

Brownsville Metropolitan Planning Organization Rail Feasibility Study

Final Report

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EXECUTIVE SUMMARY

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This report documents the findings of a rail feasibility study conducted on behalf of the Brownsville Metropolitan Planning Organization (MPO) between 2011 and 2012. The purpose of the study was to determine if a rail link between the Port of Brownsville and the Brownsville-South Padre International Airport (also referred to as the Brownsville Airport) could be viably constructed and produce an adequate return on public investment, in terms of revenue, local employment, and increased tax revenues. At present, both the Port of Brownsville and the Brownsville Airport are well-developed freight facilities that handle domestic and international freight cargoes, but they function independently of one another. While each has been successful in serving their respective markets, in locations around the world, regions are successfully integrating multiple modes of freight transportation to improve intermodal operability and to provide value-added services and manufacturing. Because it is located along a highly industrialized international border, Brownsville has a high degree of access to activities that could be exploited for regional economic growth. Additionally, there is an abundant and young labor pool in Cameron County (and throughout the Lower Rio Grande Valley) that is capable of working in skilled labor industries. While the strategic development of a superior transportation network is not a panacea for other regional challenges, it can help augment the region's assets and make Cameron County more attractive to potential employers within and outside of the region.

Overview of the Regional Economy

Cameron County has a growing and relatively young population that contains significant potential for future economic growth. However, the population's low level of educational attainment is a significant impediment and is one that will require a concentrated and sustained effort over multiple

decades to overcome. More importantly, decision makers should understand that improvements to the region's freight transportation system cannot alone overcome this deficiency. Nonetheless, freight transportation improvements would boost the region's overall competitiveness against other regions with similar endowments.

Every year, millions of tons of cargo worth billions of dollars travel to, from, within, and though Cameron County as a result of domestic commodity movements, transborder shipping, waterborne commerce, and airfreight. Transloading - the transfer of cargo – frequently occurs at many points within the region, including at the Port and at the Airport. Generally, however, there is very little, if any, value added during these movements.

The review of regional employment trends showed that Cameron County's manufacturing sector has been in decline over the past decade and its economy has transitioned further towards consumer services, which include medical care. While many of these services are important and even critical, the County risks becoming less economically diverse by concentrating into industries that do not encourage local-based firms to generate consumptive demand, profits, and investment from outside of the region. Given that Cameron County already has a relatively low level of per capita wealth; this trend could lead to a sluggish regional economy, which might already be demonstrated by Cameron County's stagnating per capita GDP growth and its high unemployment rate.

An analysis of regional freight data shows there is a wide variety of commodities being moved through the region that range from raw materials to sophisticated finished products. The automotive industry is responsible for a very significant share of these high-value goods movements, but there are also other manufacturers who produce electronics, electrical devices, machinery, and appliances in Northern Mexico. An analysis of intra-industry trade showed that the flows of goods for some industries are moving back and forth across the region in almost equal proportion. These intra-industry movements could offer multiple opportunities to provide value-added services within the same manufacturing process.

Development and Design of the Rail Corridors

In cooperation with the Brownsville MPO staff, the study's consultant rail engineer and planners developed and refined four alternative alignments. The process involved a preliminary environmental analysis, application of basic rail engineering criteria for the first designs, and a public process and environmental review which were used to vet and adjust the alternate alignments. The finalized alignments were analyzed to determine the impact they would have on the human and natural environments. Among the most important criteria were effects on existing housing, particularly residential relocation (dwelling units impacted). Although the four alignments produced similar results, Alignment 3 had the fewest total parcels impacted, the fewest private parcels impacted, and by far the fewest dwelling units impacted.

In terms of estimated construction costs, all four alignments were quite similar, and the total cost was estimated at approximately $50 million. This figure included a cost of $18 million for a proposed grade separation at Highway 4/Boca Chica Boulevard, which is not anticipated to be part of the initial

project. Additionally, the total cost estimate includes a 30% contingency cost to account for environmental mitigation, fluctuating material and labor costs, and other unforeseen or variable costs. The expense of right-of-way acquisition is not included in these estimates, but is estimated to be roughly $2 to $4 million in 2012 dollars.

The Technically Preferred Alignment for the railroad corridor between the Port of Brownsville and the Brownsville-South Padre Island International Airport is Alignment 3. Based upon the data collected to date, Alignment 3 would create the fewest impacts on the human environment, especially due to residential relocations. Alignment 3 is estimated to require 6 residential relocations compared to 24 residential relocations for Alignment 1, 25 residential relocations for Alignment 4, and 28 residential relocations for Alignment 2. Alignment 3 also impacts less overall acreage and fewer privately owned parcels of land. Also based upon the preliminary analysis, the impacts of Alignment 3 on the natural environment would create fewer or no greater impacts than the other three alignments under consideration. It requires the fewest number of irrigation canal or drainage crossings and contains the shortest distance within the floodplain. From an engineering and constructability perspective, Alignment 3 is not significantly differentiated from the other three alignments by cost.

Potential Economic Benefits of the Rail Corridor

The economic benefits that would accrue to Cameron County with the construction of a rail corridor between the Port of Brownsville and the Brownsville Airport would ultimately depend upon the types of facilities that are built around it. Three hypothetical development scenarios were analyzed using an input-output model (IMPLAN) of the Cameron County economy. Because the rail link does not yet exist and because there are no known employers in Cameron County that presently rely upon both the Port and the Airport for freight movements, the potential economic impacts of the project were predicted by considering three scenarios with disparate levels of influence on the Cameron County economy. Although these are hypothetical scenarios, the information can still be used to inform future discussions about this proposed project among elected officials and planners. The three scenarios explored were:

- Scenario 1 – Construction of a Heavy Manufacturing Facility to serve the global market;
- Scenario 2 – Construction of a Supply Chain Management Center serving maquiladoras in Mexico; and
- Scenario 3 – Opening of a Small Distribution Center that serves Mexican retailers.

It should also be noted that each scenario are not necessarily intended to estimate the entirety of the economic impacts of the project, rather the economic impacts of three different types of facilities that could be plausibly located along the proposed rail corridor. In reality, the scenarios are not mutually exclusive; since some combination of facility types could be built or more than one of a single type of facility. Because each example facility inserts itself into the region as either a producer of goods or a node in cross-border supply chains, the services create considerably more economic activity than the practice of cross-border shipping. Depending upon the type and number of facilities that locate along the rail corridor, there is a strong possibility that the initial public investment would generate

sufficient tax revenue to pay for itself over the life of the project. However, this return on investment is likely to require a much longer period than is typical for most private-sector investment. Fortunately, with adequate maintenance, rail infrastructure has a long life-span (i.e. 75 years or more), so this timeline provides a wide window to service debt related to the initial investment.

Environmental Overview

While it is anticipated that the proposed rail corridor will not have a significant impact on the human or natural environment within the study area, the project's construction will require residential relocations and will create other impacts on the human and natural environment that could require mitigation. The proposed project will require compliance with various federal and state environmental regulations and laws. By engaging in an open dialogue with regulatory agencies, stakeholders, and affected parties early in the planning and environmental review process, the project's sponsoring agency can likely streamline the period of regulatory review and approval. Similarly, coordinating the environmental review process with the planning process is another effective means of streamlining the regulatory review process. Likely environmental issues that will confront the project sponsor includes:

Environmental Justice

The population in the project study area is disproportionately minority and low-income compared to Cameron County overall. The project sponsor should consider involving the affected minority and low-income population during the planning process and incorporate their suggestions for improvements into the project, as reasonable and appropriate.

Limited English Proficiency Populations

The population within the project study area consists disproportionately of speakers with Limited English Proficiency. The project sponsor should consider involving the Limited English Proficiency population by providing bilingual (Spanish) documents and translators at public meetings.

Parklands – Section 4(f)

All proposed corridors would impact existing parkland owned by the Cameron County Park System. The project sponsor should begin coordination with Cameron County as early as reasonable, so that preparation and approval of the Section 4(f) document are not unnecessarily delayed. Potential mitigation properties in the area should be identified and purchase options or rights of first refusal should be negotiated.

Section 401 of the Clean Water Act

Construction of the rail corridor may require temporary or permanent fill material into jurisdictional waters of the United States, including wetlands. The project sponsor should seek to minimize the project's impacts on the jurisdictional waters of the United States during the preliminary design phase.

The project sponsors should begin early coordination to acquire a United States Army Corp of Engineers (USACE) Section 404 Permit and Section 401 Certification.

Executive Order 11990 Wetlands

All proposed corridors cross water bodies that may be designated as wetlands. If the project sponsors do not have access to mitigation properties from a land bank, they project sponsors should identify potential mitigation properties and negotiate options to purchase or first refusal rights.

Section 303(d) of the Clean Water Act

Water runoff from the rail corridors may drain into an impaired stream segment. The project sponsor should identify site appropriate Best Management Practices (BMP) to minimize runoff entering the impaired stream segment.

Endangered and Threatened Species

The proposed alignments are located near potential habitat of the Federally Endangered jagaurandi. The project sponsor should consider starting early coordination with Texas Parks and Wildlife to minimize and mitigate the impacts on this species in the project study area.

Recommendations

The report suggests several recommendations for the sponsoring agency or agencies to pursue, if they wish to advance development of the proposed project. These recommendations are not necessarily presented in any order of importance and they may be pursued simultaneously.

Use Planning and Proactive Zoning to Avoid Future Land Use Conflicts

To avoid disrupting the planned land uses or infrastructure that may one day be located within the right-of-way of the proposed rail corridor, the City of Brownsville should adopt zoning regulations around the proposed alignments with the assumption that the rail line will be constructed at some point in the medium- to long-term. Of particular importance is to avoid building new structures, roads, or utility lines, which would need to be relocated or demolished when the rail is constructed. It is recommended that the Brownsville MPO include this corridor in its next Metropolitan Transportation Plan (MTP), so that it becomes part of the permanent public record and so that local agencies at the municipal and county level can permit future projects or pursue improvements that do not conflict with the existing rail corridors.

Add the Proposed Rail Alignments to the Brownsville MPO's Thoroughfare Plan

Under the subdivision ordinance for the City of Brownsville, the City's Thoroughfare Plan, which follows the MPO's Thoroughfare Plan, provides the legal basis for the acquisition of right-of-way through filed plats. Therefore, an early step in the implementation process is to add the proposed rail line to the MPO/City Thoroughfare Plan. After the MPO Thoroughfare Plan Amendment has been

adopted, developers of plats within the subject areas will be required to dedicate sufficient rail right-of-way as a condition of any subdivision plat to be filed.

Purchase Potentially Impacted Parcels from Willing Sellers

For implementation of the project, it is essential that the proper right-of-way be acquired. There are two recommended methods for acquisition of right-of-way:

Acquisition through subdivision and dedication; and

Purchase of potentially impacted parcels from willing sellers.

An exception to this subdivision requirement would apply to residential parcels located in, or near the outlined box in Figure 6.1 of this report. This area would not be subject to subdivision requirements due to the presence of existing residences. Within this portion of the rail corridor, acquisition of parcels would be accomplished through purchase from willing sellers. Eminent domain should be avoided and used only as a last resort. If a major employer is not established, the subdivision process can set aside portions of the rail corridor, with the understanding that future purchases of right-of-way will be needed for the remainder of the corridor.

Establish a Joint Public Authority to Develop and Operate the Rail Corridor

The proposed project involves multiple stakeholders with legitimate roles in the development and operation of the proposed rail spur. The primary stakeholders on this project are the Brownsville Metropolitan Planning Organization, the Port of Brownsville, Brownsville-South Padre Island International Airport, and the Brownsville & Rio Grande International Railroad. To ensure that the project continues to move forward smoothly and to minimize the potential for future disagreements, a joint authority should be established which will ensure that these entities continue to be fairly represented, as they have been in the earlier stages in the process. The authority should hold regular meetings to discuss progress of the project and to distribute action items. These meetings should take place at least biannually and will add a level of accountability for all entities, while promoting full ownership and participation in the project.

Identify Mitigation Properties for Wetlands and Parkland

It is highly likely that the preferred rail corridor will impact wetlands in one or more locations within the project study area. The required mitigation is typically ten acres of mitigation land for every acre of wetlands affected. If the project's sponsoring agency or agencies do not already have a mitigation bank of wetland properties, efforts should begin to identify potential mitigation properties for purchase so that this issue does not delay the approval of the project's environmental review. Likewise, regardless of the alignment chosen, the project will impact public parkland, which will require preparation of Section 4(f) documentation and the purchase of mitigation property. The sponsoring agency or agencies should begin coordination with appropriate agencies and identify and purchase mitigation property at the earliest appropriate time.

Identify Future Funding Sources for Railroad Construction

Texas's comprehensive plan for rail, the Texas Rail Plan was approved in 2010. Elements of the plan are either financed through the general fund or obtain their own grant or loan financing. An important step for the project's sponsor will be to include the Brownsville Rail project into the next update of the Texas Rail plan and to pursue federal and state funding sources for construction.

Given the projects significant cost, finding the funds for construction will be a significant challenge for this project. Outside of a local government (or more than one local government) selling bonds for this project or a guaranteed large-scale, long-term customer along the rail corridor, acquiring funds for this project from the private sector will be difficult. Similarly, there are a number of public funding sources that could be used for this project at a federal, state, and local level, but the competition for these funds is fierce. In reality, the sponsoring agency will probably need to depend on a combination of public bonds that are, hopefully, bundled with funds from the private sector and government grants.

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SECTION 1 - INTRODUCTION

This report documents the findings of a rail feasibility study conducted on behalf of the Brownsville Metropolitan Planning Organization (MPO) between 2011 and 2012. The purpose of the study was to determine if a rail link between the Port of Brownsville and the Brownsville-South Padre International Airport (also referred to as the Brownsville Airport in this report) could be viably constructed and produce an adequate return on public investment, in terms of revenue, local employment, and increased tax revenues. At present, both the Port of Brownsville and the Brownsville Airport are well-developed freight facilities that handle domestic and international freight cargoes, but they function independently of one another. While each has been successful in serving their respective markets, in locations around the world, regions are successfully integrating multiple modes of freight transportation to improve intermodal operability and to provide value-added services and manufacturing. Those observers who are familiar with this concept know these locations under a variety of terms (e.g. inland ports, freight gateways, freight villages, etc.).

Why This Study?

The City of Brownsville is situated at a major crossroads of international trade in the western hemisphere. Its location along the U.S.–Mexico border and adjacent to the Gulf of Mexico provides opportunities for transborder trade to occur across modes. Land movements occur by truck rail, and pipeline, while waterborne commerce is handled at the Port, and airfreight at its airport. This combination of transportation modes – maritime, transborder road and rail, and air creates unique conduits for massive quantities of commodities to flow on an annual basis. However, as commodities flow through the area, they generally pass through the region with very little, if any, value added in Brownsville.

Because it is located along a highly industrialized international border, Brownsville has a high degree of access to activities that could be exploited for regional economic growth. Additionally, there is an abundant and young labor pool in Cameron County (and throughout the Lower Rio Grande Valley)

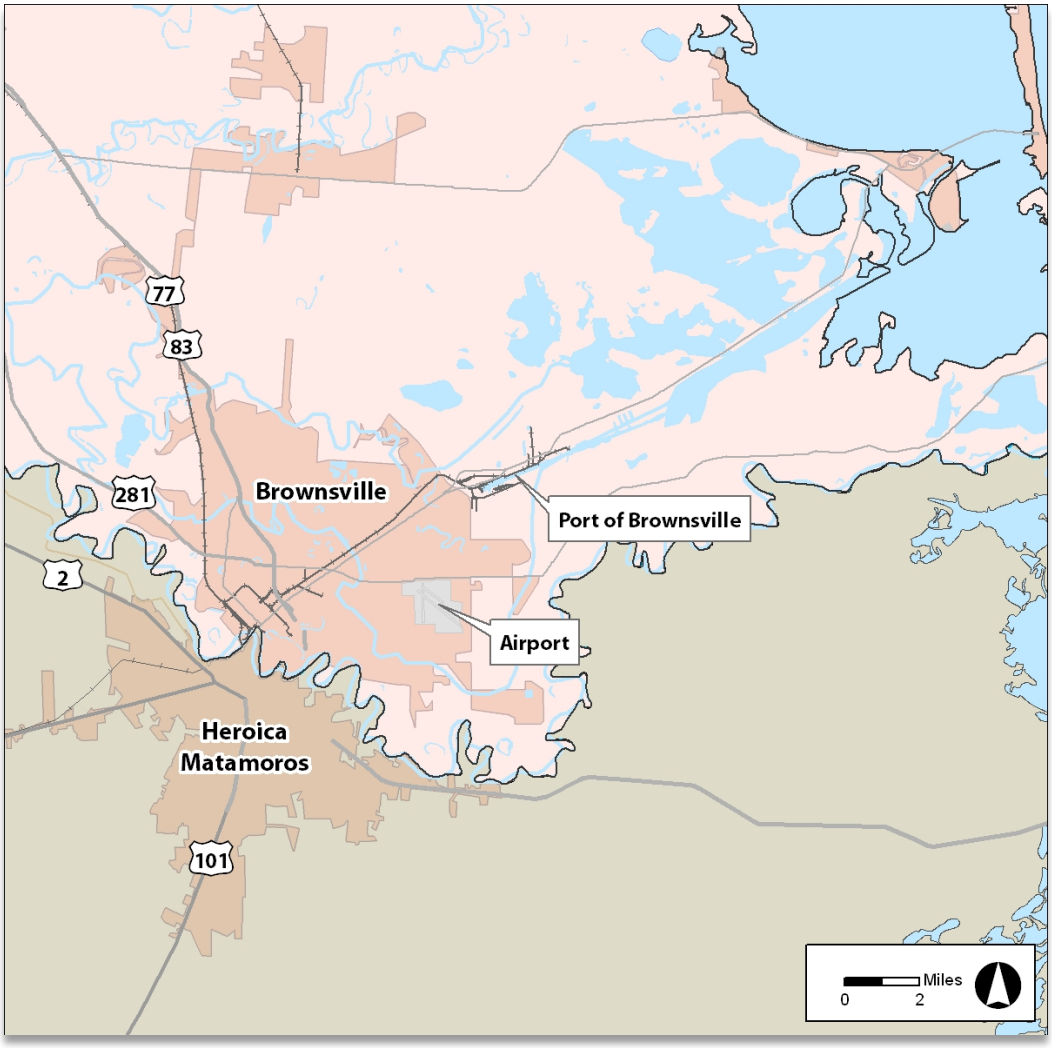
that is capable of working in skilled labor industries. While the strategic development of a superior transportation network is not a panacea for other regional challenges, such as low levels of educational attainment, it can help augment the region's assets and make Cameron County more attractive to potential employers within and outside of the region.

Regional and Study Area Description

The proposed project is located in the City of Brownsville in Cameron County, Texas, which is located in the Rio Grande Valley region of South Texas, roughly 20 miles west of the Gulf of Mexico and on the northern bank of the Rio Grande River. Cameron County is located at the conjunction of several different climate zones – subtropical, the Gulf Coast plains, the Great Plains, and the Chihuahuan desert. It mostly falls within the subtropical zone and so the area has hot and humid summers and mild winters. Although tropical weather patterns can be severe, the appearance of tropical storms and cyclones is generally infrequent.

The study area is directly north of the Mexican city of Matamoros, Tamaulipas, which is home to a large number of manufacturing facilities called *maquiladoras* that produce goods for export. The study area is also roughly an hour's driving time east of the larger Mexican city of Reynosa, Tamaulipas, which also has a prosperous maquiladora industry. Since Mexico's entry into the General Agreement on Tariffs and Trade (GATT) in 1986 and the implementation of the North American Free Trade Agreement (NAFTA) in 1994, employment in the maquiladora sector has greatly increased and northern Mexican centers such as Matamoros and Reynosa have grown in population, employment, and productivity.

Figure 1.1: Brownsville Region



At a smaller scale, the project study area lies between the Port of Brownsville and the Brownsville-South Padre Island International Airport. The eastern portion this study area has large swaths of floodplain, which are mostly property owned by the Brownsville Navigation District and private owners of agricultural land up to the Rio Grande River. A large irrigation canal cuts south and west from the port and several smaller tributary canals and the Resaca de Palma also transect this area. Moving westward, there are pockets of low-density residential development interspersed with agricultural uses. Residential land use takes the form of single family residences, small and large lot subdivisions, and mobile home parks. A few commercial (industrial) uses are also present.

Figure 1.2: Study Area

This report is intended to serve as both as a planning and a policy document for the Brownsville MPO and for other local governments and agencies that might become a partner in this project. It takes on the role of a planning document as it documents the process and analyses that lead to the development of four alternative rail corridors and the potential impacts of these alignments. It also provides a detailed discussion of the public involvement process that accompanied the development of the corridors. The report serves as a policy document in that it provides an economic analysis of the potential costs and benefits of building a rail linkage, presents various development scenarios, and outlines recommendations for future implementation.

Beyond this introduction, the report is organized into five sections. Section 2 describes the Brownsville region by its basic demographics and employment characteristics. It compares the local economy to that of Texas and the United States, noting important advantages and limitations. Section 2 also examines commodity flows through Cameron County to provide readers with an awareness of the vast quantities of freight that move through the region. Section 3 describes the

process used for developing the four alternate rail corridors (also referred to as alignments) linking the Port of Brownsville and the Brownsville Airport. The section includes physical descriptions of the finalized alignments, and a narrative profile that characterizes the proposed rail infrastructure that would be built within the corridor. Section 4 offers three distinct scenarios for the development of manufacturing or specialized warehousing facilities along the corridor and analyzes each scenario's impacts on the Cameron County economy. Section 5 provides an environmental overview of the study area and a preliminary assessment of the corridors' potential environmental impacts. This chapter can provide a starting point for the formal environmental compliance efforts that will need to undertaken, if the project moves forward. In this section, readers will find a detailed narrative of the public involvement process and summaries of meetings with stakeholders. Finally, Section 6 reviews the study's key findings and recommends next steps for the project's implementation.

SECTION 2 - THE REGIONAL ECONOMY

The purpose of Section 2 is to describe the local economy, using statistical data, to better understand how Cameron County's economy exists within a broader geographic context, such as the state of Texas or the United States. Due to its location along an international border, Cameron County's economic activity is encompassed within a broader region that could be defined as both a domestic subnational area and a binational region. The narrative of this section will consider both geographies, but with an emphasis on Cameron County's international linkages.

While transportation connectivity is an important factor for site selection, ultimately firms must consider myriad of factors that influence their ability to reach profitability. In addition to transportation costs, such factors might include labor force skills and productivity, labor costs, unionization, resource availability, proximity to markets, proximity to suppliers, property values, cost of living, taxes, government policies and regulations, environmental restrictions, etc. For manufacturing firms, among all these factors, labor productivity (not transportation costs) is generally considered the most influential factor on profitability. However, firms must consider the offsetting advantages and disadvantages of each of these factors and many others. Nonetheless, an efficient regional transportation system allows a region to distinguish itself from other regions that may offer similar conditions and it is a resource that is usually considered important by corporate decision makers. Additionally, a more efficient transportation network can also overcome deficiencies in other factors, if the efficiencies of the transportation network are significant. Therefore, it is important to understand that addressing a specific transportation need or making the overall transportation system more efficient is usually not a panacea for local economic development. However, these improvements can be a significant contributor to a region's competitiveness and they can distinguish a region apart from its competitors who may have similar advantages in other factors.

Section 2 embraces this more holistic approach to regional economic development by first discussing Cameron County's demographic and economic conditions to give a "bird's eye" view of the region's relative strengths and challenges, while also identifying potential opportunities. In the first part of

Section 2, the narrative will discuss the Cameron County's demographic trends in terms of population growth, age distribution, and educational attainment. These components are important factors that firms consider when they considering expansion into a region. This section will also describe characteristics of the local labor force and how Cameron County's economy has changed during the recent past. The narratives then transitions from people to goods and describe how freight moves to, from, within, and through the region. This discussion will, again, provide a context for understanding Cameron County's place within the regional, national, and international economy. Obviously, Cameron County is strongly impacted by its proximity to Mexico and its role as a transshipment point between the two countries will receive significant attention.

Demographic Trends

Population

Between the 2000 and 2010 decennial U.S. censuses, Cameron County added more than 70,000 residents, resulting in an overall growth rate of 21.2 percent or a compound annual growth rate (CAGR) of 1.94 percent (See Table 2.1). Within the state of Texas, Cameron County was the 13th fastest growing county between 2000 and 2010. Growth rates for Cameron County were slightly higher than those of Texas, which experienced a growth rate of 20.6 percent and a CAGR of 1.89 percent. Notably, Cameron County's and Texas's population growth rates between 2000 and 2010 were more than double the nation's overall growth rate of 9.7 percent and CAGR of 0.93 percent.

Table 2.1: Population Change, 2000-2010

	2000	2010	Growth Rate	CAGR
Cameron County	335,227	406,220	21.2%	1.94%
Texas	20,851,820	25,145,561	20.6%	1.89%
United States	281,421,906	308,745,538	9.7%	0.93%

Source: U.S. Census Bureau, 2011.

Age Distribution

In addition to having a growing population, Cameron County's population can be characterized as being a young one. From a regional economic development perspective, having a younger population can potentially offer a region stronger economic growth prospects. Regions with younger populations have more residents who are either in or available for the workforce or who will soon mature into it. This workforce-ready population can provide more opportunities for production and a growing consumption market. Populations that are disproportionately older or aging are likely to have a smaller proportion of their population in the workforce and, potentially, less output. However, despite the benefit of having a younger population, having one does not necessarily advance a region, if out-migration siphons off its educated and skilled young workers and if the rate of educational attainment among the remaining young people is low.

Cameron County's population is younger than the overall population in Texas and the United States. During the 2010 U.S. Census, the median age of the population in Cameron County was 30.6 years compared to 33.6 years in Texas and 37.2 years in the United States. The share of Cameron County's population between the ages of 20 and 64, the primary employment ages, grew in proportion to the state and the nation (See Table 2.2). Cameron County saw a much larger increase in its share of the population within the working age cohort (1.06 percent) than Texas (0.68 percent) and slightly larger than the U.S. (0.91 percent) (See Table 2.2). Both of these trends had the effect of increasing the size of the labor force. However, due to declining fertility rates, the national population trend for persons in the 0-19 age range was a loss of share. However, that loss of share was lower in Cameron County (minus 0.87 percent) than in Texas (minus 1.08 percent) and the United States (minus1.52 percent).

Although the national trend was towards an aging population, between 2000 and 2010, Cameron County's share of the population of persons 65 years and older remained fairly stable. This cohort's share of the overall population in Cameron County declined by approximately 0.1 percent, whereas their share of Texas's population grew by 0.4 percent and in the United States, it grew by 0.61 percent.

Table 2.2: 2000 and 2010 Age Distribution of Population in Cameron County, Texas

	AGE 0-19				
	2000	**Share**	**2010**	**Share**	**Share Change**
Cameron County	124,734	37.0%	147,434	36.1%	-0.87%
Texas	6,546,236	31.4%	7,621,714	30.3%	-1.08%
United States	80,184,287	28.5%	83,267,556	27.0%	-1.52%
	AGE 20-64				
	2000	**Share**	**2010**	**Share**	**Share Change**
Cameron County	173,118	51.3%	213,895	52.4%	+1.06%
Texas	12,233,052	58.7%	14,921,961	59.3%	+0.68%
United States	166,258,647	59.1%	185,209,998	60.0%	+0.91%
	AGE 65+				
	2000	**Share**	**2010**	**Share**	**Share Change**
Cameron County	37,375	11.1%	44,891	11.0%	-0.09%
Texas	2,072,532	9.9%	2,601,886	10.3%	+0.41%
United States	34,978,972	12.4%	40,267,984	13.0%	+0.61%

Source: U.S. Census Bureau, 2010.

Educational Attainment

A person's educational attainment is the highest level of schooling that they have successfully completed. Examining the educational attainment of a region's population is one way to assess its skill level and the types of jobs its workers may be qualified to hold. Data from the U.S. Census Bureau show that Cameron County's population has a low level of educational attainment, compared with Texas and the United States, and this deficiency poses a long-term challenge for the region.

Among Cameron County residents who were 25 years or older in 2010, 37.0 percent did not graduate from high school, which is nearly double the state rate of 19.3 percent and far above the national rate of 14.4 percent (See Table 2.3). The percentage of Cameron County residents who earned a bachelor's degree is 10.3 percent; again well below the state and national rates, which are both around 17 percent. The percentage of Cameron County residents with a graduate or professional degree (J.D., M.D., etc.) was 4.0 percent, compared to the state rate of 8.6 percent and the national rate of 10.4 percent.

Table 2.3: Highest Level of Educational Attainment for the Population 25 Years and Older

HIGHEST LEVEL ATTAINED	CAMERON COUNTY	TEXAS	UNITED STATES
Less than high school graduate	37.0%	19.3%	14.4%
High school graduate (includes equivalency)	24.7%	25.6%	28.5%
Some college or associate's degree	24.1%	29.2%	28.9%
Bachelor's degree	10.3%	17.3%	17.7%
Graduate or professional degree	4.0%	8.6%	10.4%

Source: U.S. Census Bureau – American Community Survey 1-Year Estimates, 2010.

Local Economy

Regional Gross Domestic Product

Gross Domestic Product (GDP) is the sum of a region's net output of products and services. Table 2.4 shows the U.S. Bureau of Economic Analysis' (BEA) estimates of regional GDP for the Brownsville-Harlingen MSA. The Brownsville-Harlingen MSA, which consists only of Cameron County, had a 2001 GDP of $5.6 billion, increasing to $6.8 billion (both figures in 2005 dollars, see Table 2.4). Thus, the total real GDP increase in Cameron County during this 10-year period was $1.1 billion or 20.4 percent.

Table 2.4: Real Gross Domestic Product for Cameron County, 2001-2010 (Chained to 2005 US$)

YEAR	GROSS DOMESTIC PRODUCT
2001	$5,668,000,000
2002	$5,883,000,000
2003	$5,996,000,000
2004	$6,061,000,000
2005	$6,153,000,000
2006	$6,353,000,000
2007	$6,618,000,000
2008	$6,810,000,000
2009	$6,721,000,000
2010	$6,823,000,000
GDP Growth	$1,155,000,000
Pct. Growth	20.4%

Source: U.S. Bureau of Economic Analysis, 2012.

While total GDP has grown in Cameron County, in part, this has been due to its population growth. Table 2.5 compares the real per capita GDP for Cameron County, the state of Texas, and the United States, which takes this into account. Notably, the per capita GDP in Texas and the United States was more than 2.5 times the per capita GDP in Cameron County. The data also show that per capita GDP in Cameron County, in real terms, has only grown 1.0 percent or $165 between 2001 and 2010. This compares unfavorably to the per capita GDP of the state of Texas, which grew by 4.3 percent or $1,801 during this period, and the U.S. per capita GDP, which grew by 6.2 percent or $2,467.

Table 2.5: Per Capita Real Gross Domestic Product for Cameron County, 2001-2010 (Chained to 2005 US$)

YEAR	CAMERON COUNTY	TEXAS	UNITED STATES
2001	$16,555	$41,998	$39,879
2002	$16,800	$42,251	$40,192
2003	$16,727	$41,670	$40,701
2004	$16,548	$43,242	$41,709
2005	$16,477	$42,628	$42,483
2006	$16,712	$43,558	$43,220
2007	$17,131	$45,009	$43,633
2008	$17,329	$44,050	$43,079
2009	$16,789	$43,401	$41,640
2010	$16,720	$43,799	$42,346
Growth 2001-2010	$165	$1,801	$2,467
Pct. Growth 2001-2010	1.0%	4.3%	6.2%

Source: U.S. Bureau of Economic Analysis, 2012.

Employment

Similar to Cameron County's pace of population growth, Cameron County's total employment grew from 118,079 to 140,350 workers or an increase of 18.9 percent between 2000 and 2010 (See Table 2.6). This rate was significantly higher than Texas's overall employment growth rate of 12.6 percent and the nation's rate of 1.6 percent during this same period. Unfortunately, employment growth was accompanied by a significant increase in the number of unemployed in Cameron County, which almost doubled between 2000 and 2010. Nonetheless, Cameron County still performed favorably compared to Texas, which had a 120.1 percent increase in the number of unemployed, and the United States, which had a 160.5 percent increase in the number of unemployed.

Historically, Cameron County's unemployment rate has surpassed state and national levels. While, thankfully, Cameron County's unemployment rates are lower than the almost 17 percent experienced during the early 1990s, they continue to surpass state and national unemployment rates. And, while its growing population has created many opportunities for new economic activity, its job growth has not kept pace with its ballooning labor force. As a result, Cameron County's unemployment rate increased from 7.0 percent to 11.2 percent between 2000 and 2010 (See Table 2.6). During the same years, the state unemployment rate increased from 4.4 percent to 8.2 percent and the national unemployment rate more than doubled from 4.0 percent to 9.6 percent.

Table 2.6: Employment, Unemployment, and Unemployment Rate

	NUMBER OF EMPLOYED		
	2000	**2010**	**Change**
Cameron County	118,079	140,350	18.9%
Texas	9,896,002	11,141,903	12.6%
United States	136,891,000	139,064,000	1.6%
	NUMBER OF UNEMPLOYED		
	2000	**2010**	**Change**
Cameron County	8,932	17,650	97.6%
Texas	451,845	994,481	120.1%
United States	5,692,000	14,825,000	160.5%
	UNEMPLOYMENT RATE		
	2000	**2010**	**Change**
Cameron County	7.0%	11.2%	60.0%
Texas	4.4%	8.2%	86.4%
United States	4.0%	9.6%	140.0%

Source: Texas Workforce Commission, 2011.

Employment by Industry

Disaggregating Cameron County's employment sectors provides a more nuanced understanding of the Cameron County economy, especially with compared to Texas and the nation. Table 2.7 shows the breakdown of employment by sector for each of these three geographies. One important footnote is that these data only account for private-sector employees and do not include public-sector employment.

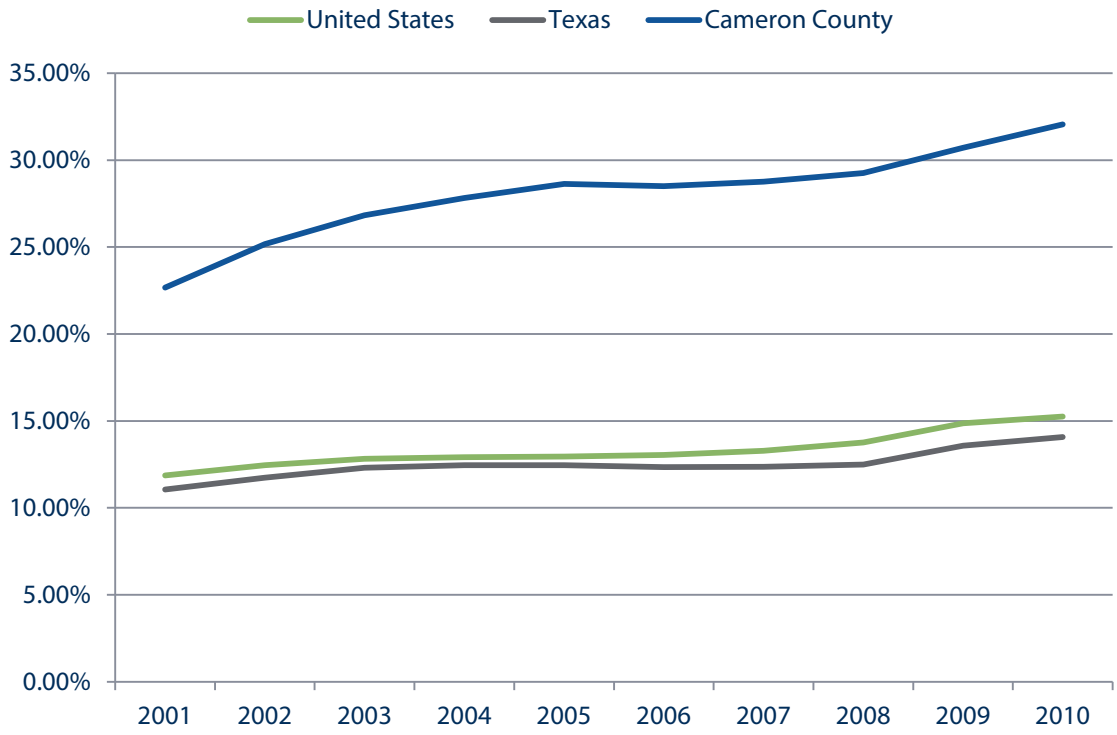
Table 2.7: Share of 2010 Private Sector Employment by Industry

INDUSTRY	CAMERON COUNTY	TEXAS	UNITED STATES
Agriculture, forestry, fishing and hunting	0.6%	0.7%	1.1%
Mining, quarrying, and oil and gas extraction	0.0%	2.5%	0.6%
Utilities	0.3%	0.6%	0.5%
Construction	3.4%	6.8%	5.2%
Manufacturing	5.9%	9.7%	10.8%
Retail trade	16.8%	13.6%	13.6%
Wholesale trade	3.2%	6.0%	5.2%
Management of companies and enterprises	0.2%	1.0%	1.8%
Administrative and waste services	6.9%	7.5%	7.0%
Educational services	0.9%	1.5%	2.3%
Health care and social assistance	32.1%	14.1%	15.3%
Transportation and warehousing	4.6%	4.3%	3.7%
Information	2.1%	2.3%	2.6%
Finance and insurance	3.5%	5.3%	5.2%
Real estate and rental and leasing	1.8%	2.0%	1.8%
Professional and technical services	2.3%	6.8%	7.0%
Arts, entertainment, and recreation	1.1%	1.3%	1.8%
Accommodation and food services	11.6%	10.7%	10.5%
Other services, except public administration	2.8%	3.5%	4.1%
Unclassified	0.0%	0.1%	0.1%

Source: U.S. Bureau of Labor Statistics, 2011.

Notably, Cameron County's private sector employment is most concentrated in the Health Care and Social Assistance sector at 32.1 percent, a rate which was more than double the state (14.1 percent) and national (15.3 percent) rates (See Figure 2.1). The primary reason for the large share of employment in this sector is that there are no public hospitals in Cameron County. Other explanations for the high concentration in this sector are the region's considerable population growth and its facilities serves Mexican citizens who come across the border for health care services, in addition to local residents. Cameron County's share of workers in the Social Assistance and Health Care employment sector has risen steadily over time, from 22.6 percent in 2001 to 32.1 percent in 2010.

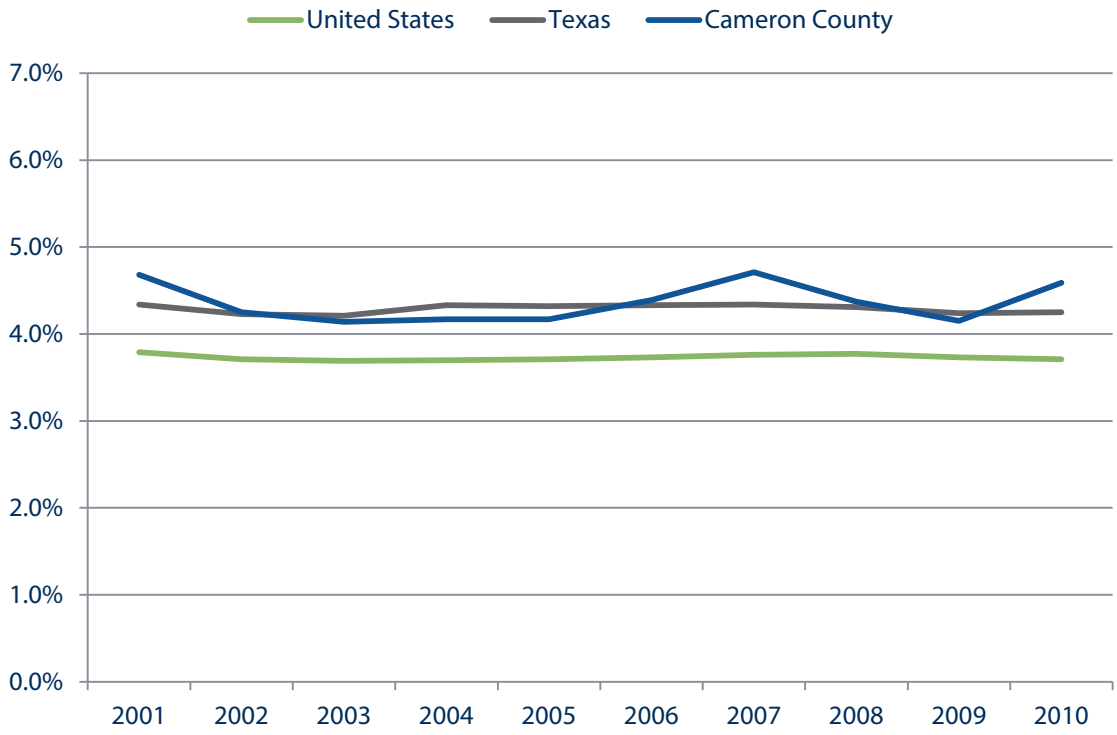
Figure 2.1: Social Assistance and Health Care Employment Share of Total Employment



Source: U.S. Bureau of Labor Statistics, 2011.

For many years, transportation and warehousing has been an important industry for Cameron County, because of its strategic location on the U.S.-Mexico border. However, despite the region's high volume of cross-border trucking activity, Cameron County had only a slightly higher percentage of its private-sector employment in this industry compared to the state of Texas. Between 2001 and 2010, Cameron County had a higher share of workers in transportation and warehousing than the national share, and it fluctuated against the state's share. In 2010, Cameron County had 4.6 percent of its workers employed in the transportation and warehousing sector, whereas the state had 4.3 percent and the nation had 3.1 percent in the same sector (See Figure 2.2).

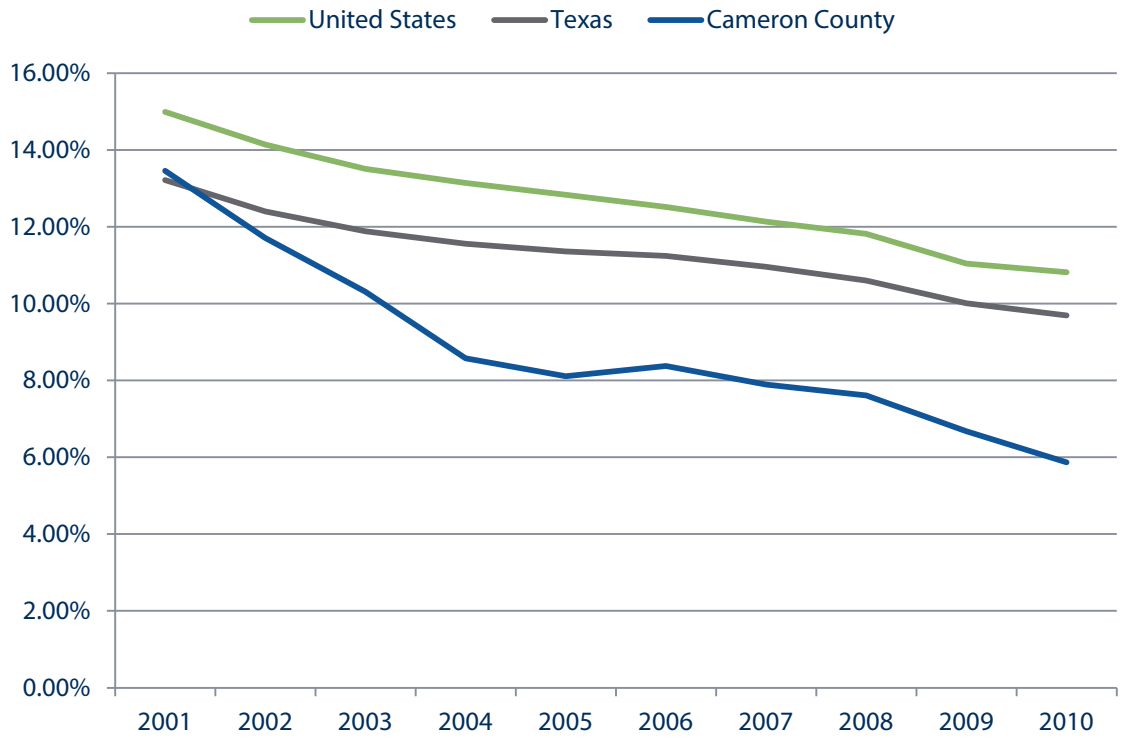
Figure 2.2: Transportation and Warehousing Employment Share of Total Employment



Source: U.S. Bureau of Labor Statistics, 2011.

Between 2001 and 2010, both the United States and Texas experienced significant job losses in the manufacturing sector, which was negatively influenced by the automation of production processes, the off-shoring of manufacturing facilities, and losses incurred during the recession of 2008-2010. Cameron County also experienced these same losses, but with greater intensity than the state or nation. In 2001, manufacturing's share of total employment in Cameron County was roughly equivalent (13.4 percent) to that of Texas (13.2 percent) (See Figure 2.3). However, the county steadily lost share in the manufacturing sector and ended the decade with 5.9% share, topped by the Texas rate of 9.7% and the U.S. rate of 10.8%. A region's manufacturing sector is among its most important because it supports other industries, which can be built around it. Regions with robust manufacturing sectors spawn new suppliers, encourage research and development, and spin off entrepreneurs.

Figure 2.3: Manufacturing Employment-Share of Total Employment



Source: U.S. Bureau of Labor Statistics, 2011.

The percentage of Cameron County's employment in retail trade was 16.8 percent - slightly higher than the state or national rates (13.6 percent for each) (See Table 3.7). Both of these concentrations are likely explained by the added effect of Mexican nationals who consume many goods and services in Cameron County. Interestingly, other industries that are important to Cameron County's economy do not show a high level of employment concentration. For example, despite being a tourist destination for U.S. and Mexican residents, the county's share of employment in the Accommodation and Food Services sector is not significantly higher than the state's economy. The Cameron County economy is lacking in other employment sectors, as well, such as Construction; Manufacturing, Finance and Insurance; and Professional and Technical Services. Continued deficiencies in these sectors could limit long-term growth in Cameron County, since these sectors provide critical goods and services that would be needed for a significant expansion of the regional economy.

Commodity Flows

The economy of Cameron County is a diversified among several disparate activities. The region is an important producer of agricultural products, a national tourist destination, a shopping destination for Mexican nationals, and (most importantly, in terms of freight) a major transshipment point for the nation's international trade with Mexico. It is also a county of more than 400,000 residents, who

consume all the goods and services that are part of modern life. An important step in understanding how to exploit Cameron County's location and transportation resources for future economic growth is to understand how commodities currently move within the region. Unfortunately, detailed statistics that show local commodity movements at a fine level of granularity are typically very expensive, may not be made publicly available, or are simply non-existent. However, by combining multiple data sources, a generalized understanding of commodity movements in a region can begin to emerge and this picture can be used to guide planning and policy decisions. The intent of this section is provide an overview of the volume of commodities moving to, from, within, and through the region and to suggest that some of these goods (even if it were only a very small share) could be diverted to value-added services performed in Cameron County. Ultimately, this diversion of goods would create new opportunities for economic activity and employment.

Because of its location along the U.S.-Mexico border and its historic importance as a transshipment point, Cameron County's economy is deeply influenced by the economy of northern Mexico and cross-border trade. In 1986, Mexico entered into the General Agreement on Tariffs and Trade (GATT), which was, perhaps, the nation's most significant step in expanding trade volumes with the United States and the World. In 1994, the United States, Mexico, and Canada ratified the North American Free Trade Agreement (NAFTA) to pursue a goal of eliminating trade barriers between the three nations. Under NAFTA, the scale and sophistication of maquiladora manufacturing facilities in Mexico has grown significantly, as have Mexico's trade volumes with the United States. Maquiladoras take in raw materials or unassembled parts and produce intermediate and final goods for export (only). Manufacturing in the maquiladora industry is a very important part of the regional economy for the larger Mexican border cities, such as Matamoros and Reynosa. Their growth has benefitted U.S. border cities, such as Brownsville, where maquiladoras often maintain administrative offices and distribution facilities. However, the often cited concept of "twin plants", in practice, rarely exists (at least with the two facilities located in very close proximity to the border). Nonetheless, growth in this sector has also created U.S. jobs in transportation and customs services. While not all parts of the United States have benefitted equally from the outcomes of NAFTA, it is generally agreed that Texas has been a "winner". Over the years, Cameron County has benefited from Mexico's trade with the United States more than most, but there still remain opportunities to be exploited.

Domestic Freight Movements

As mentioned earlier, there is no single data source that combines all elements of the freight network for a region; therefore, the data provided in this section will be drawn from various sources. To describe Cameron County's domestic commodity flows, this section will summarize TRANSEARCH data, which are a proprietary data source produced by a firm named IHS Global. The data were purchased by TxDOT for its planning needs and provided as a courtesy to the Brownsville MPO. The TRANSEARCH data are based upon data from the U.S. Census Bureau's Commodity Flow Survey, which tracks domestic freight movements in the United States, and U.S. Rail Waybill data, among other sources. Further adjustments and refinements are made to the data to produce baseline data and forecasts of commodity movements. The base year of the TRANSEARCH dataset is 2003, and it provides forecasts for multiple periods though 2030. Commodity flows are described in annual tonnage and in the number of trucks or rail cars. One limitation of the TRANSEARCH data is that they

do not provide information on the valuation of goods. Another limitation is that the TRANSEARCH data also do not appear to accurately report international commodity movements.

Commodity Origins and Destinations

The TRANSEARCH data obtained from TxDOT provide county-to-county commodity flows by mode within Texas. Outside of Texas, they provide Texas county-to-state flows by mode for U.S. states. Cameron County's top destinations for cargo, as measured in tonnage, are consistently the same group: the state of Louisiana, Hidalgo County, internal destinations within Cameron County, and Harris County (See Table 2.8). In the forecast data, this ranking is constant from 2003 estimates through the 2030 forecasts.

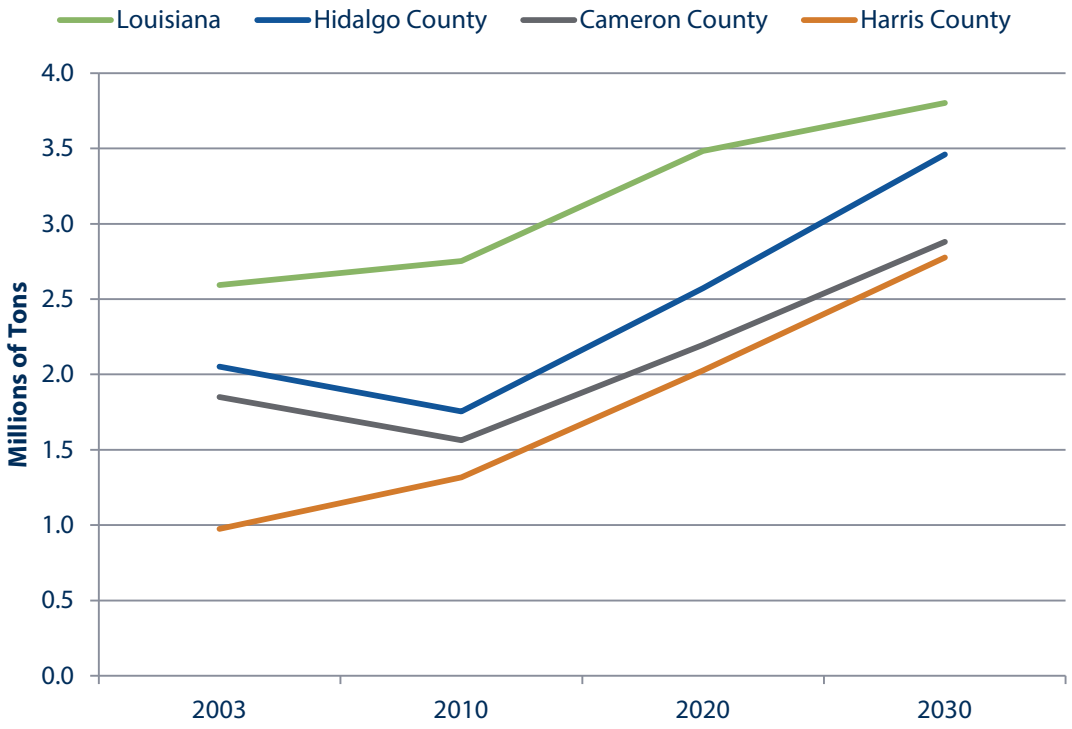
Table 2.8: Top 2010 Destinations of Cargoes Originating from Cameron County (in Short Tons)

RANK	DESTINATION	TONNAGE
1	Louisiana	2,752,186
2	Hidalgo County	1,754,667
3	Cameron County	1,563,376
4	Harris County	1,316,721
5	Nueces County	507,232

Source: IHS Global Insight, 2011

Figure 2.4 shows the 2003 baseline estimates and 2010 through 2030 forecasts of commodity movements originating in Cameron County for the top four destinations. The overall trend between 2010 and 2030 is significant growth. Throughout the forecast horizon, Louisiana is the top destination for cargo originating in Cameron County, rising from 2.6 million tons during 2003 to 3.8 million tons in 2030. Hidalgo County's imports from Cameron County increase from just over 2.0 million tons in 2003 to almost 3.5 million tons in 2030. Intra-county destinations make up the third top destination with 1.8 million tons during 2003 rising to 2.9 million tons in 2030. Finally, goods exported to Harris County rise from just under 1.0 million tons during 2003 to 2.8 million tons during 2030.

Figure 2.4: Forecasted Top Destinations of Cargoes Originating from Cameron County (Tons), 2003-2030



Source: IHS Global Insight, 2011.

According to the TRANSEARCH data, Cameron County is a net exporter of commodities, so its total inflow of goods by weight is lower than its outflow. The top five forecasted 2010 exporters to Cameron County are shown below in Table 2.9. The top exporter to Cameron County is its neighbor, Hidalgo County, with 3.6 million tons during 2010. It is followed by intra-county trade flows (2nd), Nueces County (3rd), and San Patricio County (5th). Outside of Texas, Louisiana is the fourth top origin for cargo.

Table 2.9: Top Origins of Cargoes Destined for Cameron County (in Short Tons), 2010

RANK	ORIGIN	TONNAGE
1	Hidalgo County	3,636,659
2	Cameron County	1,563,376
3	Nueces County	342,791
4	Louisiana	306,446
5	San Patricio County	269,964

Source: IHS Global Insight, 2011.

Types of Commodities

Table 2.10 provides the TRANSEARCH 2010 forecast for the top ten commodities originating from Cameron County. Interestingly, but not surprisingly, cargo originating from a warehouse or distribution center was predicted to have the highest volumes. The second, third, and fifth highest volume commodities originating from Cameron County were various forms of concrete (or its ingredients) used for construction in the Lower Rio Grande Valley. Other important commodities originating from Cameron County are petroleum products that are not refined in Cameron County but are likely transshipped through the Port of Brownsville (or, more often, the Port of Harlingen) and then by truck to consumers throughout the Lower Rio Grande Valley. Commodities produced as intermediate goods in manufacturing or production processes, most likely pass through the Port of Brownsville, and make up the seventh, eighth, and ninth highest volume commodities. Finally, prepared food is the tenth largest export good, which is mostly destined to locations outside of the region.

Table 2.10: Top 10 Cargoes Originating from Cameron County (in Short Tons), 2010

RANK	DESCRIPTION	TONNAGE
1	Warehouse & Distribution Center	5,167,171
2	Ready-mix Concrete, Wet	3,064,611
3	Portland Cement	2,674,777
4	Liquefied Gases, Coal Or Petroleum	811,014
5	Concrete Products	725,558
6	Petroleum Refining Products	444,734
7	Cyclic Intermediates Or Dyes	427,465
8	Nonmetal Minerals, Processed	341,782
9	Misc. Industrial Inorganic Chemicals	334,913
10	Misc. Food Preparations, nec	328,273

Source: IHS Global Insight, 2011.

The top commodities destined for Cameron County, as forecasted for 2010, are shown below in Table 2.11. Most of the top ten commodities are either building materials or petroleum products. Building materials include gravel and sand, ready-mix concrete, primary forest materials (i.e. lumber), asphalt paving blocks, and broken stone or riprap. The highest volume petroleum products include petroleum refining products (e.g. gasoline, diesel, etc.), liquefied gas, and miscellaneous petroleum products. There is also a significant volume of warehouse and distribution center cargo forecasted for Cameron County in 2010. Many of these goods are likely destined for the Mexican consumer market via distribution centers in Cameron County. Miscellaneous plastic products likely reflect plastic resins destined for Mexico to be used in injection molding operations along the border.

Table 2.11: Top 10 Cargoes Destined for Cameron County (in Short Tons), 2010

RANK	DESCRIPTION	TONNAGE
1	Gravel Or Sand	2,648,585
2	Ready-mix Concrete, Wet	2,319,181
3	Warehouse & Distribution Center	860,020
4	Petroleum Refining Products	580,252
5	Primary Forest Materials	413,479
6	Misc Plastic Products	270,417
7	Liquefied Gases, Coal Or Petroleum	243,773
8	Asphalt Paving Blocks Or Mix	222,397
9	Broken Stone Or Riprap	193,174
10	Misc Coal Or Petroleum Products	186,146

Source: IHS Global Insight, 2011

Unfortunately, the TRANSEARCH data has limited use for the purposes of this study. Because its intent is to help transportation planners understand current future freight flows, in terms of the number of trucks or rail cars that carry the freight. Not surprisingly, the commodities by weight, especially high-value commodities like electronics and machinery, gives little insight into their relative volume or their monetary value. Value added processes that could make use of the Port of Brownsville's and the Airport's facilities, such as manufacturing, assembly, or distribution, will most likely involve commodities with a relatively low weight and high value. It is also likely that the components for these activities will come from a variety of locations, including internationally, and the TRANSEARCH data offers limited insight into the movements of these goods.

U.S.-Mexico Surface Transborder Trade Flows

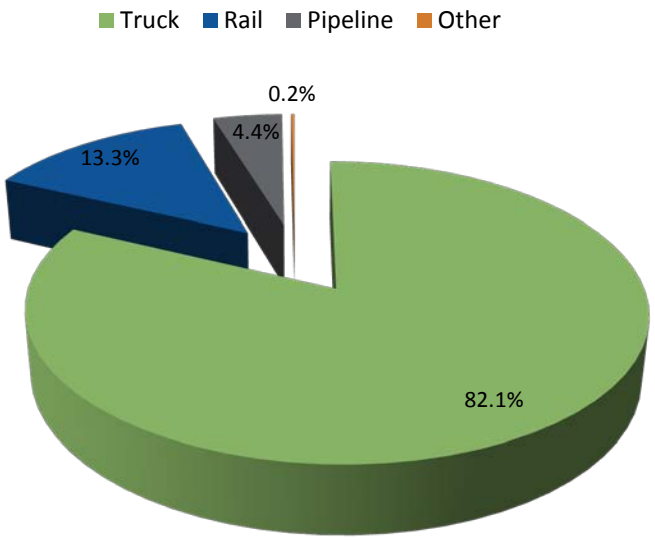
A potentially more promising data source is the North American Transborder Freight data from the U.S. Bureau of Transportation Statistics. It provides summaries of transborder trade moving on three modes (truck, rail, and pipelines) by Customs Port. Cameron County, which currently has three international bridges, is located in the Brownsville Customs Port. Among the three bridges in Cameron County, only two handle commercial traffic. Descriptions of the three bridges are provided below:

- Brownsville & Matamoros International Bridge, also known as the "Old Bridge", actually consists of two bridges. One bridge is a rail bridge which serves as the international railway bridge for Union Pacific. The second bridge is a four-lane bridge that is used exclusively for non-commercial traffic.

- Gateway International Bridge, locally known as the "New Bridge" is also made up of two bridges. One bridge has two southbound lanes and the other bridge has two northbound lanes. The Gateway International Bridge is used exclusively for non-commercial traffic.
- The Veteran's International Bridge at Los Tomates, also known as the Los Tomates Bridge, is a four-lane facility that carries commercial vehicles, passenger vehicles, and pedestrians.

Measured by value, the majority of the total transborder cargo crossing the Mexico-U.S. border at the Brownsville Customs Port is moved using trucks, with a much smaller percentage moved by rail. During 2011, approximately 82 percent of trade by value was transported by truck, approximately 13.3 percent was transported by rail, and approximately 4.4 percent was transported by some other means, including pipeline (See Table 2.5). For 2010, the total value of transborder cargo transported by truck was approximately $11.0 billion, the total value transported by rail was approximately $1.8 billion, and the total value transported by other means was more than $600 million.

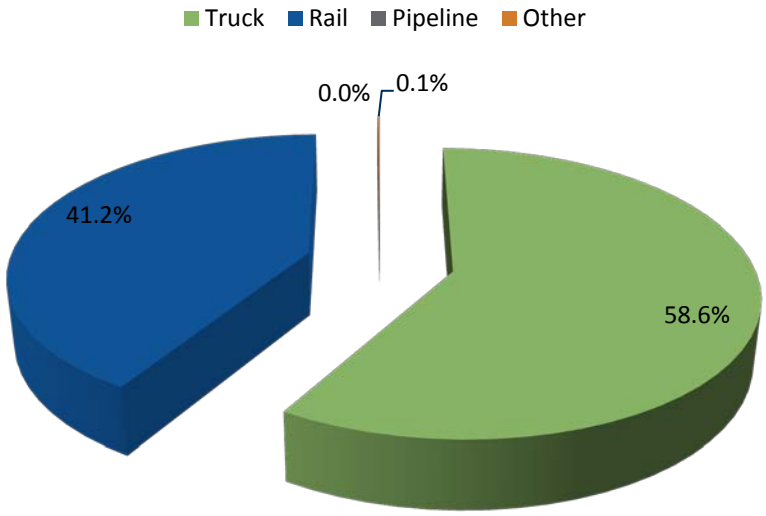
Figure 2.5: 2011 Mode Share of Total US-Mexico Transborder Trade Crossing at the Brownsville Customs Port by Value



Source: U.S. Bureau of Transportation Statistics, 2012.

While the mode distribution between truck and rail strongly favors truck, when measured by value, the distribution is more equal when considered by weight. Figure 2.6 shows that rail's share of the total tonnage of imported goods is more than 40 percent. Unfortunately, U.S. Customs only collects weight data on imported freight, so there are no data to show the mode distribution for exported goods.

Figure 2.6: Mode Share of Total US-Mexico Transborder Trade Crossing at Brownsville by Value during 2011



Source: U.S. Bureau of Transportation Statistics, 2012.

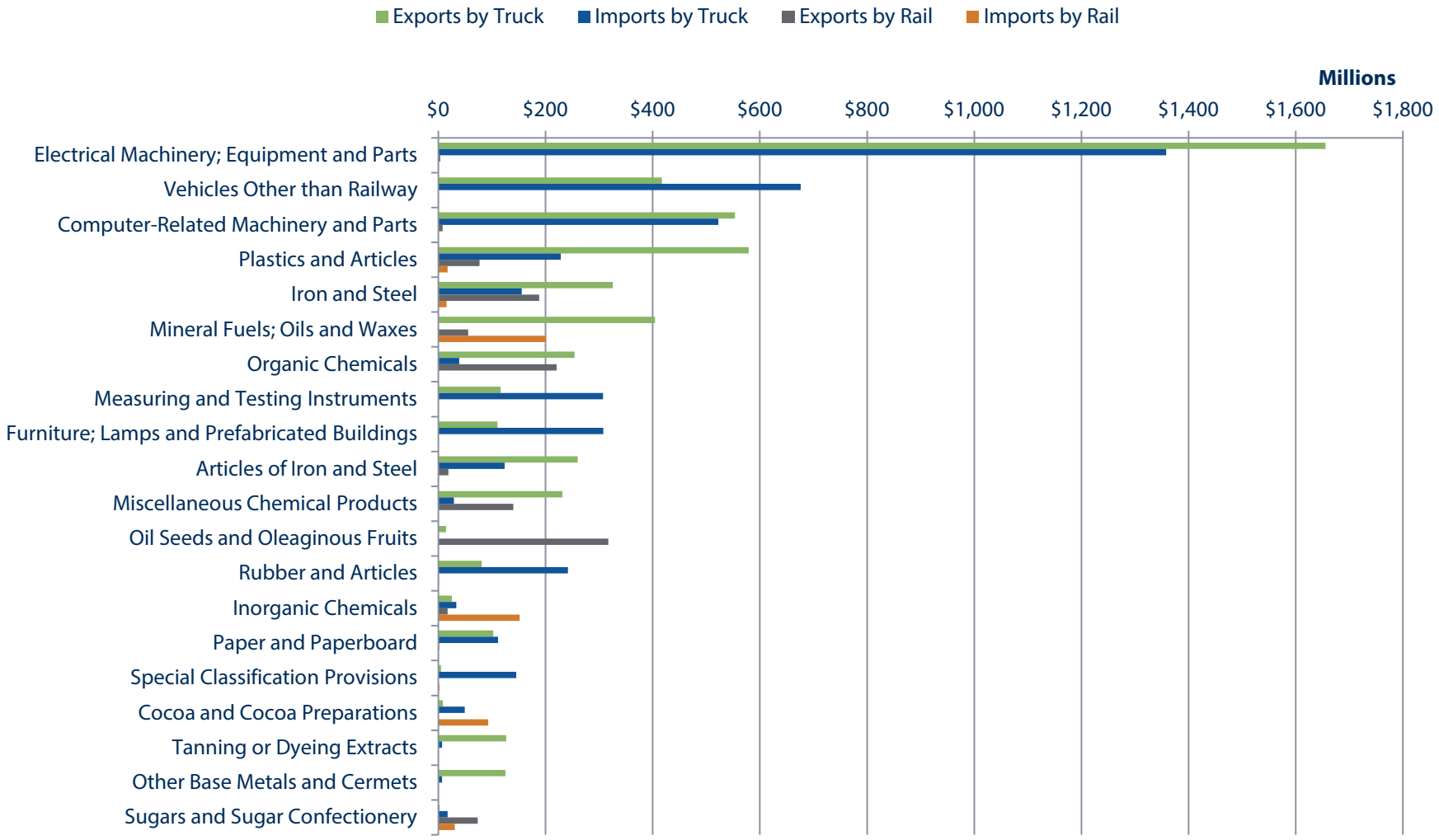
Some insightful information for identifying potential target industries can be gleaned from Table 2.12 and Figure 2.7. In 2011, the top export commodities at the Brownsville Customs Port were electrical machinery, equipment and parts; vehicles other than railway (i.e. automobiles and trucks); and computer-related machinery and parts. Interestingly, and unlike many other border crossings, more cargo (in terms of value) was southbound than northbound at the Brownsville Customs Port. Rail handled bulk commodities like steel and chemicals, which are key inputs for manufacturing processes. Trucks, on the other hand, transported higher-value goods, such as intermediate goods and finished products.

Table 2.12: Top Ten Commodity Groupings for 2011 Transborder US-Mexico Trade at the Brownsville Customs Port

RANK	DESCRIPTION	EXPORTS	IMPORTS	TOTAL
1	Electrical Machinery; Equipment and Parts	$7,373,613,498	$5,418,535,493	$12,792,148,991
2	Vehicles other than Railway	$1,659,119,385	$1,358,299,239	$3,017,418,624
3	Computer-Related Machinery and Parts	$417,129,643	$676,037,192	$1,093,166,835
4	Plastics and Articles	$561,581,458	$522,608,654	$1,084,190,112
5	Iron and Steel	$655,653,576	$245,465,847	$901,119,423
6	Mineral Fuels; Oils and Waxes	$513,708,132	$171,317,161	$685,025,293
7	Organic Chemicals	$460,143,718	$200,756,592	$660,900,310
8	Measuring and Testing Instruments	$474,889,104	$39,074,791	$513,963,895
9	Furniture; Lamps and Prefabricated Buildings	$116,371,712	$307,297,209	$423,668,921
10	Articles of Iron and Steel	$110,369,724	$307,596,950	$417,966,674
	TOTAL ALL COMMODITIES	$7,373,613,498	$5,418,535,493	12,792,148,991

Source: U.S. Bureau of Transportation Statistics, 2012.

Figure 2.7: 2011 Imports and Exports by Truck and Rail Modes - Total Trade Value



Source: U.S. Bureau of Transportation Statistics, 2012.

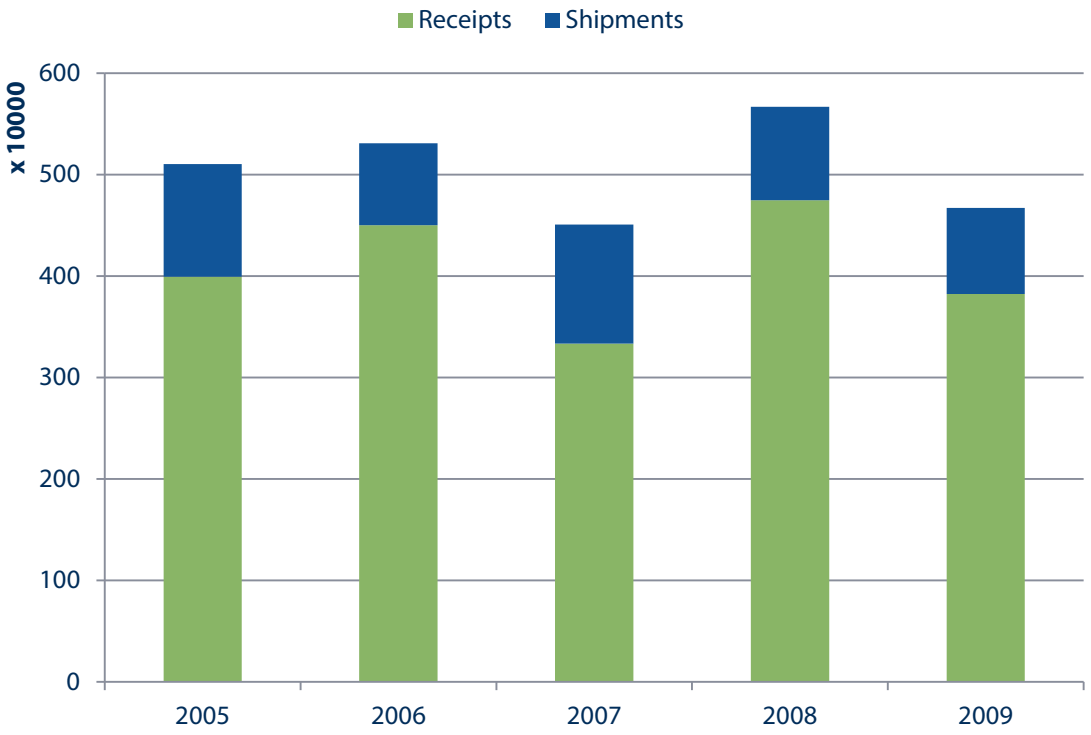
Waterborne Commerce

Cameron County is home to two deepwater ports, the Port of Brownsville and the Port of Port Isabel, and the shallow draft Port of Harlingen (which is located in the city of Rio Hondo). Among these three facilities, the Port of Brownsville is the largest, in terms of infrastructure and the most active, in terms of the volume of commodities handled. The Port of Port Isabel does not handle a significant volume of cargo and the Port of Harlingen only serves barge traffic. The Port of Brownsville's turning basin is located approximately two miles southeast of the city of Brownsville and lies eight miles north of the Rio Grande River. The Port of Brownsville is connected to the Gulf of Mexico by a 17-mile dredged channel which meets the Gulf of Mexico at Brazos Santiago Pass. At Santiago Pass, vessels may enter from or depart to blue water or connect with the U.S. Inland Waterway System through the Gulf Intracoastal Waterway (GIWW).

The Port of Brownsville opened in 1936 and, over time, has modernized to become a regional port that serves South Texas and the industry of northern Mexico. More than 200 firms call the Port of Brownsville home and their activities ranges from handling various types of bulk cargo to constructing offshore drilling rigs to shipbreaking to steel fabrication. Additionally, a Foreign Trade Zone (FTZ) is located adjacent to the port, which provides duty free treatment to items processed there and re-exported.

The U.S. Army Corp of Engineer's data for cargo handled along the Brownsville Ship Channel shows it was mostly a recipient of inbound cargo with the ratio of inbound to outbound cargo averaging roughly 5 to 1 during the most recent five years that data were available. During the period between 2005 and 2009, the overall cargo volume declined from 5.1 million short tons during 2005 to 4.7 million short tons during 2009 (See Figure 2.8). This change was mostly influenced by fluctuating inbound cargo volumes, while outbound cargo volumes along the Brownsville Ship Channel were relatively stable during this period.

Figure 2.8: Total Waterborne Commerce – Receipts and Shipments (in Short Tons)



Source: US Army Corps of Engineers Navigation Data Center, 2011.

Table 2.13 shows a generalized grouping of the commodities handled at the Port of Brownsville. Petroleum and petroleum products was the commodity grouping with the largest volume. During 2009, 1.8 million tons were received along the Brownsville Ship Channel and almost 700,000 tons were outgoing. The second largest commodity was primary manufactured goods, which consisted almost entirely of steel. The third largest commodity grouping was crude materials, inedible, which included goods such as building materials and scrap metal. A relatively small volume of manufactured goods (in terms of weight, but not necessarily value) was received at the port and very little was shipped out.

Table 2.13: Receipts and Shipments by Commodity Class (in Short Tons), 2009

COMMODITY GROUPING	RECEIPTS	SHIPMENTS
Petroleum and Petroleum Products	1,857,455	693,197
Primary Manufactured Goods	1,208,347	69,476
Crude Materials, Inedible Except Fuels	669,279	78,599
Food and Farm Products	47,850	2,352
Chemicals and Related Products	22,187	3,697
Coal, Lignite and Coal Coke	16,253	0
All Manufactured Equipment, Machinery	1,143	3
Unknown or Not Elsewhere Classified	61	202
Total Tonnage Handled	3,822,575	847,526

Source: U.S. Army Corps of Engineers - Navigation Data Center, 2011.

Airfreight

The Brownsville-South Padre Island International Airport is a commercial airport located in southeast Brownsville. The airport's runway is 7,400 feet by 150 feet with a current proposal to extend the runway to 10,000 feet. The Airport was inaugurated with great fanfare in 1929, when Charles Lindbergh flew in from Mexico City. Lindbergh's landing officially opened the airport and established the first leg of airmail service to Mexico. Amelia Earhart joined the crowd of 20,000, who attended the ceremony (Brownsville-South Padre Island International Airport, 2012). Today, the airport handles both passenger flights and cargo service, but it is the smallest passenger airport in the Rio Grande Valley behind Harlingen and McAllen. Despite its modest volume the Brownsville Airport is capable of handling a much higher volume of take-offs and landings. The airport maintains the Airport Industrial Airpark, and several hundred acres of industrial space, which includes a Foreign Trade Zone (FTZ). Tenants of the Airpark include Trico Wiper Products and Silver Eagle Bus. As of 2012, the Airpark was not fully occupied.

Airborne freight data from the U.S. Bureau of Transportation Statistics' T-100 dataset show that much of the freight handled at the Brownsville-South Padre Island International Airport originates from or is destined to locations with automotive manufacturing. The Airport's freight flows are heavily weighted toward outbound movements. During 2010, the Airport handled almost 320,000 pounds of outgoing airfreight, with the two top destinations for airfreight, located in Michigan (Gaylord and Detroit), which accounted for more than half the total volume (167,197 pounds) (See Table 2.14). To serve its customers, an airline at the airport maintains a service called Midnight Express, which guarantees next day delivery to any location within 500 miles of Detroit, Michigan, if the cargo arrives by midnight. Texas airports received approximately 27,600 pounds of airfreight from Brownsville and, despite its location along the U.S.-Mexico border, only 4,600 pounds of airfreight leaving Brownsville went to destinations in Mexico (Leon/Guanajuato), while 38,000 pounds went to airports in Canada (Windsor and Hamilton).

Table 2.14: Top Destinations for Airborne Cargo Originating in Brownsville, 2010

RANK	DESTINATION CITY	ON-FLIGHT MARKET FREIGHT ENPLANED (POUNDS)
1	Gaylord, Michigan	87,132
2	Detroit, Michigan	80,065
3	Gary, Indiana	41,807
4	Windsor, Canada	21,912
5	Dallas, Texas	17,526
6	Hamilton, Canada	16,146
7	Hickory, North Carolina	13,440
8	Arlington, Texas	7,686
9	Traverse City, Michigan	6,869
10	Pontiac, Michigan	6,838
11	Talladega, Alabama	6,120
12	Leon/Guanajuato, Mexico	4,597
13	Dallas/Fort Worth, Texas	2,473
14	Little Rock, Arkansas	1,560
15	Toledo, Ohio	455
	Total Pounds	319,951

Source: U.S. Bureau of Transportation Statistics, 2011

The total volume of incoming airfreight Brownsville-South Padre Island International Airport was 50,629 pounds during 2010, which was less than one-sixth of the outgoing volume (See Table 2.15). The top three origins for airborne cargo destined to the Airport, during 2010, were Saltillo, Mexico; Reno, Nevada; and Dayton Ohio. Less than 2,000 pounds of airfreight destined to Brownsville originated within Texas.

Table 2.15: Origins for Airborne Cargo Destined to Brownsville-South Padre Island International Airport, 2010

RANK	ORIGIN CITY	ON-FLIGHT MARKET FREIGHT ENPLANED (POUNDS)
1	Saltillo, Mexico	14,042
2	Reno, Nevada	10,035
3	Dayton, Ohio	8,643
4	Pontiac, Michigan	6,844
5	Huntsville, Alabama	5,325
6	Little Rock, Arkansas	3,880
7	Dallas-Fort Worth, Texas	1,860
	Total Pounds	50,629

Source: Bureau of Transportation Statistics, 2011.

Unfortunately, information on the commodities transported by air to and from the Brownsville-South Padre Island International Airport is not available from the BTS data.

Regional Intra-Industry Trade

The last component of data analysis for this section examines the region's intra-industry trade with Mexico. Intra-industry trade is trade within the same industry between partners, as opposed to overall trade volumes or trade within particular sectors where there is a comparative advantage. The idea of intra-industry trade runs counter to the Ricardian and Hecksher-Ohlin theories of trade, which assume that nations or regions will produce goods in which they have a comparative advantage or factor endowments. In practice, much of the trade that exists between nations is within the same industrial sector. Production processes are broken down between regions and nations to take advantage of labor market differentiation or lower production costs. Most frequently, intra-industry trade occurs between advanced economies, but it can also occur between industrializing and less-developed countries too. The automotive industry is probably the most advanced sector in the practice of intra-industry trade.

Estimates of intra-industry trade between regions are most often made using a simple calculation developed by Grubel and Lloyd (1975) called the Grubel-Lloyd (G-L) Index. The G-L Index calculates an index value of intra-industry between countries or industrial sectors and is shown in the equation below. A value of zero implies no intra-industry trade (all imports, all exports, or no trade at all) and value of 100 means that imports and exports are completely balanced.

Where:
B_i = G-L Index for Sector I;

X = Exports

M = Imports

i = Industry sector

Frequently, intermediate goods in a manufacturing process will cross a border several times before the finished product is complete. Observers of border trade often repeat a saying that an automobile crosses the U.S.-Canadian border seven or eight times before it is fully assembled. The extraordinary volume of high-value products that require sophisticated manufacturing and assembly techniques means there opportunities for companies located in the Brownsville region to insert themselves into the logistical supply chain of product manufacturing or distribution and provide value added services. In turn, these companies would also be creating public sector benefits of employment and increased tax revenue. Table 2.16 shows the calculated G-L Indices for selected industry sectors from an analysis of the intra-industry trade between the United States and Mexico that crosses at the Laredo U.S. Customs District. The Laredo Customs Port includes data from all ports of entry between Del Rio, Texas and Brownsville and it is the most disaggregated level of data that is made publicly available. The data show there are a several industries with a significant amount of intra-industry trade that could be targeted for operations, which could make use of a rail link between the Port of Brownsville and the Brownsville-South Padre Island International Airport.

Table 2.16: 2011 Grubel-Lloyd Index Values for Selected Industries between the Laredo U.S. Customs Port and Mexico

G-L RANK	NAICS COMMODITY CLASSIFICATION	TOTAL EXPORT VALUE	TOTAL IMPORT VALUE	GL-INDEX
1	333 Machinery, Except Electrical	$9,712,855,100	$9,660,537,701	99.73
3	332 Fabricated Metal Products	$3,906,448,324	$3,653,061,698	96.65
4	331 Primary Metal, Manufactured	$6,503,182,068	$5,987,207,169	95.87
6	334 Computer & Electronic Products	$12,498,767,936	$13,915,220,745	94.64
7	339 Miscellaneous Manufactured Commodities	$1,341,108,482	$1,840,627,198	84.30
17	336 Transportation Equipment	$17,310,175,258	$39,848,216,551	60.57
19	335 Electrical Equipment, Appliances & Components	$4,811,228,142	$11,553,318,918	58.80

Source: U.S. Census Bureau, 2012.

Conclusions

From this overview of the Cameron County economy, a number of conclusions can be drawn. First, Cameron County's growing and relatively young population contains significant potential for future economic growth. However, the population's low level of educational attainment is a significant impediment and is one that will require a concentrated and sustained effort over multiple decades to overcome. More importantly, improvements to the region's freight transportation system cannot alone remedy this deficiency, even though transportation improvements would boost the region's overall competitiveness against other regions with similar endowments. Second, every year, millions of tons of cargo worth billions of dollars travel to, from, within, and though Cameron County as a result of domestic commodity movements, transborder shipping, waterborne commerce, and airfreight. Transloading - the transfer of cargo – frequently occurs at many points within the region, including at the Port and at the Airport. Generally, however, there is very little, if any, value added during these movements. Third, the region's manufacturing sector has been in decline over the past decade and Cameron County's economy has transitioned further towards consumer services, which include medical care. While many of these services are important and even critical, the County also risks becoming less economically diverse by concentrating into industries that do not encourage local-based firms to generate consumptive demand, profits, and investment from outside of the region. Given that Cameron County already has a relatively low level of per capita wealth; this trend could lead to a sluggish regional economy, which might already be demonstrated by Cameron County's stagnating per capita GDP growth and its high unemployment rate.

The most accessible method for the region to overcome these current challenges is to take advantage of existing opportunities. Given that Cameron County is literally awash with freight and much of this freight consists of international trade serving international supply chains, it makes sense to pursue policies and infrastructure improvements that would allow firms located in the County to become part of the supply chain and to provide value added services that are currently being provided elsewhere or to respond to new demand. The analysis of freight data shows there is a wide variety of commodities being moved through the region that range from raw materials to sophisticated finished products. The automotive industry is responsible for a very significant share of these goods movements, but there are also other manufacturers who produce electronics, electrical devices, machinery, and appliances in Northern Mexico. In fact, the analysis of intra-industry trade showed that the flows of goods for some industries are moving back and forth across the region in almost equal proportion. These intra-industry movements could offer multiple opportunities to provide value-added services within the same manufacturing process. Section 5 will outline some potential scenarios for pursuing these types of value-added activities that incorporate a rail link between the Port of Brownsville and the Brownsville-South Padre Island International Airport and estimate their potential economic impacts on Cameron County.

SECTION 3 – DEVELOPMENT OF RAIL CORRIDORS

This section describes the process by which the four alternate rail corridors, also known as alignments, were developed. The process began with a preliminary environmental constraint analysis, followed by application of basic rail engineering criteria to produce the initial set of alternate alignments, and then moved through a public involvement process and environmental analysis to vet and adjust the alignments as appropriate. A goal of the project was not to select a single preferred corridor, but rather to produce four viable alternate corridors for future consideration. In addition to describing the corridor development process, this section also includes physical descriptions of the finalized alignments, and a profile of existing and proposed infrastructure related to the construction of the rail line.

The public process involved the formation of a rail stakeholders committee and a meeting with the general public. The process was an integral part of the determination of the finalized alignments, and a full description is provided in Section 5. In addition, Section 5 includes a detailed description of the environmental review process which was used to evaluate the finalized alignments, which will be available as a starting point for later environmental compliance documentation.

Process for Developing Alternate Alignments

The guiding force in the development of the rail corridors was the project's consultant rail engineer. Because of the specialized requirements for rail geometry and track construction, it was essential that the rail engineer undertake the initial design of the corridors. In addition, the rail engineer reviewed all suggested modifications to the proposed alignments. Brownsville MPO staff also served as key decision makers and provided essential local knowledge during the process of developing the alignments.

This first step during the initial corridor development phase was to map environmental constraints within the study area. Environmental constraint maps showed the location of the 100-year flood plain, parks, schools and childcare facilities, places of worship, hospitals, colonias, cemeteries, and landfills. The purpose of the constraint mapping was to avoid areas with sensitive features to the greatest extent possible. However, not all environmental impacts to human and natural features could be avoided. For example, it was inevitable that alignments would traverse the flood plain at some point between the port and the airport, just as it was impossible to avoid crossing wetlands. Nonetheless, by combining all the features into one or two maps, it was easier for the project team to assess the constraints on the ground and to select pathways that avoided or minimized impacts.

Next, fieldwork was conducted in the study area to observe existing conditions, verify the data on the constraint maps, and to formulate ideas to further improve the alternative alignments. Although many conditions were known beforehand, on-the-ground observation led to a better understanding of the issues and the ability to formulate new ideas on how to address these issues during alignment design. Among the issues observed during fieldwork were the following:

- A series of wide irrigation canals cut through the study area, one of which would roughly parallel the direction of the alignments, and others that the alignments would need to cross;
- The U.S.-Mexico border fence exists in numerous pieces in the southwestern portion of the study area and any alignments in the vicinity would need to give the fence a wide berth;
- A public building is located in the study area which houses a Head Start program; and
- A number of residences are scattered throughout the study area which might conflict with potential alignments.

During the same time period as the field observations, the MPO and project team had one meeting with representatives of the Port of Brownsville and a second meeting with representatives of the Brownsville South Padre Island International Airport. These meetings helped to clarify the needs of each entity and physical parameters of bringing the rail line into the port and airport facilities. During the meeting with the Port of Brownsville, Port staff suggested that a rail corridor could be placed within an existing 1000-foot wide corridor that the port owns and is set aside for a future international bridge. However, it should be noted that neither the Port of Brownsville nor its ruling body – the Brownsville Navigation District - have formally committed to dedicating right-of-way to the rail corridor. The project team toured both the port and airport and observed ground conditions firsthand.

Following the field observations and meetings, a rough Digital Terrain Model was prepared from USGS topographical maps. Initial draft alignments were prepared against the background of the Digital Terrain Model. The project consultant's rail engineer designed the alignments using the following criteria as guidelines:

1. Design alignments within existing right-of-way whenever possible;

2. Avoid constraints such as floodplains;
3. Be mindful of costs, minimizing costly elements such as bridges;
4. Be aware of impact on roadways, ensuring that at-grade crossings would be perpendicular to the roadway; and
5. Create a setback from the airstrip in accordance with the airport's runway extension plan.

Once the first draft of the alternative alignments was complete, the next phase began, in which draft alignments were presented to key stakeholders and the general public for review. In an effort to involve the public and stakeholders in the design of the alternative alignments, the process drew upon their input and involved them at several junctures. Presentation of the draft alignments included a public meeting, and discussions with stakeholders. A complete description of public and stakeholder involvement is included in Section 5.

The final step of the alignment development process was to coordinate with the East Loop project team to ensure that the East Loop roadway designs did not conflict in any way with the Brownsville Rail Feasibility Study. The East Loop project involves the construction of a 2-lane highway directly connecting the Port of Brownsville to Southwest Parkway/County Road 1419. One of the aims of the project is to place truck traffic onto the new East Loop and remove it from other arterials and highways in the community.

So that the two teams could coordinate, a phone conference was held with the Brownsville Rail Feasibility Study project team and the East Loop project team. During the phone conference, the East Loop project team shared information about the latest alignment designs for the East Loop and the status of the project. In this conversation it was confirmed that the Brownsville rail alignments would be located an appropriate distance from the East Loop alignment. It was also decided that the rail alignment design would include an optional grade separation at the intersection with Highway 4/Boca Chica Boulevard. This grade separation would not be part of the initial project, but could be added later if traffic conditions warranted.

Description of Alternatives

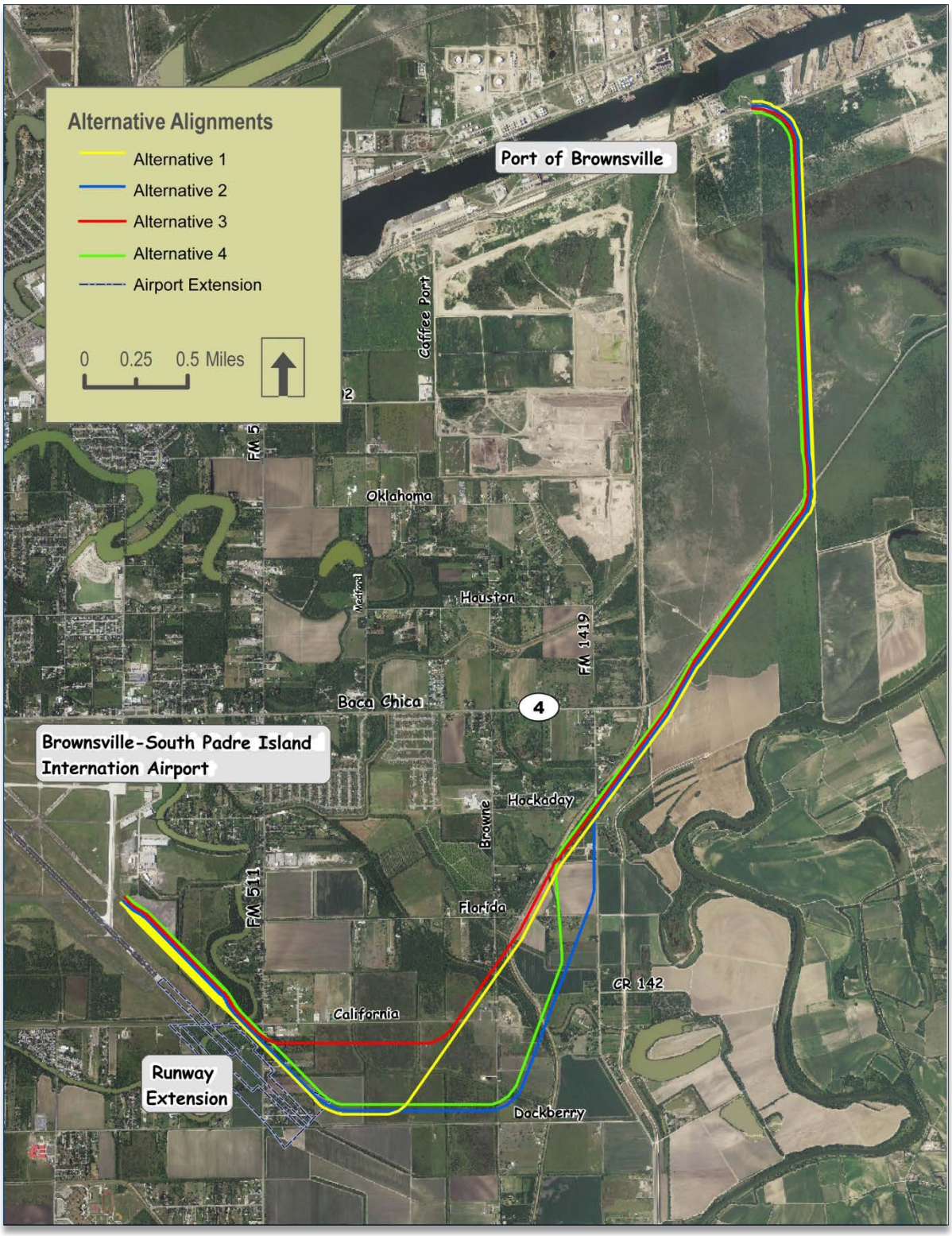
After the initial draft of the alternative alignments, a number of revisions were made in response to information gathered during the study and based upon suggestions provided by the Brownsville MPO staff, the rail stakeholder committee, and the general public. After making all revisions, the project team finalized the alternative alignments as they are shown in Figure 3.1. As described above, one of the project's goals was to provide four viable alternatives, rather than identifying a single preferred alternative. A detailed description of the alternative alignments is provided below.

All alternative alignments have the same origin segment and ending segment; they coexist as the same alignment within in the 1000-foot corridor that begins on the south side of the Brownsville Ship Channel, and at the end of the line as they approach the airport. All alternatives begin south of the

Port of Brownsville at the Brownsville & Rio Grande International Railroad (BRG) line north of RI Ostos Road. From this point, the alternatives make a slight arc to the south and proceed for approximately 1.75 miles and intersecting Highway 4/Boca Chica Boulevard. After crossing the roadway, all alignments turn southwest to parallel Boca Chica Boulevard on its eastern side for approximately 1.3 miles. At this point, Boca Chica Boulevard turns due west and crosses the irrigation canal and the alignments continue southwest past Oklahoma Street.

The first point of divergence occurs approximately 0.5 miles south of Boca Chica Boulevard, approximately 400 feet south of where FM 1419/Oklahoma Avenue crosses the irrigation canal. For all alternatives, the crossing of FM 1419/Oklahoma Avenue is envisioned as a grade separated intersection, which would be an overpass for the existing roadway. Past this crossing, Alternative 2 diverges from the other alternative alignments.

Figure 3.1 Alternative Alignments



Alternatives are described below:

From the first point of divergence, Alternative 1 continues southwest, following the same angle as the northern portion of Highway 4. It parallels the western edge of the irrigation canal, makes a slight southward adjustment south of Hockaday Street, and continues at the same angle, past Florida Road and California Road – a total of approximately 1.7 miles for that segment. Approximately 500 feet north of Dockberry Road, the rail corridor turns due west and proceeds for approximately 1,500 feet, almost reaching the Sunny Sky Colonia. It then turns northwest and proceeds for approximately 1.4 miles to its terminus at the airport.

From the first point of divergence, Alternative 2 heads almost due south for approximately 2,000 feet, then makes a slight turn to the southwest and proceeds for approximately 1 mile. From there, it arcs due west, crosses Browne Avenue, and proceeds for approximately 0.75 miles. It then turns northwest and proceeds for approximately 1.4 miles to its terminus at the airport.

From the first point of divergence, Alternative 3 continues southwest. It parallels the eastern edge of the irrigation canal, makes a slight southward adjustment south of Hockaday Street, and continues at the same angle, past Florida Road and California Road, but not extending as far as Alternative 1 – a total of approximately 1.3 miles from the first point of divergence. Approximately 550 feet south of California Road, it turns west and parallels California for 0.75 miles, almost to FM 511. It then turns northwest and proceeds for approximately 1 mile to its terminus at the airport.

From the first point of divergence, Alternative 4 proceeds southwest, on the eastern side of the irrigation canal for approximately 0.25 miles. It then turns south for approximately 0.5 miles, crossing Florida Road. It then turns southwest and proceeds for 0.7 miles. From there, it arcs due west, crosses Browne Avenue, and proceeds for approximately 0.75 miles. It then turns northwest and proceeds for approximately 1.4 miles to its terminus at the airport.

Impacts Matrix

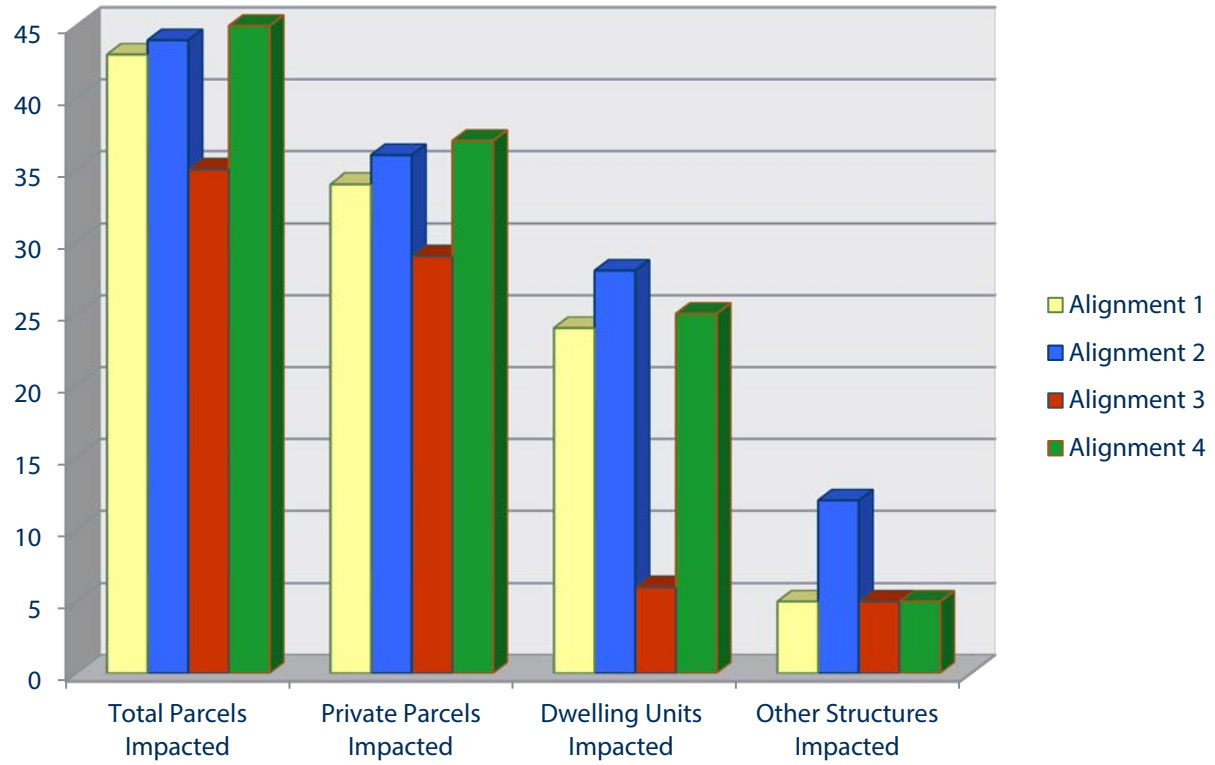
One of the tools used in the development of the alternative alignments was an impact matrix; which tallied the impacts of each alignment on the human and natural environments. In the process of preparing draft alternatives, the matrix was used as a tool to refine the alignments and to compare the impacts among them. Criteria related to effects on housing were viewed as especially important, and avoiding residential relocations was one of the key principles of alignment design. The Impacts Matrix for the final alignments is shown below as Table 3.1. A detailed description of the environmental review is provided in Section 5.

Table 3.1: Impacts Matrix

CRITERION	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 4
Length (Miles)	7.3	7.6	7.0	7.7
Right of Way Required (Acreage)	105.8	109.6	102.2	110.0
Total No. of all Parcels Impacted	43	44	35	45
No. of Private Parcels Impacted	34	36	29	37
Total No. of Dwelling Units Impacted	24	28	6	25
No. of Dwelling Units within the Airport Expansion Noise Corridor	21	21	3	21
No. of Dwelling Units outside of the Airport Expansion Noise Corridor	3	7	3	4
No. of Driveways Impacted	7	12	6	7
No. of Other Structures Impacted	5	12	5	5
Total Roadways (at-grade-crossings)	7	6	7	6
Arterial Roadways	3	3	3	3
Local or Collector Roadways	4	3	4	3
Floodplain-100 Yr. (Linear Feet)	20,988	21,275	20,327	21,275
Potential Wetland Crossings (minus the resaca /pond crossings)	9	9	9	9
Potential Wetlands Impacted (acreage)	22.3	22.3	22.3	22.3
Total No. of Water Feature Crossings	12	11	11	12
Irrigation Canal or Drainage Crossings	8	8	7	9
Resaca/Pond Crossings	4	3	4	3
Park acreage impacted	7.1	4.0	7.1	4.0
Wildlife preserve acreage impacted	0	0	0	0
Schools within 1000 Ft	0	0	0	0
Nursing Homes within 1,000 feet	0	0	0	0
Hospitals within 1,000 feet	0	0	0	0
Places of Worship within 1,000 feet	0	0	0	0
Daycares within 1,000 feet	1	0	1	0
Historical sites within 1000 feet	0	0	0	0
Cemeteries impacted	0	0	0	0
Colonias impacted	0	0	0	0
Archeological Study sites (where other areas have been studied)	3	3	3	3

Figure 3.2 shows a comparison of each alignment's impacts on parcels, dwelling units, and other structures. Based on these criteria, the collective impacts of each alignment were similar, although Alignment 3 appeared to require the fewest residential relocations.

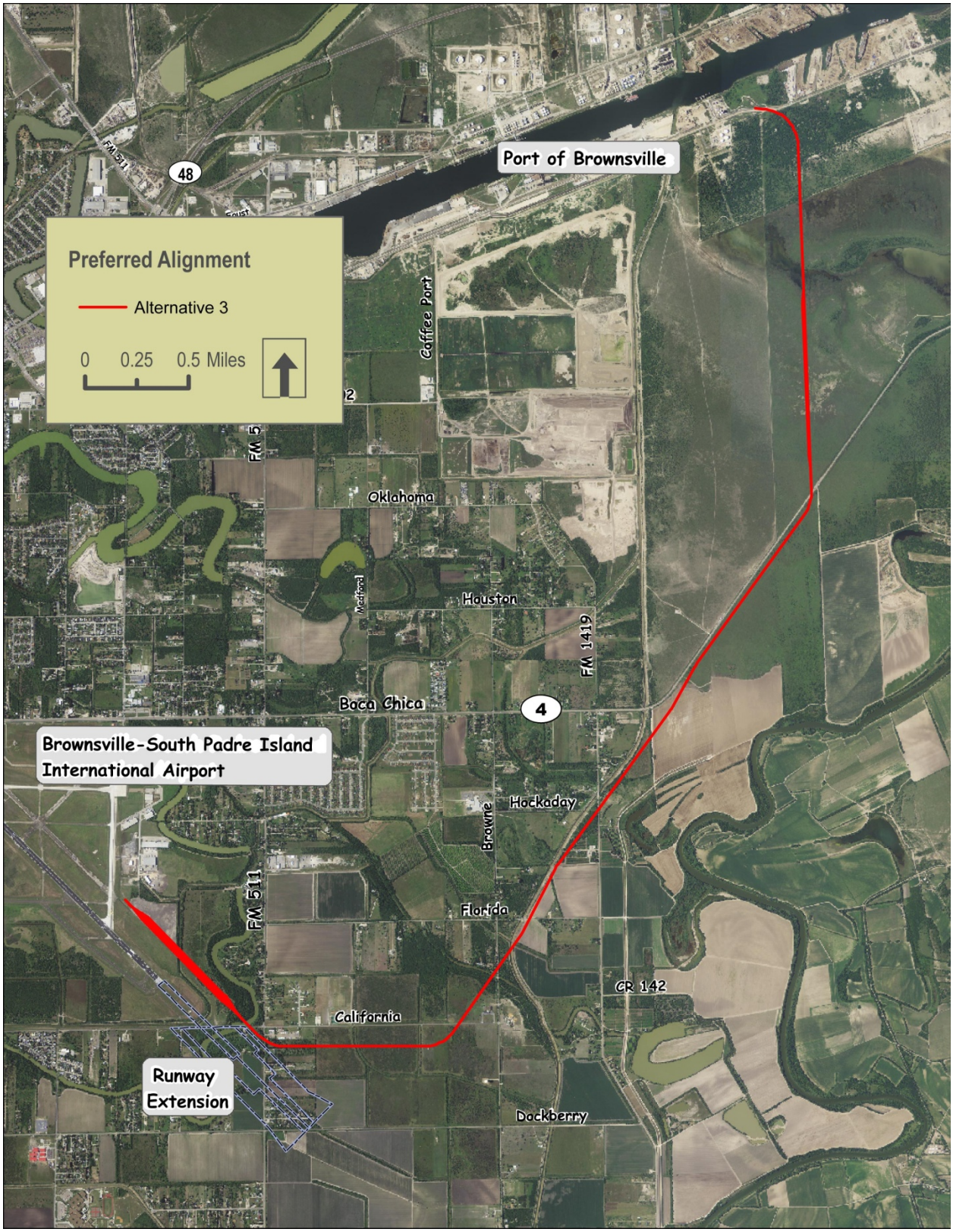
Figure 3.2: Impacts on Parcels and Structures



Technically Preferred Alternative

The Technically Preferred Alignment for the railroad corridor between the Port of Brownsville and the Brownsville-South Padre Island International Airport is Alignment 3. Based upon the data collected to date, Alignment 3 would create the fewest impacts on the human environment, especially due to residential relocations. Alignment 3 is estimated to require 6 residential relocations compared to 24 residential relocations for Alignment 1, 25 residential relocations for Alignment 4, and 28 residential relocations for Alignment 2. Alignment 3 also impacts less overall acreage and fewer privately owned parcels of land. Also based upon the preliminary analysis, the impacts of Alignment 3 on the natural environment would create fewer or no greater impacts than the other three alignments under consideration. It requires the fewest number of irrigation canal or drainage crossings and contains the shortest distance within the floodplain. From an engineering and constructability perspective, Alignment 3 is not significantly differentiated from the other three alignments by cost.

Figure 3.3 Technically Preferred Alternative Alignment



Infrastructure Profile

After the alignments of the rail corridors were established, the next step was to determine the type of rail infrastructure needed within a corridor. The difference between the alignments and the rail infrastructure is similar to the relationship of an electrical conduit and a wire. Following this analogy, alternative alignments are similar to the conduit and the rail infrastructure relates to the wires. This section will describe existing and proposed rail infrastructure in the region. The future rail line would be built within the context of the existing system and eventually become a vital piece of that system.

Existing Infrastructure

Cameron County is served by the Union Pacific Railroad (UP) - the only rail line that connects the Lower Rio Grande Valley to a nationwide network. The BNSF Railroad has a trackage agreement with UP and is able to use or move rail cars on UP tracks as part of the network which connects to the BNSF hub in Houston.

Brownsville is one of eight rail ports-of-entry along the U.S.-Mexico border. UP maintains an interchange with Kansas City Southern de Mexico (KCSM), through an intermediate switch on the Brownsville and Matamoros (B&M) International Bridge, which is exclusively reserved for rail transport.

Figure 3.4: The Union Pacific Railroad System Network

Source: Union Pacific Railroad, 2012.

Figure 3.5: The BSNF Railroad System Network

Source: BNSF Railroad, 2012.

As part of the Brownsville Railroad Relocation Program, federal stimulus money was used to establish a large-scale rail switchyard - a location for storing, sorting, loading, and unloading railroad cars for freight operations. Completed in 2011, the Olmito Switchyard is located to the east of US 77/83 and south of Merryman Road in North Brownsville. Maintained by UP, the Olmito Switchyard serves as an interchange for UP, BNSF, and BRG railroads.

The Port of Brownsville is served by the Brownsville & Rio Grande International Railroad (BRG), a short rail line railroad which operates as a common carrier. The BRG owns ten locomotives and maintains and operates 42 miles of track lines. Its primary service is a shuttle train from the Port of Brownsville to the Olmito Switchyard northwest of the study area. At the Olmito Switchyard, the BRG interchanges rail cars with the UP and BNSF Railroads.

The BRG provides exclusive rail transportation to all facilities in the Brownsville Navigation District. However, the railroad is under separate management from the District, governed by a Board of trustees, which establishes policies, rules, and rates and approves all contractual obligations of the railroad. The Board consists of five Trustees who were initially appointed by the Board of

Commissioners of the Brownsville Navigation District. BRG trains operate 24 hours per day; six days per week and special switching can be arranged at any time (Brownsville & Rio Grande Railroad, 2012).

Currently, Cameron County is working on a program called the West Rail Relocation Project, also known as the West Rail Project, to minimize the number of conflict points between rail and roadways, and reduce road congestion caused by rail traffic. Ongoing improvements associated with the project will eliminate 14 at-grade highway rail crossings. Additionally, the project will include the construction of a new international railroad bridge and approximately six miles of new rail tracks which will connect the bridge's tracks to the Olmito Switchyard. Work began on the bridge in January 2012 and its expected completion date is in late 2012. The project is being funded through the Federal Railroad Administration's Rail Line Relocation and Improvement Program, and is a joint effort between TxDOT, Cameron County, the City of Brownsville, the Cameron County Regional Mobility Authority, and the nation of Mexico (Clark, 2011).

Planned Infrastructure

The proposed rail line that would connect the Port of Brownsville and the Brownsville / South Padre Island International Airport is defined as an industrial spur. The proposed spur would begin with the BRG line north of Ostos Road, and would thus be connected to the Olmito Switchyard and to the B&M International Bridge.

The spur would be traversed by manifest trains, which would accommodate various types of cars including intermodal (container) stack cars, box cars, bulkhead flat cars for materials such as lumber or pipe, or tanker cars.

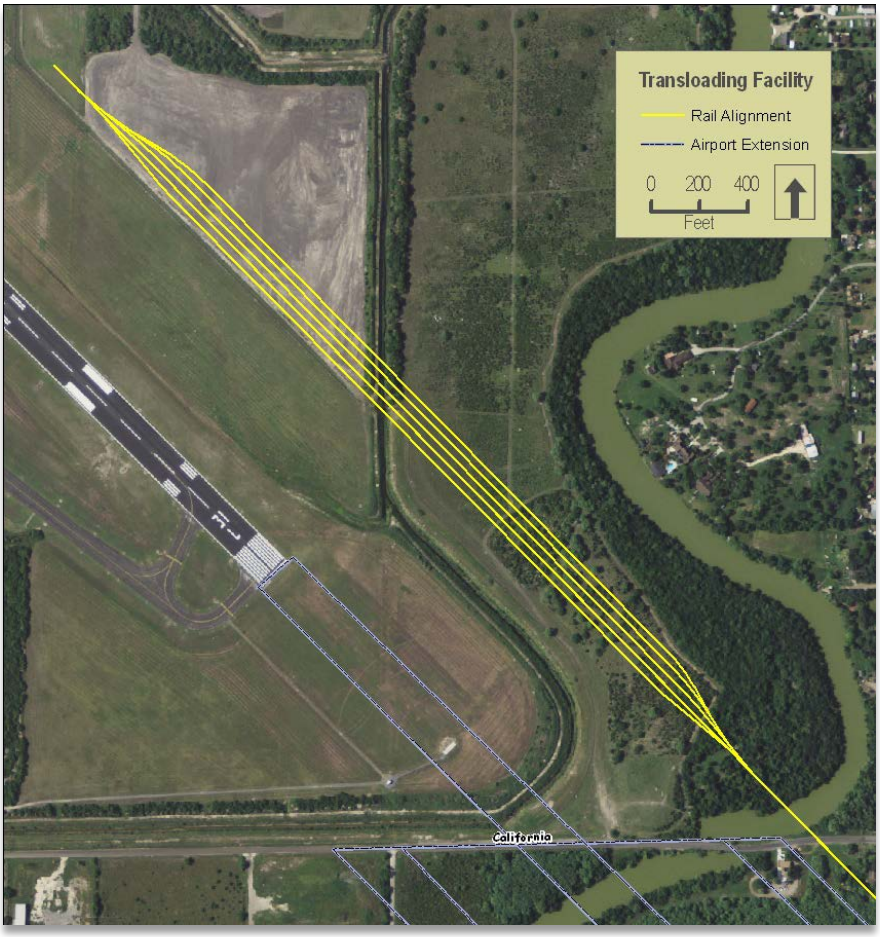
Figure 3.6: Example of a Manifest Train

Depending on the alignment selected, the line would be approximately 7.0 – 7.7 miles in length and would be constructed with 136 pound rail and concrete ties. The alternative alignments were designed with a maximum of six degree railroad curves or turning radius, which would allow a top speed of 25 mph on the track. Curves were designed with two inches of superelevation – the vertical distance between the heights of the inner and outer edges of the rails. The curves were designed with 130 feet of transition spiral, providing trains with a gradual transition into a turn.

Several major bridge structures would need to be constructed so the line could cross existing drainage ditches, irrigation canals and eddies. Steel bridge structures are the strongest and most durable and may be needed in some locations to span over existing canals. Standard concrete rail structures should be used in other locations. Ultimately, several grade separated intersections between the proposed rail line and existing roadways may need to be constructed to minimize vehicular traffic interruptions in the area.

An airport transloading facility was designed to support transloading operations of all types. Rail transloading is the process of transferring cargo from one mode of transportation to another. An airport transloading facility would need to be constructed on the site where the rail line enters the airport property. Tracks at the airport yard are designed at 30 feet on center, a standard distance which will facilitate truck movements between tracks and also allow equipment to operate efficiently during loading or unloading operations.

Figure 3.7: Proposed Airport Transloading Facility



Space has also been allotted for overhead cranes, potentially allowing intermodal operations- the loading and unloading of intermodal containers and trailers on a rail car. The airport transloading facility has been positioned and designed to maximize access and connectivity to the surrounding roadway network and to facilitate rail to truck capabilities. The facility was designed to comply with FAA regulations for ground and side clearances in relation to the existing airport runway.

The airport transloading facility would need to be fenced to allow train crews to enter a secured area, complete the spotting or logging of railcars, and depart without interfering with airport security operations. Once the train crew has departed and the gated perimeter secured, airport security could enter the gated area from the port side of the operation, secure it, and then allow truck traffic into the area for transloading work to be completed. A security plan will need to be developed between the airport and railroad to comply with the security concerns of each entity.

Figure 3.8: Transloading Facility

A cost-benefit comparison was conducted to determine the amount of train traffic needed to make the rail line viable. It is estimated that the rail facility would need to generate a traffic count of 100 rail cars per week (2-3 train trips between the port and the airport) to support the funding needed to construct and maintain the rail line. Each rail car traversing the industrial spur would generate revenue; the revenue that would be generated is estimated at $500 to $550 per car.

It is anticipated that operations and maintenance of the industrial spur would be carried out by the BRG. Any future rail expansions would need to be built by the rail operator or potential customers served by the rail line. A location has also been allotted for a support yard and wye track- a triangular shaped track arrangement - to facilitate the switching operation. Although the support yard and wye track would not be part of the initial construction, these facilities would become essential if rail traffic to the airport transloading facility increases over time.

Cost Estimates

Cost estimates were prepared for each of the alternative alignments. Estimates are summations of the various components of the rail lines such as track, switches, bridges, and crossing. Quantity is multiplied by unit cost to provide a total. All amounts are assumed to be provided in 2011 dollars.

The total includes a cost of $18 million for a proposed future grade separation at Highway 4/Boca Chica Boulevard This improvement is not proposed as part of the initial project, rather, it would be added at a later date when traffic on Boca Chica Boulevard was sufficient to justify the grade separation.

Because this is a preliminary study and the timeline for implementation is unknown, a contingency factor of 30% is factored into the total cost for each alignment alternative. This contingency is an effort to account for fluctuating costs of materials and labor, unforeseen costs due to environmental mitigation, and other unexpected expenses.

The total cost does not vary widely between alternative alignments and is approximately $50 million in each case. It should be noted that the cost estimates in Table 3.2 do not include the cost of right-of-way acquisition nor do they include the cost of constructing the transloading facility within the airport's perimeter.

Table 3.2: Construction Cost Estimates for Rail Infrastructure in Alternative Alignments

	ALIGNMENT 1			ALIGNMENT 2			ALIGNMENT 3			ALIGNMENT 4		
PROJECT ELEMENT DESCRIPTION	Quant.	Unit Cost	Total (millions)	Quant.	Unit Cost	Total (millions)	Quant.	Unit Cost	Total (millions)	Quant.	Unit Cost	Total (millions)
Track - Track Feet*	38,315	$200	$7.66	39,991	$200	$8.00	36,771	$200	$7.35	40,146	$200	$8.03
Switches - Each	1	$120,000	$0.12	1	$120,000	$0.12	1	$120,000	$0.12	1	$120,000	$0.12
Grading - Per Foot	38,315	$120	$4.60	39,991	$120	$4.80	36,771	$120	$4.41	40,146	$120	$4.82
At-Grade Crossings - Per Foot**	555	$5,000	$2.78	475	$5,000	$2.38	595	$5,000	$2.98	475	$5,000	$2.38
At-Grade Crossings - Signal - (LS)**	8	$125,000	$1.00	7	$125,000	$0.88	8	$125,000	$1.00	7	$125,000	$0.88
Railroad Bridges - Per Foot***	1,295	$7,000	$9.07	1,270	$7,000	$8.89	1,235	$7,000	$8.65	1,270	$7,000	$8.89
Total with 30% Contingency			$32.79			$32.57			$31.86			$32.64
Proposed Future Grade Separation (LS) – Boca Chica / Outer Loop			$18.00			$18.00			$18.00			$18.00
TOTALS			$50.79			$50.57			$49.86			$50.64

* Based on 136# CWR construction

** At-Grade Crossing costs based on concrete crossing panels and crossing protection using #9A crossing protection

*** Costs based on using standard concrete crossing deck bridges

Note: Costs for fencing the rail corridor are not included in this estimate.

Conclusions

In this section, the process used to develop and refine the four alternative alignments was described in detail. The process involved a preliminary environmental analysis, application of basic criteria for the first designs, and a public process and environmental review which were used to vet and adjust the alternative alignments.

Within this framework, four viable alternative alignments were prepared by the consultant rail engineer, and the alignments went through a series of drafts. The finalized alignments were analyzed to determine the impact they would have on human and natural environments. Among the most important criteria were effects on existing housing, particularly residential relocation (dwelling units impacted). Although the four alignments produced similar results, Alignment 3 had the fewest total parcels impacted, the fewest private parcels impacted, and by far the fewest dwelling units impacted.

In terms of cost analysis, all four alignments were quite similar, and the total cost was estimated at approximately $50 million. This figure included a cost of $18 million for a proposed future grade separation at Highway 4/Boca Chica Boulevard which would not be part of the initial project. In addition, the total included a 30% contingency cost to account for environmental mitigation and fluctuating costs of materials and labor.

The next section will explore the potential economic impacts of the proposed rail line under several different scenarios.

SECTION 4 – REGIONAL ECONOMIC IMPACTS

Section 4 of this report provides estimates of the potential economic impacts of constructing a rail link between the Port of Brownsville and the Brownsville Airport. Because the rail link does not yet exist and because there are no known employers in Cameron County that presently rely upon both the Port and the Airport for freight movements, the potential economic impacts of the project will be predicted by considering three scenarios with disparate levels of influence on the Cameron County economy. Although these are hypothetical scenarios, the information can still be used to inform future discussions about this proposed project among elected officials and planners. The three scenarios explored in this section are:

- Scenario 1 – Construction of a Heavy Manufacturing Facility to serve the global market;
- Scenario 2 – Construction of a Supply Chain Management Center serving maquiladoras in Mexico; and
- Scenario 3 – Opening of a Small Distribution Center that serves Mexican retailers.

It should also be noted that each scenario is not necessarily intended to estimate the entirety of the economic impacts of the project, rather the economic impacts of three different types of facilities that could plausibly be located along the proposed rail corridor. In reality, the scenarios are not mutually exclusive; since some combination of facility types could be built or more than one of a single type of facility. It should also be noted that the assumptions behind each scenario are intentionally simplistic, (preferably) understated, and not based upon actual proposals. Additionally, the scenarios assume that the rail infrastructure has been built or that services exist (like a container-on-barge service between the Port of Brownsville and Houston), which are not presently in place. Finally, the economic impacts of constructing the rail linkage will be calculated separately from the three scenarios.

Brownsville Port - Airport Rail Spur

As outlined in Section 3, the total estimated construction cost for the Brownsville Port-Airport Rail Spur (BP-ARS) is approximately $50 million, not including right-of-way acquisition. However, within this $50 million cost estimate, there is an optional grade separation at the alignment's intersection with Loop 4, valued at $18 million, and a 30 percent contingency on the rail construction costs, valued at about $7 million. The economic impact analysis will analyze the construction cost of building the rail spur with and without the contingency factor and will separately calculate the impacts of constructing the grade separation. The operating cost of the BP-ARS and its future maintenance expenses are assumed to be carried by the railroad's operator, which will roll those costs into the price that it charges users per rail car.

Scenario 1 - Heavy Manufacturer

Scenario 1 assumes that a large, heavy equipment manufacturer will choose to locate in or relocate an existing facility to Cameron County. Using the new Caterpillar plant in Victoria, Texas as a guide, this facility would employ 600 workers. The facility's construction cost is assumed to be $55 million and construction will occur over a two-year period. The plant is assumed to receive 100 rail cars per week, which would bring a mixture of containerized and bulk cargoes. It is also assumed that some cargoes feeding the plant's manufacturing process would occasionally be brought in as airfreight.

Scenario 2 - Supply Chain Management Center

A supply chain management center is a generic term that could be used to describe a number of closely related services that suppliers or large manufacturers use to lower costs. A facility in Brownsville could leverage proximity to the Port and the Airport to support efficient manufacturing activities in Mexico. Specifically, possible activities could be:

- Sequencing and metering – Sequencing is when a supplier or third-party manages the release of inputs for the production process so that there is a sufficient supply of materials as needed. Metering is a similar practice of supply but operates on a schedule, while sequencing implies a demand driven process.
- Sub-assembly and kitting – Sub-assembly and kitting prepare supplies for assembly by either partially assembling them or preparing kits with the supplies so that the assembly process is easier to carry out on the production floor. The advantage to manufacturer from this practice is that it makes the assembly process easier and requires less manufacturing space.
- Direct and indirect line feeding – This is a process where a supplier or a third-party manages a storage facility to support a manufacturing process. The purpose is to provide the customer with only the amount of production inputs needed until the next delivery, while minimizing inventory costs for the manufacturer.

The benefit to a Mexico-based manufacturing facility, from having a supply chain management center in Brownsville, is that it would allow manufacturers to more easily consolidate their supplies within a single location. Using the Rio Grande Valley's superior transportation infrastructure, a Cameron County-based facility would remain within easy reach of maquiladoras in northern Mexico.

A facility of this type is presently being constructed in Laredo, Texas by the company Exel, which is owned by DHL. The building that is being constructed is 250,000 square feet and will be built at a cost of $10 million. Exel plans to add 100 employees to supplement its existing 29 employees, who already work in Laredo. The average salary for the new employees will be $11.33 per hour.

Scenario 2 assumes construction of an equivalent supply management facility to be built in Cameron County. The construction of the warehouse and its equipment would be $10 million and it would employ 129 employees. It is also assumed that the facility will receive 20 intermodal containers per week through the Port of Brownsville and transported on the BP-ARS.

Scenario 3 - Small Sized Distribution Center

Scenario 3 is intended to provide an example of the economic impacts produced by a smaller beneficiary of the rail link. If the BP-ARS is constructed, it is assumed there might be one or more large-scale users and numerous small scale users like the ones described here. In this scenario it is assumed that a computer and electronics distributor serving Mexican retailers wants to take advantage of the added security and proximity of a location along the U.S. side of the border. A U.S. location also allows use of the superior transportation infrastructure in Cameron County. Distribution into Mexico would occur by truck or by air, depending upon the value of the product, the urgency of delivery, the distance, and the security situation.

Under Scenario 3, the distributor operates a leased 50,000 square foot distribution center within an existing building at the Brownsville Airport. Prior to moving into the building, it is assumed that $200,000 was spent to refurbish and upgrade the facility and the distribution center expects to employs 38 employees. Some products received by the warehouse are offloaded in Houston and transferred to a container-on-barge service that brings them to the Port of Brownsville. Three containers are brought per week from the Port of Brownsville to the warehouse on the rail spur. Trucks are the preferred mode of delivery to its retailers in Mexico, but inventory shortages or security situations can necessitate the use airfreight

Study Assumptions and Methodology

The estimation of the BP-ARS's future economic impacts required the consideration of various factors that produce direct impacts on economic growth. Because the IMPLAN model only accounts for a project's backward linkages to the economy and not its forward linkages, it is the responsibility of the analyst to identify and predict these forward linkages so that they can be entered into a regional

input-output model. In the case of the BP-ARS, the activities forecasted to produce forward linkages were manufacturing (stimulated by existence of the new rail facility), the storage and distribution of goods, rail transportation, and new facility construction. Given the difficult and seemingly infinite assertions that could be made about forward linkages, this study chose not to extend these linkages any further than the immediate activities prior to or after a shipment. The sections below provide a brief explanation of how the direct impacts were measured.

Defining the Impact Areas

The impact area defined for this study is Cameron County. The regional input-output model's database for Cameron County was acquired and models were constructed and estimated over five annual forecast periods, following a one or two-year construction period. The estimates of direct output entered into the model were those activities which physically occurred in Cameron County. The economic impact forecast did not account for economic activity related to the BP-ARS that might occur elsewhere in Texas, in other U.S. states, or in Mexico.

New Production

New production was defined as economic activity directly stimulated by construction of the BP-ARS that would not exist without it. The proxy for this new production was new, direct employment rather than the value of the output.

New Construction

Scenarios 1 and 2 assume the construction of new manufacturing and warehousing facilities, respectively. These facilities are assumed to be built after the BP-ARS' construction is completed. The facility for Scenario 1 is assumed to require two years to be built and the facility for Scenario 2, one year to be built. Remodeling construction is assumed under Scenario 3.

Rail Transportation

Rail transportation costs were entered into the regional input-output model as a direct economic impact and as a single figure for each forecast year. It was assumed that the rail operator on the BP-ARS would charge customers $500 per car movement, regardless of the commodity. It was also assumed that empty cars would be returned to the Port at no additional charge.

Truck Transportation

All truck movements in the three scenarios were assumed to use carriers from outside of Cameron County. As a result, these movements were not included in the model and, therefore, created no economic benefit to Cameron County. Border drayage transfers and long-distance moves into Mexico are typically performed by Mexican carriers, due to their competitiveness and the refusal of U.S.-based trucking companies to operate in Mexico. Additionally, while the complete movement of a good from maritime vessel or rail head to customer requires that it be transferred at least a short distance by a truck or yard hostler, these costs were assumed to be included within the total price of rail car movement between the Port and Airport and were not analyzed separately.

Estimating Total Economic Impact Using the IMPLAN Model

The regional input-output model used for this study is the IMPLAN software. This software is a frequently used tool for estimating the economic impacts of projects by government agencies, academic institutions, and the private sector. The software was originally developed for the U.S. Forest Service but has since become proprietary and is now distributed by the Minnesota IMPLAN Group, Inc. The IMPLAN software is a computerized input-output model, which predicts the impacts of new economic activity on the remainder of a study area's economy.

To perform the economic impact analysis, the direct economic impacts identified above were entered into the IMPLAN software. All results were reported in nominal dollars (i.e. the value of the activity for that year, not controlled for inflation). Once entered, the model produced estimates of direct, indirect, induced, and total output, employment, and tax revenue.

Study Findings

The sections below provide the results from the IMPLAN model analysis, which predicted the economic impacts of proposed rail construction and the three scenarios, in terms of economic output, jobs, and tax revenue. These sections only show the results of the IMPLAN model for Cameron County.

Brownsville Port-Airport Rail Spur Construction

The direct economic impacts of building the rail spur in Cameron County, without the contingency factor, were predicted to be approximately $18 million over the two-year construction period (assumed to be 2012 and 2013 in the model) (see Table 4.1). With the contingency factor included, the total direct impact increased by roughly $2.5 million per year. The direct output from constructing the railroad overpass was just under $9.0 million per year, also assumed over a two-year construction period.

Table 4.1: Estimated Regional Economic Impact of the Brownsville Port-Airport Rail Spur – Direct, Indirect, Induced, and Total Output

	RAIL CORRIDOR WITHOUT CONTINGENCY COSTS			
Year	**Direct Output**	**Indirect Output**	**Induced Output**	**Total Output**
1	$10,074,607	$4,165,617	$3,848,896	$18,089,121
2	$10,074,607	$4,302,363	$3,947,400	$18,324,370
	RAIL CORRIDOR WITH CONTINGENCY COSTS			
Year	**Direct Output**	**Indirect Output**	**Induced Output**	**Total Output**
1	$12,895,497	$5,331,990	$4,926,587	$23,154,074
2	$12,895,497	$5,507,025	$5,052,671	$23,455,193
	LOOP 4 OVERPASS			
Year	**Direct Output**	**Indirect Output**	**Induced Output**	**Total Output**
1	$8,999,878	$3,836,095	$2,199,911	$15,035,884
2	$8,999,878	$3,761,337	$2,146,501	$14,907,716

The construction phase of the BP-ARS is expected to create between 28 and 36 jobs annually during Years 1 and 2 (see Table 4.2). The total county employment, including direct, indirect, and induced employment, is expected to increase by 96 and 123 jobs during each year of the two-year construction period. Readers should note that a "job" created by the construction of the project is defined as employment for one person for one year. Construction of the overpass would generate 80 jobs that be directly tied to construction and these would last for approximately two years. Additional indirect and induced employment from the overpass would produce approximately 45 jobs each year.

Table 4.2: Estimated Economic Impact of the Brownsville Port-Airport Railroad Spur on the Study Area – Direct, Indirect, Induced, and Total Employment

	RAIL CORRIDOR WITHOUT CONTINGENCY COSTS			
Year	**Direct Employment**	**Indirect Employment**	**Induced Employment**	**Total Employment**
1	28.0	32.0	35.7	95.8
2	28.2	32.2	36.0	96.5
	RAIL CORRIDOR WITH CONTINGENCY COSTS			
Year	**Direct Employment**	**Indirect Employment**	**Induced Employment**	**Total Employment**
1	35.9	40.9	45.8	122.6
2	35.9	41.3	46.1	123.2
	LOOP 4 OVERPASS			
Year	**Direct Employment**	**Indirect Employment**	**Induced Employment**	**Total Employment**
1	79.7	26.7	20.5	126.9
2	79.7	25.6	19.7	125.0

Building the BP-ARS is also expected to create positive impacts to the state and local tax base. The model anticipates that the total state and local tax revenue generated within the region would be

between $1.1 million and $1.4 million (see Table 4.3). Construction of the overpass would generate another $690,000 in state and local tax revenues.

Table 4.3: Estimated Economic Impact of the Brownsville Port-Airport Railroad Spur on the Study Area – Federal, State, and Local Taxes

	RAIL CORRIDOR WITHOUT CONTINGENCY COSTS					
Year	**Employee Compensation**	**Proprietary Income**	**Household Expenditures**	**Corporations**	**Indirect Business Tax**	**Total**
1	$21,164	$0	$500,187	$38,509	$1,174	$561,034
2	$21,760	$0	$514,288	$39,595	$1,208	$576,851
	RAIL CORRIDOR WITH CONTINGENCY COSTS					
Year	**Employee Compensation**	**Proprietary Income**	**Household Expenditures**	**Corporations**	**Indirect Business Tax**	**Total**
1	$27,090	$0	$640,239	$49,292	$1,503	$718,124
2	$27,853	$0	$658,288	$50,681	$1,546	$738,368
	LOOP 4 OVERPASS					
Year	**Employee Compensation**	**Proprietary Income**	**Household Expenditures**	**Corporations**	**Indirect Business Tax**	**Total**
1	$9,752	$0	$315,803	$22,285	$603	$348,443
2	$9,541	$0	$308,952	$21,802	$590	$340,885

Scenario 1

The direct economic impact of Scenario 1 on Cameron County was predicted to be $30.6 million during Year 1, as the manufacturing facility is being built (see Table 4.4). This impact includes all expenditures and stimulated economic activity. During Year 3, the combined regional output from the manufacturing plant and the rail operations is expected to be $427.4 million and this value stays relatively constant throughout the planning horizon.

Table 4.4: Estimated Economic Impacts of Scenario 1 on Cameron County – Direct, Indirect, Induced, and Total Output Reported in Nominal Dollars

Year	Direct Output	Indirect Output	Induced Output	Total Output
1	21,189,992	4,991,821	4,494,324	$30,676,139
2	$22,100,000	$5,017,665	$4,470,045	$31,587,710
3	$333,194,464	$59,938,528	$34,274,112	$427,407,103
4	$333,194,464	$60,013,079	$34,495,433	$427,702,976
5	$333,194,464	$60,120,413	$34,735,468	$428,050,345
6	$333,194,464	$60,120,414	$34,735,468	$428,050,346
7	$333,194,464	$60,120,413	$34,735,468	$428,050,345

The construction of the manufacturing facility is expected to create more than 260 jobs within the region during Year 1 (2014) and approximately 245 jobs during Year 2 (see Table 4.5). During Year 3,

when it is assumed that the manufacturing plant will begin production, direct employment is anticipated to be approximately 607 jobs. This total accounts for 600 manufacturing jobs and 7 jobs created by the new rail traffic. Total regional employment, including direct, indirect, and induced employment, is predicted to be more than 1,300 jobs during Year 3, falling to roughly 1,260 jobs during Year 7. Readers should note that after Year 2, the number of jobs generated by the project is constant and represents more or less permanent employment.

Table 4.5: Estimated Economic Impacts of Scenario 1 on Cameron County – Direct, Indirect, Induced, and Total Employment

Year	Direct Employment	Indirect Employment	Induced Employment	Total Employment
1	189.8	32.8	41.1	263.7
2	174.5	31.5	39.4	245.4
3	607.2	404.6	295.6	1,307.5
4	607.2	399.2	291.7	1,298.1
5	607.2	393.8	287.9	1,288.9
6	607.2	386.0	282.2	1,275.3
7	607.2	378.3	276.5	1,262.0

The construction of the BP-ARS is also expected to create positive impacts to the state and local tax base. The model anticipates that the total state and local tax revenue generated by the new economic activity would total $660,000 during Year 1, growing to $7.7 million in Year 3 and then remains relatively constant (see Table 4.6). The model results do not account for any local or state tax abatements that might be made to recruit the employer.

Table 4.6: Estimated Economic Impact of Scenario 1 on Cameron County – Federal, State, and Local Taxes in Nominal Dollars

Year	Employee Compensation	Proprietary Income	Indirect Business Tax	Household Expenditures	Corporations	Total
1	$20,519	$0	$592,275	$45,584	$1,654	$660,032
2	$20,482	$0	$591,200	$45,502	$1,651	$658,835
3	$192,380	$0	$7,173,717	$344,709	$17,631	$7,728,437
4	$193,698	$0	$7,221,034	$347,074	$17,747	$7,779,553
5	$195,028	$0	$7,268,732	$349,462	$17,864	$7,831,086
6	$195,028	$0	$7,268,732	$349,462	$17,864	$7,831,086
7	$195,028	$0	$7,268,732	$349,462	$17,864	$7,848,382

Scenario 2

The direct economic impact of building a supply chain management center in Cameron County is predicted to produce $10.0 million of output during Year 1 (see Table 4.7). The direct economic impact of the operating facility would be slightly lower at $9.0 million each year. By Year 5 the total regional output of the operating supply chain management center is anticipated to be approximately $14 million, annually.

Table 4.7: Estimated Economic Impacts of Scenario 2 on Cameron County – Direct, Indirect, Induced, and Total Output in Nominal Dollars

Year	Direct Output	Indirect Output	Induced Output	Total Output
1	$10,000,000	$4,099,143	$2,328,437	$16,427,581
2	$9,059,222	$2,947,761	$2,712,019	$14,719,002
3	$9,059,222	$2,902,630	$2,632,209	$14,594,062
4	$9,059,222	$2,859,844	$2,556,776	$14,475,843
5	$9,059,222	$2,819,326	$2,485,471	$14,364,020
6	$9,059,222	$2,819,326	$2,485,471	$14,364,020

The construction of a supply chain management center would also be expected to create almost 90 jobs in Cameron County during Year 1 (see Table 4.8). The operation of the facility would create 130 jobs, with the total regional employment (including direct, indirect, and induced employment) predicted to be approximately 180 jobs during Year 2, falling gradually to 173 jobs during Year 6.

Table 4.8: Estimated Economic Impacts of Scenario 2 on Cameron County – Direct, Indirect, Induced, and Total Employment

Year	Direct Employment	Indirect Employment	Induced Employment	Total Employment
1	88.6	27.3	20.9	136.8
2	130.4	27.1	23.8	181.4
3	130.4	25.7	22.7	178.9
4	130.4	24.5	21.6	176.6
5	130.4	23.3	20.6	174.4
6	130.4	22.8	20.2	173.5

If built, the BP-ARS is also expected to create positive impacts to the state and local tax base. The model anticipates that under Scenario 2, the total state and local tax revenue generated within the region would be $370,000 during Year 1, falling to $344,000 during Year 6 (see Table 4.9).

Table 4.9: Estimated Economic Impacts of Scenario 2 on Cameron County – Federal, State, and Local Taxes in Nominal Dollars

Year	Employee Compensation	Proprietary Income	Household Expenditures	Corporations	Indirect Business Tax	Total
1	$10,371	$0	$335,838	$23,699	$641	$370,549
2	$15,282	$0	$331,709	$27,262	$819	$375,072
3	$14,844	$0	$322,349	$26,484	$796	$364,473
4	$14,423	$0	$313,350	$25,736	$774	$354,283
5	$14,018	$0	$304,702	$25,016	$752	$344,488
6	$14,018	$0	$304,702	$25,016	$752	$344,488

Scenario 3

The total economic impact of the computer and electronics distribution center on Cameron County was predicted to be $320,000 during Year 1 (see Table 4.10). By Year 2, when operations commence, the total regional output of the facility is expected to be more than $4.0 million annually.

Table 4.10: Estimated Economic Impacts of Scenario 3 on Cameron County – Direct, Indirect, Induced, and Total Output in Nominal Dollars

Year	Direct Output	Indirect Output	Induced Output	Total Output
1	$200,000	$72,584	$48,987	$321,570
2	$2,593,430	$834,032	$767,855	$4,195,316
3	$2,593,430	$819,558	$743,499	$4,156,487
4	$2,593,430	$805,719	$720,393	$4,119,542
5	$2,593,430	$792,489	$698,462	$4,084,381
6	$2,593,430	$792,489	$698,462	$4,084,381

The remodeling of the existing warehouse is anticipated to have only minimal impacts on county job creation; producing 2 jobs within the region during Year 1 (see Table 4.11). Once the warehousing operations begin during Year 2, direct employment is anticipated to increase to 38 jobs. Total regional employment, including direct, indirect, and induced employment, is predicted to be roughly 50 jobs throughout the planning horizon.

Table 4.11: Estimated Economic Impacts of Scenario 3 on Cameron County – Direct, Indirect, Induced, and Total Employment

Year	Direct Employment	Indirect Employment	Induced Employment	Total Employment
1	2.0	0.5	0.4	3.0
2	38.2	7.7	6.8	52.7
3	38.2	7.3	6.4	52.0
4	38.2	7.0	6.1	51.3
5	38.2	6.6	5.8	50.6
6	38.2	6.5	5.7	50.4

Constructing the BP-ARS also expected to create positive impacts to the state and local tax base. The model anticipates that the total state and local tax revenue generated within the region will be very modest at $8,500 during Year 1 (2014), but growing to approximately $106,000 in Year 2 before diminishing to $96,500 by Year 6 (see Table 4.12).

Table 4.12: Estimated Economic Impacts of Scenario 3 on Cameron County – Federal, State, and Local Taxes in Nominal Dollars

Year	Employee Compensation	Proprietary Income	Household Expenditures	Corporations	Indirect Business Tax	Total
1	$228	$0	$7,690	$497	$15	$8,430
2	$4,330	$0	$93,656	$7,718	$232	$105,936
3	$4,196	$0	$90,784	$7,480	$225	$102,685
4	$4,067	$0	$88,016	$7,251	$218	$99,552
5	$3,943	$0	$85,347	$7,029	$211	$96,530
6	$3,943	$0	$85,347	$7,029	$211	$96,530

Conclusions

The economic benefits that would accrue to Cameron County with the construction of a rail spur between the Port of Brownsville and the Brownsville Airport would ultimately depend upon the types of facilities that are built around it. This section shows the estimated economic impacts created by three hypothetical development scenarios, which reflect possible activities that might exist along the proposed rail corridor. Because each example facility inserts itself into the region as either a producer of goods or a node in cross-border supply chains, the services create considerably more economic activity than the practice of cross-border shipping. Depending upon the type and number of facilities that locate along the rail corridor, there is a strong possibility that the initial public investment would generate sufficient tax revenue to pay for itself over the life of the project. However, this return on investment is likely to require a much longer period than is typical for most private-sector investment. Fortunately, with adequate maintenance, rail infrastructure has a long life-span (i.e. 75 years or more), so this provides a wide window to service debt related to the initial investment

SECTION 5 - ENVIRONMENTAL OVERVIEW

Cameron County is located in a geographic region of South Texas with distinct natural and cultural resources. As described in Section Four, the proposed rail corridors are located in southeastern Cameron County near the U.S.-Mexico border and at the periphery of Brownsville's urban development. The purpose of this section is to provide a general overview of environmental conditions in the project study area, which is shown in Figure 5.1. The information provided in this section is for preliminary planning purposes only and is not intended for direct use in an environmental compliance document. However, by initiating this preliminary review, it is hoped that sensitive environmental features and project delays will be avoided, while also minimizing the project's overall impacts on the human and natural environment.

Land Use

The project study area is located in an area that is partially within the City of Brownsville and partially within the unincorporated area of Cameron County. The incorporated areas within the city of Brownsville are zoned for residential and commercial activities. The land use within the project study area consists of a mixture of industrial, scattered residential, agriculture (cropland, pastures, and citrus orchards), public uses, commercial, and vacant parcels. Table 5.1 shows the estimated acreage of land uses within the four alternative alignments. Alternative 2 impacts the greatest acreage at 109.5 acres, while Alternative 3 has the least impact at 102.5 acres. Two-thirds or more of the impacted land within the corridors is defined as either vacant, pasture, or cultivated cropland. Publicly owned land is another significant category (23.0 to 27.0 acres impacted), which includes properties owned by the Port of Brownsville, the Brownsville Airport, and Cameron County. Residential acreage ranges from 4.0 to 6.0 acres, with Alternatives 1 and 3 having the least impact and Alternative 2 having the greatest impact. Parkland is another significant component, ranging from 2.0 acres (Alternatives 2 and 4) to 4.0 acres (Alternatives 1 and 3). The land use with the fewest impacts is commercial properties, with 0.5 acres affected by each alternative.

Figure 5.1: Proposed Alignments and Environmental Review Study Area

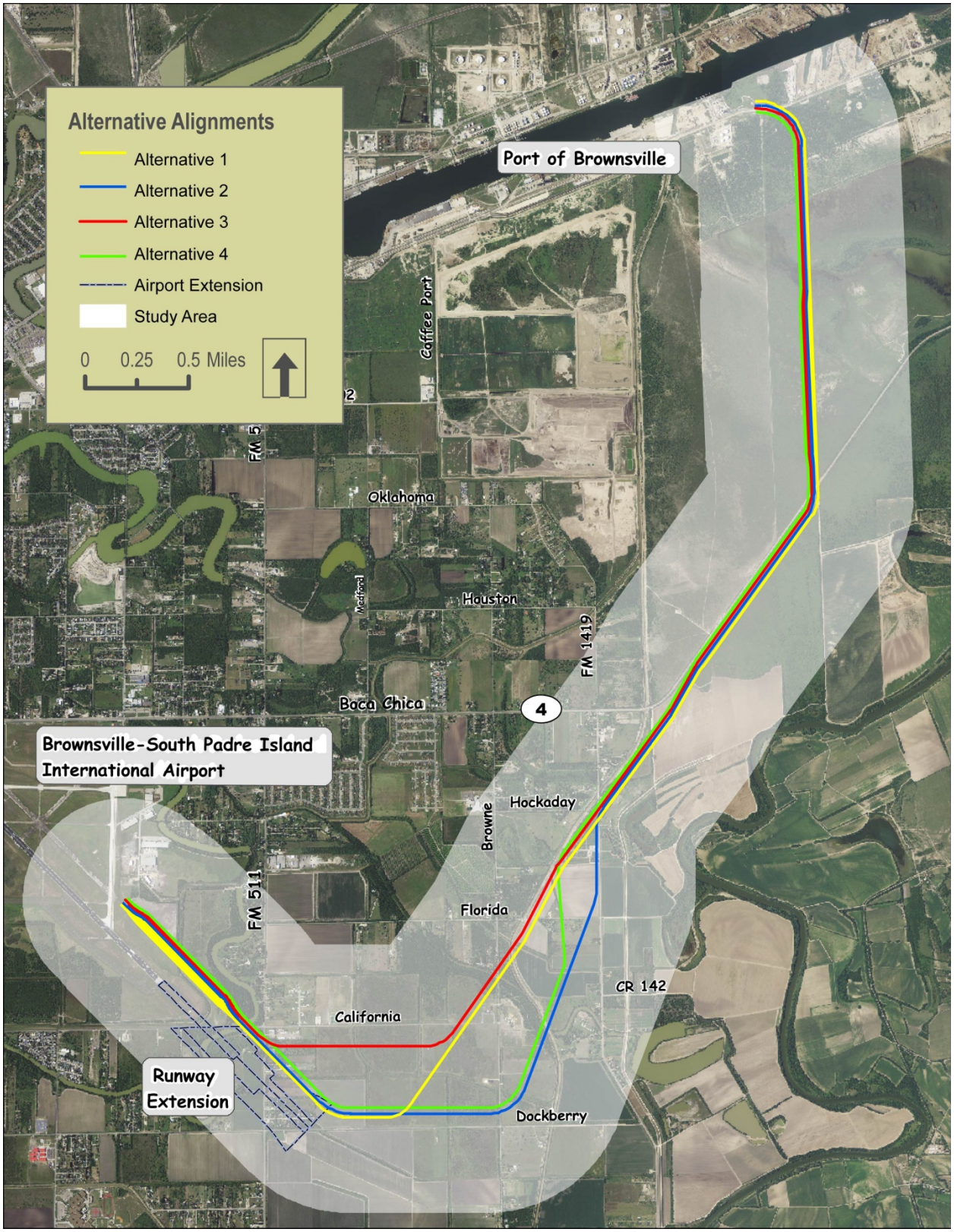


Table 5.1: Land Use within Proposed Rail Corridor (100-foot) Right-of-Way by Alternative

LAND USE CATEGORY	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 4
Agriculture - Cultivated Cropland	14.0	14.0	14.0	14.0
Commercial or Industrial	0.5	0.5	0.5	0.5
Parkland	4.0	2.0	4.0	2.0
Public	27.0	26.0	23.0	26.0
Residential	4.0	6.0	4.0	5.0
Vacant	37.0	36.0	40.0	36.0
Vacant/Pasture	19.0	25.0	17.0	25.0
TOTAL	105.5	109.5	102.5	108.5

Demographics - Community Impacts

Data from the 2010 U.S. Census was analyzed to assess the impacts of the project on the surrounding population. For the purpose of the discussion, the study area is defined as the five U.S. Census Block Groups identified in Table 5.1. Within these five Census Block Groups, lived a total of 9,764 residents during the 2010 U.S. Census and their combined population was 95.3 percent minority compared to 89.3 percent in Cameron County. In closest proximity to the alignment corridors, there are a number of occupied dwelling units, but the socioeconomic characteristics of their residents are not known.

Environmental Justice

Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires each Federal agency to "make achieving environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Federal Highway Administration (FHWA) has identified three fundamental principles of environmental justice:

- To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations;
- To ensure full and fair participation by all potentially affected communities in the transportation decision-making process;
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Disproportionately high and adverse human health or environmental effects are defined as adverse effects that: (1) are predominantly borne by a minority population and/or a low-income population, or (2) will be suffered by the minority population and/or low-income population and are appreciably

more severe or greater in magnitude than the adverse impacts that will be suffered by the non-minority population and/or non-low-income population.

Demographic data from the project area show a mostly Hispanic population resides around the project study area, which is more racially and ethnically diverse than Cameron County as a whole (See Table 5.2). During the 2010 U.S. Census, 87.0 percent of Cameron County's population identified as being White of which 10.7 percent was non-Hispanic. Only 0.5 percent of the total population identified themselves as being Black or African-American and 12.5 percent identified themselves as another race or more than one race. Cameron County's Hispanic population consisted of 88.1 percent of all residents. Within the study area, Block Group 2, Census Tract 127 and Block Group 1, Census Tract 9801 had the smallest minority populations at 81.6 percent and 90.0 percent, respectively. Block Groups 1, 2, and 4 in Census Tract 141 had minority populations of 98.1 percent, 97.5 percent, and 95.7 percent, respectively.

The U.S. Department of Health and Human Services' 2010 poverty guideline for a family of four is $22,050. Median household income data for the study area was obtain from the U.S. Census Bureau's American Community Survey, which is based upon survey samples collected between 2006 and 2010. In the past, median household income data collected during the decennial census was used for this analysis. However, starting with 2010 Census, the U.S. Census Bureau ended its collection of income data and relies solely upon data collected for the American Community Survey. According to these data, the 2010 median household income for Cameron County was $31,264. The median household income for Census Tract 127 was $31,303 and in Census Tract 141 it was $22,346. No income data were available for Census Tract 9801 or at the Block Group level for any Census Tract. These data show that the overall population in the study area had a lower median household income than Cameron County as a whole, but was still slightly higher than the national poverty threshold. Cameron County's overall poverty rate, during the 2000 Census, was 34.7 percent compared to 27.4 percent in Census Tract 127 and 48.3 percent in Census Tract 141. All of the residents in Census Tract 9801 were reported to live in poverty.

Other population and housing characteristics of the study area reported by the 2010 U.S. Census data include age distribution and home ownership. One-third of Cameron County's population is under 18 years of age, while 11.1 percent of its population is 65 years or older. The share of the population between 18 and 64 years of age, which represents most workers in the labor force, was 55.9 percent. With the exception of Census Tract 127, Block Group 2, the remainder of the Census Block Groups had a populations with a higher percentage of children than Cameron County overall. Conversely, these same Block Groups had fewer residents aged 65 years and older than did Cameron County.

The U.S. Census data show that home ownership in Cameron County is high at 72.4 percent. Within the project study area (with the exception of Block Group 1, Census Tract 9801, which only had three homes), all of the Block Groups had higher rates of home ownership than Cameron County overall. Cameron County's dwelling unit occupancy rate is somewhat low, but this is likely due to the large number of condominiums located in South Padre Island, which are occupied seasonally or rented to tourists. Nonetheless, within the project study area, the dwelling unit occupancy rates were lower in Block Group 2, Census Tract 127 and Block Group 4, Census Tract 141 than Cameron County overall.

Dwelling unit occupancy rates were higher in Block Groups 1 and 2 in Census Tract 141 and in Block Group 1, Census Tract 9801.

Table 5.2: Characteristics of 2010 Census Block Groups in the Project Area Compared to Cameron County, Texas

	CAMERON COUNTY, TX	CENSUS TRACT 127, BG 2	CENSUS TRACT 141, BG 1	CENSUS TRACT 141, BG 2	CENSUS TRACT 141, BG 4	CENSUS TRACT 9801, BG 1
Population	406,220	1,011	5,312	1,844	1,587	10
Percent Male	48.1	49.1	48.0	47.8	50.3	60.0
Percent Female	51.9	50.9	52.0	52.2	49.7	40.0
Age (*Percent of Total Population)*						
Under 18 years old	33.0	28.0	40.9	38.4	41.3	40.0
18-64 years old	55.9	58.1	54.1	55.7	51.8	60.0
65 years & older	11.1	13.9	5.0	5.9	6.9	0.0
Ethnicity *(Percent of Total Population)*						
White	87.0	89.7	87.7	88.6	87.1	100.0
Black or African-American	0.5	0.4	0.2	0.4	0.3	0.0
All other races or more than one race	12.5	9.9	13.9	11.0	12.6	0.0
Hispanic	88.1	81.3	97.0	97.4	95.5	90.0
White, not Hispanic	10.7	18.4	2.9	2.5	4.3	10.0
Median household income†	$31,264	$30,303	$22,346	$22,346	$22,346	n/a
Percent of household in poverty	34.7	27.4	48.3	48.3	48.3	100.00
Total Housing Units	141,924	429	1,328	468	467	3
Percent Occupied	84.3	71.3	94.9	93.4	83.7	100.0
Percent Renter-Occupied	27.6	14.2	14.4	18.4	25.7	33.3

† 2010 dollars

Note: Percentages may not add to 100 due to rounding. Source: U.S. Census Bureau, 2010

Limited English Proficiency Populations

Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency," requires agencies to examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and to develop and implement a system to provide those services so that LEP persons can have meaningful access to them.

In the spirit of Executive Order 13166, a review of 2010 U.S. Census data was conducted to determine evidence for a LEP population within the study area. Within Cameron County, approximately 30.0 percent of the population that was 5 years and older spoke English less than "very well." Within the project area, the share of the population 5 years and older who spoke English less than "very well" in Census Tract 127 and Census Tract 141, was 36.0 percent and 46.5 percent, respectively. None of the 57 residents, over the age of 5, in Census Tract 9801 spoke English well. As further evidence of the large number of Spanish speakers in the study area, many businesses adjacent to and within the project area have signage in Spanish.

Since Cameron County, as a whole, has a large population of residents who do not speak English well and the study area has an even higher population, proportionately, it will be useful to publish any future information concerning the proposed project in both English and Spanish. It is recommended that any public involvement for this proposed project provides information to the public in written Spanish. Additionally, it is suggested that any meetings with landowners affected by the project, who do not speak English "very well", also include a qualified language interpreter.

Property Acquisition and Relocations

The proposed rail corridor would necessitate the acquisition of between 102 and 110 acres of land, dependent upon the selected alternative (See Table 5.3). Alternative 3 requires the least acreage, while Alternative 4 requires the most. The properties needed for the rail corridor would be a mix of publicly and privately owned parcels. Publicly-owned parcels are located north of SH 4 (Port of Brownsville) and at the corridors' terminus in the Airport. Additionally, there are other publicly-owned properties that would be impacted by the corridors around the intersection of Browne and California Roads, which are owned by Cameron County. Properties at the corridor's southern terminus are mostly privately-owned, but the City of Brownsville intends to purchase many of them as part of a planned expansion of the Airport's runway. The number of privately-owned parcels that would be impacted by the corridor alignment ranges from a low of 29 properties along Alignment 3 to a high of 45 parcels along Alignment 4. The number of potential residential relocations ranges from a high of 28 relocations along Alignment 2 to a low of 6 relocations along Alignment 3. Additionally, Alignment 1 would require 24 residential relocations and Alignment 4 would require 25 relocations. However, many of these impacted residences are clustered in an area east of FM 511, north of Dockberry Road. These residences are also located within the future noise corridor of the Airport's proposed runway expansion. Assuming that the runway's expansion precedes the construction of the rail corridor, many fewer residential relocations would be required to build the railroad. Under this scenario, the

least number of relocation would occur along Alignment 1 or Alignment 3 with three residences, while Alignment 4 would require four relocations. Alignment 2 would have seven residential relocations.

Table 5.3: Summary of the Anticipated Right-of-Way Acquisition and Relocations by Proposed Alignment

ISSUE OF CONCERN	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 4
Right-of-way required (acreage)	105.8	109.6	102.2	110.0
Total number of parcels Impacted	43	44	35	45
Privately-owned parcels (within total)	34	36	29	37
Publicly-owned parcels (within total)	9	8	6	12
Total number of residential relocations	24	28	6	25
Total Number of Residential relocations within the Airport Expansion Noise Corridor	21	21	3	21
Total number of dwelling units outside of the Airport Expansion Noise Corridor	3	7	3	4
Number of Driveways Impacted	7	12	6	7
Number of Non-Residential Structures Impacted	5	12	5	5

Transportation

Construction of the rail corridor would create between six and seven new at-grade roadway crossing (See Table 5.4). Each of the four alignments would cross arterials at SH 4 (Boca Chica Boulevard), FM 1419 (Oklahoma Avenue), and FM 511 (Indiana Avenue). Each alternative also crosses Florida Road, Browne Avenue, and California Road. Alternatives 1 and 3 would also cross California Road a second time. It is not anticipated that the proposed project would interfere with current or future rail traffic flows on the regional rail network or the rail network within the Port of Brownsville. It is assumed that cargo moved within the corridor would depart the Port southbound, where no rail infrastructure currently exists, and move to the Brownsville Airport. Following any value-added activity, freight moving northbound may return to the Port of Brownsville for outbound shipment, leave by truck, or continue moving by rail to a destination beyond the Port.

Table 5.4: Transportation Impacts of the Proposed Alignments

ISSUE OF CONCERN	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 4
New Arterial Crossings (new at-grade crossings)	3	3	3	3
New Local Collector Crossings (new at-grade crossings)	4	3	4	3

Parklands and Section 4(F) Resources

Each of the proposed rail corridors traverses land owned by the Cameron County Park System. Alignments 2 and 4 traverse an undeveloped area of Browne Road County Regional Park and impact approximately 2.0 acres. This portion of the park is planned for an expansion of existing athletic fields and a walking trail. Alignments 1 and 3 traverse areas north of the park's existing development, but on the west side of Browne Road (through another undeveloped portion of the parkland) and impact approximately 4.0 acres. Future plans for this portion call for developing all or part of this parcel into recreational uses.

Under Section 4(f) of the 1966 Transportation Act, if a project would use land from a public park, recreation area, wildlife or waterfowl refuge, or historic site, a 4(f) evaluation must be performed. The proposed project may require the use of publicly owned land from a public park, recreational area, wildlife and waterfowl refuge lands, or historic sites of national, state, or local significance. As a result, it is anticipated that a Section 4(f) evaluation will be required to construct this project. It is recommended that the local sponsor for the project develop an early and ongoing dialogue with the Cameron County Park System about the status of the proposed rail corridor, along with any plans by the Park System to expand existing park facilities. Potential mitigation properties in the area should also be identified early in the planning process.

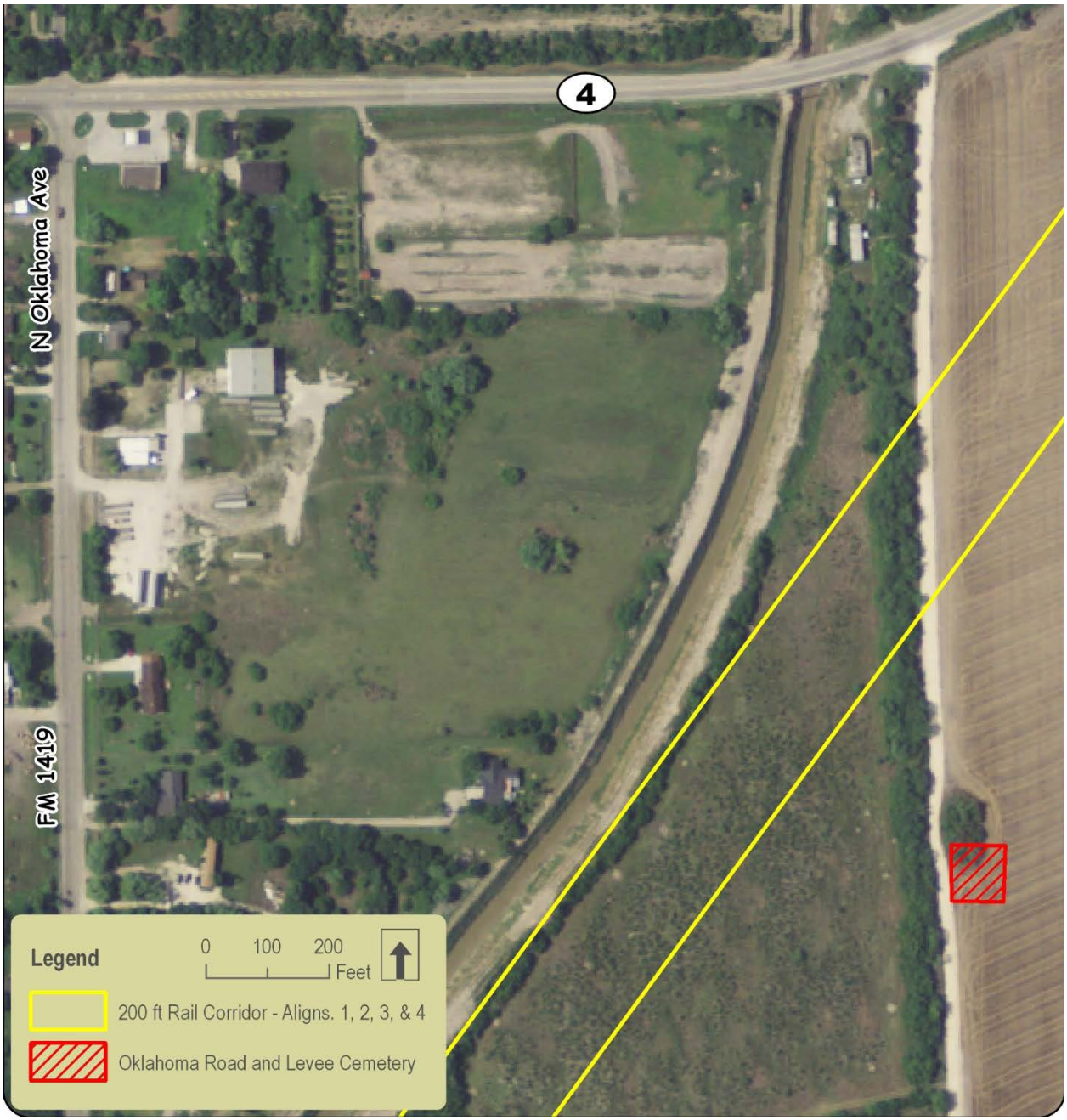
Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. State laws such as the Antiquities Code of Texas require consideration of cultural resources during project planning. Compliance with these laws often requires consultation with the Texas Historical Commission/Texas State Historic Preservation Officer (SHPO) to identify, protect, and preserve properties listed on the National Register of Historic Places (NRHP) or list of State Archeological Landmarks (SAL). Historic properties are any prehistoric or historic district, site, building, structure, or object which his included or eligible for inclusion in the National Register of Historic Places (NRHP) or meets the requirements for designation as a State Archeological Landmark (SAL). Projects using any state or federal funds must comply with all applicable laws that protect cultural resources. Likewise, even locally funded projects that impact protected cultural resources will need to comply with relevant laws and protections.

Records of cultural resources located within and surrounding the Area of Potential Effect (APE) that are listed in the Texas Archeological Sites Atlas were reviewed. The review of the Atlas did not identify any properties listed in the NRHP or any designated as a SAL. Within the study area, there have been two previous archeological/historical surveys during the recent past. The first study was undertaken during May 2003 for the Cameron County Parks Department (TAC Permit 3122. Fieldwork for the second study was completed in October 2004 for the Brownsville Airport Runway Extension (TAC Permit 3363). The only cultural resource identified in the study area was a cemetery located south of SH 4 (Boca Chica Blvd.) and about .25 miles east of S. Oklahoma Avenue (FM 1419). This cemetery is

known as the Oklahoma Road and Levee Cemetery (CF-C032) and its approximate location is shown in Figure 5.2. None of the rail corridors, as currently proposed, would disturb the cemetery, according to the boundaries delineated in the Texas Archeological Sites Atlas. Near this location, all the proposed rail alignments fall within the same 200-foot wide corridor, which is located approximately 250 feet to the northwest of the cemetery's perimeter.

Figure 5.2: Location of the Oklahoma Road and Levee Cemetery (CF-C032)



If any state or federal funds are used to construct a rail corridor, a field survey by a qualified historian would be necessary to determine that there are no NRHP or SAL-listed properties in the project area

and the project complies with applicable state laws. Likewise, a qualified archeologist would need to conduct a field survey of the study area with appropriate shovel testing to determine if more extensive survey for cultural resources is required.

Air Quality

The proposed project is entirely within the boundaries of Cameron County, Texas, which is in attainment of all National Ambient Air Quality Standards (NAAQS). While the project may increase the overall emission of pollutants into the air, as overall economic activity in the region increases, the net effect on regional air quality is anticipated to be lower than if all good movements occurred with commercial trucks.

Water Resources

The project is located within the Rio Grande River Basin within areas that have historically served or continue to serve as the floodplain for the Rio Grande River. One of the features of Cameron County's terrain are remnant channel segments of the Rio Grande River that now function as curvilinear ponds called "resacas". While resacas are not provided any special regulatory protection they may be protected as wetlands and, therefore, could be subject to Section 404 compliance and to compliance with other applicable laws and regulations. Each of the proposed rail corridors crosses the Resaca de la Palma twice. The first crossing of the resaca would be west of Oklahoma Road (FM 1419) and north of Florida Road. All of the proposed corridors have a second crossing west of S. Indiana Avenue and north of Dockberry Road. An overview of the proposed corridor alignments' impacts on water features in the study area is provided below in Table 5.4.

Table 5.5 shows that the between 19 and 21 acres of wetlands may be impacted by the proposed corridor alignments. Because the proposed corridor traverses an agricultural area within this region, there are a number irrigation canal and drainages that would have to be crossed. Alignment 3 crosses the fewest canals and drainages at 7, while Alignment 4 crosses the most with 9 channels. Alignments 1 and 2 each have 8 crossings. In addition to the Resaca crossings already mentioned, Alternatives 2 and 4 cross a pond, while Alternatives 1 and 3 cross two ponds.

Table 5.5: Summary of Potential Impacts to Water Features by Alignment

ISSUE OF CONCERN	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 3
Potential Wetlands Impacted (acreage)	21.0	19.0	21.0	20.0
Irrigation Canal or Drainage Crossings (number)	8	8	7	9
Resaca/Pond Crossings (number)	4	3	4	3

Section 401 of the Clean Water Act: Water Quality Certification

It is anticipated that the proposed rail project will impact more than 1,500 linear feet of stream and/or 3 acres of waters of the U.S. or will affect rare/ecologically significant wetlands. A Tier II 401 Certification Questionnaire and Alternatives Analysis Checklist must be completed and submitted to TCEQ.

Since this project will likely result in the placement of temporary or permanent dredge or fill material into jurisdictional waters of the United States, including wetlands or other special aquatic sites; a Section 404 permit will likely be required. This project might require a United States Army Corps of Engineers (USACE) Section 404 Permit and, therefore, Section 401 Certification.

Executive 11990, Wetlands

Alternative corridor alignment will need to be reviewed by qualified biologists and regulatory agencies, as required by Executive Order 11990 on wetlands. This review must show that no practicable alternatives to the proposed crossings could be identified or a new alignment must be identified.

Rivers and Harbors Act of 1899, Section 10

This project does not involve work in or over a navigable water of the United States; therefore, Section 10 of the Rivers and Harbors Act does not apply.

Section 303(d) of the Clean Water Act

Storm water runoff from the proposed construction would flow either into the Brownsville Ship Channel, which empties into the Laguna Madre, or tributaries of the Rio Grande River. According to the Texas Commission on Environmental Quality's (TCEQ) State of Texas *2010 Texas Water Quality Inventory*, Segment 2494 of the Brownsville Ship Channel had acceptable conditions for aquatic life and could be used for a public water supply. However, it was considered "non-supporting" for recreational use due to high levels of bacteria.

Segment 2301_01 of the Rio Grande River is currently designated for contact recreation, has good conditions for aquatic life, and can be used as a public water supply. However, testing did show a screening level concern for chlorophyll-a, which can cause eutrophication (an overabundance of nutrients in the water). These high levels of chlorophyll-a are caused by agricultural run-off (among other sources) and can lead to algal blooms and fish kills.

Runoff from this project would discharge within 5 stream miles upstream of Segment 2494 of the Brownsville Ship Channel, which is listed as threatened/impaired on the 2010 303(d) list. The project's sponsoring agency will need to identify best management practices (BMPs) to control the constituent of concern at this location.

Section 402 of the Clean Water Act: Texas Pollutant Discharge Elimination System, Construction General Permit

This project would include five or more acres of earth disturbance. The sponsoring agency would comply with TCEQ's Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP). A Storm Water Pollution Prevention Plan (SW3P) would be implemented, and a construction site notice would be posted on the construction site. A Notice of Intent (NOI) would be required.

Section 402 of the Clean Water Act: Texas Pollutant Discharge Elimination System, Municipal Separate Store Sewer System (MS4)

This project is located within the boundaries of the Phase II Cameron County Municipal Separate Storm Sewer System, and would comply with the applicable MS4 requirements.

Floodplain

More than half of the proposed rail corridor is located within the Federal Emergency Management Agency's (FEMA's) designated 100-year floodplain. The corridor's placement within the 100-year floodplain ranges from 20,327 linear feet along Alternative 3 to 21,275 feet along Alternatives 2 and 4 (See Table 5.6). Alternative 1 has 20,988 linear feet in the floodplain. To build these portions of the rail corridor within the 100-year floodplain, soils will need to be a graded and fill added to raise the track above the floodplain. At appropriate intervals, culverts and other structures will be installed to insure that the proper drainage of floodwater is not impaired by the track.

Table 5.6: Linear Feet of 100-Year Floodplain Crossed by Proposed Rail Corridor Alignments

	ALIGNMENT 1	ALIGNMENT 2	ALIGNMENT 3	ALIGNMENT 3
100-Year Floodplain (Linear Feet)	20,988	21,275	20,327	21,275

Source: FEMA, 2011

Aquifers

While the Gulf Coast Aquifer is partially located within Cameron County, the proposed project does not appear to be located over the recharge or contributing zones of any major or minor aquifers, according to maps produced by the Texas Water Development Board.

Biological Resources

The vegetation types of the project area, as described in *The Vegetation Types of Texas* (published by Texas Parks and Wildlife Department in 1984), are "Crops" and "Other Native and/or Introduced Grasses." Vegetation observed within and adjacent to the project right-of-way during a field visit was consistent with the mapped type, although it is also transected by Resaca de la Palma, which is surrounded by a wooded buffer.

Endangered and Threatened Species

Qualified project biologists have not assessed the potential for threatened, endangered, or candidate species habitat within the project area. However, a comprehensive list of threatened, endangered, and candidate species that could potentially occur within Cameron County is included in Appendix 1. Additionally, the Texas Natural Diversity Database (NDD) was consulted for information regarding occurrences of listed and rare species in the project study area on February 3, 2012, using data obtained from the Texas Parks and Wildlife Department's live version of the NDD. Information files were reviewed for the known locations of species using 2010 digital aerial photography base (which include the project area and surrounding vicinity). According to the NDD, the project study area contains known ecologically significant stream segments and federal designated critical habitat for Federally Threatened bird species the Piping Plover (*Charadrius melodus*). Numerous Elements of Occurrence (EO) and two managed areas (the Lower Rio Grande Valley National Wildlife Refuge and the Los Palomas Wildlife Management Area) were identified by the TXNDD within a 1.5 mile radius of the proposed project. The most important Element of Occurrence (EO ID 3768) was the Federally Endangered Jaguarundi (*Herpailurus yaguarondi*) killed on SH 4, 2.0 miles east of Keller's Corner. This incident occurred in 1986. A second EO (EO ID 7926) near the proposed rail corridors was the Texas Indigo Snake (*Drymarchon melanurus erebennus*), which occurred along the Rio Grande River, approximately 3,000 feet from the proposed rail corridor. The Texas Indigo Snake is not a Federally Listed Threatened or Endangered species; however, it is designated as Threatened by the State of Texas. The sightings of the Texas Indigo Snake occurred between 1998 and 2002 and the species is capable of living on cultivated land, which lies between the Rio Grande River and the proposed rail corridor. There have been two earlier EOs (EO ID 5937 and EO ID 3087) for a snake known as the Speckled Racer (*Drymobius margaritiferus*), which is also a species designated by Texas as Threatened. These specimens were observed (and collected) in 1935 and 1982. The 1935 EO is located in the eastern portion of the proposed rail corridors.

Other rare animal species that could potentially exist within the study area include the Southern Yellow Bat (*Lasiurus ega*), the Black Spotted Newt (*Notophthalmus meridionalis*), the Mexican Tree Frog (Smilisca Baudinii), the Northern Cat-eyed Snake (Leptodeira septentrionalis septentrionalis), and the South Texas Siren (*Siren sp. 1*). The Southern Yellow Bat's potential presence (EO ID 6796) is based upon several collections during the 20th Century, but no specific occurrence date is known. It is a state Threatened species. The Black Spotted Newt (EO ID 1378) is a state Threatened species and extremely rare. The Mexican Tree Frog (EO ID 3594) is rare and threatened species in Texas, but considered secure in Mexico. The Northern Cat-eyed Snake (EO

ID 4888) was observed in the general region in 1927 and is state Threatened. The South Texas Siren (EO ID 3355) is a state Threatened reptile that was observed in the general area between 1950 and 1960. The one plant species of note is the Runyon's water-willow (*Justicia runyonii*). The Runyon's water-willow is a rare vascular plant that was observed north of the study area in 1922 (EO 5105).

Note that the NDD cannot be used for presence/absence determinations. Prior to the finalization of a rail corridor, the sponsoring agency should and will likely be required to enlist a qualified biologist to determine the presence or absence of these and any other species of concern. This effort should also include extensive coordination with all appropriate regulatory agencies, including the Texas Parks and Wildlife Department.

Noise and Vibration

The primary noise generators within the project area are the Brownsville Airport and vehicular traffic on SH 4 and local arterials and collectors. Possible residential sensitive receptors are located at scattered locations along the corridor alignments. Two non-residential sensitive noise receptors in the study area (defined as residences, hospitals, schools, parks, daycares, churches, etc.) are Browne Road Regional Park and a daycare facility located at the northeast corner of FM 511 and California Road. While it is not anticipated that the proposed rail corridor would carry sufficient traffic volumes significantly increase the ambient noise level, it is likely that future environmental studies will require the sponsoring agency to model the noise impacts of the proposed project. If the project is found to produce a significant increase in the ambient noise and vibration levels, abatement measures would be considered for incorporation into the project, subject to the completion of the project design, utility evaluation, and polling of adjacent property owners.

Hazardous Materials

An initial review of hazardous materials databases maintained by the Texas Commission on Environmental Quality (TCEQ) and the U.S. Environmental Protection Agency (EPA) was performed to determine if there were any known hazardous material sites in the project study area. It should be emphasized that this review was cursory and a more detailed examination of these databases should be undertaken as the project moves towards detailed planning and when preparing the project's environmental documentation.

During a field survey of the project area, no ground stains or stressed vegetation were observed, which would indicate that a hazardous material had been placed on the ground or was leaching from the subsurface. No sites on the National Priorities List (NPL) are located within 1.0 mile of the project's limits. A search of the hazardous materials databases on the EPA's website was conducted, which includes records from the TRI, CERCLIS and RCRA databases. There are no hazardous material generators or storage within the project area or immediately adjacent to it. A search of the TCEQ's Petroleum Storage Tank (PST) and Leaking Petroleum Storage Tank (LPST) databases found several

locations of note. A leaking petroleum storage tank is located at a convenience store (Dan's Quick Stop) at the address of 7878 Boca Chica Boulevard (SH 4). This facility is located on the southwest corner of the intersection of Boca Chica Boulevard and FM 511, but is not in close proximity to any of the proposed alternative corridors. There are two PSTs located within the project area. The first PST (The Village Hut) is located at 9510 Boca Chica Boulevard, at the southeast corner of its intersection with Oklahoma Avenue. The second PST (R & F Farms/Loop Farms Inc.) is located at 827 Oklahoma Avenue, which between Hockaday Street and Florida Road and could potentially be impacted by the alignment of Alternative 2. Two petroleum tank farms are located within a roughly 700-foot distance of the project's northern terminus. The proposed corridor would not threaten to displace or pass in close proximity to these facilities. Finally, a Municipal Solid Waste Site is located near the study area at a location approximately 2,000 feet east-northeast of the intersection of Oklahoma Road and Medford Avenue. This landfill is operated by the City of Brownsville on property owned by the Brownsville Navigation District. In close proximity, the City of Brownsville closed a landfill. Neither of these landfills (operating or closed) would be impacted by the proposed rail corridor alignments.

It should also be noted that the Port of Brownsville has not placed any dredged materials within the corridor. The Port's Dredge Material Placement Area #8 is approximately 3,200 feet west of the Port's 1,000-foot bridge corridor (within which all alignments of the rail corridor have been placed) and Dredge Material Placement Area #7 is approximately 2,700 feet from the eastern boundary of the bridge corridor

In addition to the identified hazardous materials sites in the study, there may be other sites that are not recorded, not listed in the databases reviewed for this overview, or inadvertently omitted. Any hazardous material sites, known or newly discovered, within the final rail corridor will need to be remediated according to all applicable federal and state laws, rules, and regulations.

Public Involvement

Although not required for a feasibility study, a public participation process was developed to maximize input and involvement from the public and stakeholders during the rail feasibility study. The first phase of the public participation process involved the formation of and meetings with a Rail Advisory Committee (RAC) to bring together key stakeholders in the community. The second phase of the public participation process involved a public meeting, which was used to present ideas to the public and receive feedback, particularly from local landowners.

Rail Advisory Committee (RAC)

The RAC was formed to bring together key stakeholders, who would be involved or directly impacted by the operations of a proposed rail corridor. The purpose of bringing these stakeholders together was to:

- Solicit technical expertise and professional knowledge;
- Identify issues and constraints related to the proposed project;

- Ensure that all relevant public entities were informed of the study; and
- Initiate a team mind set which would carry on after the study was completed.

The RAC consisted of representatives of the Port of Brownsville, the Brownsville/Padre Island International Airport, the Brownsville Economic Development Corporation, the Brownsville & Rio Grande International Railroad, and the Brownsville MPO policy board. The Rail Advisory Committee met for the first time on Wednesday, April 27, 2011, at the Port of Brownsville. In addition to the project team, the following stakeholders attended the meeting:

- Eduardo Campirano, Port Director, CEO, Port of Brownsville
- Donna Eymard, Deputy Port Director, Port of Brownsville
- Ariel Chavez, Director of Engineering Services, Port of Brownsville
- Steve Muschenheim, MPO Policy Board Member, U.S. Customs Broker, Operations and Sales Manager – Parker & Company
- Norma Torres, President and COO, Brownsville & Rio Grande International Railroad
- Clemente Rodriguez, Manger of Track Projects, Brownsville & Rio Grande International Railroad

The meeting was a starting point for discussion and coordination among the various entities, and covered topics related to potential routes, facilities planning, and safety concerns. Following the meeting, the majority of the RAC toured the study area, focusing on existing infrastructure at the port and the airport, and infrastructure impediments including drainage, canals, and waterways.

A second meeting of the RAC was held on Thursday, April 28, 2011 at the Brownsville/Padre International Airport. The same presentation was given at this meeting as at the Port meeting the previous day and similar topics were discussed. The following people were in attendance at the second meeting, but not at the first:

- Larry Brown, Director, Brownsville/Padre Island International Airport
- German Rico, Director of Business Development, Port of Brownsville

Following the meeting, Larry Brown led a tour of the airport facilities, and the participants observed the location of the airport's proposed runway expansion to 10,000 feet.

Public Meeting

The second phase of the public involvement process was a public meeting which was held at the Port of Brownsville's headquarters on September 28, 2011 at 6:30 pm. The meeting was announced to the general public and landowners in the project study area through various methods and media, which included:

- Letters were sent to over 200 addresses, based on their property's proximity to alignment alternatives, and East Loop public process mailing list;
- An announcement placed in the *Brownsville Herald* newspaper;
- An announcement was placed in the Brownsville MPO Newsletter; and
- An announcement placed in an e-mail newsletter sent to all City of Brownsville employees.

The purpose of the meeting was twofold. The first purpose was to inform the public about the study, its goals, progress, and timeline. Equally important, the second purpose of the meeting was to answer questions, receive feedback, acquire additional information about the study area, and to record the public's comments and concerns, particularly those of local landowners.

At the public meeting, handouts that showed the four alignment alternatives under consideration were provided at the sign-in table. Prior to the start of the meeting, attendees were provided opportunity to view maps displayed in the conference room. These maps included the four alignment alternatives for the rail at a large scale, a rail map of the region, and a map of human and environmental factors in the study area. Meeting attendees were also provided with refreshments.

Mr. Mark Lund, the Brownsville MPO director, opened the meeting by welcoming the attendees and explaining the MPO's structure and primary functions. Mr. Alfonso Vallejo was introduced and made available to provide translation for any Spanish speakers (other Spanish speaking members of the RAC also attended the meeting). Dr. Michael Bomba from Alliance Transportation Group, Inc. then gave a brief PowerPoint presentation outlining the purpose of the rail feasibility project, potential benefits of a rail connection, examples of successful multimodal facilities, specific attributes of the project, and issues that were being considered when assessing the proposed corridors. Mr. Larry Long of Wilson & Company, a railroad engineer who supervised the development of the four alignment alternatives, described the physical rail alignments, locations where the alignments diverge, and technical rationale for creating the alignments in their locations. Dr. Bomba concluded the presentation with information about the timeline for the project.

At the conclusion of the informational portion of the meeting, the floor was opened for comments and questions. The attendees' questions and comments covered topics from the effects of the proposed rail line on properties in the community, to specifics of alignment alternatives, to infrastructure, to other issues and concerns. Appendix B contains a complete list of questions and comments made during the public meeting.

Most of the attendees who spoke identified themselves as living on property parcels near the proposed rail alignments. Many of these residents were concerned that the rail alignment would traverse their property, affect its accessibility, or that frequent train trips would disturb their quality of life. Other questions and comments addressed specific issues about the alignments; notifications and communication between the MPO and the residents; or questions about the proposed infrastructure required for the project; and the anticipated frequency of service.

In responding to the attendees' comments, Mark Lund assured attendees that the Brownsville MPO aims for a high level of transparency during this project and invited anyone who was interested to meet directly with the MPO's staff to discuss issues related to individual properties. In addition to Mr. Lund's comments, Mr. Larry Brown, the Director of the Brownsville/Padre Island, responded to some questions and discussed the economic opportunities that the rail extension would bring. Likewise, Mr. Eduardo A. Campirano, Director of the Port of Brownsville, responded to questions regarding the reasons for the project and discussed the need for long term planning in order to be proactive rather than reactive regarding transportation and economic development issues in the area. Mr. Campirano also emphasized that the rail project is not imminent or even a certainty and that landowners should not expect offers to purchase their property in the near term. A summary of comments and questions from the public meeting is found below in Table 5.7.

Table 5.7: Summary of Comments Made during the Public Meeting for the Rail Feasibility Study

SUMMARY OF COMMENTS	NUMBER OF COMMENTORS
Effects of the project on property	5
Corridor alignments – Questions, new information, or suggestions for	4
Meeting notification and/or communication between residents and the	4
Proposed infrastructure /Anticipated frequency of service	3
Potential land acquisition process	2
Environmental impacts and how these would be assessed	2
Suggested alternate projects to the proposed project	2

At the conclusion of the meeting, the attendees were invited to stay and discuss specific issues or concerns. Study team members were available to answer attendees' questions and to help review large scale maps of the study area. Several attendees remained to look at the maps, examine specific alignments, and to make suggestions on how to realign alternatives. Some attendees drew their ideas on the maps and the study team used these maps for further analysis.

Interactions between the public and the study team did lead to substantive changes to the alignment alternatives. During the meeting, one attendee pointed out that the rail would impact fewer houses if it were moved from the west side of the canal to the east. This attendee stayed after the meeting and drew on a map to show his idea. Ultimately, the attendee's idea was incorporated into the revision of Alignments 1 and 3 that minimized these impacts.

Conclusions

While it is anticipated that the proposed rail corridor will not have a significant impact on the human or natural environment within the study area, the project's construction will require relocations and will create other impacts on the human or natural environment that could require mitigation. The proposed project will also require compliance with various federal and state environmental

regulations and laws. By engaging in an open dialogue with regulatory agencies, stakeholders, and affected parties early in the planning and environmental review process, the project's sponsoring agency can likely streamline the period of regulatory review and approval. Similarly, coordinating the environmental review process with the planning process is another effective means of streamlining the regulatory review process. Table 5.8 provides a list of potential regulatory issues that might be triggered by the construction of the proposed project. In addition to the issues identified on this list, there may be others that require a significant effort and mitigation to achieve environmental compliance.

Table 5.8: Potential Regulatory Issues Likely Triggered by Construction of the Rail Corridor and Recommendations to Streamline Environmental Compliance

REGULATORY ISSUE	POTENTIAL IMPACT	COMMENTS AND RECOMMENDATIONS
Environmental Justice	Disproportionate impact on minority and low-income populations	Involve the affected low-income and minority population in the planning process and incorporate their suggestions for improvements into the project, based upon their reasonableness and appropriateness.
Limited English Proficiency Population (LEP)	Disproportionate impact on LEP	Involve LEP by providing bilingual (Spanish) documents and translators at public meetings.
Parklands – Section 4(f)	Impacts to undeveloped parkland	The proposed project impacts land owned by the Cameron County Park System that is planned for future development as. Begin coordination with the Cameron County as early as reasonable, so that the preparation and approval of the Section 4(f) document are not unnecessarily delayed. Identify potential mitigation properties in the area. Negotiate options to purchase or first refusal rights for potential mitigation properties.
Section 401 of the Clean Water Act	Construction of the rail corridor may require temporary or permanent fill material into jurisdictional waters of the United States, including wetlands.	Minimize the project's impacts on jurisdictional waters of the U.S. during the preliminary design phase. Begin early coordination for a United States Army Corps of Engineers (USACE) Section 404 Permit and Section 401 Certification.
Executive Order 11990 Wetlands	Proposed rail corridor crosses water bodies that may be designated wetlands	If a land bank of wetland mitigation properties is not available, identify potential mitigation properties and negotiate options to purchase or first refusal rights.
Section 303(d) of the Clean Water Act	Runoff from the project may drain into an impaired stream segment	Identify site appropriate Best Management Practices (BMP) to minimize runoff entering the impaired stream segment.
Endangered and Threatened Species	Proposed alignments near potential habitat for the Federally Endangered jaguarundi	Begin early coordination with Texas Parks and Wildlife to minimize and mitigate the impacts on this species in the project study area.

SECTION 6 - CONCLUSIONS AND RECOMMENDATIONS

This study has explored the initial steps for transforming the city of Brownsville and its environs into a region that leverages its existing and future transportation resources to build a multimodal freight transportation hub that advances the region's economy and provides desirable employment opportunities for its workforce. Despite the massive quantities of cargo that travels through and within Cameron County on a regular basis, very little value is added by locally-based firms during these movements. This is especially relevant because Cameron County's manufacturing sector has been in decline over the past decade and it continues to transition further oriented towards retail and consumer service industries. If this trend continues, unabated, Cameron County's economy risks becoming even less economically diverse and concentrated into industries that do not encourage local-based firms to generate consumptive demand, profits, and to attract investment from outside of the region. Given Cameron County's relatively low level of per capita wealth, this trend could prevent the regional economy from escaping its past underperformance.

On the other hand, the presence of significant volumes of international freight in Cameron County is untapped potential. Local government should pursue policies and sponsor infrastructure improvements that will encourage firms within region to become part of the international supply chain and to provide value added services that are currently being provided elsewhere. Relevant industries for Cameron County include the automotive industry, as well as the electronics, electrical devices, machinery, and appliance manufacturing industries. Within some industries, the flow of goods back and forth across the border occurs more than once, offering multiple opportunities to provide value-added services within the same manufacturing process.

The proposed rail corridor is one means for Cameron County to pursue these new activities. To advance the effort, four viable alternative alignments were prepared by the MPO's consultant rail engineer, and they were vetted by the project team, stakeholders, and the general public through a series of draft alignments. The process began with a preliminary environmental constraint analysis, followed by application of basic rail engineering criteria to produce the initial set of alternate alignments. The alignments then moved through a public involvement process and a more rigorous

environmental analysis to vet and suggest adjustments to the alignments as appropriate. The finalized alignments were then analyzed to determine the impact they would have on human and natural environments.

The estimated cost of constructing the rail spur was determined to be substantial. Cost estimates for all four alignments were very similar and estimated at approximately $50 million, plus right-of-way acquisition costs of several million dollars. However, the project cost estimate also included the cost of $18 million for an optional grade separation at the alignment's intersection with Loop 4/Boca Chica Boulevard. Given current traffic volumes on Loop 4 and the anticipated rail traffic, this grade separation would not need to be built as part of the initial project. The $50 million price tag also included a 30 percent contingency to the construction cost to account for environmental mitigation and the fluctuating costs of materials and labor. While it is possible that the actual cost of the project could reach or exceed the estimated cost, it is more likely that the project could be built for less.

The economic analysis section of this study found that attracting a major manufacturer along the rail spur could generate a significant number of new jobs and boost regional economic output. However, the project also creates opportunities for the location of smaller users, each of which would contribute positively towards the local economy and contribute revenue to public coffers. Depending upon the type and number of facilities that ultimately locate along the rail corridor, there is a reasonable possibility that the initial public investment would generate sufficient tax revenue to pay for itself over the life of the project, although the return on investment would likely to require a much longer period of repayment than is typical for most private-sector investment.

Recommendations

The sections below suggest several recommendations for the sponsoring agency or agencies to pursue, if they wish to advance development of the proposed project. These recommendations are not necessarily presented in any order of importance and may be pursued simultaneously.

Use Planning and Proactive Zoning to Avoid Future Land Use Conflicts

To avoid disrupting the planned land uses or infrastructure that may one day be located within the right-of-way of the proposed rail spur, the City of Brownsville should adopt zoning regulations around the proposed alignments with the assumption that the rail line will be constructed at some point in the medium- to long-term. Of particular importance is to avoid building new structures, roads, or utility lines, which would need to be relocated or demolished when the rail is constructed. It is recommended that the Brownsville MPO include this corridor into its next Metropolitan Transportation Plan (MTP), so that it becomes part of the permanent public record and so that local agencies at the municipal and county level can permit future projects or pursue improvements that do not conflict with the existing rail corridors.

Add the Proposed Rail Alignments to the Brownsville MPO's Thoroughfare Plan

Under the subdivision ordinance for the City of Brownsville, the City's Thoroughfare Plan, which follows the MPO's Thoroughfare Plan, provides the legal basis for the acquisition of right-of-way through filed plats. Therefore, an early step in the implementation process is to add the proposed rail line to the MPO/City Thoroughfare Plan.

In upcoming months, the Brownsville MPO, in cooperation with the City of Brownsville, will select the preferred route alignment. After adequate provision of public notice has been made, this alignment should be adopted and formally included in the MPO/City Thoroughfare Plan map. After this MPO Thoroughfare Plan Amendment has been adopted, developers of plats within the subject areas will be required to dedicate sufficient rail right-of-way as a condition of any subdivision plat to be filed.

Purchase Potentially Impacted Parcels from Willing Sellers

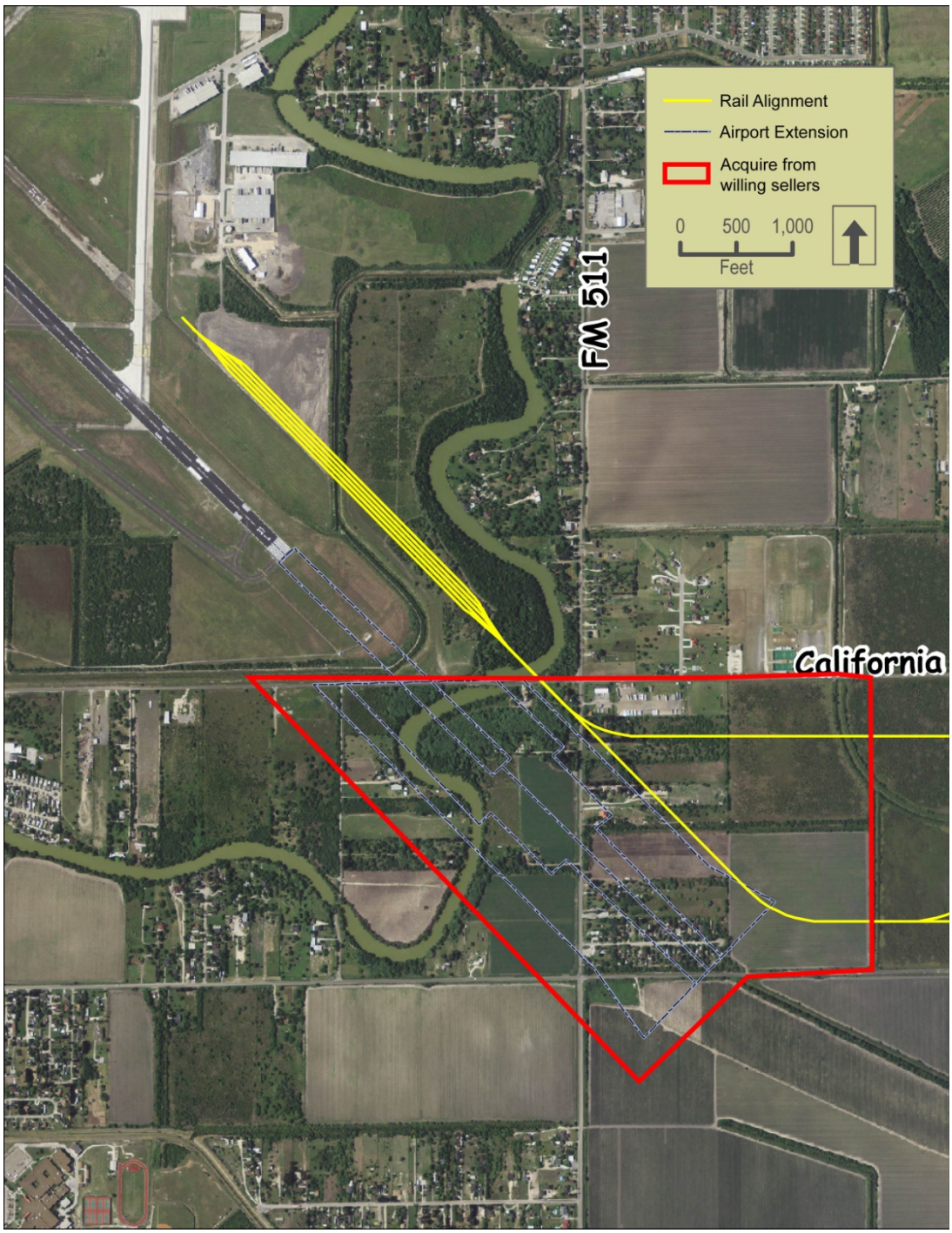
For implementation of the project, it is essential that the proper right-of-way be acquired. There are two recommended methods for acquisition of right-of-way:

- Acquisition through subdivision and dedication; and
- Purchase of potentially impacted parcels from willing sellers.

An exception to this subdivision requirement would apply to residential parcels located in, or near the outlined box in Figure 6.1. This area would not be subject to subdivision requirements due to the presence of existing residences. Within this portion of the rail corridor, acquisition of parcels would be accomplished through purchase from willing sellers. An outline box similar to the one shown in Figure 6.1 should be included in the MPO/City Thoroughfare Plan to indicate land areas that the sponsoring agency should purchase from willing sellers. A note with the outlined box may read: "Rail right-of-way within this area is to be acquired from willing sellers."

If a major employer with need for rail service is established within the study area, a more active approach to property acquisition may be needed. Eminent domain should be avoided and used only as a last resort. If a major employer is not established, the subdivision process can set aside portions of the rail corridor, with the understanding that future purchases of right-of-way will be needed for the remainder of the corridor

Figure 6.1: Area in Which the Project Sponsor Should Consider Purchasing Properties from Willing Sellers



Establish a Joint Public Authority to Develop and Operate the Rail Corridor

The proposed project involves multiple stakeholders with legitimate roles in the development and operation of the proposed rail spur. The primary stakeholders on this project are the Brownsville Metropolitan Planning Organization, the Port of Brownsville, Brownsville-South Padre Island International Airport, and the Brownsville & Rio Grande International Railroad. The Port of Brownsville and the Brownsville & Rio Grande International Railroad are authorized by the Brownsville Navigation District, which is itself an entity of the State of Texas. Within these two subunits, each has its own administrative body and board. The Brownsville Airport and the Brownsville MPO operate as departments of the City of Brownsville and must answer to the City of Brownsville's City Council. To ensure that the project continues to move forward smoothly and to minimize the potential for future disagreements, a joint authority should be established which will ensure that these entities continue to be fairly represented, as they have been in the earlier stages in the process. The authority should hold regular meetings to discuss progress of the project and to distribute action items. These meetings should take place at least biannually and will add a level of accountability for all entities, while promoting full ownership and participation in the project.

Identify Mitigation Properties for Wetlands and Parkland

It is highly likely that the preferred rail corridor will impact wetlands in one or more locations within the project study area. The required mitigation is typically ten acres of mitigation land for every acre of wetlands affected. If the project's sponsoring agency or agencies do not already have a mitigation bank of wetland properties, efforts should begin to identify potential mitigation properties for purchase so that this issue does not delay the approval of the project's environmental review. Likewise, regardless of the alignment chosen, the project will impact public parkland, which will require preparation of Section 4(f) documentation and the purchase of mitigation property. The sponsoring agency or agencies should begin coordination with appropriate agencies and identify and purchase mitigation property at the earliest appropriate time.

Identify Future Funding Sources for Railroad Construction

Texas's comprehensive plan for rail, the Texas Rail Plan was approved in 2010. Elements of the plan are either financed through the general fund or obtain their own grant or loan financing. An important step for the project's sponsor(s) will be to get the Brownsville Rail project into the next update of the Texas Rail plan and to pursue federal and state funding sources for construction.

Given the projects significant cost, finding the funds for construction will be a significant challenge for this project. Outside of a local government (or more than one local government) selling bonds for this project or a guaranteed large-scale, long-term customer along the rail spur, acquiring funds for this project from the private sector will be difficult. Similarly, there are a number of public funding sources that could be used for this project at a federal, state, and local level, but the competition for these funds is fierce. In reality, the sponsoring agency will probably need to depend on a combination of public bonds that are, hopefully, bundled with funds from the private sector and government grants. The sections below provide brief summaries of some government programs that might be accessed to pay for rail construction.

Federal Rail Programs

Freight Intermodal Distribution Pilot Grant Program - This program provides grants to states to reduce congestion, increase safety, and support the development of intermodal freight facilities and inland port initiatives. It provides capital funds for freight distribution and infrastructure at intermodal freight facilities. To receive funding, states should submit applications to the Federal Highway Administration (FHWA), answering these questions:

- How the project will help relieve congestion, improve transportation safety, facilitate international trade, and encourage public-private partnerships.
- Ways in which the project will establish or expand intermodal facilities that encourage the development of inland freight distribution centers.

Community Facilities Program

The U.S. Department of Agriculture provides these funds for programs which develop community facilities in rural areas. Eligible rail facilities include rail spurs serving industrial parks, yards, sidings and mainline tracks; these facilities can be part of a community development strategy which provides jobs and infrastructure. This grant is more likely to be awarded when the project has received other loans and grant awards.

Railroad Rehabilitation and Improvement Financing (RRIF) Program

RRIF provides direct loans and loan guarantees from the federal government to finance railroad infrastructure. Funding may be used to:

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings and shops;
- Refinance outstanding debt incurred for the purposes listed above; and
- Develop or establish new intermodal or railroad facilities.

Loans made available under this program may fund up to 100% of project cost and repayment periods are up to 35 years. These loans may be applied for by state and local governments, railroads, joint ventures that include one railroad, and limited option freight shippers with plans to construct a new rail connection.

U.S. Department of Commerce – Economic Development Administration Funds

This program provides funding to rail project that promote job creation or retention in distressed areas. The projects must demonstrate that they provide relief from economic distress. In severely depressed areas, the program provides up 80 percent of the project costs and rail spurs and sidings are eligible.

State and Local Programs

Rural Rail Districts

Texas' Rural Rail Districts have bonding authority and the power of eminent domain to build rail infrastructure, but they do not have taxing authority. Loans undertaken to build rail infrastructure are repaid from revenues generated by a project's users. At present, Cameron County does not have a Rural Rail District, although former county officials have considered creating one in the past.

Texas Economic Development Bank

The Texas Economic Development Bank provides financing and tax incentives to businesses, communities, and lending institutions in the state. By offering these services, the bank makes an effort to attract and retain jobs. Program goals of the bank include providing tax incentives to communities for businesses that are expanding or relocating to Texas. The bank aims to provide incentives to lenders to enable lenders to:

- Make low interest loans to qualifying businesses;
- Provide bond-based long-term debt financing for capital investment in public entities, in large commercial and industrial projects, and for other economic development purposes
- Link businesses searching for investment capital with potential investors; and
- Inform institutional lenders of economic development plans and encourage lenders to support those plans in their marketing and investment strategies.

Tax Increment Reinvestment Zone (TIRZ)

A TIRZ is a limited means of funding transportation improvements that operates like a Tax Increment Finance (TIF) zone. A municipality or county may create a TIRZ under Chapter 311 of the Texas Tax Code. Because the Texas Constitution only permits municipalities to issue bonds, this will only be possible within the portion of the study area that are within incorporated areas.

State Revolving Loans

States may use federal funds to jump start a revolving loan program on behalf of a rail project. Within this framework, funds from federal programs such as the Local Rail Freight Assistance program are loaned to railroads below the prime interest rate. Payments on the loans are used to leverage additional loans.

Private Activity Bonds

If any aspect of the project is taken on by a private firm or joint venture, it is possible for tax-exempt private activity bonds to be issued. These bonds would cover aspects of the project which are paid for by the private sector, such as freight transfer facilities.

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APPENDIX A | Sources

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APPENDIX B | Threatened and Endangered Species

FEDERAL AND STATE THREATENED AND ENDANGERED SPECIES IN CAMERON COUNTY, TEXAS

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Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas

AMPHIBIANS		FEDERAL STATUS	STATE STATUS
Black-spotted newt	*Notophthalmus meridionalis*		T
can be found in wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods; Gulf Coastal Plain south of the San Antonio River			
Mexican treefrog	*Smilisca baudinii*		T
subtropical region of extreme southern Texas; breeds May-October coinciding with rainfall, eggs laid in temporary rain pools			
Sheep frog	*Hypopachus variolosus*		T
predominantly grassland and savanna; moist sites in arid areas			
South Texas siren (large form)	*Siren sp 1*		T
wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods, but does require some moisture to remain; southern Texas south of Balcones Escarpment; breeds February-June			
White-lipped frog	*Leptodactylus fragilis*		T
grasslands, cultivated fields, roadside ditches, and a wide variety of other habitats; often hides under rocks or in burrows under clumps of grass; species requirements incompatible with widespread habitat alteration and pesticide use in south Texas			
BIRDS		**FEDERAL STATUS**	**STATE STATUS**
American Peregrine Falcon	*Falco peregrinus anatum*	DL	T
year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.			
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	
migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.			
Brown Pelican	*Pelecanus occidentalis*	DL	E
largely coastal and near shore areas, where it roosts and nests on islands and spoil banks			
Cactus Ferruginous Pygmy-Owl	*Glaucidium brasilianum cactorum*		T
riparian trees, brush, palm, and mesquite thickets; during day also roosts in small caves and recesses on slopes of low hills; breeding April to June			

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

BIRDS (continued)		FEDERAL STATUS	STATE STATUS
Common Black-Hawk	*Buteogallus anthracinus*		T
cottonwood-lined rivers and streams; willow tree groves on the lower Rio Grande floodplain; formerly bred in south Texas			
Eskimo Curlew	*Numenius borealis*	LE	E
historic; nonbreeding: grasslands, pastures, plowed fields, and less frequently, marshes and mudflats			
Gray Hawk	*Asturina nitida*		T
locally and irregularly along U.S.-Mexico border; mature riparian woodlands and nearby semiarid mesquite and scrub grasslands; breeding range formerly extended north to southernmost Rio Grande floodplain of Texas			
Interior Least Tern	*Sterna antillarum athalassos*	LE	E
subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony			
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	LE	E
open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species			
Northern Beardless-Tyrannulet	*Camptostoma imberbe*		T
mesquite woodlands; near Rio Grande frequents cottonwood, willow, elm, and great leadtree; breeding April to July			
Peregrine Falcon	*Falco peregrinus*	DL	T
both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.			
Piping Plover	*Charadrius melodus*	LT	T
wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats			
Reddish Egret	*Egretta rufescens*		T
resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear			
Rose-throated Becard	*Pachyramphus aglaiae*		T
riparian trees, woodlands, open forest, scrub, and mangroves; breeding April to July			

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

BIRDS (Continued)		FEDERAL STATUS	STATE STATUS
Sooty Tern	*Sterna fuscata*		T
predominately 'on the wing'; does not dive, but snatches small fish and squid with bill as it flies or hovers over water; breeding April-July			
Sprague's Pipit	*Anthus spragueii*	C	
only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.			
Texas Botteri's Sparrow	*Aimophila botterii texana*		T
grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite, or yucca; nests on ground of low clump of grasses			
Tropical Parula	*Parula pitiayumi*		T
dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas; breeding April to July			
White-faced Ibis	*Plegadis chihi*		T
prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats			
White-tailed Hawk	*Buteo albicaudatus*		T
near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May			
Wood Stork	*Mycteria americana*		T
forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960			
Zone-tailed Hawk	*Buteo albonotatus*		T
arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions			
FISHES		**FEDERAL STATUS**	**STATE STATUS**
Mexican goby	*Ctenogobius claytonii*		T
Southern coastal area; brackish and freshwater coastal streams			
Opossum pipefish	*Microphis brachyurus*		T
brooding adults found in fresh or low salinity waters and young move or are carried into more saline waters after birth; southern coastal areas			

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

FISHES (continued)		FEDERAL STATUS	STATE STATUS	FISHES
Rio Grande silvery minnow	*Hybognathus amarus*		LE	E
extirpated; historically Rio Grande and Pecos River systems and canals; reintroduced in Big Bend area; pools and backwaters of medium to large streams with low or moderate gradient in mud, sand, or gravel bottom; ingests mud and bottom ooze for algae and other organic matter; probably spawns on silt substrates of quiet coves				
River goby	*Awaous banana*			T
Southern coastal waters; clear water with slow to moderate current, sandy or hard bottom, and little or no vegetation; also enters brackish and ocean waters				
Smalltooth sawfish	*Pristis pectinata*		LE	E
different life history stages have different patterns of habitat use; young found very close to shore in muddy and sandy bottoms, seldom descending to depths greater than 32 ft (10 m); in sheltered bays, on shallow banks, and in estuaries or river mouths; adult sawfish are encountered in various habitat types (mangrove, reef, seagrass, and coral), in varying salinity regimes and temperatures, and at various water depths, feed on a variety of fish species and crustaceans				
MAMMALS		**FEDERAL STATUS**	**STATE STATUS**	
Coues' rice rat	*Oryzomys couesi*			T
cattail-bulrush marsh with shallower zone of aquatic grasses near the shoreline; shade trees around the shoreline are important features; prefers salt and freshwater, as well as grassy areas near water; breeds April-August				
Jaguar	*Panthera onca*		LE	E
extirpated; dense chaparral; no reliable TX sightings since 1952				
Jaguarundi	*Herpailurus yaguarondi*		LE	E
thick brushlands, near water favored; 60 to 75 day gestation, young born sometimes twice per year in March and August, elsewhere the beginning of the rainy season and end of the dry season				
Ocelot	*Leopardus pardalis*		LE	E
dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November				
Southern yellow bat	*Lasiurus ega*			T
associated with trees, such as palm trees (Sabal mexicana) in Brownsville, which provide them with daytime roosts; insectivorous; breeding in late winter				
West Indian manatee	*Trichechus manatus*		LE	E
Gulf and bay system; opportunistic, aquatic herbivore				

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

MAMMALS (continued)		FEDERAL STATUS	STATE STATUS
White-nosed coati	*Nasua narica*		T
woodlands, riparian corridors and canyons; most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade			
MOLLUSKS		**FEDERAL STATUS**	**STATE STATUS**
False spike mussel	*Quadrula mitchelli*		T
possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins			
Salina mucket	*Potamilus metnecktayi*		T
lotic waters; submerged soft sediment (clay and silt) along river bank; other habitat requirements are poorly understood; Rio Grande Basin			
Texas hornshell	*Popenaias popeii*	C	T
both ends of narrow shallow runs over bedrock, in areas where small-grained materials collect in crevices, along river banks, and at the base of boulders; not known from impoundments; Rio Grande Basin and several rivers in Mexico			
REPTILES		**FEDERAL STATUS**	**STATE STATUS**
Atlantic hawksbill sea turtle	*Eretmochelys imbricata*	LE	E
Gulf and bay system, warm shallow waters especially in rocky marine environments, such as coral reefs and jetties, juveniles found in floating mats of sea plants; feed on sponges, jellyfish, sea urchins, molluscs, and crustaceans, nests April through November			
Black-striped snake	*Coniophanes imperialis*		T
extreme south Texas; semi-arid coastal plain, warm, moist micro-habitats and sandy soils; proficient burrower; eggs laid April-June			
Green sea turtle	*Chelonia mydas*	LT	T
Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches; adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds; nesting behavior extends from March to October, with peak activity in May and June			
Kemp's Ridley sea turtle	*Lepidochelys kempii*	LE	E
Gulf and bay system, adults stay within the shallow waters of the Gulf of Mexico; feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August			
Leatherback sea turtle	*Dermochelys coriacea*	LE	E
Gulf and bay systems, and widest ranging open water reptile; omnivorous, shows a preference for jellyfish; in the US portion of their western Atlantic nesting territories, nesting season ranges from March to August			

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

REPTILES (continued)		FEDERAL STATUS	STATE STATUS
Loggerhead sea turtle	*Caretta caretta*	LT	T
Gulf and bay system primarily for juveniles, adults are most pelagic of the sea turtles; omnivorous, shows a preference for mollusks, crustaceans, and coral; nests from April through November			
Northern cat-eyed snake	*Leptodeira septentrionalis septentrionalis*		T
Gulf Coastal Plain south of the Nueces River; thorn brush woodland; dense thickets bordering ponds and streams; semi-arboreal; nocturnal			
Speckled racer	*Drymobius margaritiferus*		T
extreme south Texas; dense thickets near water, Texas palm groves, riparian woodlands; often in areas with much vegetation litter on ground; breeds April-August			
Texas horned lizard	*Phrynosoma cornutum*		T
open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September			
Texas indigo snake	*Drymarchon melanurus erebennus*		T
Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter			
Texas scarlet snake	*Cemophora coccinea lineri*		T
mixed hardwood scrub on sandy soils; feeds on reptile eggs; semi-fossorial; active April-September			
Texas tortoise	*Gopherus berlandieri*		T
open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November			
PLANTS		Federal Status	State Status
South Texas ambrosia	*Ambrosia cheiranthifolia*	LE	E
grasslands and mesquite-dominated shrublands on various soils ranging from heavy clays to lighter textured sandy loams, mostly over the Beaumont Formation on the Coastal Plain; in modified unplowed sites such as railroad and highway right-of-ways, cemeteries, mowed fields, erosional areas along small creeks; flowering July-November			
Star cactus	*Astrophytum asterias*	LE	E
gravelly clays or loams, possibly of the Catarina Series (deep, droughty, saline clays), over the Catahoula and Frio formations, on gentle slopes and flats in sparsely vegetated openings between shrub thickets within mesquite grasslands or mesquite-blackbrush thorn shrublands; plants sink into or below ground during dry periods; flowering from mid March-May, may also flower in warmer months after sufficient rainfall, flowers most reliably in early April; fruiting mid April-June			

Table A-1: Federal and State Threatened and Endangered Species Located in Cameron County, Texas (Continued)

PLANTS (continued)		Federal Status	State Status
Texas ayenia	*Ayenia limitaris*	LE	E
Subtropical thorn woodland or tall shrubland on loamy soils of the Rio Grande Delta; known site soils include well-drained, calcareous, sandy clay loam (Hidalgo Series) and neutral to moderately alkaline, fine sandy loam (Willacy Series); also under or among taller shrubs in thorn woodland/thorn shrubland; flowering throughout the year with sufficient rainfall			

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