Regional Parkway

CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

Regional Parkway Mobility Corridor Feasibility Study

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1. Introduction

The Corpus Christi Metropolitan Planning Organization (CCMPO), City of Corpus Christi, Nueces County and San Patricio County have sponsored efforts to conduct a study to determine whether a new roadway is needed to alleviate congestion, provide an alternate route in portions of Nueces and San Patricio Counties, and to plan for forecasted growth in the region. The study focused on the feasibility of what has become known as the Regional Parkway Mobility Corridor (RPMC). The study has been guided by a Project Coordinating Committee (PCC) consisting of members from each of the sponsoring entities, as well as, members from the Texas Department of Transportation (TxDOT). Members of the PCC were briefed at each study milestone during the alternatives analyses and provided direction to the study team. Additionally, study milestones and developments were shared with the Corpus Christi Regional Transit Authority (CCRTA) and Federal Highway Administration (FHWA). The study area for the RPMC is comprised of approximately 275,000 acres. The proposed RPMC is anticipated to be predominately on new location; however there is opportunity to explore use of existing public right-of-way during alignment selection. The proposed RPMC facility is proposed as a limited access, multi-lane roadway consisting of a raised center median, shoulders, bicycle, pedestrian, and multimodal accommodation. A parkway facility is the best suited to support these characteristics. Refer to **Figure 1-1** for a rendered image of the parkway concept.

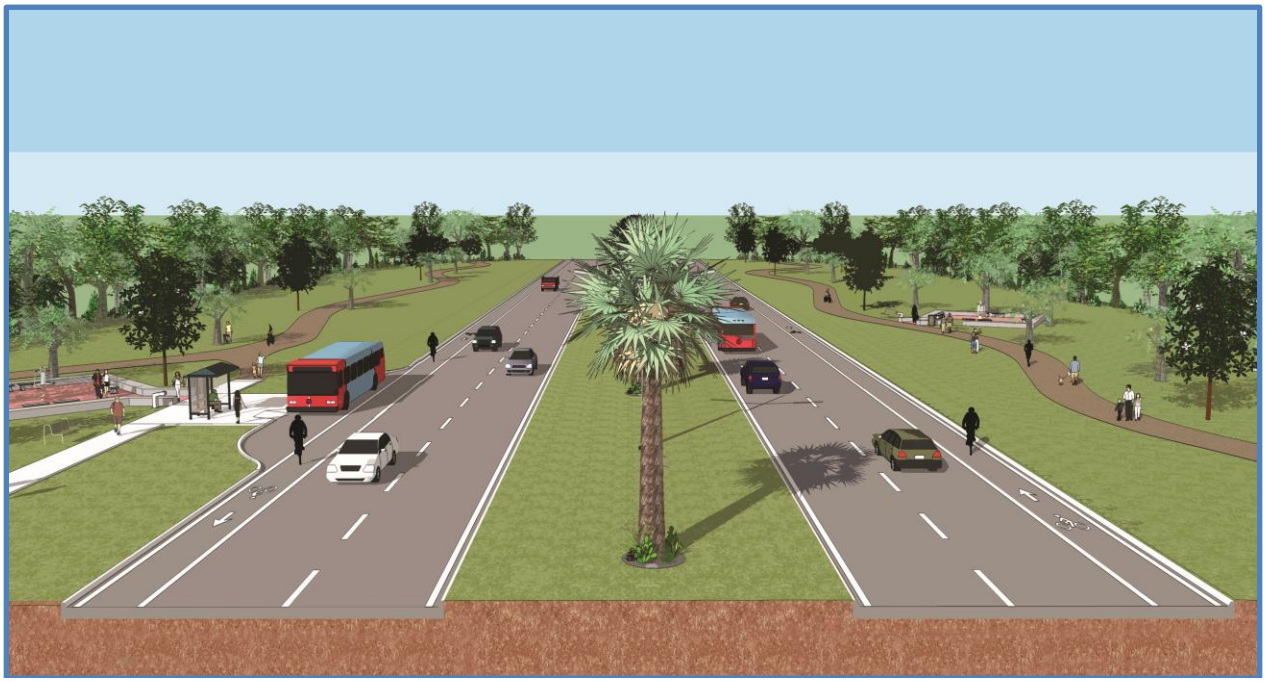


Figure 1-1: Rendering of the Parkway Concept

1.1. Previous Studies

Previous studies of the need for enhanced mobility have been conducted; however, they were focused on the south side of Corpus Christi. The *South Loop Transportation Study* from October of 1999 recommended an outer loop be constructed within San Patricio and Nueces Counties to alleviate anticipated congestion based on expected growth and inadequate existing infrastructure. Some of the key issues noted in this report were:

- Increasing congestion on the State Highway (SH) 358 and on arterials crossing Interstate Highway (IH) 37
- SH 358 as the only major highway connecting various parts of the City of Corpus Christi for people who live on the south side and work either downtown, at Corpus Christi Naval Air Station (NAS), at area refineries, or major places of employment in the area
- Insufficient right-of-way (ROW) for improving various arterials and SH 358
- Emergency evacuation issues

The 1999 study also summarized expected population growth patterns along with projected traffic volumes within the study region. These findings estimated growth to occur south of Oso Creek and in areas adjacent to Farm-to-Market (FM) 624. The final recommendation identified a corridor from United States (US) 77 north of Odem, crossing the Joe Fulton International Corridor towards the south via Carbon Plant Road, and extending towards SH 286. Also, an additional Laguna Madre crossing was recommended, which would extend the loop to North Padre Island. The findings of the 1999 study coincide and are still relevant to the RPMC. In addition, other recent studies have been performed to initiate implementation of IH 69 through portions of Nueces and Kleberg Counties. IH 69 is currently proposed along the existing alignment of US 77 within the RPMC study area and would be considered in future phases of the RPMC analyses.

1.2. Need and Purpose

Within Nueces County future traffic volumes along existing roadways including segments of US 77, SH 44 and SH 286, are anticipated to increase substantially by 2035. In addition, the Texas State Data Center anticipates a 51 percent increase in population within the study area by 2040 which would result in increased traffic congestion and safety issues.

On North Padre Island, the projected growth of flood-prone and vulnerable residential communities and vacation sites on the island underscores the need for a more efficient evacuation route which would be provided by an additional crossing of the Laguna Madre. Within the northern portion of Nueces County current bridge structures over the Nueces River are subject to flooding, and a new structure would improve crossing capabilities during hazardous situations or a flooding event.

For many years, there has been discussion about the need for an alternate major transportation route within Nueces County to address the expanding development in the northwest to southern part of the County and the resulting traffic issues. This route would also potentially provide connections to other roadway facilities that serve or are proposed to serve international trade, port facilities, and rail initiatives in addition to improving the safety of drivers and pedestrians within the area. To meet these and other transportation needs such as reduction of traffic congestion, the RPMC is proposed to be developed in order to complement and enhance mobility in the Corpus Christi, Nueces County and San Patricio County areas. The proposed RPMC is included as a priority corridor within the region's Metropolitan Transportation Plan (MTP) which extends through the year 2035. Improvements may include proposed modifications to connecting facilities such as SH 286, SH 358, IH 37, US 77, PR 22, SH 361, SH 357 (Rodd Field Road), and Nueces County Road (CR) 52. In addition, a potential connection to North Padre Island to aid in emergency evacuation and a new or improved crossing of the Nueces River to mitigate flooding were added to the focus of this study.

The PCC and area stakeholders, TxDOT and the CCMPO have identified the following purposes as those to be addressed by the proposed RPMC:

- Reduce Congestion and Facilitate Regional Mobility, Connectivity and System Linkages
- Facilitate Potential Economic and Population Growth and Address Safety Issues
- Provide Alternate Hurricane Evacuation Route

Reduce Congestion and Facilitate Regional Mobility, Connectivity and System Linkages

The proposed RPMC would provide alternate routes and connections to existing highways, freeways and roadways. The facility will provide direct connections to SH 286, IH 37 and US 77

traffic to/from Corpus Christi, while alleviating congestion issues along SH 358 and FM 624 by providing an alternate route. Enhanced mobility and connectivity to the northern portion of the study area may also reduce congestion caused by increased truck traffic resulting from developing oil field activity. In addition, a proposed route would improve system linkages to the future planned IH 69 facility providing relief for the anticipated congestion and increased traffic resulting from this development. The proposed project would also improve connectivity by supplementing the existing crossings of the Nueces River and Laguna Madre.

Facilitate Potential Growth and Address Operational Safety Issues

The RPMC would provide an efficient connection to key developments supporting economic development activities. By allowing connections to SH 286, SH 357 (Saratoga Boulevard), Business 286 and FM 43, the RPMC will serve as an integral part in creating economic development opportunities by providing the infrastructure needed to access and support land development and regional growth. In addition, because the proposed RPMC is anticipated to be a limited access facility, ingress/egress conflicts would be reduced and the growth associated with the RPMC would be controlled.

Provide Alternate Hurricane Evacuation Routes

Additional hurricane evacuation route(s) would be provided by including additional bridge structures to serve Padre /Mustang Islands. Evacuating traffic could access alternate routes, such as SH 44 toward Alice and westward, more easily without having to use SH 358 or IH 37.

2. Alternative Analysis Process

The key objective to performing the alternative analysis was to start with the Universe of Alternatives and use a screening methodology to analyze and eliminate alternatives that did not meet the need and purpose of the project. A study area was first defined based on a review of previous studies, need and purpose, and feedback from the PCC. The following procedural steps were followed in establishing a Reasonable Alternative Corridor.

- Study area estimated within the region
- Universe of Alternatives derived using the Alignment Alternatives Research Tool (AART)

- Conceptual Alternatives (10) were chosen based on environmental constraints
- Viable Alternatives (5) were derived from the Conceptual (10) based on scoring criteria
- Reasonable Alternative (1) was derived from the Viable (5) based on scoring criteria

This alternative analysis process is outlined in detail in the following sections.

2.1. Universe of Alternatives

The Universe of Alternatives was established for the RPMC through identification of key intersecting points that met the need and purpose within the previously defined study area. Based on this initial selection of points and application of existing environmental constraints the AART was utilized to screen the Universe of Alternatives for fatal flaws. [AART is a planning level Geographic Information System (GIS) based corridor analysis tool for evaluating potential new corridors. It can be used to identify corridors of least environmental impact between two or more points and can also be used to quantify environmental impacts of corridor alternatives. A description of AART including a discussion of the methodology utilized in this study is provided in **Appendix A**.]

Throughout the process of evaluating the Universe of Alternatives meetings were held with the PCC to discuss the study area, environmental constraints, their proposed weighting within the AART database, and initial start and end points, as well as waypoints (points in between) for the generation of conceptual alternatives. The locations of these points are identified in **Figure 2-1**. This set of start points, end points, and waypoints were utilized in development of the Universe of Alternatives, which are shown in **Figure 2-2**. For each combination of points, AART identified the paths of the least environmental impacts through the study area resulting in the Conceptual Alternatives.



Figure 2-1: Start and End Points for Universe of Alternatives

Note: S-Start Point, E-End Point, W-Waypoint

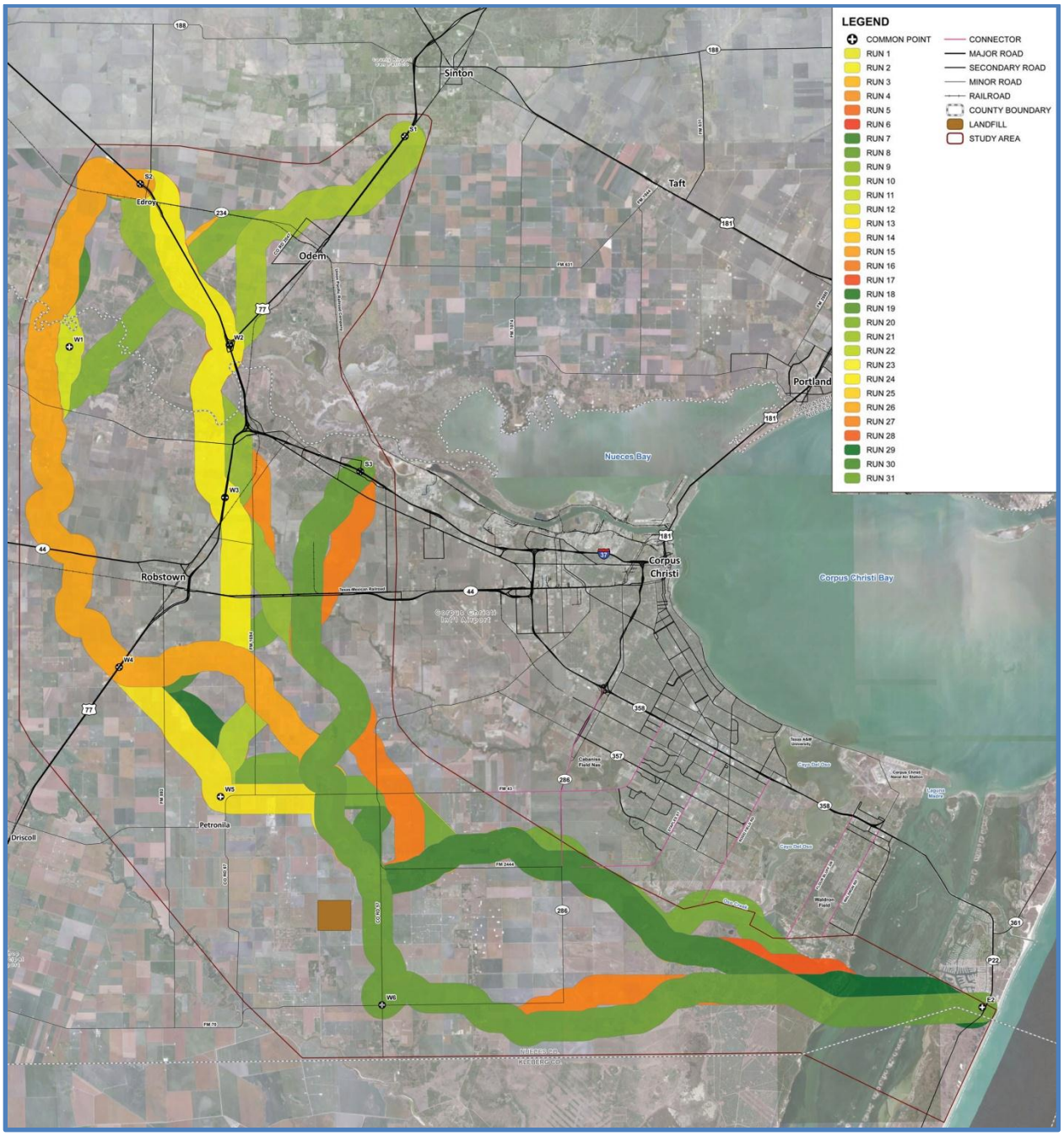


Figure 2-2: Universe of Alternatives

2.2. Description of Conceptual Alternatives

As a result of preliminary evaluations and screenings to the Universe of Alternatives, ten (10) conceptual alternatives were chosen to undergo further evaluation. These conceptual corridors are shown in **Figure 2-3** and discussed in more detail in the following sections.

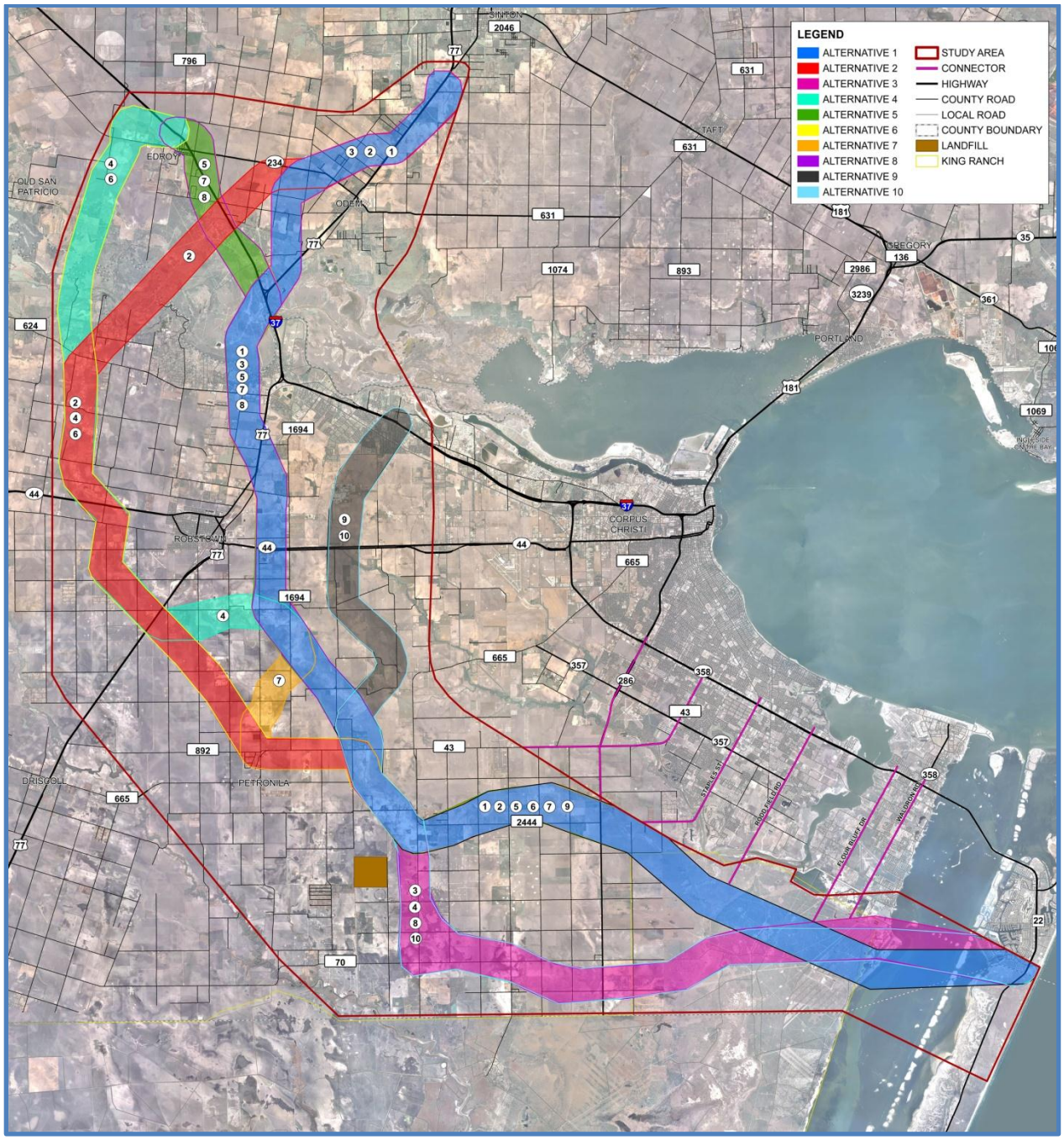


Figure 2-3: Conceptual Alternatives for Evaluation

Alternative 1

Alternative 1 begins in the north approximately 2 miles south of the city of Sinton. From there it follows the existing US 77 alignment for approximately 2 miles and then deviates to the west around the city of Odem. The corridor then follows a southern heading just west of the US 77/IH 37 interchange and then crosses US 77 at a slight southeast trajectory and continues south to SH

44. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples Street (St.). It then follows an eastern heading along Staples St. and then southeast across the King Ranch property (see **Figure 4-1**) from which it crosses the Laguna Madre and ends at the southern termini at Park Road (PR) 22.

Alternative 2

Alternative 2 begins in the north approximately 2 miles south of the city of Sinton. From there it follows the existing US 77 alignment for approximately 2 miles, deviates to the west around the city of Odem, and crosses IH 37 a few miles north of the IH 37/US 77 interchange. From there it continues on a southwest heading toward FM 624. It then follows a southern heading to cross SH 44 just west of Robstown and then a southeastern heading to cross US 77. The corridor continues to Petronila where it turns east for approximately 4 miles and then turns southeast for 4 miles. From this point it follows an eastern heading along Staples St. and then southeast across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 3

Alternative 3 begins in the north approximately 2 miles south of the city of Sinton. From there it follows the existing US 77 alignment for approximately 2 miles and then deviates to the west around the city of Odem. The corridor then follows a southern heading just west of the US 77/IH 37 interchange and then crosses US 77 at a slight southeast trajectory and continues south to SH 44. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples St., follows a southern heading along CR 57, and then east along FM 70. It then follows an eastern heading across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 4

Alternative 4 begins in the north at IH 37 around the city of Edroy then follows a western heading for about 2 miles. From there it follows a southern heading to cross SH 44 just west of Robstown and then veers southeast to US 77 where it follows an eastern heading to FM 1694. From there it traverses a southeast heading until veering south along CR 57 and then east along

FM 70. From there it follows an eastern heading across the King Ranch property, crosses the Laguna Madre, and ends at the southern termini at PR 22.

Alternative 5

Alternative 5 begins in the north at IH 37 around the city of Edroy. This corridor follows the existing IH 37 alignment to the IH 37/US 77 interchange where it then follows a southern trajectory. The alternative crosses US 77 at a slight southeast trajectory and continues south to SH 44. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples St., follows an eastern heading along Staples St., heads southeast across the King Ranch property, crosses the Laguna Madre, and ends at the southern termini at PR 22.

Alternative 6

Alternative 6 begins in the north at IH 37 around the city of Edroy then follows a western heading for about 2 miles. From there it follows a southern heading to cross SH 44 just west of Robstown, veers southeast to US 77, and continues on this heading to Petronila. From there it turns east for approximately 4 miles, turns southeast for 4 miles, and then follows an eastern heading along Staples St. The corridor then follows a southeast heading across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 7

Alternative 7 begins in the north at IH 37 around the city of Edroy. This corridor follows the existing IH 37 alignment to the IH 37/US 77 interchange where it then follows a southern trajectory. The alternative crosses US 77 at a slight southeast trajectory and continues south to SH 44. The corridor then crosses FM 1694 and veers back to the southwest to Petronila. From there it turns east for approximately 4 miles, turns southeast for 4 miles, and then follows an eastern heading along Staples St. The corridor then follows a southeast heading across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 8

Alternative 8 begins in the north at IH 37 around the city of Edroy. This corridor follows the existing IH 37 alignment to the IH 37/US 77 interchange where it then follows a southern

trajectory, crosses US 77 at a slight southeast trajectory, and continues south to SH 44. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples St. From this point it takes a southeast heading and veers south along CR 57 and east along FM 70. The alternative then follows an eastern heading across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 9

Alternative 9 begins in the north at IH 37 approximately 4 miles east of the IH 37/US 77 interchange. It follows a southwest heading and then a southern heading as it crosses SH 44. From there it continues south for 2 miles, veers southeast for 2 miles, and then traverses back southwest for 2 miles to the FM 665/CR 61 intersection. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples St., follows an eastern heading along Staples St., and then heads southeast across the King Ranch property. From this point it crosses the Laguna Madre and ends at the southern termini at PR 22.

Alternative 10

Alternative 10 begins in the north at IH 37 approximately 4 miles east of the IH 37/US 77 interchange. It follows a southwest heading and then a southern heading as it crosses SH 44. From there it continues south for 2 miles, veers southeast for 2 miles, and then traverses back southwest for 2 miles to the FM 665/CR 61 intersection. From this point, the corridor veers southeast to the intersection of FM 2444 and Staples St., traverses a southeast heading, veers south along CR 57, and then east along FM 70. It then follows an eastern heading across the King Ranch property from which it crosses the Laguna Madre and ends at the southern termini at PR 22.

3. Conceptual Alternatives Analysis

In this phase of the alternative analysis, the Conceptual Alternatives were evaluated and scored based on social and environmental impacts, mobility and engineering evaluations, and the initial public response to the alternatives. Individual criteria were scored on a scale ranging from 20 (least favorable) to 100 (most favorable). The method of criteria scoring could be either qualitative (based on judgment) or quantitative (based on direct quantity comparison) and was determined on a case by case basis. These screening criteria are further described in the following sections. Using these evaluation criteria, a separation of alternatives was identified

with alternatives scoring 65 and above. This resulted in five Viable Corridors being carried forward to the next screening step. In addition, the No-Build alternative will be carried through each evaluation phase regardless of rank in order to keep a consistent baseline for comparison and to allow this study to transition smoothly into the alignment selection phase consistent with National Environmental Policy Act (NEPA). Each corridor alternative was determined to have a corridor width of approximately 1 mile to facilitate flexibility in establishing alignment alternatives in subsequent project development phases.

3.1. Social and Environmental Evaluation

Social and environmental concerns, if not identified and addressed early, can cause unwanted impacts to social and environmental conditions and project delays during permitting and construction. It is for this reason that great importance was put on the analysis of social and environmental constraints throughout the alternatives analysis process. Social and environmental constraints maps were initially used to identify fatal flaws in corridor alternatives. For the Conceptual Alternatives analysis phase of the study the components of the social and environmental rankings were examined in more detail than in the previous analysis in order to further compare the alternatives. The data sources used to evaluate these multiple layers of information were derived from a number of both social and environmental data sources (included in **Appendix B**). The components of these sources, which were used to determine the rank of each alternative, are described in greater detail in the following sections. The AART was utilized in quantifying the social and environmental impacts for each of the conceptual alternatives. The results of this quantification are included in **Appendix A**.

All social and environmental components were scored and qualitative criteria such as air quality and water quality were assigned points on a sliding scale based on the ratios between the lowest and highest ranked. Quantitative criteria such as hazardous materials were scored using a direct sum or percentage as a means of comparison between the alternatives.

The social and environmental data sources used for the evaluation included the following eight major criteria:

- Social and Economic Impacts
- Cultural Resource Impacts

- Vegetation and Wildlife Habitat Impacts
- Water Quality Impacts
- Wetland Impacts
- Hazardous Materials
- Air Quality Impacts
- Noise Level Impacts

3.1.1. Social and Economic Impacts

The 2010 census data was used to determine the number of blocks found within each corridor, and the blocks were identified which included either an income level below the Health and Human Services 2012 poverty level ($22,350 for a family of four) or a minority population. In addition the number of blocks located within urban areas was then determined using 2010 Stratmap city boundary shape file. For the purposes of this analysis, it was assumed that these urban areas would include a greater number of persons and consequently receive greater social and economic impacts from a roadway project. The percentage of urban census blocks found within each alternative along with the existence of minority population or low income census blocks were used to estimate the rankings. Results of the social and economic impacts analysis are included below in **Table 3-1**. Alternative 2 obtained the highest score primarily because it included the lowest percentage of census blocks located within city boundaries, while Alternatives 9 and 10 included the highest percentages of urban areas. The No-Build alternative score reflects the anticipated loss of economic gains resulting from future impacts to the regional economy.

Table 3-1: Social and Economic Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
80	60	100	80	80	80	80	60	60	40	20

3.1.2. Cultural Resources Impacts

The cultural resources impacts analysis included three sources of data: historic properties or historic districts impacts, potential archeological impacts, and section 4(f) property impacts. The historic properties or districts impacts analysis considered the location of the alternative corridor in relation to either identified historic properties or historic districts. The King Ranch Historic

District (KRHD), the only historic district found within the study area, is also a Section 4(f) property. Alternative ranking was based on the number of acres of KRHD bisected by each alternative. Alternatives which bisected a larger portion of the KRHD were considered to be less suitable for project use and were therefore assigned a lower score. Results of the historic properties or historic districts impacts analysis are included below in **Table 3-2.** Analysis revealed that Alternatives 3, 4, 8 and 10 included substantial bisecting impacts to the KRHD and were considered to be less suitable. The remaining alternatives included the same scoring values.

Table 3-2: Historic Properties or Districts Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
60	60	60	20	20	60	60	60	20	60	20

The archeological impacts analysis incorporated values provided by AART for the analysis of the alternatives. This analysis included multiple ranking categories which resulted in a total possible impact. The scoring of archaeological impacts included the sum of the acres of site points and the weighted value of the probability of the occurrence of archeological sites, which was used to determine the percentage of probable archeological sites found within each alternative. This value in addition to the total acres of known archeological sites, and the acres of cemeteries was used to determine alternative ranking. Known archeological sites and known cemetery locations were considered to be negative factors for use as a preferred alternative. Total estimated impacts were rated largest to smallest with larger possible impact areas considered less suitable for use as an alternative corridor and smaller impact areas of a higher suitability. Results of the archeological impacts analysis are included below in **Table 3-3**. Alternatives 1 and 4 scored as the most suitable of the build alternatives due to their lower percentage of archeological impacts, and Alternatives 6 and 9 were considered to be less suitable because of their high archeological impact percentages.

Table 3-3: Archeological Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	100	60	80	100	80	40	80	80	40	60

Potential section 4(f) property impacts were based on the number of acres of potential 4(f) sites including National Register of Historic Site Properties, recreation areas, and parks found within each corridor alternative, and the relative social or environmental importance of each site. Total 4(f) impacts were rated largest to smallest with larger possible impacts considered least suitable

and smaller impacts of a higher suitability. The results of the section 4(f) property impacts analysis are included in **Table 3-4.** Alternatives 2, 4, and 6 included no 4(f) properties and were therefore considered to be the most suitable for corridor use. Alternatives 1, 3, 5, 7, and 8 included larger 4(f) properties such as parks and recreation areas which resulted in a lowered score and less suitability as corridor alternatives.

Table 3-4: Section 4(f) Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	40	100	40	100	40	100	40	40	80	80

3.1.3. Vegetation and Wildlife Habitat Impacts

Potential vegetation and wildlife habitat impacts utilized land use values provided by AART for the analysis of the alternatives. The ranking of vegetation and wildlife habitat impacts was then calculated using the percentage in each alternative corridor of agricultural, open water and undeveloped areas, the documented occurrence of threatened or endangered species, and the presence of designated critical habitat. These specific land use areas were selected because most agricultural, open water and undeveloped areas generally include more vegetation and wildlife habitat areas than developed areas. A higher number of endangered or threatened species decreased the corridors rank due to limitations legislated by the Endangered Species Act and administered by the U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD). If the alternative included river or stream crossings additional impacts to riparian habitat and aquatic species were assumed and the ranking value was subsequently decreased. Results of the potential vegetation and wildlife habitat impacts analysis are included below in **Table 3-5**. Alternatives 9 and 10 included a larger number of endangered and threatened species which reduced the overall score, making these less suitable for use as alternative corridors. Alternatives 2, 4, and 6 did not include any endangered species, and only one threatened species, resulting in a higher score and more suitability as corridor alternatives.

Table 3-5: Vegetation and Wildlife Habitat Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	60	80	60	80	60	80	60	60	40	40

3.1.4. Water Quality Impacts

Potential water quality impacts included the existing land use values provided by AART for floodplain, and waterbody acres. The percentage of floodplain and waterbody acres within each alternative was then calculated and used in the ranking determination. The water quality impact

rankings also included the number of stream crossings which were designated as either major or minor within each alternative. The numbers of acres of each type of floodplain area, existing water quality conditions; and the crossing of significant stream segments or segments listed on the TCEQ 303d list were also used to determine the ranking of each alternative. Results of the potential water quality impacts analysis are included below in **Table 3-6**Error! Reference source not found.. Alternatives 4 and 10 included the highest scores associated with the impacts to water quality and are considered to be the best for corridor use. These alternatives included a smaller percentage of floodplain and waterbody areas and fewer total stream crossings. Alternatives 1, 5, and 7 were determined to be least suitable for use as corridor alternatives because of their higher percentage of floodplain and waterbody areas, and higher number of stream crossings.

Table 3-6: Water Quality Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	40	60	60	80	40	60	40	60	60	80

3.1.5. Wetland Impacts

The wetland impacts analysis included two data sources, mapped wetland areas and Coastal Barrier Resource areas. Wetland Impacts incorporated the number of acres by wetland type provided by AART. Rankings of each alternative were then assessed based on the percentage of wetland areas found within each alternative. The percentage of wetland areas which received a higher AART relative ranking of 8 or 9 (indicating a higher environmental value) was also included in this analysis. Results of the wetland impacts analysis are included below in **Table 3-7**. Alternatives 2, 4 and 6 included a smaller percentage of total wetland areas and a lower percentage of wetlands ranked by AART as 8 or 9 making them more suitable as corridor alternatives. The remaining alternatives included the same scoring value and are considered to be equal in suitability as corridor alternatives.

Table 3-7: Wetland Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	60	80	60	80	60	80	60	60	60	60

Coastal Barrier Resource Area impacts analysis and ranking was based on the total percentage of these areas located within each alternative. Results of the Coastal Barrier Resource Area impacts analysis are included below in **Table 3-8**. Because all of the alternatives include the same route through the Coastal Barrier Resource Area the scores were identical.

Table 3-8: Coastal Barrier Resource Area Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	60	60	60	60	60	60	60	60	60	60

3.1.6. Hazardous Materials

Hazardous materials impacts analysis included the number of mapped locations of Resource Conservation and Recovery Act data, Environmental Protection Agency and Texas Commission on Environmental Quality hazardous materials sites, and federal superfund site locations to generate a total number of documented hazardous materials sites per alignment. Results of the hazardous materials impacts analysis are included below in **Table 3-9**. Alternatives 1, 3, and 8 included the greatest number of hazardous materials sites making them the least suitable for use as alternative corridors. Alternatives 9 and 10 contained the least number of hazardous material sites resulting in a higher score and better suitability for corridor use.

Table 3-9: Hazardous Materials Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	40	60	40	60	60	60	60	40	80	80

3.1.7. Air Quality Impacts

The air quality impacts analysis utilized the acres of existing land use values provided by AART. Rankings were based on the land use determination of the percentage of acres of commercial, industrial, oil facility, transportation, public, residential, and school areas in each alternative corridor which would either contribute to air issues as a sensitive receptor for bad air levels or a contributor to air pollution levels. Results of the air quality impacts analysis are included below in **Table 3-10**. Alternative 4 scored the highest and is considered to be the most suitable for corridor use because it contained none of the areas used for this analysis. Alternatives 7 and 9 contained the highest percentage of these land use types resulting in a less suitable score. The No-Build alternative score reflects anticipated greater traffic congestion and idling within the project area which would result in an increase in air quality impacts.

Table 3-10: Air Quality Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
20	60	60	80	100	60	80	40	80	40	80

3.1.8. Noise Level Impacts

In order to determine the potential noise level impacts the existing land use values provided by AART of each alternative were employed. The areas thought to be adversely impacted by

increased noise levels included parks, public and residential areas, and schools. The total numbers of acres of these areas found within the individual alternatives were then summed and a percentage calculated. Rankings were based on the total percentage of increased noise level impacted areas located within each alternative. Results of the noise level impacts analysis are included below in **Table 3-11**. Of the build alternatives, Alternative 4 included the lowest percentage of areas considered to be adversely impacted by increased noise levels, resulting in a higher score and greater corridor suitability. Alternatives 2, 3, 6, 8 and 10 also included lower percentages of these areas resulting in a higher suitability level for these corridors. Alternative 9 was considered to be the least suitable due to the greater percentage of noise level affected areas found within this corridor alternative.

Table 3-11: Noise Level Impacts

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	60	80	80	100	60	80	60	80	40	80

3.1.9. Social and Environmental Evaluation Results

Each social and environmental category was analyzed and averaged to establish overall scores for each alternative (**Table 3-12**). A summary of all social and environmental evaluation scores can be found in **Figure 3-1**. Based on these scores the No-Build alternative scored the highest with an 87.27, reflecting the anticipated conclusion that the No-Build alternative would yield fewer social and environmental impacts than the build alternatives. Alternatives 4, 2, and 6 include the next highest scores with 78.18, 72.73, and 70.91 respectively. The remaining lower ranked alternatives all include scores which are at least 10 points below that of Alternative 6.

Table 3-12: Subtotal

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
87.27	58.18	72.73	60.00	78.18	60.00	70.91	56.36	58.18	54.55	60.00

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9	ALTERNATIVE 10
Rank	**1**	**8**	**3**	**5**	**2**	**5**	**4**	**10**	**8**	**11**	**5**
OVERALL SCORE	**87.27**	**58.18**	**72.73**	**60.00**	**78.18**	**60.00**	**70.91**	**56.36**	**58.18**	**54.55**	**60.00**
SOCIAL AND ENVIRONMENTAL IMPACTS											
Noise Impacts											
Noise Impacts	100	60	80	80	100	60	80	60	80	40	80
Social and Economic Impacts											
Social and Economic Impacts	80	60	100	80	80	80	80	60	60	40	20
Cultural Resource Impacts											
Historic District Impacts	60	60	60	20	20	60	60	60	20	60	20
Potential Archeological Impacts	100	100	60	80	100	80	40	80	80	40	60
Section 4f Property Impacts	100	40	100	40	100	40	100	40	40	80	80
Air Quality Impacts											
Air Quality Impacts	20	60	60	80	100	60	80	40	80	40	80
Vegetation and Wildlife Habitat Impacts											
Vegetation and Wildlife Habitat Impacts	100	60	80	60	80	60	80	60	60	40	40
Wetland Impacts											
Wetland Impacts	100	60	80	60	80	60	80	60	60	60	60
CBRA Impacts	100	60	60	60	60	60	60	60	60	60	60
Water Quality Impacts											
Water Quality Impacts	100	40	60	60	80	40	60	40	60	60	80
Hazardous Materials											
Hazardous Materials	100	40	60	40	60	60	60	60	40	80	80
SOCIAL AND ENVIRONMENTAL SUBTOTAL	**960**	**640**	**800**	**660**	**860**	**660**	**780**	**620**	**640**	**600**	**660**
SOCIAL AND ENVIRONMENTAL AVERAGE	**87.27**	**58.18**	**72.73**	**60.00**	**78.18**	**60.00**	**70.91**	**56.36**	**58.18**	**54.55**	**60.00**

Figure 3-1: Summary of Environmental Decision Matrix for Conceptual Alternatives

3.2. Mobility Evaluation

The mobility category was divided into nine major criteria including travel demand, vehicle hours of travel (VHT), average speed, level of service (LOS), effect on the study area roadway network, conformance with transportation plans, improved access and connectivity, safety, and emergency evacuation. A travel demand model was utilized in developing measures of effectiveness for most of the quantitative criteria with the exception of the emergency evacuation and conformance with transportation plans criterion.

3.2.1. Travel Demand Model Development

A travel demand model was developed for the RPMC Study using available data from the Corpus Christi regional travel demand model previously developed by TxDOT for a 1996 base year and a 2025 forecast year. The model for the RPMC Study was developed with a base year of 2006 and an initial 2035 forecast year. Some of the required model inputs for 2006 and 2035

were developed previously by the CCMPO and other consultants. Those inputs were used to develop a new validated 2006 base year model and forecasts for the years 2015 and 2035.

The travel demand model was calibrated and validated to the base year to ensure the model's ability to accurately represent base year travel patterns, and therefore its ability to predict future behavior. This validation was performed using traffic volumes and vehicles miles of travel (VMT). Demographic data for future years was reviewed, updated, and adjusted based on the 2010 census and current information such as the Schlitterbahn water park on Padre Island, updates to the status of the La Quinta container port, and the redevelopment of Naval Station Ingleside. The future roadway network includes planned projects contained in the Corpus Christi MPO's Metropolitan Transportation Plan and reflects the recent projected decrease in available funding which has impacted previously programmed projects. Details of the travel demand model development and validation are included in **Appendix D**.

It was initially assumed the RPMC would have an opening year of 2015 and a design year of 2035. This was the basis on which travel demand model runs for the conceptual alternatives were conducted. During the course of the project, however, the opening year was modified in coordination with the PCC to 2020 and the design year to 2040. Travel demand modeling for the subsequent Viable Alternatives was therefore conducted for years 2020 and 2040. Using different analysis years produces slightly different results, but had no impact on the relative performance or ranking of the conceptual alternatives.

3.2.2. Travel Demand Forecasts

Projected travel demand is summarized in **Table 3-13** for each conceptual corridor alternative. The travel demand for these alternatives represents traffic volumes diverted from regional roadways onto the RPMC to take advantage of a faster, less congested route to and from various destinations. The data shows that Alternative 1 is projected to attract the highest traffic volumes onto the RPMC, approximately 30,400 vehicles per day (vpd), followed by Alternative 2 with 28,700 vpd. Alternative 10 (10,200 vpd) and Alternative 4 (11,100 vpd) are projected to result in the lowest traffic volumes on the RPMC.

Table 3-13: Regional Parkway Average 2035 Daily Volumes

Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
30,400	28,700	24,200	11,100	24,600	19,400	23,300	18,000	15,100	10,200

3.2.3. Traffic/Mobility Evaluation Results

For the qualitative criteria such as travel demand and LOS, points were awarded to alternatives on a sliding scale based on ratios between the lowest and highest ranked. For example, in terms of roadway miles operating at LOS E/F in 2035, the range was 363 miles for Alternative 10 and 307 miles for Alternative 1, a difference of 56. Alternative 1; therefore, scored the maximum of 100 representing the least quantity of roadway miles operating at LOS E/F, while Alternative 10 scored the lowest score of 20, representing the most roadway miles operating at LOS E/F. Similarly, the other corridor alternatives were scored consistent with the relative quantity of roadway miles operating at LOS E/F.

Alternatives attracting higher traffic volumes and the resulting hours spent traveling within the region were awarded higher scores, as well as alternatives that reduced congestion on significant regional roads such as SH 358, SH 44, US 77, SH 286, IH 37, and FM 624. The results of the traffic evaluation for the conceptual corridor alternatives are summarized in **Figure 3-2**. Considering the performance of the conceptual alternatives in the nine identified evaluation categories, Alternative 2 was the highest ranked alternative (overall score of 87.27), followed by Alternative 1 (overall score of 81.82).

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9	ALTERNATIVE 10
Rank	**11**	**2**	**1**	**3**	**8**	**5**	**3**	**7**	**6**	**9**	**10**
OVERALL SCORE	**30.91**	**81.82**	**87.27**	**75.45**	**68.18**	**74.55**	**75.45**	**70.91**	**72.73**	**56.36**	**53.64**
TRAFFIC MOBILITY											
Travel Demand											
Project Travel Demand/Utilization along Parkway	20	100	100	80	40	80	60	80	60	60	40
Vehicle Hours Traveled (VHT)											
VHT of Region (Compared to No-Build)	40	100	100	80	80	80	80	40	60	80	80
Speed											
Speed of Alternative	40	100	100	100	100	100	100	100	100	100	100
Speed of Study Area (Compared to No-Build)	40	80	100	80	100	80	80	40	80	60	60
Speed of Region (Compared to No-Build)	40	100	100	80	80	80	100	40	80	80	80
Level of Service											
LOS E and F Improvement from No-Build	20	100	80	60	60	80	80	80	40	60	20
Affect to Area Roadway Network											
Reduced Congestion on SPID	20	100	100	60	60	100	100	100	60	80	60
Reduced Congestion on SH44	40	20	100	60	80	20	100	20	60	60	60
Reduced Congestion on I-37	40	100	100	60	60	80	80	80	80	20	20
Reduced Congestion on SH 286	20	60	60	40	40	60	60	40	40	40	40
Reduced Congestion on US 77	40	80	80	100	20	60	20	60	60	20	20
Reduced Congestion on FM 624	20	40	60	40	60	40	60	40	40	40	40
Conformance with Transportation Plans											
Does alternative facilitate and coincide with transportation plans?	60	100	100	100	100	100	100	100	100	100	100
Improved Access and Connectivity											
IH intersections	20	80	80	80	80	100	80	100	100	80	80
US Highway intersections	20	100	80	100	40	60	40	60	60	20	20
SH intersections	20	100	100	100	80	100	80	100	100	80	80
FM Highway intersections	20	80	80	80	100	80	80	80	100	60	80
City Street intersections	20	100	80	80	60	100	100	100	80	40	40
County Road intersection	20	80	100	80	60	40	60	60	60	40	40
Major Developments	20	40	60	60	40	40	40	60	60	20	20
Safety											
Safety	80	60	60	60	60	100	60	100	100	60	60
Emergency Evacuation											
Emergency Evacuation	20	80	100	80	100	60	100	80	80	40	40
TRAFFIC MOBILITY SUBTOTAL	**680**	**1800**	**1920**	**1660**	**1500**	**1640**	**1660**	**1560**	**1600**	**1240**	**1180**
TRAFFIC MOBILITY AVERAGE	**30.91**	**81.82**	**87.27**	**75.45**	**68.18**	**74.55**	**75.45**	**70.91**	**72.73**	**56.36**	**53.64**

Figure 3-2: Summary of Mobility Decision Matrix for Conceptual Alternatives

3.3. Engineering Evaluation

The engineering evaluation of the conceptual alternatives was based on engineering components with respect to the construction of a Parkway facility. Engineering aspects were evaluated quantitatively and values were derived from either calculations or summations. Examples of items where calculations were used are cost and residential density. Engineering items that were directly summed consisted of ROW, utilities and drainage. Scores were determined for each alternative using a relative scale based on ratios between the lowest and highest ranked. The engineering category was divided into seven major criteria:

- Right-of-Way
- Railroad Impacts

- Constructability
- Construction Cost
- Cost Effectiveness
- Utilities
- Drainage

3.3.1. Right-of-Way

The (ROW) analysis was divided into two categories; a total area of ROW impacted and the potential for residential displacements. A quantitative comparison was first completed based on using the total length of the alternative and estimating a 400 foot ROW width to determine the total proposed ROW footprint. The larger the amount of ROW required, the lower the score of the corridor. Based on the fact that each proposed corridor alternative requires significant ROW, each build alternative resulted in a score between 40 and 60. The no-build alternative scored 100 because no additional ROW is required. A breakdown of these results can be found in **Table 3-14**.

Table 3-14: Total Right-of-Way

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	60	60	60	60	40	60	60	60	40	40

The potential for residential displacement is a direct comparison of the number of residences within the alternative corridor area. A residential count was tabulated from visual inspection of the aerials, and the residential area was derived from AART. This value represents an estimated amount of residential displacements during the final alignment phase. From this analysis, an alternative with a higher density will have a lower and therefore less desirable score. Therefore, because Alternatives 9 and 10 traverse a dense residential area and Alternatives such as 2 and 6 do not, the scores range from a minimum value of 20 and a maximum of 100. The results of this analysis have been shown in **Table 3-15**.

Table 3-15: Propensity for Residential Displacement

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	80	100	80	100	80	100	80	80	20	20

3.3.2. Railroad Impacts

Railroad impacts were tabulated based on a quantitative analysis of railroad crossings and railroad facilities within the corridor. A total number of main line tracks that completely cross the corridor were quantified and tabulated for each alternative. A higher number of railroad crossings yielded a lower score. Based on the relative number of main line track crossings between the alternatives, the corridor scoring ranged from 20 to 100. See **Table 3-16** for results of the analysis.

Table 3-16: Railroad Crossings

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	20	20	20	60	60	60	60	60	100	100

A similar analysis was performed concerning railroad facilities within the corridors. These facilities could include intermodal yards and spur crossings. The scores were 100 for all alternatives since there were no significant impacts located. See **Table 3-17** for results of the analysis.

Table 3-17: Railroad Facilities

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	100	100	100	100	100	100	100	100	100	100

3.3.3. Constructability

The constructability of a particular alternative is a qualitative criterion that takes into account many factors. A consistent characteristic of these elements is that they represent certain components of a project that can complicate the construction process. The factors considered in this criterion were number of interchanges (grade separations) and proximity to existing parallel highway facilities. These elements can complicate traffic control and increase earthwork, among other things. All of these elements were weighted based on type of facility (railroads, interstate highways, US and state highways) indicating level of complexity. An alternative with a higher number of constructability issues received a lower score. Given the disparity of these values, scores ranged between 40 and 100. The results of this analysis are shown in **Table 3-18**.

Table 3-18: Constructability

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	40	60	40	80	40	80	40	40	100	100

3.3.4. Construction Cost

A planning level cost analysis was computed based on a representative parkway typical section, length of alternative corridor, an estimate of minor drainage crossings, an estimate of grade separated structures based on type of facility (railroads, interstate highways, US and state highways), and the cost of a proposed Nueces River bridge and a proposed Laguna Madre bridge. For purposes of evaluation, the proposed typical section is assumed to consist of a four lane divided roadway with a raised median, 2 foot curb offsets, 12 foot inside lanes and accommodations for cyclists. A typical section has been provided in **Figure 1-1**. Associated costs were compared and scored based on the relative difference between the highest and lowest cost alternatives, with lower cost having a higher score. Based on this difference, a low score of 40 and high score of 100 were utilized. The results of this are shown in **Table 3-19**.

Table 3-19: Construction Cost

	No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
Cost	**$ 0**	$344 Mil	$373 Mil	$351 Mil	$353 Mil	$325 Mil	$342 Mil	$335 Mil	$332 Mil	$281 Mil	$288 Mil
Score	100	60	40	60	60	80	60	60	60	80	80

3.3.5. Cost Effectiveness

Cost effectiveness can be described as the total cost of the alternative divided by the average daily traffic expected on that corridor. From an engineering perspective, this analysis describes the effectiveness of the corridor to distribute traffic. The result is an estimated cost to move a vehicle through the corridor. Based on the difference of these numbers, the alternatives resulted in scores ranging from 40 to a 100. The results of this are shown in **Table 3-20**.

Table 3-20: Cost Effectiveness

	No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
Cost	$ 0	$344 Mil	$373 Mil	$351 Mil	$353 Mil	$325 Mil	$342 Mil	$335 Mil	$332 Mil	$281 Mil	$288 Mil
ADT	0	31K	29K	24K	11K	25K	20K	24K	18K	15K	10K
Score	100	100	100	100	60	100	80	100	80	60	40

3.3.6. Utilities

The utility impact analysis takes into account oil, gas, and major water line crossings within the corridor. Utilities were tabulated from AART and compared to the total length of the corridor to establish an average impact per mile. Oil & gas lines were weighted heavier than water lines and the resulting net crossings were directly compared with the total length of the project. Based on

the relative difference of these numbers, the alternatives resulted in scores ranging from 40 to a 100, with a higher number of crossings per mile resulting in a lower score. The results of this are shown in **Table 3-21**.

Table 3-21: Utilities

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
100	100	80	100	80	80	80	100	100	40	40

3.3.7. Drainage

The analysis of drainage features included river crossings, creek crossings, and FEMA floodplain impacts. The Nueces River was considered as the primary river crossing location for the corridors. Since Alternatives 9 and 10 do not cross this river, they were scored 100. All other alternatives cross the river and, therefore, received a score of 60. For creek crossings, Oso Creek was the primary waterway evaluated. For this creek, Alternatives 9 and 10 crossed the creek and therefore scored 80, whereas all other alternatives did not cross and scored 100. For floodplain crossings, the proposed ROW width of 400 feet established an effective area used to compare the multiple alternatives. The scores ranged between 40 and 100 with alternatives having a higher amount of potentially impacted floodplain area scoring lower. The results of this are shown in **Table 3-22**.

Table 3-22: Drainage

	No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
River Crossing	40	60	60	60	60	60	60	60	60	100	100
Creek Crossing	100	100	100	100	100	100	100	100	100	80	80
FEMA Crossing	100	40	60	60	100	40	80	40	60	80	100

3.3.8. Results of Engineering Analysis

Each engineering analysis category was averaged to establish an overall score for each corridor alternative, which is summarized in **Table 3-23**. The overall results of this analysis are shown in **Figure 3-3**. As expected, the No-Build alternative scores the highest because there are no impacts to ROW, railroads, utilities, or costs associated with construction. Alternative 4 and 6 score the second highest with 78.18, followed by Alternatives 7, 8, 9 and 10 with scores of 72.73.

Table 3-23: Engineering Analysis Overall Scores

No-Build	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10
94.55	69.09	70.91	70.91	78.18	70.91	78.18	72.73	72.73	72.73	72.73

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9	ALTERNATIVE 10
Rank	1	11	8	8	2	8	2	4	4	4	4
OVERALL SCORE	94.55	69.09	70.91	70.91	78.18	70.91	78.18	72.73	72.73	72.73	72.73
ENGINEERING											
Right-of-Way											
Total Right-of-Way	100	60	60	60	60	40	60	60	60	40	40
Propensity for Displacements	100	80	100	80	100	80	100	80	80	20	20
Railroad Impacts											
Railroad crossings	100	20	20	20	60	60	60	60	60	100	100
RR facility impacts	100	100	100	100	100	100	100	100	100	100	100
Constructability											
Constructability	100	40	60	40	80	40	80	40	40	100	100
Construction Cost											
Cost	100	60	40	60	60	80	60	60	60	80	80
Cost Effectiveness											
$/Veh-Mile	100	100	100	100	60	100	80	100	80	60	40
Utilities											
Impacts to Existing Utilities	100	100	80	100	80	80	80	100	100	40	40
Drainage											
River Crossings	40	60	60	60	60	60	60	60	60	100	100
Creek Crossings	100	100	100	100	100	100	100	100	100	80	80
FEMA Floodplain Impacts	100	40	60	60	100	40	80	40	60	80	100
ENGINEERING SUBTOTAL	1040	760	780	780	860	780	860	800	800	800	800
ENGINEERING AVERAGE	94.55	69.09	70.91	70.91	78.18	70.91	78.18	72.73	72.73	72.73	72.73

Figure 3-3: Summary of Engineering Decision Matrix for Conceptual Alternatives

3.4. Initial Impression of Public Reaction

The scoring of the public's reaction to the various alternatives was based on the result of a number of targeted interviews conducted with certain stakeholders. A summary of the public involvement scoring can be found in **Figure 3-4**. The scoring is subjective and was based on the following scores: 20 = negative reaction; 60 = negative or positive reaction (i.e. neutral or unknown); or 100 = positive reaction. No score of 40 or 80 was assigned. Besides a limited number of interviews, one other caveat of note is geographic. A given alternative may have positive elements in certain areas and negative elements in others. In those cases, there was a tendency to score the alternative as a 60 unless the negative feedback was at the level of a known fatal flaw.

Some of the noteworthy comments collected during interviews included the following:

- At the north end, a corridor located further to the west is likely to be the most supported crossing over the Nueces River. One potential downside of the west crossing is that it does not provide any connection or relief in the more easterly section of San Patricio County.
- An Alternative with a crossing over the Nueces River is desirable.
- Relief in the area of FM 624 and Robstown would be positive.
- There are indications that relief in the Odem area, if supported, would be to the west of the community.
- A corridor located closer to Corpus Christi would be better in terms of providing relief to SH 358 and discouraging urban sprawl.
- An Alternative with a crossing over the Laguna Madre would be positive.
- Minimizing the division of landowners' properties is desirable.
- The only acceptable path for a corridor near the King Ranch property is located at or near the Ranch boundary in order to minimize impact.
- There was generally a positive reaction overall, to building some type of new system/roadway.

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9	ALTERNATIVE 10
Rank	6	2	2	6	6	2	1	2	6	6	6
OVERALL SCORE	20.00	60.00	60.00	20.00	20.00	60.00	100.00	60.00	20.00	20.00	20.00
PUBLIC INPUT											
Public Support											
Initial Impression of Public Reaction	20	60	60	20	20	60	100	60	20	20	20
PUBLIC INPUT SUBTOTAL	20	60	60	20	20	60	100	60	20	20	20
PUBLIC INPUT AVERAGE	20.00	60.00	60.00	20.00	20.00	60.00	100.00	60.00	20.00	20.00	20.00

Figure 3-4: Summary of Public Involvement Decision Matrix for Conceptual Alternatives

3.5. Identification of Viable Alternatives

The analyses of social and environmental issues, traffic and mobility, Engineering and public reaction were used to further narrow the corridor alternatives from ten Conceptual Alternatives to five Viable Alternatives. The individual scores (rankings) of these categories were grouped and weighted evenly to arrive at an overall score for each Alternative. The overall scores indicated that Alternative Corridors 1, 2, 5, 6 and 7 had the highest five build Alternative scores. The scoring summary is shown in **Figure 3-5**. As was mentioned previously, the No-Build Alternative will be carried through to the next phase of evaluation. These Viable Alternative Corridors are depicted in **Figure 3-6**.

RATING SYSTEM 100 = Best Score 20 = Worst Score		NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5	ALTERNATIVE 6	ALTERNATIVE 7	ALTERNATIVE 8	ALTERNATIVE 9	ALTERNATIVE 10
Rank		7	3	2	8	6	4	1	5	9	11	10
OVERALL SCORE		58.19	67.27	72.73	56.59	61.15	66.37	81.14	65.00	55.91	50.91	51.59
SUMMARY OF AVERAGES												
1) TRAFFIC MOBILITY		30.91	81.82	87.27	75.45	68.18	74.55	75.45	70.91	72.73	56.36	53.64
2) SOCIAL AND ENVIRONMENTAL IMPACTS		87.27	58.18	72.73	60.00	78.18	60.00	70.91	56.36	58.18	54.55	60.00
3) ENGINEERING		94.55	69.09	70.91	70.91	78.18	70.91	78.18	72.73	72.73	72.73	72.73
4) PUBLIC INPUT		20.00	60.00	60.00	20.00	20.00	60.00	100.00	60.00	20.00	20.00	20.00
WEIGHTING	100%											
1) TRAFFIC MOBILITY	25%											
2) SOCIAL / ENVR IMPACTS	25%											
3) ENGINEERING	25%											
4) PUBLIC INPUT	25%											
WEIGHTED SUMMARY												
1) TRAFFIC MOBILITY		7.73	20.45	21.82	18.86	17.05	18.64	18.86	17.73	18.18	14.09	13.41
2) SOCIAL AND ENVIRONMENTAL IMPACTS		21.82	14.55	18.18	15.00	19.55	15.00	17.73	14.09	14.55	13.64	15.00
3) ENGINEERING		23.64	17.27	17.73	17.73	19.55	17.73	19.55	18.18	18.18	18.18	18.18
4) PUBLIC INPUT		5.00	15.00	15.00	5.00	5.00	15.00	25.00	15.00	5.00	5.00	5.00
OVERALL SCORE		58.19	67.27	72.73	56.59	61.15	66.37	81.14	65.00	55.91	50.91	51.59

Figure 3-5: Summary of Decision Matrix Results for Conceptual Alternatives

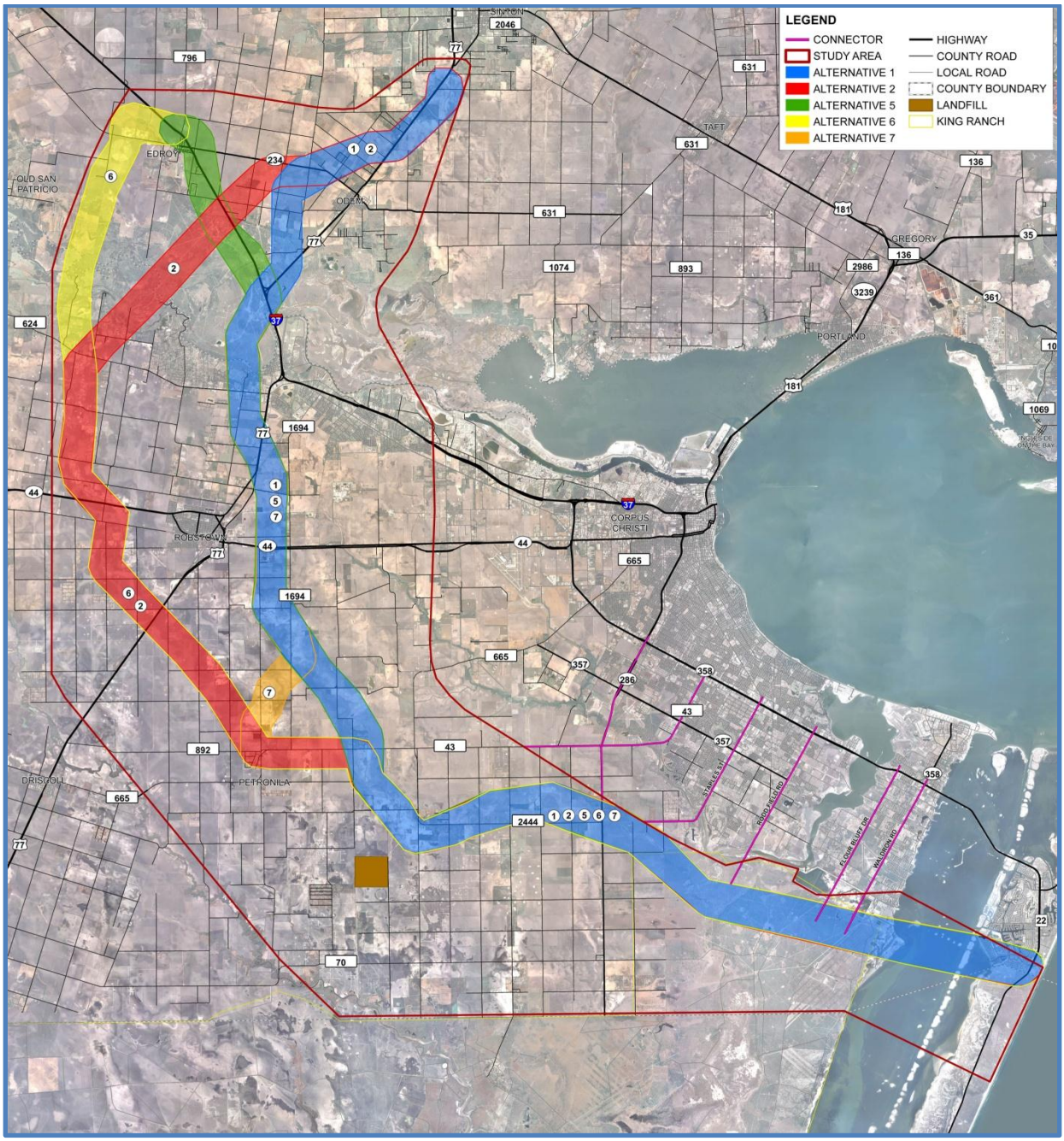


Figure 3-6: Viable Alternatives for Evaluation

4. Viable Alternatives Evaluation

In this phase of analysis, the top five scoring build alternatives were evaluated and scored based on social and environmental, traffic and mobility, and engineering constraints. Please note that the Viable Alternative corridors were modified from their Conceptual Alternative configurations as described below and additional detailed data was used when available. These actions have

resulted in scores which differ from those found in the Conceptual Alternative evaluation for the same numbered alternative.

These corridors will be screened and scored based on performance in the aforementioned categories and narrowed from five Viable Alternatives to one Reasonable Alternative. The No-Build Alternative will still be carried through to the next phase regardless of scoring to maintain a consistent baseline for comparison and to allow this study to transition smoothly into the NEPA alignment selection phase.

4.1. Modifications to Viable Corridor Alternatives

Once the Viable Alternatives were established, they were presented to the MPO, City of Corpus Christi and TxDOT. In addition, meetings with representatives from the King Ranch were held in an effort to solicit feedback on the proposed Viable Corridor Alternatives. Impacts to the King Ranch would need to be minimized or avoided, if possible, due to its status as a section 4(f) property. As a result of this meeting, representatives from the King Ranch provided a desirable alignment based on current information about their property and activities therein. Since this alignment was agreed to by the King Ranch as a feasible corridor through their property and considering that an agreeable route through that property was crucial in providing access to North Padre Island, modifications to the Viable Alternative corridors were made to ensure that the proposed King Ranch alignment was located within the proposed corridors. An illustration showing this proposed corridor through the King Ranch can be found in **Figure 4-1**.

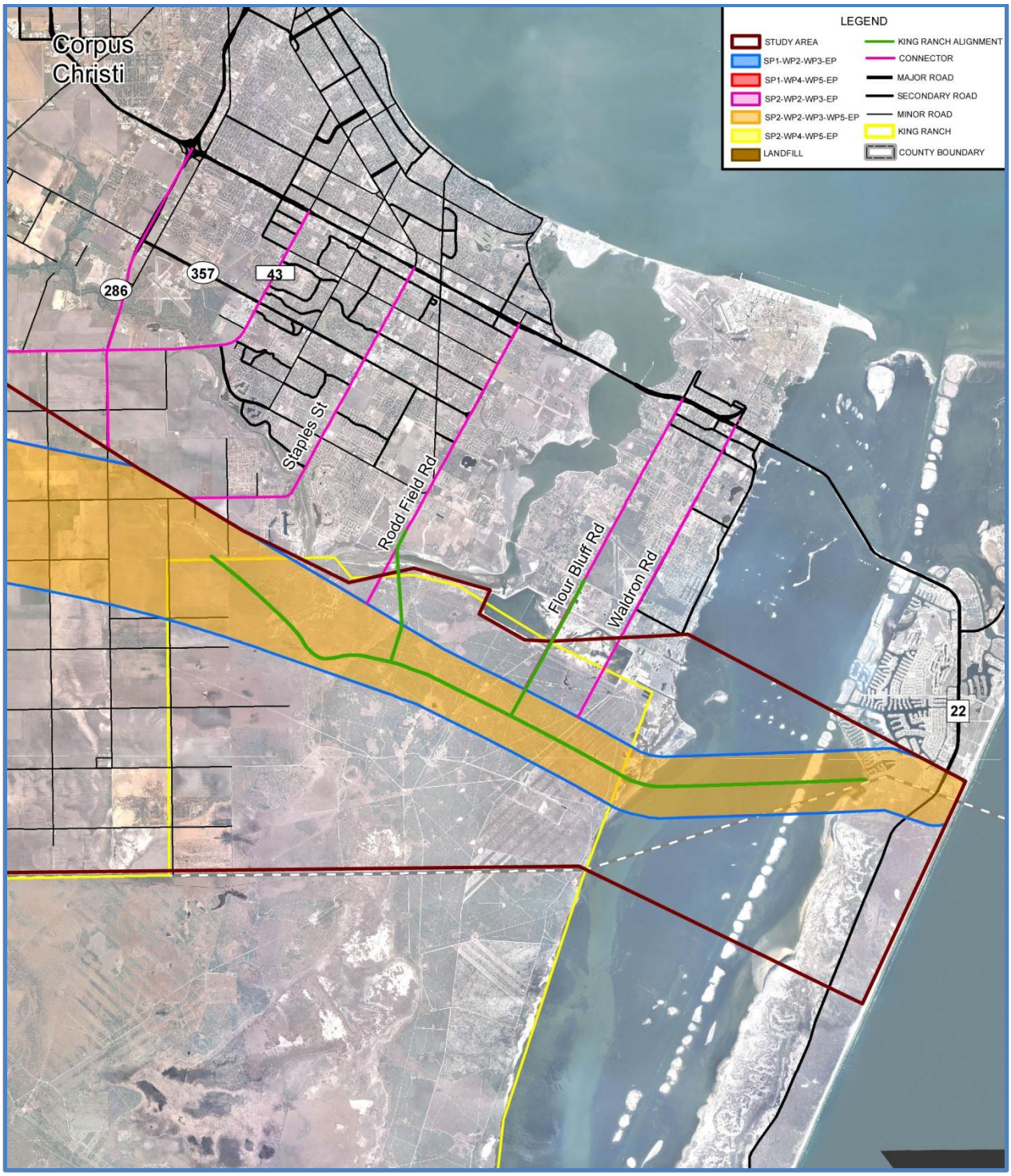


Figure 4-1: Modified Corridor through the King Ranch property

Note: King Ranch preferred alignment in green and King Ranch property boundary in Yellow

A potential concern pointed out by the MPO, City of Corpus Christi and TxDOT was the IH 37/US 77 interchange was not included within Alternatives 1, 5, and 7 corridors in the northern

portion of the study region. Even though the final alternative alignment may not feasibly be able to utilize the existing alignment of IH 37, including it in the Alternative Corridors would allow a better comparison of this option against the other corridors using the screening criteria. This expansion would also allow greater flexibility during the future NEPA phase of project development, should such a corridor be selected. Based on these observations and recommendations, Alternatives 1, 5, and 7 were widened to include the IH 37/US 77 interchange. A visual graphic of the widening is found in **Figure 4-2**.

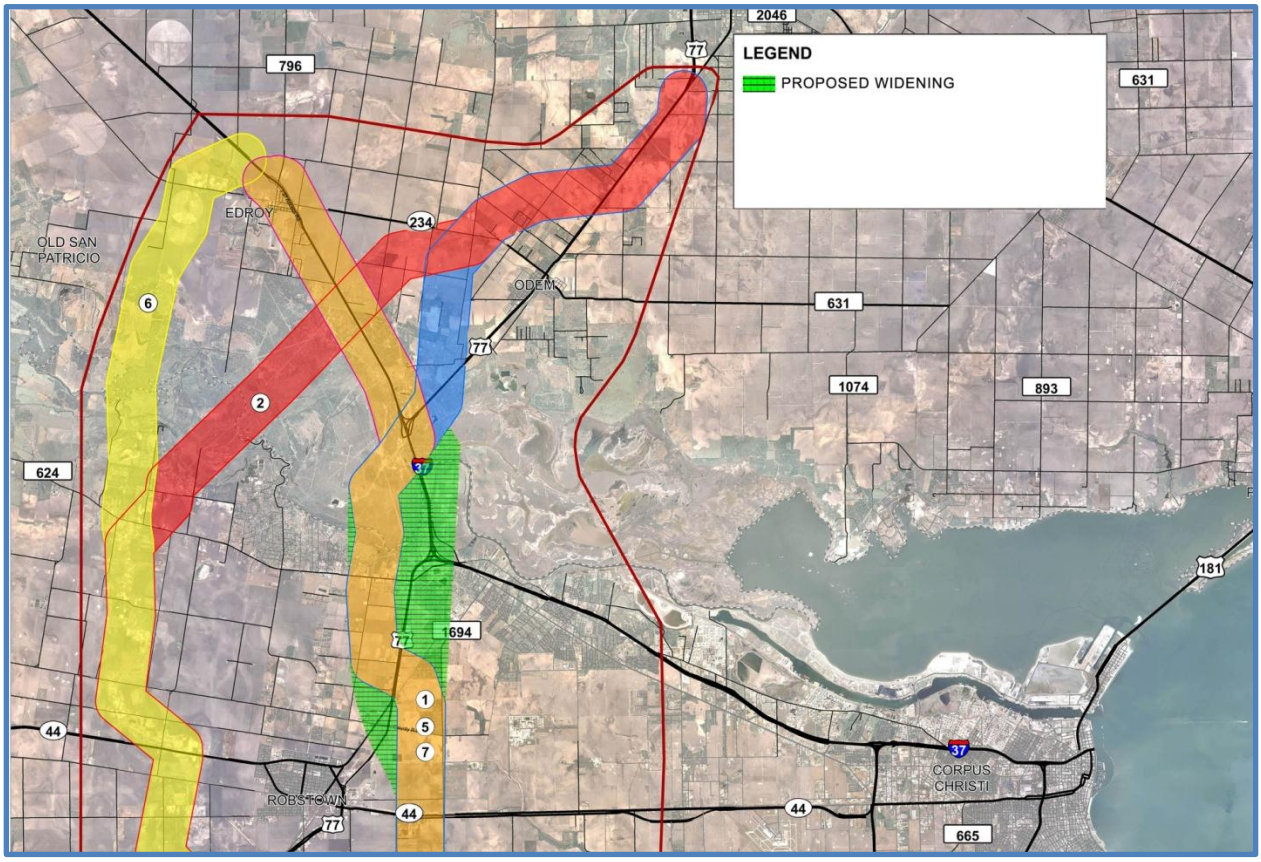


Figure 4-2: Corridor Widening North of SH 44

Other modifications made to the Viable Alternatives were an expansion of the corridors in the location just east of Petronila and smoothing out the corridor at the north entrance to the King Ranch. It was noted upon further visual inspection of the latest aerial images that there was little development and minimal existing facilities that would preclude an alignment in this area. Since these changes would effectively modify all corridors and would not skew the analysis results, these changes were adopted to add flexibility during the future NEPA phase of project development. These changes are shown in **Figure 4-3**.

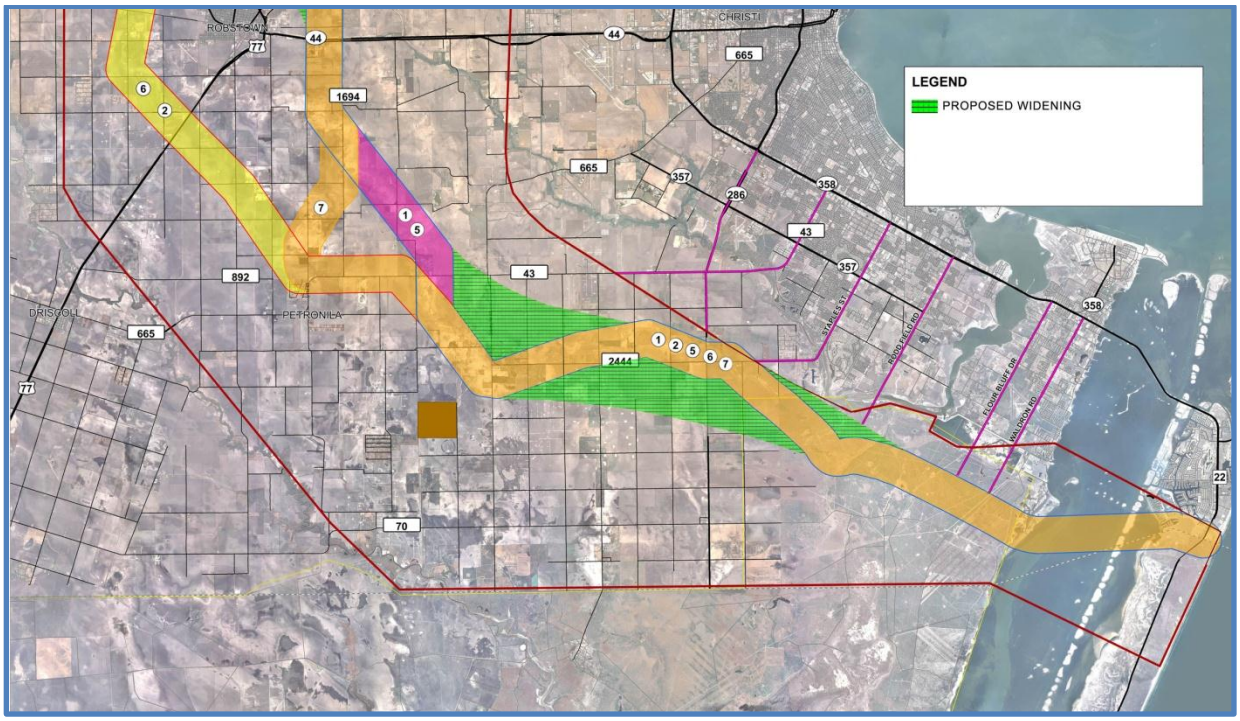


Figure 4-3: Corridor Widening East of Petronila

The next modification made to the corridors was to eliminate all corridors northeast of IH 37. The rationale behind this modification stems from the need to directly compare the alternatives by giving them a similar beginning and endpoint. Previously, the southern terminus was consistent for all alternatives. However, the northern terminus had two distinct endpoints; one near Edroy and the other near Sinton. Therefore, Alternatives 1 and 2 were modified to terminate at IH 37. Upon visual inspection of the alternatives, it became apparent that Alternative 7 was redundant with Alternative 5, since the only difference was a slight jog westward just north of Petronila. It was for this reason that Alternative 7 was removed from the Viable Alternative list and precluded from the analysis. The final Viable Alternatives analyzed in this phase of study are depicted in **Figure 4-4.**

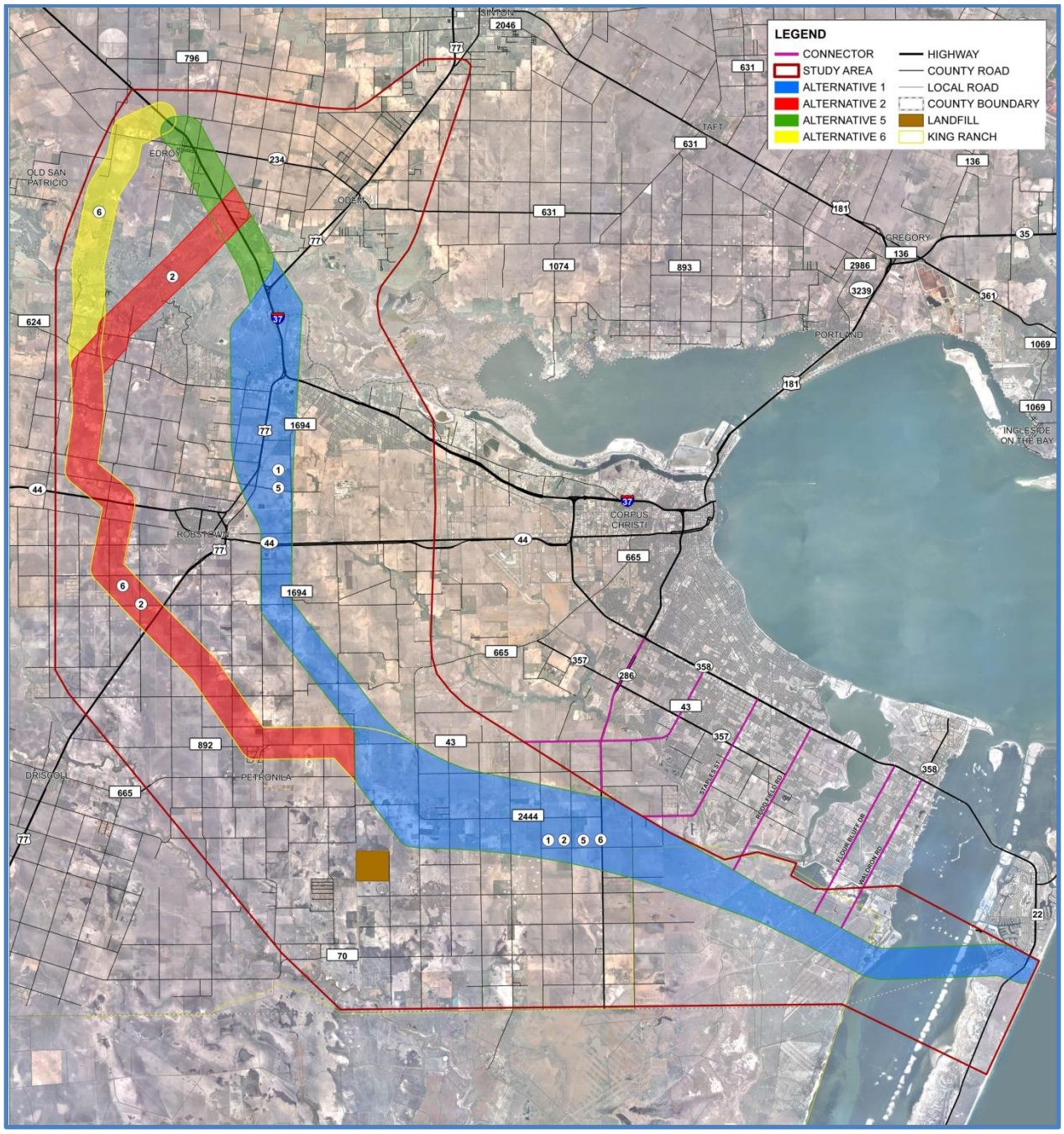


Figure 4-4: Viable Alternatives for Evaluation (Modified)

4.2. Social and Environmental Evaluation

The use of AART, along with multiple, existing data sets including environmental features, land uses, and other information, resulted in the identification of the Universe of Alternatives. These multiple corridor alternatives were further evaluated and modified using a decision matrix in addition to input from local entities and the PCC, resulting in the

identification of four Viable Alternatives. The decision matrix included a ranking methodology in which the highest score indicated that the alternative was best suited for the proposed use, and a lower score indicated that it was the worst suited. The selected Viable Alternatives and the No-Build Alternative were then evaluated for social and environmental concerns after incorporating the modifications made to the alternative corridors, as previously described. These modifications resulted in the creation of a common corridor area for the Viable Alternatives which originated east of Petronila and terminated at PR 22. The major criteria used in this subsequent evaluation were selected to generate a more detailed assessment of each alternative. Details of the different alternative screening criteria, the methods used in the evaluation of the Viable and No-Build Alternatives, and the resulting rankings are described in the following paragraphs.

The potential social and environmental impacts for the No-Build and four Viable Alternatives were evaluated using the ten major criteria listed below:

- Noise Level Impacts
- Social and Economic Impacts
- Cultural Resource Impacts
- Air Quality Impacts
- Vegetation and Wildlife Habitat Impacts
- Wetland Impacts
- Water Quality Impacts
- Hazardous Materials
- 4(f) Property Impacts
- Land Use Impacts

4.2.1. Noise Level Impacts

The areas considered to be adversely impacted by increased noise levels include parks, public and residential areas, and schools. Existing land use values provided by AART allowed the calculation of the total number of acres of these areas found within the individual corridor alternatives. These areas were then summed and a percentage of the overall corridor was calculated. Alternatives containing a lower percentage of noise impacted areas were considered to be more suitable for the proposed RPMC. Results of the noise level impacts analysis are included below in **Table 4-1**.

Of the analyzed alternatives, Alternative 6 included a low number of noise sensitive receivers along with the No- Build Alternative. Alternative 2 contained a moderate number of sensitive receivers, and Alternatives 1 and 5 included a larger number of sensitive receivers making these the least desirable from the noise level impact perspective.

Table 4-1: Noise Level Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	60	80	60	100

4.2.2. Social and Economic Impacts

The 2010 census data was used to establish the number of census blocks within each corridor and identify those blocks which included either a minority population or an income level below the Health and Human Services 2012 poverty level ($22,350 for a family of four). A higher value was assigned to any census blocks located within urban areas based on the assumption that these urban areas would include a greater number of persons, thereby resulting in greater social and economic impacts from the RMPC. The percentage of urban census blocks found within each alternative, along with the existence of minority populations or low income census blocks, were used to estimate the rankings. The highest score was given to the alternatives that included the smallest percentage of urban areas and the lowest number of minority populations or low income groups. The results of the social and economic impacts analysis are included below in **Table 4-2.**

Alternatives 1 and 5 included the largest number of census blocks and the greatest percentage of census blocks located within urban areas. These two alternatives also included census blocks that included both minority populations and lower income levels. Alternative 2 included the smallest percentage of census blocks found in urban areas and no minority or low income populations. Alternative 6 did not include any minority populations or low income areas, but included a

slightly higher percentage of urban census blocks than Alternative 2. The No-Build Alternative score reflects the loss of possible future economic opportunities within the area.

Table 4-2: Social and Economic Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
80	40	80	60	80

4.2.3. Cultural Resources Impacts

The cultural resources impacts analysis included two sources of data: historic district, and archeological impacts. The King Ranch Historic District (KRHD) was the only historic district found within the study area. Because the Viable Alternative corridors were modified to include a common corridor area through the KRHD, the same values were assigned to each alternative. The No-Build Alternative would have no effect on any historic district. The results of the historic district impacts are included below in **Table 4-3**.

Table 4-3: Historic District Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	80	80	80	80

The archeological impacts analysis included values provided by AART. Multiple categories were used to determine a total impact ranking. The scoring of archaeological impacts included the sum of the acres of known site points and the weighted value of the probability of the occurrence of archeology sites, which was used to determine the percentage of archeological areas that would potentially occur within each alternative. This value, in addition to the total acres of known archeological sites and the acres of known cemeteries, was used to determine the alternative rankings. A larger number of high probability areas for archaeological sites, known archeological sites, or known cemetery locations are all considered to be negative factors for alternative selection. Alternatives 2 and 6 included a lower percentage of acres of high probability archeological sites and known archeological site points, which resulted in a higher ranking than Alternatives 1 and 5. In addition, Alternatives 2 and 6 contained a smaller number of acres of known archeological sites than Alternatives 1 and 5. The No-Build Alternative would not impact any known or probable archeological sites or cemeteries. The results of the archeological impacts analysis are included below in **Table 4-4**.

Table 4-4: Archeological Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	60	80	60	80

4.2.4. Air Quality Impacts

Air quality impacts analysis was based on the land use determination provided by AART. This analysis utilized the percent of acreage of commercial, industrial, oil facility, transportation, public, residential, and school areas within each alternative corridor. These land use types were selected because they either contribute to air quality issues as a sensitive receptor for bad air levels, or as a contributor to higher air pollution levels. Alternative 6 included the smallest percentage of commercial, industrial, oil facility, transportation, public, residential and school areas. Alternative 2 included a percentage of these areas that was approximately half that of Alternatives 1 and 5. Alternative 5 had the largest percentage of air quality impacts among the Viable Alternatives. The No-Build Alternative score reflects anticipated greater traffic congestion and idling within the project area which would result in an increase in air quality impacts. The results of the air quality impact analysis are included below in **Table 4-5**.

Table 4-5: Air Quality Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
20	40	80	40	100

4.2.5. Vegetation and Wildlife Habitat Impacts

The vegetation and wildlife habitat impacts analysis was calculated using several factors including the percentage in each alternative corridor of agricultural, open water, and undeveloped areas provided by AART. These land use areas were selected because most agricultural, open water and undeveloped areas include more vegetation and wildlife habitat areas than more developed areas. Additional factors included the documented occurrence of threatened or endangered species and the presence of designated critical habitat areas. A higher number of endangered or threatened species occurrences decreased the corridors' rank due to resulting project limitations legislated by the Endangered Species Act and administered by the U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD). If the alternative included river or stream crossings, additional impacts to riparian habitat and aquatic species were assumed and the ranking value was decreased. Alternatives 1 and 5 included the documented occurrence of one endangered species and one threatened species while Alternatives 2 and 6 only had one threatened species occurrence. The percentage of available

acres of agricultural, open water, and undeveloped areas within the Viable Alternatives was lowest in Alternative 5 and highest in Alternative 6. All alternatives crossed through critical habitat for the Piping Plover, a federal and state threatened species. The results of the vegetation and wildlife habitat impacts analysis are included below in **Table 4-6**.

Table 4-6: Vegetation and Wildlife Habitat Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	60	80	60	80

4.2.6. Wetland Impacts

The wetland impacts analysis included wetland areas provided by AART. Wetland impacts were calculated using the percentage of acres of identified wetlands found within each Viable Alternative. In addition, the percentage of wetland areas which received a higher AART relative ranking of 8 or 9 (indicating a higher environmental value) was also considered in this analysis. Alternatives 2 and 6 had the lowest percentage of wetland areas with a value under 12 percent. Alternatives 1 and 5 included percentages of wetland areas of 13.6 percent and 14.8 percent, respectively. The percentage of wetland areas relatively ranked as 8 or 9 was similar for all Viable Alternatives. No wetland impacts would result from the No-Build alternative. The results of the wetland impacts analysis are included below in **Table 4-7**.

Table 4-7: Wetland Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	60	80	60	80

4.2.7. Water Quality Impacts

The water quality impacts analysis incorporated a number of factors including the existing land use values provided by AART for floodplain and waterbody acres. The percentage of floodplain and waterbody acres within each alternative was calculated and used in the ranking determination. The water quality impact rankings also included the number of stream crossings which were designated as either major or minor within each alternative. The numbers of acres of each type of floodplain area, existing water quality conditions and the crossing of significant stream segments or segments listed on the Texas Commission on Environmental Quality (TCEQ) 303(d) list were also used to determine the ranking of each alternative. The percentage of the alternative corridor that included floodplain and waterbody areas was lowest for Alternatives 2 and 6 and Alternative 5 was the greatest. The total number of stream crossings ranged from a low of ten for Alternative 6 to a high of 14 for Alternative 2. All Viable Alternatives cross some

portion of Oso Creek and Laguna Madre which are listed on 303(d) list as impaired by TCEQ. The results of the water quality impacts analysis are included below in **Table 4-8**.

Table 4-8: Water Quality Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	40	60	40	80

4.2.8. Hazardous Materials

The hazardous materials analysis used the number of mapped locations from Resource Conservation and Recovery Act data, and Environmental Protection Agency and TCEQ hazardous materials sites along with federal superfund site locations to generate a total number of documented hazardous materials sites per Viable Alternative. Alternatives 2 and 6 included a lower number of sites (seven and six respectively), compared with 39 sites in Alternative 1 and 40 sites within Alternative 5. No superfund sites were located within any of the Viable Alternative corridors. No impacts to hazardous materials would occur with the No-Build Alternative. The results of the hazardous materials analysis are included below in **Table 4-9**.

Table 4-9: Hazardous Materials Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	40	80	40	80

4.2.9. 4(f) Property Impacts

The Section 4(f) property impacts analysis were based on the number of acres of potential 4(f) sites including recreation areas and parks found within each alternative and the relative social or environmental importance of each site. Under Section 4(f) of the 1966 Transportation Act, projects which impact or use public parks, recreation areas, wildlife or waterfowl refuges and historic sites, must perform a 4(f) evaluation which can be time consuming and costly for the project. No Federal or State Parks, historic sites, or refuges of any kind were located within any Viable Alternative corridor. Total acres of 4(f) impacts were rated with alternatives including larger possible impacts considered less suitable and alternatives with smaller impacts considered more suitable. Alternative 6 had the least amount of impact among the Viable Alternatives with no 4(f) properties located within the corridor. Alternatives 1 and 5 both contained four areas that could be considered as 4(f) properties. No 4(f) properties would be impacted with a No-Build Alternative. The results of the Section 4(f) Property impacts within the Viable and No-Build Alternative are included in **Table 4-10**.

Table 4-10: 4(f) Parks Impacts

No-Build	Alt 1	Alt 2	Alt 5	Alt 6
100	60	80	60	100

4.2.10. Land Use Impacts

The land use impacts analysis used existing land use values provided by AART, the location of oil and gas wells from the Texas Railroad Commission, and Soil Survey Geographic Database (SSURGO) soils data from the U.S. Department of Agriculture. Impacts were further divided into five categories; farmland, residential, commercial, oil wells, and gas wells. The ranking of each category is discussed below followed by the results of the land use impacts in **Table 4-11.**

Farmland Impacts were determined by utilizing the number of acres of prime farmland provided by AART for the Viable Alternatives. The prime farmland category included the total land use acres of old field agriculture, pasture, and row crops found within each alternative. The total percentage of prime farmland found within each alternative was then determined and used to help establish the alternative ranking. Prime farmland is a designation assigned by U.S. Department of Agriculture defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The use of prime farmland soil for other purposes should be avoided if possible. The number of acres of soils considered to be prime farmland soils was also included in this analysis. Alternatives 1 and 5 contained a lower number of acres of prime farmland that would be impacted and Alternatives 2 and 6 included values which were higher. All the Viable Alternative corridors included a percentage of prime farmland that exceeded 70 percent. No impacts to prime farmland would occur with the No-Build Alternative.

Residential impacts were determined using the existing acres of residential land use areas provided by AART. The original land use determination was made utilizing current aerial photography to determine where the residential areas occurred within each alternative. The ranking was based on the percentage of residential areas found within each alternative corridor. Alternative 6 included the lowest amount of residential land use with only 2.3 percent of the alternative corridor. Alternative 2 included 2.7 percent and Alternatives 1 and 5 included 3.6 and 4.7 percent, respectively.

Commercial impacts were determined by using the existing acres of commercial areas provided by AART. The ranking was based on the total percentage of commercial areas found within each

alternative corridor. Alternatives 2 and 6 contained approximately 0.5 percent of commercial land use within their corridors making them the highest scored among the Viable Alternatives. Alternatives 1 and 5 contained approximately 1.2 percent each of commercial land use within their corridors resulting in a lower score.

Oil well impacts included the number of known existing oil wells within each Viable Alternative as provided by AART. The ranking was based on the total number of oil wells found within each alternative corridor. Alternative 6 included the least number of oil wells with 372 wells reported. Alternatives 1 and 5 included less than 450 total wells and Alternative 2 included the greatest number of oil wells reported with 499.

Gas well impacts utilized the existing number of gas wells provided by the AART program within the Viable Alternatives. The ranking was based on the total number of gas wells found within each alternative corridor. Alternative 5 included the lowest number of gas wells with 68 within the corridor. Alternative 6 contained 85 gas wells, Alternative 1 106 gas wells, and Alternative 2 127 gas wells.

Table 4-11: Land Use Impacts

	No-Build	Alt 1	Alt 2	Alt 5	Alt 6
Farmland	100	80	60	80	60
Residential	100	40	60	40	80
Commercial	100	60	80	60	80
Oil Wells	100	60	40	60	80
Gas Wells	100	60	40	80	60

4.2.11. Overall Results of Social and Environmental Evaluation

Each social and environmental analysis category was averaged to establish an overall score for each alternative, which is summarized in **Table 4-12.** Based on these scores, the No-Build alternative scores the highest reflecting the fact that no construction yields fewer social and environmental impacts. Alternative 6 is the highest ranked of the Viable Alternatives with a score of 81.33. Alternative 2 included a score of 70.67 and Alternatives 1 and 5 are similarly ranked with scores of 56.00 and 58.67, respectively.

Table 4-12: Overall Social and Environmental Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
93.33	56.00	70.67	58.67	81.33

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 5	ALTERNATIVE 6
Rank	**1**	**5**	**3**	**4**	**2**
OVERALL SCORE	**93.33**	**56.00**	**70.67**	**58.67**	**81.33**

SOCIAL AND ENVIRONMENTAL IMPACTS					
Noise Impacts					
Noise Impacts	100	60	80	60	100
Social and Economic Impacts					
Social and Economic Impacts	80	40	80	60	80
Cultural Resource Impacts					
Historic District Impacts	100	80	80	80	80
Potential Archeological Impacts	100	60	80	60	80
Air Quality Impacts					
Air Quality Impacts	20	40	80	40	100
Vegetation and Wildlife Habitat Impacts					
Vegetation and Wildlife Habitat Impacts	100	60	80	60	80
Wetland Impacts					
Wetland Impacts	100	60	80	60	80
Water Quality Impacts					
Water Quality Impacts	100	40	60	40	80
Hazardous Materials					
Hazardous Materials	100	40	80	40	80
4F Parks Impacts					
4F Parks	100	60	80	60	100
Land Use Impacts					
Farmland	100	80	60	80	60
Residential	100	40	60	40	80
Commercial	100	60	80	60	80
Oil Wells	100	60	40	60	80
Gas Wells	100	60	40	80	60
SOCIAL AND ENVIRONMENTAL SUBTOTAL	**1400**	**840**	**1060**	**880**	**1220**
SOCIAL AND ENVIRONMENTAL AVERAGE	**93.33**	**56.00**	**70.67**	**58.67**	**81.33**

Figure 4-5: Summary of Environmental Decision Matrix for Viable Alternatives

4.3. Traffic and Mobility Evaluation

This section summarizes the results of the traffic/mobility evaluation of the four Viable Alternatives (Alternatives 1, 2, 5 and 6).

4.3.1. Viable Alternative Corridors

As mentioned previously, each of the Viable Alternatives was defined as a one-mile corridor routed to minimize impacts of known environmental constraints and residential developments as determined from available data. For the purpose of modeling these alternatives the centerline of the one-mile corridor was coded in the travel demand model. The RPMC was coded as a divided parkway with two lanes in each direction and no frontage roads.

The main lane speed was set at 70 mph throughout the length of the alternative, and ramps were coded in accordance with their area types consistent with the rest of the model. Ramps were modeled at intersections of significant roadways to provide access in key areas along the corridor. Where appropriate, significant existing roads such as SH 357 (Rodd Field Road), FM 2444 (Staples Street), Flour Bluff Drive, and Waldron Road were extended to intersect with the RPMC.

4.3.1.1. Alternative 1

The corridor for Alternative 1 passes east of Robstown, TX as shown in **Figure 4-6**. The full corridor is 41 miles long. Ramps and connections were provided in 12 locations. The connections from east to west are at PR 22, Waldron Road, Flour Bluff Drive, Rodd Field Road, SH 286, FM 2444, FM 665, FM 1694/FM 892, SH 44, US 77, FM 624, and IH 37.

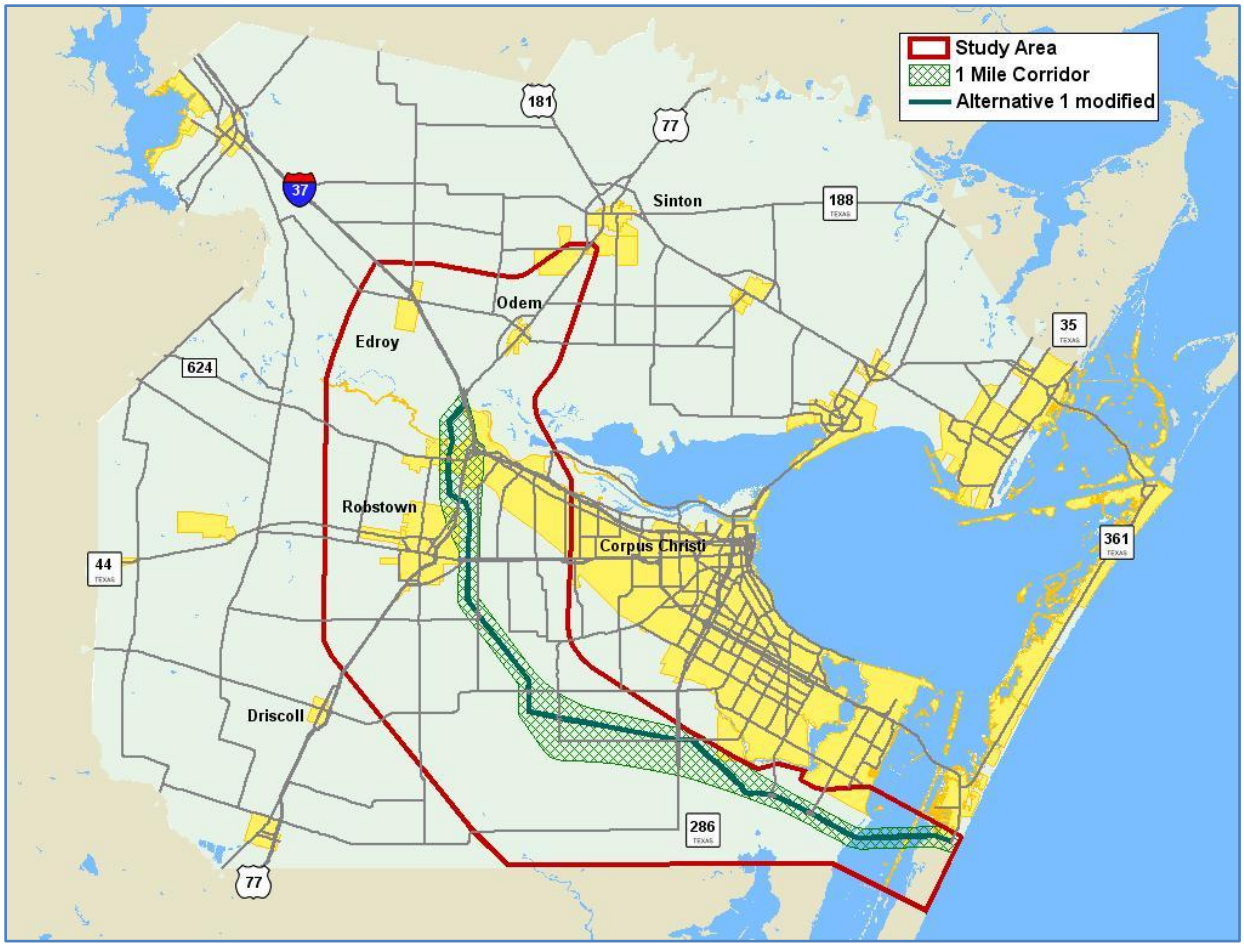


Figure 4-6: Alternative 1

4.3.1.2. Alternative 2

The corridor for Alternative 2 is shown in **Figure 4-7**. It is 50 miles long and passes west of Robstown, TX. Ramps and connections were provided in 14 locations. The connections from east to west are at PR 22, Waldron Road, Flour Bluff Drive, Rodd Field Road, SH 286, FM 2444, FM 665, FM 1694, FM 892, FM 2826, US 77, SH 44, FM 624, and IH 37.

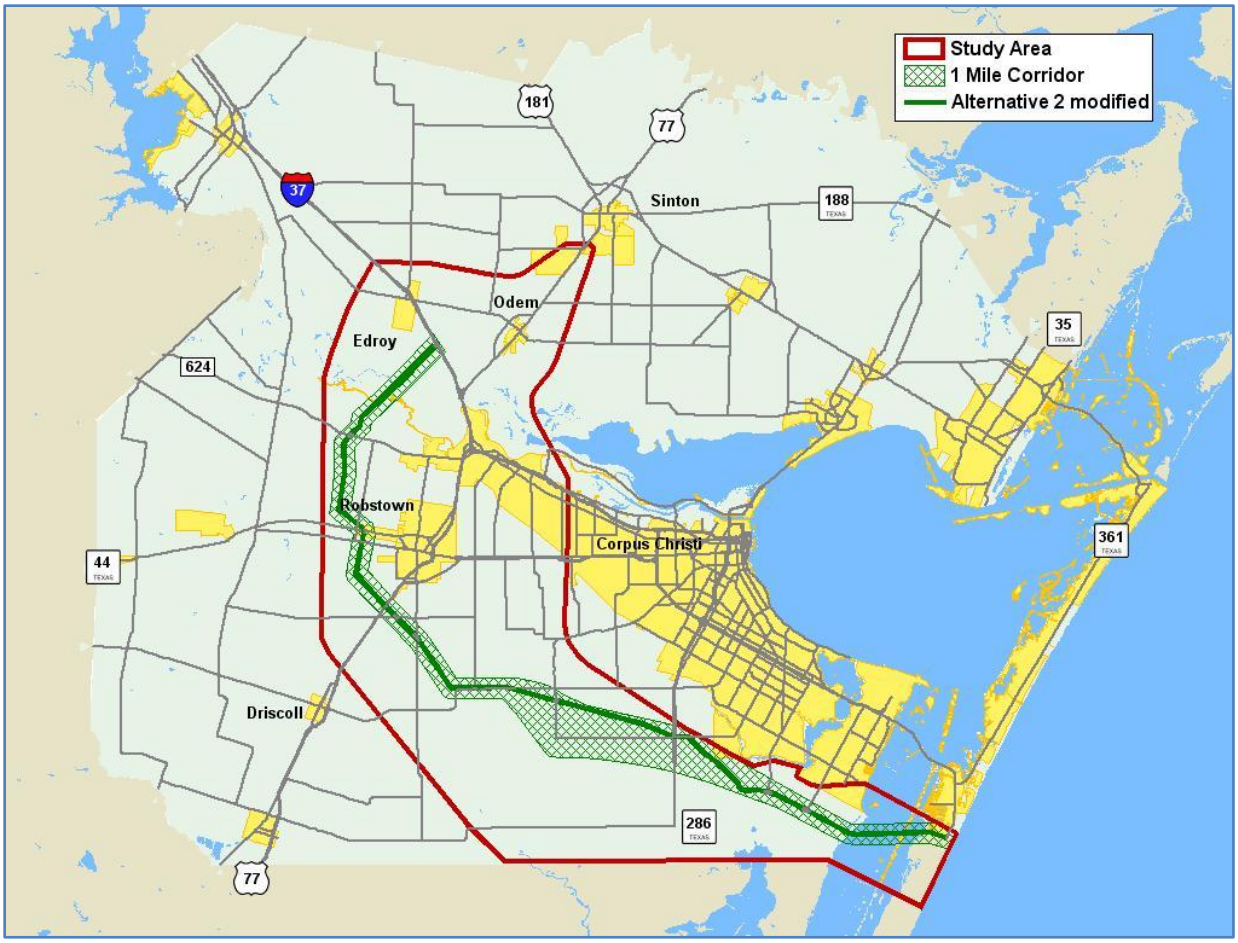


Figure 4-7: Alternative 2

4.3.1.3. Alternative 5

The corridor for Alternative 5 is shown in **Figure 4-8**. This alternative is 48 miles long. It passes east of Robstown, TX. Ramps and connections were provided in 14 locations. The connections from east to west are at PR 22, Waldron Road, Flour Bluff Drive, Rodd Field Road, SH 286, FM 2444, FM 665, FM 1694, SH 44, US 77, FM 624, IH 37/US 77, SH 234, and IH 37/FM 796. This alternative runs parallel to IH 37 for about six miles. Ramp connections from the RPMC to IH 37 main lanes were therefore coded in this section to allow traffic to access the IH 37 frontage roads using existing ramps.

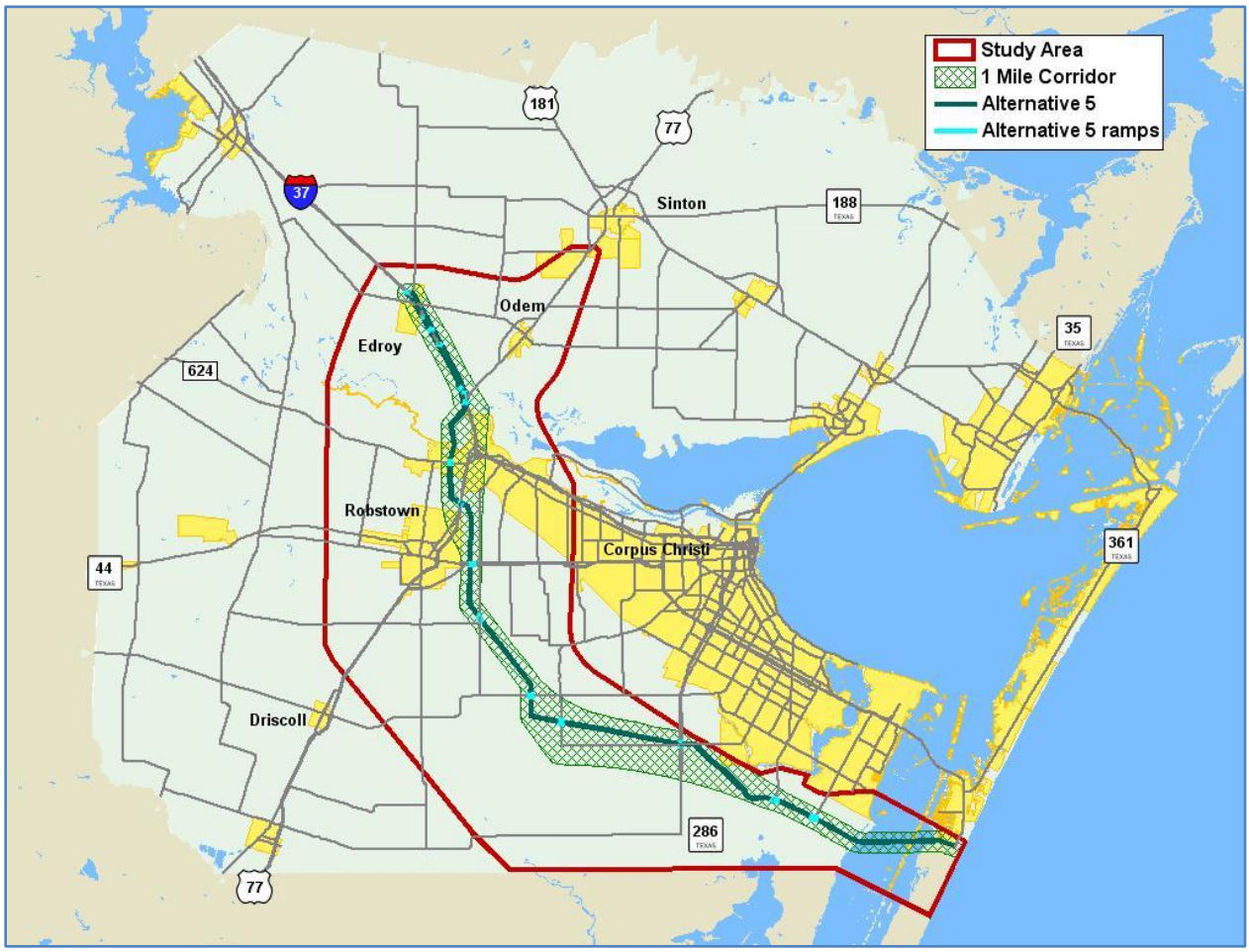


Figure 4-8: Alternative 5

4.3.1.4. Alternative 6

The corridor for Alternative 6 is shown in **Figure 4-9**. This alternative is 52 miles long. It passes west of Robstown, TX. Ramps and connections were provided in 13 locations. The connections from east to west are at PR 22, Waldron Road, Flour Bluff Drive, Rodd Field Road, SH 286, FM 2444, FM 665/FM 1694, FM 892, FM 2826, US 77, SH 44 FM 624, and IH 37.

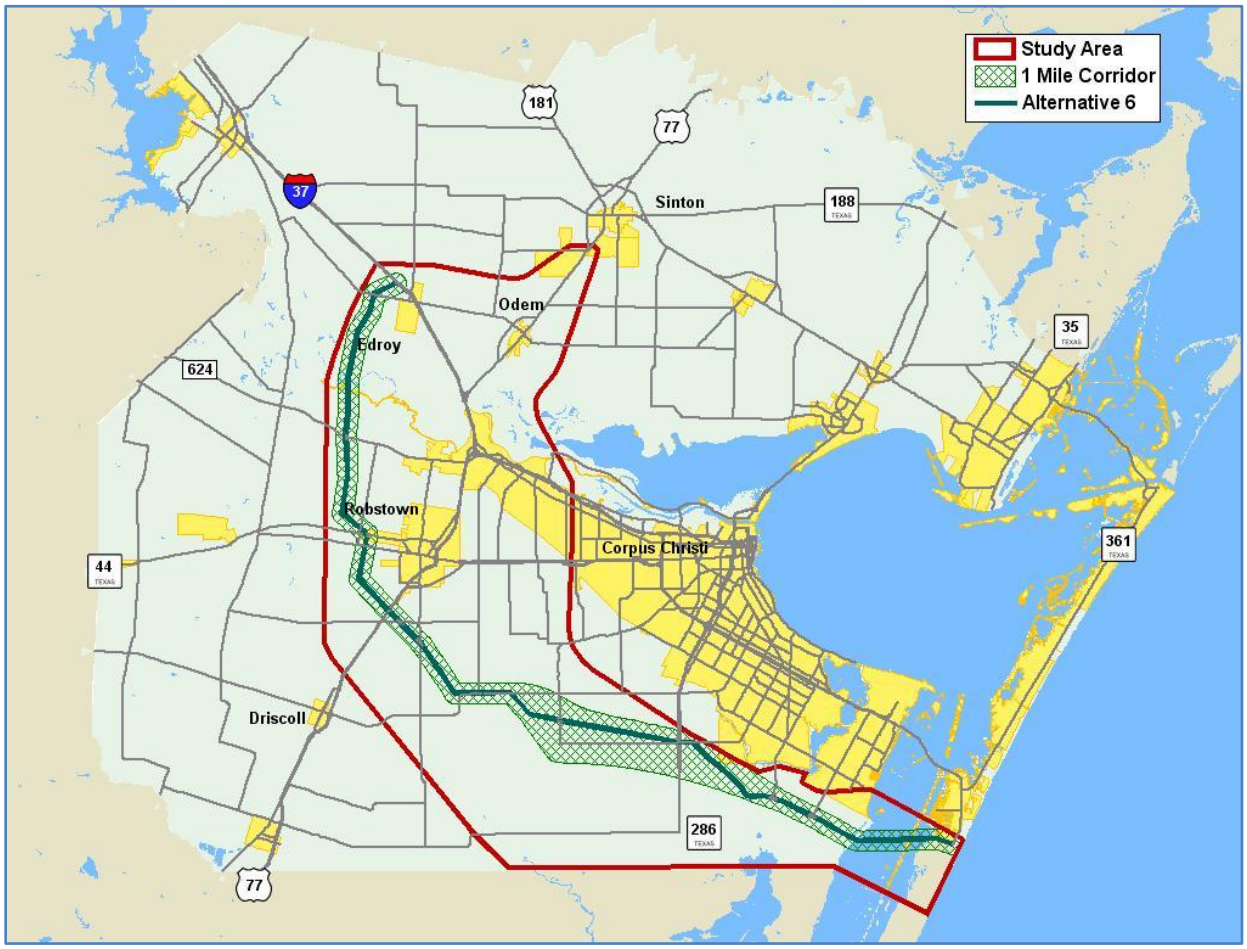


Figure 4-9: Alternative 6

4.3.2. Traffic Volumes and LOS for the Viable Alternatives

The Viable Alternatives were coded in the travel demand model in order to forecast travel demand and measures of effectiveness such as LOS, VHT, and others for use in comparing the corridor alternatives. Details of those measures and the comparison of the Viable Alternatives based on these criteria are discussed in the following sections. Traffic volumes for the RPMC and significant study area roadways are summarized in **Exhibits 1 through 4 (Appendix C)** for the four Viable Alternatives. LOS for the RPMC and significant study area roadways are summarized in **Exhibits 5 through 9 (Appendix C).**

4.3.3. Traffic/Mobility Evaluation Results

The No-Build and Viable Alternatives were evaluated using the following eight criteria:

- Travel Demand
- Vehicle Hours Traveled (VHT)
- Average Speed
- Level of Service (LOS)
- Effect on Study Area Roadway Network
- Conformance with Transportation Plans
- Toll Feasibility
- Emergency Evacuation

4.3.3.1. Travel Demand

Each alternative was evaluated based on the volume of traffic the alternative is projected to attract from the regional roadway network. The scoring was based on the projected RPMC daily traffic volumes in 2040 for each alternative. A higher number of vehicles is indicative of a corridor that is more effective in attracting traffic and as such, warrants a higher score. **Table 4-13** summarizes overall average weighted traffic volumes for the entire length of each alternative. These volumes were derived by averaging the volume for various segments of the RPMC

weighted by the length of each segment. Alternative 1 has the highest average projected volume of 24,290 vpd; Alternative 6 has the lowest with 18,910 vpd. In this category, the No-Build was awarded 20 points as it does not provide a benefit over the existing and is the least favorable in this category. Alternative 6 was awarded 80 points as it is the least favorable of the build alternatives but better than the No-Build. The projected traffic volumes for Alternatives 1, 2, and 5 are within six percent of each other and were therefore each awarded a score of 100. Evaluation scores are summarized in **Table 4-14**.

Table 4-13: Regional Parkway Average 2040 Volumes

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
-	24,290	21,450	22,820	18,910

Table 4-14: Travel Demand Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	100	100	100	80

4.3.3.2. Vehicle Hours Traveled (VHT)

VHT is a measure of the time spent by road users traveling on the roadway network. It is derived by adding up the time spent by all traffic on the regional roadway network. The projected VHT for each build alternative was compared with the No-Build Alternative with the highest reduction in VHT yielding the highest score. VHT is summarized in **Table 4-15**. The data show that Alternative 6 would result in the greatest decrease in VHT (100 points) compared to the No-Build scenario and Alternative 1 would result in the least decrease in VHT (60 points). The No-Build had the highest VHT and was therefore scored as 20. Scoring for each alternative based on VHT is summarized in **Table 4-16**.

Table 4-15: Year 2040 Vehicle Hours Traveled in the Region

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
	641,005	553,795	550,945	547,303	541,004
Reduction compared to No-Build	**-**	**-87,210**	**-90,060**	**-93,702**	**-100,001**

Table 4-16: VHT Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	60	60	80	100

4.3.3.3. Average Speed

Table 4-17 shows that for all build alternatives, a speed of approximately 70 mph is projected along the RPMC. The build alternatives were therefore awarded a score of 100 and the No-Build a score of 20.

Table 4-18 shows the effect of each alternative on the rest of the roadway network but does not include the speed on the RPMC to avoid data bias. All the build alternatives are projected to result in speeds of 34-35 mph in the region and were awarded a score of 100. The No-Build Alternative, however, is projected to have an average speed approximately five mph lower than the other alternatives and was therefore given a score of 20. **Table 4-19** summarizes the scoring results for the Viable Alternatives and the No-Build alternative with respect to average speeds.

Table 4-17: Year 2040 Average Speed (mph) along the Regional Parkway

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
-	69.0	69.6	67.9	69.1

Table 4-18: Year 2040 Average Speed (mph) in the Region

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
29.5	34.3	34.5	34.6	34.7

Table 4-19: Average Speed Evaluation Scores

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Regional Parkway	20	100	100	100	100
Region	20	100	100	100	100

4.3.3.4. Level of Service (LOS)

LOS is a qualitative measure of traffic operations, ranging from LOS A to LOS F. LOS A-C represents traffic ranging from free-flow conditions to stable flow conditions causing minor traffic flow disruptions. LOS D represents imminent instability in traffic flow conditions. LOS E represents noticeable traffic congestion with travel demand approaching or at roadway capacity. LOS F represents severe traffic congestion with travel demand exceeding roadway capacity causing stop-and-go traffic flow conditions. This evaluation criteria is based on the overall reduction of forecasted roadway miles with LOS E/F of each alternative compared to the No-Build Alternative.

The total miles in the regional roadway network operating at LOS E/F as well as the evaluation scores are summarized in **Table 4-20** for each alternative. Alternative 6 is projected to result in the greatest reduction in number of regional roadway miles operating at LOS E/F in 2040. Evaluation scores are summarized in **Table 4-21**.

Table 4-20: Year 2040 Regional LOS Summarized by Miles

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Miles at LOS A	478	521	534	529	546
Miles at LOS B	165	166	176	206	226
Miles at LOS C	206	261	264	224	214
Miles at LOS D	170	193	192	200	197
Miles at LOS E	159	152	151	141	133
Miles at LOS F	244	220	213	228	219
Miles at LOS E/F	403	372	364	369	352
LOS E/F Reduction compared to No-Build	-	**-11**	**-39**	**-34**	**-51**

Table 4-21: LOS Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	60	80	80	100

4.3.3.5. Effect on Regional Roadway Network

One of the stated needs for the proposed RPMC is traffic relief on regional roadways. The goal is for the proposed RPMC is to reduce congestion on roads such as FM 624, serve as an alternate route for SH 358 and IH 37, and provide an alternate route for traffic connecting from US 77 to Corpus Christi and other major developed areas. An important measure is therefore, the effect that each alternative corridor has on the existing roadway network. In general, the more traffic volumes an alternative attracts from existing roadways, the more favorable it is. It should be noted, however, that in some instances the changing travel patterns and the need for new routes to access a RPMC alternative sometimes causes a localized increase in traffic. The weighted average volumes for the selected regional roadways for each alternative are summarized in **Table 4-22**. The changes in the 2040 volumes for selected regionally significant roads compared to the No-Build alternative are shown in **Table 4-23.** The overall evaluation scores considering the weighted average volumes and the comparison to the No-Build are summarized in **Table 4-24**.

Table 4-22: Year 2040 Average Daily Volumes on Existing Roadways

Roadway	From	To	No-Build	Alt 1	Alt 2	Alt 5	Alt 6
SH 358	IH 37	SH 361	102,990	89,660	89,090	90,630	88,910
SH 44	County Line	SH 358	48,600	49,280	42,880	51,990	42,790
IH 37	County Line	SH 286	53,250	47,760	51,360	43,840	48,010
SH 286	IH 37	FM 2444	71,090	81,530	85,630	79,300	83,360
US 77	County Line	County Line	51,260	49,830	52,150	50,000	53,670
FM 624	County Line	US 77	21,100	21,020	16,870	18,630	14,810
FM 43	SH 358	FM 665	18,200	15,390	16,080	15,460	18,710
FM 665	FM 43	County Line	7,040	7,590	5,500	4,960	6,740
Ocean Dr	Morgan	NAS Gate	19,430	18,650	18,610	18,570	18,490

Table 4-23: Change in Year 2040 Volumes Compared to No-Build on Existing Roadways

Roadway	From	To	Alt 1	Alt 2	Alt 5	Alt 6
SH 358	IH 37	SH 361	-13,330	-13,900	-12,360	-14,080
SH 44	County Line	SH 358	680	-5,720	3,390	-5,810
IH 37	County Line	SH 286	-5,490	-1,890	-9,410	-5,240
SH 286	IH 37	FM 2444	10,440	14,540	8,210	12,270
US 77	County Line	County Line	-1,430	890	-1,260	2,410
FM 624	County Line	US 77	-80	-4,230	-2,470	-6,290
FM 43	SH 358	FM 665	-2,810	-2,120	-2,740	510
FM 665	FM 43	County Line	550	-1,540	-2,080	-300
Ocean Dr	Morgan	NAS Gate	-780	-820	-860	-940

Table 4-24: Effect on Regional Roadway Network Evaluation Scores

Roadway	No-Build	Alt 1	Alt 2	Alt 5	Alt 6
Reduced congestion on SPID	20	80	100	60	100
Reduced congestion on SH 357	20	80	100	60	100
Reduced congestion on SH 44	40	40	100	20	100
Reduced congestion on IH 37	20	80	60	100	80
Reduced congestion on SH 286	100	40	20	60	40
Reduced congestion on US 77	80	100	60	100	20
Reduced congestion on FM 624	20	60	80	80	100
Reduced congestion on FM 43	40	100	80	100	20
Reduced congestion on FM 665	40	20	80	100	60
Reduced congestion on Ocean Dr	20	60	80	80	100

Alternatives 2 and 6 scored highest in terms of reducing congestion on SH 358 (South Padre Island Drive) and SH 44. Alternative 6 scored the highest with reducing congestion on FM 624. Alternatives 1 and 5 scored the highest with regard to reduced congestion on US 77 and FM 43; Alternative 5 would also provide the most relief for IH 37 and FM 665. From a traffic volume standpoint, the No-Build alternative scored higher than the build alternatives with regard to SH

286 due to the fact that this roadway would be one of the major carriers of traffic to and from the RPMC.

4.3.3.6. Safety

A crash analysis was conducted for the study area based on 3-year data from 2007-2009. Crash rates were derived and compared to statewide rates for similar roadways. Crash rates reflect the influence of traffic volumes, roadway type, conditions, and accessibility on safety. Overall, most of the crash rates on the roadways in the study area are lower than the statewide average. A few roadways, such as SH 286, were found to have a crash rate slightly higher than the statewide average for each of the three years. A roadway is typically considered to have a crash concern when the crash rate is more than double the statewide average. Based on this standard, none of the roadways in the study area were found to have a crash concern. However, the City of Corpus Christi maintains a list of collision-prone areas within its jurisdiction[1]. In 2010, portions of S. Padre Island Drive, Saratoga Boulevard, Holly Road, and Weber Road were on that list. A reduction in traffic volumes without any changes in roadway type and conditions would result in a reduction in crash rate for these collision-prone locations. The projected reductions in traffic volumes on these roadways as a result of the four Viable Alternatives along with the evaluation score are summarized in **Table 4-25**. Alternatives were scored based on the total reduction in traffic volumes. Therefore Alternative 1 scored the highest of the build alternatives and Alternative 6 the least, as shown in **Table 4-26**.

Table 4-25: Year 2040 Traffic Volume Reduction on Collision-Prone Roadways

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
SH 358	-	-13,330	-13,900	-12,360	-14,080
Staples Street	-	2,340	3,030	1,860	2,910
Saratoga Boulevard	-	-2,870	-2,950	-2,540	-3,030
Weber Road	-	-2,810	-2,120	-2,740	510
Holly Road	-	-130	50	160	10
Total Reduction		-16,800	-15,890	-15,620	-13,680

Table 4-26: Traffic Volume Reduction on Collision-Prone Roadways Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	100	80	80	60

[1] http://www.caller.com/news/2010/jan/23/harbor-bridge-was-citys-most-dangerous-road/, *accessed October 22, 2012*

4.3.3.7. Conformance with Transportation Plans

For this criterion, alternatives were evaluated with regard to their compatibility with regional transportation plans and any conflicts that would arise with their construction. All the build alternatives received the maximum 100 score since they coincide with the Corpus Christi MPO long range transportation plan and work well with future development. The No-Build was scored 40 as it does not hinder future development but does not increase mobility as the build alternatives would. Scores are summarized in **Table 4-27**.

Table 4-27: Conformance with Transportation Plans Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
40	100	100	100	100

4.3.3.8. Toll Feasibility

A high-level evaluation of the relative tolling potential of the alternatives was conducted based on the estimated revenue per mile that each build alternative would generate. It is projected that all four build alternatives would generate an estimated $3 million per mile and as such this criteria is not a differentiator. However, the estimate revenue per mile is relatively low due to the projected level of traffic. The build alternatives were each given a score of 80 as shown in **Table 4-28**; the No-Build has no tolling potential and was therefore scored 20.

Table 4-28: Toll Feasibility Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	80	80	80	80

4.3.3.9. Emergency Evacuation

This criterion is qualitative in nature and seeks to compare the relative merits of the build alternatives in terms of offering an evacuation route in the event of a natural or industrial disaster. The addition of a second crossing of the Nueces River is considered positive as is access to IH 37 which is an established evacuation corridor. Alternative 6 was awarded the highest score since it carries traffic furthest inland before terminating at IH 37. Alternative 1 was scored the lowest of the build alternatives as it carries traffic the least distance inland before terminating at IH 37. Results of the emergency evacuation evaluation are summarized in **Table 4-29**.

Table 4-29: Emergency Evacuation Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
20	60	80	80	100

4.3.3.10. Overall Results of Traffic / Mobility Evaluation

The scores discussed in the preceding sections for traffic/mobility were averaged across the individual categories to derive an overall score which is summarized in **Table 4-30**. Details of the scoring are provided in **Figure 4-10**. From an overall traffic/mobility perspective, Alternative 5 ranks highest followed closely by Alternatives 2 and 6. There is a difference of 1.06 between the scores for Alternatives 5 and 6 and the difference between Alternatives 6 and 1 is 6.31, which is indicative of how close Alternatives 2, 5, and 6 are from a traffic/mobility perspective and that they are relatively more favorable than Alternative 1.

Table 4-30: Overall Traffic/Mobility Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
31.58	74.74	81.05	82.11	81.05

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 5	ALTERNATIVE 6
Rank	**5**	**4**	**2**	**1**	**2**
OVERALL SCORE	**31.58**	**74.74**	**81.05**	**82.11**	**81.05**

TRAFFIC MOBILITY					
Travel Demand					
Project Travel Demand/Utilization along Parkway	20	100	100	100	80
Vehicle Hours Traveled (VHT)					
VHT of Region (Compared to No-Build)	20	60	60	80	100
Speed					
Speed of Study Area (Compared to No-Build)	20	100	100	100	100
Speed of Region (Compared to No-Build)	20	100	100	100	100
Level of Service					
LOS E and F Improvement from No-Build	20	60	80	80	100
Affect to Area Roadway Network					
Reduced Congestion on SPID	20	80	100	60	100
Reduced Congestion on SH 357	20	80	100	60	100
Reduced Congestion on SH44	40	40	100	20	100
Reduced Congestion on I-37	20	80	60	100	80
Reduced Congestion on SH 286	100	40	20	60	40
Reduced Congestion on US 77	80	100	60	100	20
Reduced Congestion on FM 624	20	60	80	80	100
Reduced Congestion on FM 43	40	100	80	100	20
Reduced Congestion on FM 665	40	20	80	100	60
Reduced Congestion to/from US Navy Air Station	20	60	80	80	100
Overall Improved Safety	20	100	80	80	60
Conformance with Transportation Plans					
Does alternative facilitate and coincide with transportation plans?	40	100	100	100	100
Toll Feasibility					
Toll Feasibility	20	80	80	80	80
Emergency Evacuation					
Emergency Evacuation	20	60	80	80	100
TRAFFIC MOBILITY SUBTOTAL	**600**	**1420**	**1540**	**1560**	**1540**
TRAFFIC MOBILITY AVERAGE	**31.58**	**74.74**	**81.05**	**82.11**	**81.05**

Figure 4-10: Summary of Mobility Decision Matrix for Viable Alternatives

4.4. Engineering Evaluation

The engineering evaluation of the No-Build and four Viable Alternatives was based on engineering aspects regarding the construction of a proposed parkway facility. For qualitative criteria such as cost and residential density, points were awarded to alternatives on a sliding scale

based on ratios between the lowest and highest ranked. However for quantitative criteria such as ROW, utilities and drainage, a direct summation of items/facilities was derived and used as a comparison tool.

The engineering category was divided into four major criteria:

- ROW
- Railroad Impacts
- Utilities
- Cost

4.4.1. Right-of-Way

The ROW analysis was broken up into three categories; a total area of ROW impacts, the potential for residential displacements, and the density of existing public ROW and the analysis expanded on the evaluation that was performed for the Conceptual Alternatives screening. A general quantitative comparison was first completed based on the complete length of the alternative and estimating a 400 foot ROW width to determine a total area. Based on the disparity of these areas, each alternative was scored with a minimum value of 40 and a maximum of 100. A breakdown of these results can be found in **Table 4-31**.

Table 4-31: Total Right-of-Way

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Total ROW Area (SF)	0	16,400	19,600	18,800	20,400
Scoring	100	40	80	60	80

The potential for residential displacement is a direct comparison of the number of residences per unit area. A residential count tabulated from visual inspection of the aerials and the residential area was derived from AART. This value is a determination of the likelihood of the alternative corridor to have greater residential displacements during the final alignment phase. Based on the disparity of these areas, each alternative was scored with a minimum value of 40 and a maximum of 100. The results of this analysis have been shown in **Table 4-32**.

Table 4-32: Potential for Residential Displacement

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Density (Count/Area)	0	0.986	0.667	0.918	0.601
Scoring	100	40	80	60	100

The density of existing public ROW represents the amount of public ROW within each corridor alternative. The area of public ROW within the corridor was pulled directly from AART and compared against the total corridor area. Based on the disparity of these areas, each alternative was scored with a minimum value of 20 and a maximum of 100. The results of this are shown in **Table 4-33**.

Table 4-33: Density of Existing Public Right-of-Way

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Density (Public/Total)	0	0.01008	0.00067	0.00838	0.00061
Scoring	20	40	100	60	100

4.4.2. Railroad Impacts

A quantitative measure was performed to determine overall railroad impacts within each corridor alternative. Two elements were considered in this evaluation including railroad crossings and parallel railroads within the corridor. A total number of railroads that completely cross the corridor were quantified and then ranked. Based on the disparity of these areas, each alternative was scored either a value of 40 or 60 based on there being either two or three total crossings. See **Table 4-34** for results of the analysis.

Table 4-34: Railroad Crossings

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Railroad Crossings	0	2	2	3	3
Scoring	100	60	60	40	40

A similar analysis was performed concerning railroads which run either parallel to the corridor or cross into corridor limits but do not fully cross the corridor. These were quantified and ranked based on the total number of impacts. The scores ranked either a 60 or 100 since there is either one parallel railroad or none. See **Table 4-35** for results of the analysis.

Table 4-35: Parallel Railroads

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Parallel Railroads	**0**	1	0	1	0
Scoring	**100**	60	100	60	100

4.4.3. Utilities

The utility impact analysis takes into account oil and gas crossings within each corridor alternative. The utilities were tabulated from AART and compared to the total length of the corridor to establish an average impact within each corridor alternative. Excepting the No-Build, all alternatives showed roughly the same rate of crossings; therefore all were scored the same at 80. The results of this are shown in **Table 4-36**.

Table 4-36: Utility Impacts

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Scoring	100	80	80	80	80

4.4.4. Cost

For project cost, two elements were considered in scoring including total construction cost and cost per vehicle per mile. A planning level cost analysis was computed based on the parkway pavement design, the length of the alternative corridor, an estimate of drainage crossings, an estimate of grade separated structures based on major roadway crossings, an estimate for a Nueces River bridge and a Laguna Madre bridge. These costs were then compared and scored based on the difference between the highest and lowest cost alternatives. Based on this difference, a low score of 60 and high score of 100 were utilized. The results of this are shown in **Table 4-37**.

Table 4-37: Total Construction

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Cost	$ 0	$ 289,300,000	$ 318,100,000	$ 310,300,000	$ 326,200,000
Scoring	100	100	60	80	60

The cost per vehicle analysis was based on the total cost of the corridor alternative and the average daily traffic expected on that corridor. From an engineering perspective, this is a qualitative analysis describing the effectiveness of the corridor to distribute traffic, and comparing that to alternative's cost. The result is an estimated cost to move a vehicle through the corridor. Based on the results, the build alternatives were scored from a 60 to a 100 and the results are shown in **Table 4-38**.

Table 4-38: Cost per Vehicle

	No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
Cost	$ 0	$ 289,300,000	$ 318,100,000	$ 310,300,000	$ 326,200,000
ADT	0	24,290	21,450	22,820	18,910
Cost per Vehicle	N/A	$ 11,910	$ 14,830	$ 13,598	$ 17,250
Scoring	**20**	100	80	80	60

4.4.5. Results of Engineering Analysis

Each engineering analysis category was averaged to establish an overall score for each alternative corridor and is summarized in **Table 4-39**. The detailed results of this analysis are shown in **Figure 4-11**. Based on these scores the No-Build alternative scores the highest. However, this is logical from an engineering perspective since there would be no impacts to ROW, railroads, utilities or costs associated with a No-Build scenario. Alternative 2 scores the same with 80.00, followed by Alternative 6 with a score of 77.50 and Alternatives 1 and 5 with a score of 65.00.

Table 4-39: Overall Engineering Evaluation Scores

No-Build	Alternative 1	Alternative 2	Alternative 5	Alternative 6
80.00	65.00	80.00	65.00	77.50

RATING SYSTEM 100 = Best Score 20 = Worst Score	NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 5	ALTERNATIVE 6
Rank	**1**	**4**	**1**	**4**	**3**
OVERALL SCORE	**80.00**	**65.00**	**80.00**	**65.00**	**77.50**

ENGINEERING					
Right-of-Way					
Total Right-of-Way (Acreage)	100	40	80	60	80
Propensity for Residential Displacements	100	40	80	60	100
Density of Existing Public ROW	20	40	100	60	100
Railroad Impacts					
Number of Railroad Crossings	100	60	60	40	40
Parallel alignments (Linear Feet)	100	60	100	60	100
Utilities					
Impacts to Oil and Gas Wells	100	80	80	80	80
Cost					
Total Cost	100	100	60	80	60
Cost/Veh/Mile	20	100	80	80	60
ENGINEERING SUBTOTAL	**640**	**520**	**640**	**520**	**620**
ENGINEERING AVERAGE	**80.00**	**65.00**	**80.00**	**65.00**	**77.50**

Figure 4-11: Summary of Engineering Decision Matrix for Viable Alternatives

4.5. Reasonable Corridor Alternative Recommendations

The highest four ranking alternatives were carried forward from the Conceptual Alternatives evaluation to make up the Viable Alternatives. This step further screened the Viable Alternatives to recommend a Reasonable Corridor for further development. Within this analysis step, social and environmental, traffic and mobility, and engineering were further evaluated and scored. Based on this screening process, Alternative 6 was selected as the Reasonable Corridor Alternative. This Corridor is highlighted in **Figure 4-12** with the overall scoring for each major screening criterion shown in **Figure 4-13**.

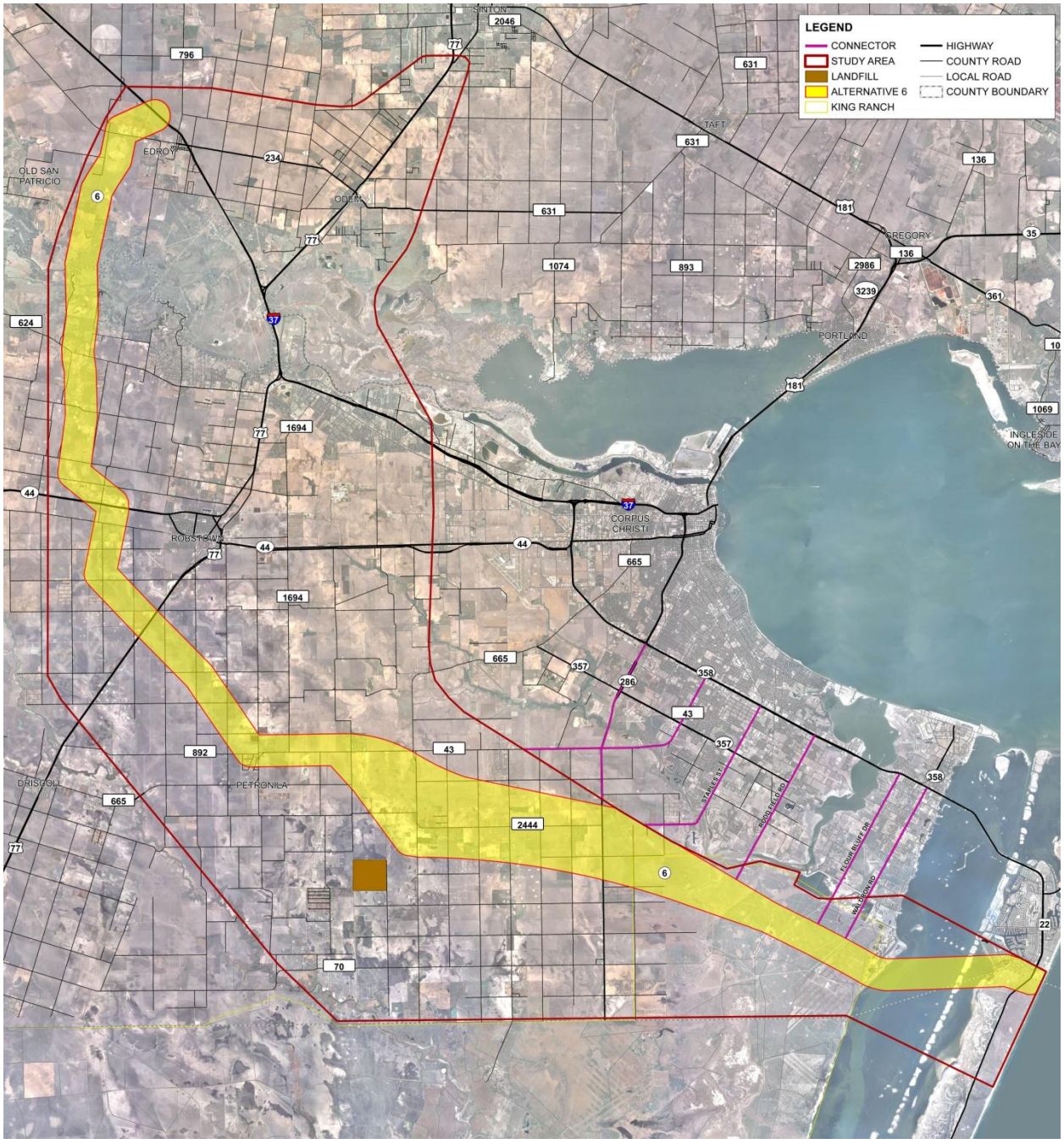


Figure 4-12: Reasonable Alternative (6)

RATING SYSTEM 100 = Best Score 20 = Worst Score		NO BUILD	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 5	ALTERNATIVE 6
Rank		4	5	2	3	1
OVERALL SCORE		68.30	65.23	77.22	68.58	79.95
SUMMARY OF AVERAGES						
1) TRAFFIC MOBILITY		31.58	74.74	81.05	82.11	81.05
2) SOCIAL AND ENVIRONMENTAL IMPACTS		93.33	56.00	70.67	58.67	81.33
3) ENGINEERING		80.00	65.00	80.00	65.00	77.50
WEIGHTING	100%					
1) TRAFFIC MOBILITY	33%					
2) SOCIAL / ENVR IMPACTS	33%					
3) ENGINEERING	33%					
WEIGHTED SUMMARY						
1) TRAFFIC MOBILITY		10.53	24.91	27.01	27.37	27.01
2) SOCIAL AND ENVIRONMENTAL IMPACTS		31.11	18.66	23.55	19.55	27.11
3) ENGINEERING		26.66	21.66	26.66	21.66	25.83
OVERALL SCORE		68.30	65.23	77.22	68.58	79.95

Figure 4-13: Summary of Decision Matrix Results for Viable Alternatives

4.6. Traffic and Toll Revenue Analysis

A sketch-level traffic and toll revenue analysis was conducted for the two highest ranked reasonable alternatives (Alternative 2 and Alternative 6).

4.6.1. Assumptions

The annual traffic and toll revenue estimates for the two scenarios described above are based on an opening year of 2020 with all electronic tolling (no discounts for high occupancy vehicles and no congestion pricing). Annual revenues were projected for the 40-year period after the 2020 opening year, based on a toll rate of 20 cents per mile in 2020, increasing to 36 cents per mile by 2040. Details of other assumptions are included in **Appendix D**.

4.6.2. Findings

Traffic revenue for the 2020 opening year is estimated at $11.1 million for Alternative 2 and $12.4 million for Alternative 6. At this level of analysis the results demonstrate that from the standpoint of revenue generation potential, there is no appreciable difference between these two highest ranked alternatives. Details of annual revenues through 2060 are provided in **Appendix D**.

5. Public Involvement

A comprehensive Public Involvement process was undertaken as a part of the RPMC Feasibility Study. Public involvement procedures were used to ensure that information obtained can be utilized and incorporated into future environmental studies. As part of the Public Involvement process, a PCC was established and held ten (10) meetings. In addition, more than 18 presentations and 12 one-on-one meetings were held with various groups or stakeholders. Once the Viable Alternatives were identified, two (2) Citizens and Public Officials Briefings to which stakeholders, Committee members, the general public and media were invited. Individuals were encouraged to submit comments and over 274 comments were returned, but some individuals submitted two comment sheets and a number of families/households/businesses submitted multiple comment sheets.

Public Involvement Plan

With the guidance of the PCC, a Public Involvement Plan was developed. This was updated as the project progressed. A list of potential key stakeholders was developed with representation of certain key groups, such as landowners, farming interest, regional business, mass transit, environmental/urban growth, and recreational. The Public Involvement Plan included actions and tasks cognizant of the NEPA process. It involved the creation of a database, coordination with the PCC, interviews with stakeholders, briefings to local governmental entities, briefings for the public, general public/media outreach, a project notebook, and newsletters. These action items are described in more detail below.

5.1. Database

A database of key stakeholders was developed, which included elected and local officials, property owners, business owners, economic development groups and chambers of commerce, farm bureau/agricultural agents, school districts, neighborhood groups, and area transportation and planning agencies. This database was updated and maintained throughout the project. Approximately 275 individuals or groups are identified in the list. After the public briefings, the mailing list was updated and now includes over 540 individuals or groups based on comments received and individuals who requested to be included in the list.

5.2. Project Coordinating Committee

Each of the funding and partnering agencies was invited to participate in the PCC. The CCMPO, San Patricio County, the City of Corpus Christi, TxDOT each had two representatives, though at times different representatives attended for these entities. Nueces County chose to only have one representative.

Periodic meetings with the PCC were organized throughout the project to keep them informed and get input on any changes. Agendas and unofficial meeting notes were developed after each of the meetings for the use of the PCC. A media release was available in the event that members of the media attended the PCC meetings. While no media attended these meetings, key officials were interviewed for articles several times throughout the project.

5.3. Stakeholder Outreach

The CCMPO's website was utilized to keep the public and PCC members informed about the project. Newsletters and other information were routinely posted to this website from the beginning of the project.

5.3.1. SharePoint Website for Project Coordinating Committee

A website was developed to keep PCC members informed about the project as well as provide handouts and presentations distributed at the meetings in electronic form. Each Committee member was provided a website user name and password.

5.3.2. Project Notebook

A project notebook was developed that catalogs the different public outreach activities and materials created throughout the project. The notebook also includes materials handed out at PCC meetings and project team meetings. Articles written about the project have been collected and placed in the notebook in order of latest publication to oldest publication. News releases prepared for each of the events are also included. Any contacts made with the general public were cataloged via Contact Reports and are included in the notebook. All information related to the Public and Officials Briefings is contained in the notebook including photos from the Citizens and Public Officials Briefings.

5.3.3. Project Summary

A one-page Project Summary (or first Newsletter) was developed to explain the feasibility study and provided a map of the general study. This Project Summary was distributed to various groups and handed out to interested stakeholders and as presentations were made to governmental entities and groups throughout the project.

5.3.4. Newsletters

Three project newsletters were developed. The first newsletter was the Project Summary. The second newsletter included a summary of the project in Spanish. The third newsletter was a publication that gave a project update and provided information about "what comes next." A map showing two alternative corridors was included in the newsletter update. These newsletters were distributed at various events and were available at offices of the CCMPO and on the CCMPO website.

5.4. Briefings/Presentations

Several presentations were made to governmental entities and groups throughout the project. Below is a list of presentations and the dates the presentations were made.

- MPO Technical Advisory Committee-November 18, 2010
- MPO Transportation Policy Committee-December 2, 2010
- MPO Transportation Policy Committee-April 7, 2011
- MPO Technical Advisory Committee-April 21, 2011
- San Patricio County-January 3, 2012
- City of Odem-January 3, 2012
- Nueces County-January 4, 2012
- City of Driscoll-January 5, 2012
- City of Robstown-January 9, 2012

- City of Corpus Christi-January 17, 2012
- City of Orange Grove-January 18, 2012
- City of Old San Patricio-February 6, 2012
- City of Mathis-February 27, 2012
- City of Sinton-March 27, 2012
- City of Corpus Christi Planning Commission-March 28, 2012
- Corpus Christi Southside Chamber of Commerce –August 9, 2012
- City of Petronila–October 1, 2012
- Nueces County Farm Bureau-October 9, 2012

Additional one-on-one meetings were organized with key stakeholders such as Stripes convenience store representatives, the Bay Area Smart Growth Initiative Group, representatives from the King Ranch, the Park Ranger of the Padre Island National Seashore, representatives from the Welder family (they own 6,000 acres within the study area), representatives of ranch land in San Patricio County and San Patricio Drainage District, representatives of the City of Corpus Christi's planning and development offices, the Mayor and Economic Development Director of Kingsville, the Corpus Christi Chamber's Infrastructure Committee, the Corpus Christi Regional Transportation Authority staff, TxDOT area engineers, and representatives for a family that owns a tract of land on North Padre Island. Updates were also given to officials such as council members and commissioners throughout the project. In addition, the MPO Technical and Policy Committee was given periodic updates by the MPO director and the MPO director met about the project with a number of city and county officials during the project as well as other individuals and groups. Information on the project was also supplied to the area legislative delegation and the area's congressional office.

Camino Real Regional Mobility Authority (CRRMA) Presentation: On Thursday, July 26, 2012, members of the PCC and some of the local officials were invited to listen to a presentation by Raymond L. Telles, CRRMA Executive Director. The presentation was made at the Congressman Solomon P. Ortiz International Center. Mr. Telles spoke to the group about

innovative ways that El Paso is financing transportation zones with methods such as Transportation Reinvestment Zones. Elected officials from the area were invited to attend the presentation and information was sent to them prior to the presentation. About 12 people attended this presentation. Members of the PCC received a PowerPoint presentation after the meeting via e-mail. Attendees were provided information on the RPMC project. A number of public officials were present including San Patricio County Judge Terry Simpson, Port Commissioner Mike Carrell, and City of Corpus Christi Councilwoman Nelda Martinez. A newspaper reporter for the Corpus Christi Caller-Times, a local newspaper, also attended.

Citizens and Public Officials Briefings: Citizens and Public Officials Briefings were held on Monday, August 27, 2012 and Tuesday, August 28, 2012. The first meeting was at the Richard M. Borchard Regional Fairgrounds in Robstown and the second meeting was at the TxDOT Training Center in Corpus Christi.

Each meeting followed the same format. An open house was conducted from 5:30 p.m.-6 p.m., during which the project team members were available to answer questions as attendees reviewed exhibits. The presentation started at 6 p.m. and was conducted by Project Manager Bob Leahey, of HDR Engineering. The project team remained after the public meeting ended to allow the public to ask additional questions and continue to review the exhibits. At each meeting, personnel who could speak Spanish were present. Media releases were prepared, sent, and available for media representatives. A newspaper reporter attended each of these meetings and interviewed key officials and stakeholders about the project. A sign-in table was set up and those who attended received the second and third newsletters and a Comment Form.

About 16 individuals signed in at the Monday, August 27, 2012 briefing in Robstown. About 29 people attended the briefing on Tuesday, August 28, 2012, including elected and public officials, stakeholders and members of the media. Summary notes of these briefings were developed, including questions and verbal comments, and are included in the project notebook.

Notices providing information in English about all public meetings were mailed one week prior to the meetings to the 250+ person/organization mailing list. There was contact information provided in Spanish in case someone had questions about the briefings. The notice included an opportunity for the hearing impaired to request translation services.

Display ads in English (approximately 6 inches by 6 inches) were published twice in the *Corpus Christi Caller-Times, Nueces County Record Star, San Patricio County News, Portland News,* and once in the *Island Moon*. Again, basic information was provided in Spanish that provided a phone number for Spanish speaking persons who wished to obtain more information. Some email reminders were also sent out to various individuals and groups about the briefings. Media releases were sent out to area media outlets on Wednesday, August 22, 2012, again on Monday, August 27, 2012, and then again on Tuesday, August 28, 2012.

Information about the meetings was available on the CCMPO website at www.corpuschristi-mpo.org. Meeting information was posted to the Corpus Christi MPO Facebook page. Those who attended were encouraged to fill out comment forms and drop them off at the end of the meeting or to send them by mail.

5.5. Public Comments

Seven people filled out Comment Sheets at the Citizens and Public Officials Briefings. Originally, the public comment was to end on September 10th, but in response to citizen's requests, the comment period was extended until September 30th. In addition, the MPO told citizens that they welcome public input even after this date. Approximately 250 Comment Sheets were received on or before the September 30th deadline. Comments sheets continued to arrive after the deadline and those received through September 30th were added to a Comment Summary Document. All of the sheets received through October 19th, which totaled 274, have been included in the project notebook. All individuals who made comments have been added to the updated project mailing list.

As a result of the briefings, a Comment Summary was developed and distributed to the project team and the PCC. These comments were discussed and certain modifications have been made as the result of the comments offered.

5.6. Additional Outreach

Throughout the study, team members and the PCC have discussed the project with various individuals and groups. Certain individuals contacted the project team for additional information or to be added to the project mailing list for the future. As an example, a meeting was held with an individual commenter who requested additional information, and a trustee for multiple trusts

who own land in the project area called for additional information and to be added to the mailing list.

6. Segments of Independent Utility (SIU)

This section summarizes the development and evaluation of segments of the highest ranked alternative corridor (Alternative 6) that potentially have independent utility.

6.1. Definition and Purpose of SIUs

It is anticipated that the completion of this study for the Regional Parkway will be followed in the project development process by the completion of environmental documentation and an identification of a specific alignment. To facilitate that process, and given that funding would likely not be available to build the entire length of the RPMC at once, the highest ranked corridor was divided into various segments.

Based on the guidelines provided in the TxDOT *Environmental Manual (2004)*, state/federal roadways and local major thoroughfares may be selected as logical termini. According to that same manual, for a project to have independent utility, it must be able to function on its own, without further construction of an adjoining system.

6.2. Identification of Preliminary Segments

Seven segments were identified in coordination with the PCC. These segments are summarized in **Table 6-1** and illustrated in **Figure 6-1** using an alphabetic identifier and were then evaluated to determine prioritization. It should be noted that Segments A and B are assumed to include the extensions of Rodd Field Road and Cimarron Road.

Table 6- 1: Preliminary Corridor Segments

Segment	From	To	Length (miles)
A	PR 22	Rodd Field Road	9.5
B	Rodd Field Road	SH 286	6.2
C	SH 286	CR 57	6
D	CR 57	US 77	11.1
E	US 77	SH 44	4.4
F	SH 44	FM 624	5.3
G	FM 624	IH 37	8.5
Total			**51.0**

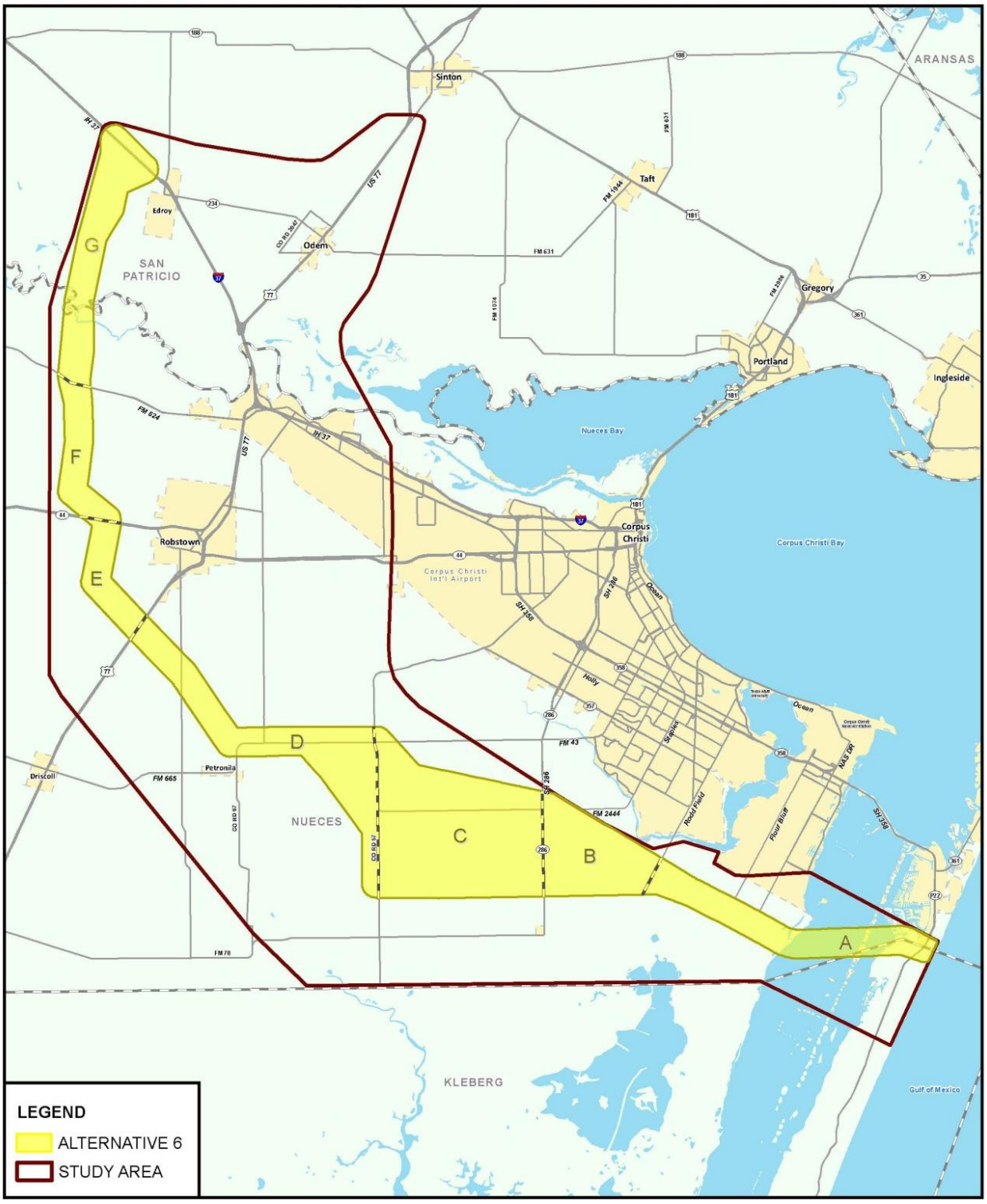


Figure 6-1: Preliminary Corridor Segments

6.3. Evaluation of Preliminary Corridor Segments

The preliminary corridor segments were evaluated based on their projected utility (relative magnitude of traffic volume diverted from regional roadways) and a planning level delay benefit/cost ratio.

Each of the seven corridor segments was coded independently in the travel demand model for years 2020 and 2040 in order to isolate their individual impacts on the regional roadway network. A summary of how each segment is projected to perform in terms of travel demand along the Regional Parkway and the change in VHT for the regional roadway network (compared to the No-Build alternative) is provided in **Table 6-2**.

Table 6-2: Summary of Measures of Effectiveness for Corridor Segments

		No-Build	Complete Alternative	Segment A	Segment B	Segment C	Segment D	Segment E	Segment F	Segment G
2020	**Daily Traffic Volume**		15,260	13,100	670	1,730	10,210	2,050	740	900
	Daily Regional VHT	389,964	353,529	359,651	389,746	390,150	390,308	389,867	390,099	407,865
		-	-36,435	-30,314	-218	186	344	-98	134	17,900
2040	**Daily Traffic Volume**		18,910	22,320	7,380	2,270	5,080	6,330	8,140	1,910
	Daily Regional VHT	650,756	541,004	555,887	646,317	646,785	647,964	647,149	645,720	645,699
		-	-109,752	-94,869	-4,439	-3,971	-2,792	-3,607	-5,036	-5,057

VHT = Vehicle Hours Traveled (total of travel time and delay summed for all vehicles traveling on the roadway network)

6.3.1. Travel Demand

The complete alternative would attract an estimated average of 15,260 VPD in 2020 and 18,910 vpd in 2040. **Table 6-2** demonstrates that as a standalone segment, Segment A would attract the highest travel demand both in 2020 and in 2040. This is due primarily to the relief it would provide to traffic from North Padre Island, providing a second crossing of the Laguna Madre. In 2020, it is projected that Segment B would attract the lowest volume. Although this segment would be a parallel facility to roadways such as SH 358, Holly Road, and Saratoga Boulevard, the time and distance that drivers would have to travel in order to utilize it would exceed what they would experience along other paths, resulting in the low travel demand projection (670 vpd). However, by 2040 due to increased development in the vicinity of the segment and increased roadway congestion, Alternative B would attract approximately 7,380 vpd, ranking

fourth compared to the other segments. Segment G is projected to have the third lowest travel demand in 2020 (900 vpd) and the lowest by 2040 (1,910 vpd).

Segment D is projected to attract the second highest travel demand (10,210 vpd) in 2020, but traffic volumes would drop to 5,080 vpd by 2040 due to planned upgrades to competing facilities - FM 665 and FM 43 in 2020 and FM 2444 in 2025. Based on the MPO's Regional Transportation Plan, those roadways would all be widened from two lanes to four lanes and would provide alternatives for the traffic that would use Segment D.

6.3.2. Vehicle Hours Traveled (VHT)

Comparing the change in VHT between the No-Build Alternative and each segment provides a measure of the reduction in travel delay for road users. Of the seven segments, Segment A is projected to have the highest impact on delay in the region, resulting in a VHT reduction of over 30,000 hours a day in 2020 and almost 95,000 hours a day in 2040. In 2020, the other segments have little impact on VHT in the region, with the exception of Segment G which is projected to result in an increase in congestion in the region. In 2040 delay savings for segments other than Segment A range from almost 2,800 hours a day to 5,000 hours a day.

6.3.3. Delay Benefit/Cost Ratio

A planning level benefit/cost ratio was derived based on the value of travel time savings and the cost for each segment. The monetary value of benefits and costs were calculated in constant 2012 dollars.

Travel time savings are created by increasing travel speeds in the region and reducing the delay caused by congestion. A monetary value for travel time savings was derived based on the average value of time for the Corpus Christi area obtained from the Annual Urban Mobility Report, 2011, published by the Texas Transportation Institute. Based on the data in that report, the average value of time in 2010 for the Corpus Christi area was $16.30 per person per hour. Adjusting this value to 2012 dollars based on the consumer price index (as of November 2012) results in a value of $17.29 per person per hour. Using typical vehicle occupancy of 1.2 persons per vehicle and assuming 260 weekdays in a year, annual travel time savings were estimated for each segment assuming independent implementation. Travel time savings were calculated based

on the 2020 and 2040 travel demand output for VHT and interpolated for each year in between to ultimately derive the discounted value for the total savings during that 20-year period.

Planning level construction cost estimates were developed for each of the segments based on typical per mile costs and accounting for interchanges, bridges, and culverts. It should be noted that cost estimates do not include ROW acquisition and preparation, professional fees associated with engineering design, environmental or annual operating and maintenance.

A summary of benefits, cost, and benefit/cost ratio based on delay is provided in **Table 6-3**. A benefit/cost ratio of one or greater is typically indicative of a viable transportation project, one in which the costs are matched or exceeded by the benefits to road users. The results show that all segments have a benefit/cost ratio greater than one, with the exception of segments C, D, and G. Those three segments are therefore not considered economically feasible from a planning level benefit-cost perspective.

Table 6-3: Benefit/Cost Summary

Alternative 6	Length (miles)	Average Daily Volume		Present Value Delay Benefits (2012 $)	Construction Cost (2012 $)	Delay B/C
		2020	2040			
Segment A	9.5	13,100	22,320	$1,801,233,165	$166,303,053	10.8
Segment B	6.2	670	7,380	$37,316,074	$32,851,221	1.1
Segment C	6	1,730	2,270	$16,470,518	$24,245,053	0.7
Segment D	11.1	10,210	5,080	$17,030,009	$44,853,347	0.4
Segment E	4.4	2,050	6,330	$24,872,471	$17,779,705	1.4
Segment F	5.3	740	8,140	$31,104,269	$21,416,463	1.5
Segment G	8.5	900	1,910	-$330,734,176	$34,347,158	-9.6
Full Alternative	51.0	15,260	18,910	$2,125,734,892	$333,998,000*	6.4

** Note: Construction costs for Segments A and B include the extensions of Rodd Field Road and Cimarron Drive. However, the total cost for the full alternative only counts the cost of the extensions once as it will be incurred either with A or B but not both.*

A sensitivity analysis was conducted to determine how the calculated benefit/cost ratio would change based on higher or lower costs and benefits. Relative to the feasibility threshold value of one, there would be no change in results with 10 percent higher costs or 10 percent lower travel time savings than assumed.

6.3.4. Evaluation Summary

Based on the projected traffic volumes that each preliminary segment of the RPMC would attract from the regional roadway network, Segment A is projected to generate the highest daily traffic volumes both short term in 2020 and long term in 2040. Segments B and F are projected to have low traffic volumes if constructed by 2020, however by 2040 it is anticipated that they would generate higher traffic volumes. The other segments are projected to have low traffic volumes both in 2020 and 2040.

In terms of travel time savings, Segment A is expected to reduce VHT by almost 10 percent in 2020 and by 15 percent in 2040. The impact of the other segments is less than one percent in both 2020 and 2040.

Although Segment A is projected to perform well from a traffic volume and regional travel time savings perspective, the cost of a bridge over the Laguna Madre, as well as the potential issues with environmental clearance, could pose problems. The relative impact of the added cost of the Laguna Madre compared to other segments is accounted for in the determination of the benefit/cost ratio. Based on that criterion, Segment A is still economically feasible. With the exception of segments C, D and G, all other segments are also projected to have benefit/cost ratios higher than one.

Overall, therefore, there are some segments such as C, D, and G which may not have independent utility. Consideration should therefore be given to combining some of these preliminary segments into larger segments which have independent utility.

6.4. Segment Prioritization

The preliminary RPMC segments evaluated in the previous section were identified in coordination with the PCC based on an initial review of logical termini. The results of the analysis demonstrate that segments C, D, and G are not likely to have independent utility. Consideration should therefore be given to combining some of these preliminary segments into larger segments. It is anticipated that a workshop will be held with the PCC to discuss this further, after which a decision can be made regarding segment prioritization. Additionally, the evaluation indicates that extensions of connecting facilities may be given a high priority when considering the segments of independent utility. Extending SH 286, Cimarron Rd., and/or Rodd

Field Rd. (SH 357) will eventually need to be accomplished in order to maximize mobility benefits of the RPMC.

The preliminary RPMC segments of independent utility offer an opportunity to initiate and create a Transportation Reinvestment Zone (TRZs). The State of Texas passed legislation in 2007 (Senate Bill 1266) enabling creation of Transportation Reinvestment Zones (TRZs) to capture the value of potential benefits, or the tax increments, associated with future transportation projects.. According to the Transportation Reinvestment Zone Handbook published by the Texas Transportation Institute, cities and counties are authorized to designate areas as TRZs to fund road projects. All or a portion of the growth in taxable value, or increment could be captured.

The planning process needed to effectively implement the funding strategy offered by TRZ legislation should be conducted early in the project development process. Consideration of a TRZ for each segment of the RPMC is a way to identify and secure future local funding sources and allow for local control of the decision making process.

Appendix A
Alignment Alternatives Research Tool

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1 Introduction

The alternative selection process for any transportation facility begins with the identification and input quantification of a universe of alternatives and ultimately the selection of reasonable alternatives that address the established purpose and need and are ultimately carried through the NEPA process. The identification of alternatives for the Regional Parkway Mobility Corridor (RPMC) included the use of automated software called the Alignment Alternatives Research Tool (AART), to assist and accelerate the identification and evaluation of build alternatives.

2 Alignment Alternatives Research Tool (AART)

AART is a series of GIS-based functions designed to route conceptual corridor "footprints" through the identified community and environmental resources available from both public databases and project derived databases. These "footprints" are developed through a simple "opportunities and constraints" approach. In this approach values are assigned to site specific resources by experts in the field. The computer model routes preferred paths between user-selected endpoints through an artificial "terrain" created by the weighting of natural resources, socioeconomic, infrastructure and other values that have been assigned in the study area. Additionally, "avoid" areas can be included to effectively 'mask out' any areas where development should not be considered. The system uses a grid-based format for improved model efficiency. The resolution or grid cell size may be further refined as viable corridor alternatives are identified and higher resolution field data is incorporated into the system. AART will find the least impact path between endpoints and summarize the impacts for each corridor selection. Additionally, AART will also display potential alternative corridor regions for each model run. The main user interface in AART is illustrated in **Figure 1**.

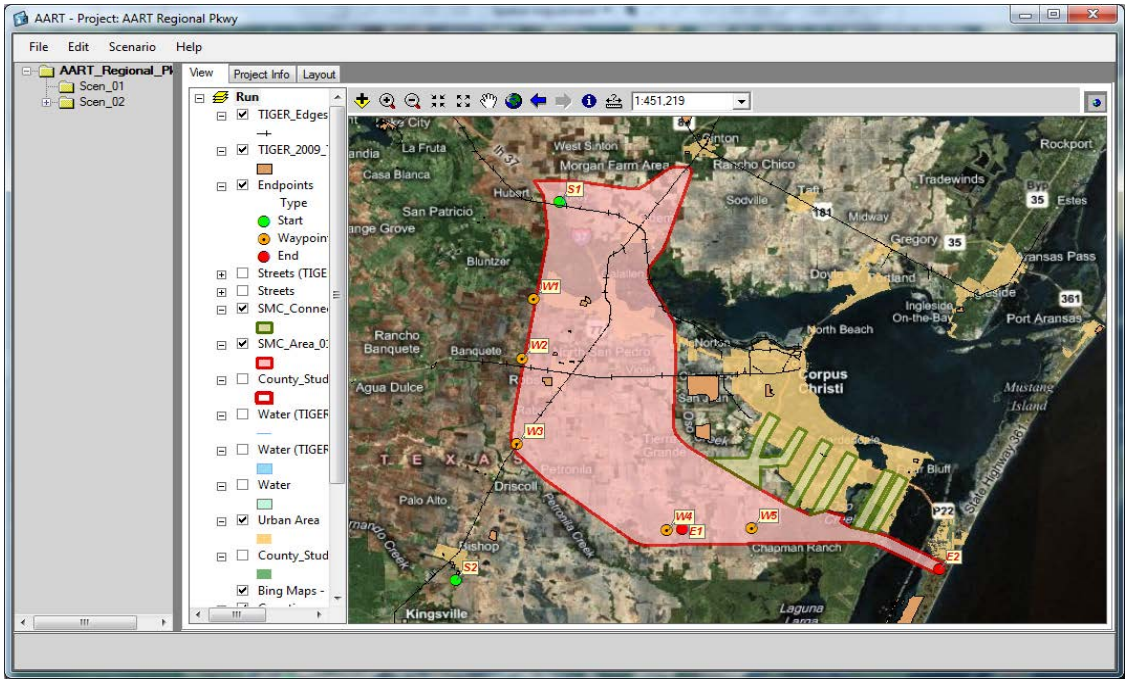


Figure 1: Main AART User Interface

The tool incorporates the functions of ArcGIS 9.3, ArcGIS Spatial Analyst, and geodatabases to maintain information and perform the complex spatial calculations needed to effectively analyze each model run.

2.1 How AART Works

AART is used to identify potential corridors based on user-provided points and user-ranked GIS data layers. The Tool finds a least-impact path between the points by attempting to stay away from high-ranked areas while maintaining as short a path as possible between points. The corridor width is then applied to the least-impact path and the environmental and cultural impacts of the corridor are calculated.

Endpoints - In order to generate corridors, AART requires at least two endpoints indicating the start and end of the corridor. These points are supplied by the user and are based on project requirements.

Input Data - AART will accept nearly any type of GIS vector data as inputs. Some examples of the types of data that are commonly used are shown in **Figure 2**. A special data layer outlining the project study area is also required. All analyses conducted by AART are constrained by the boundaries of the study area.

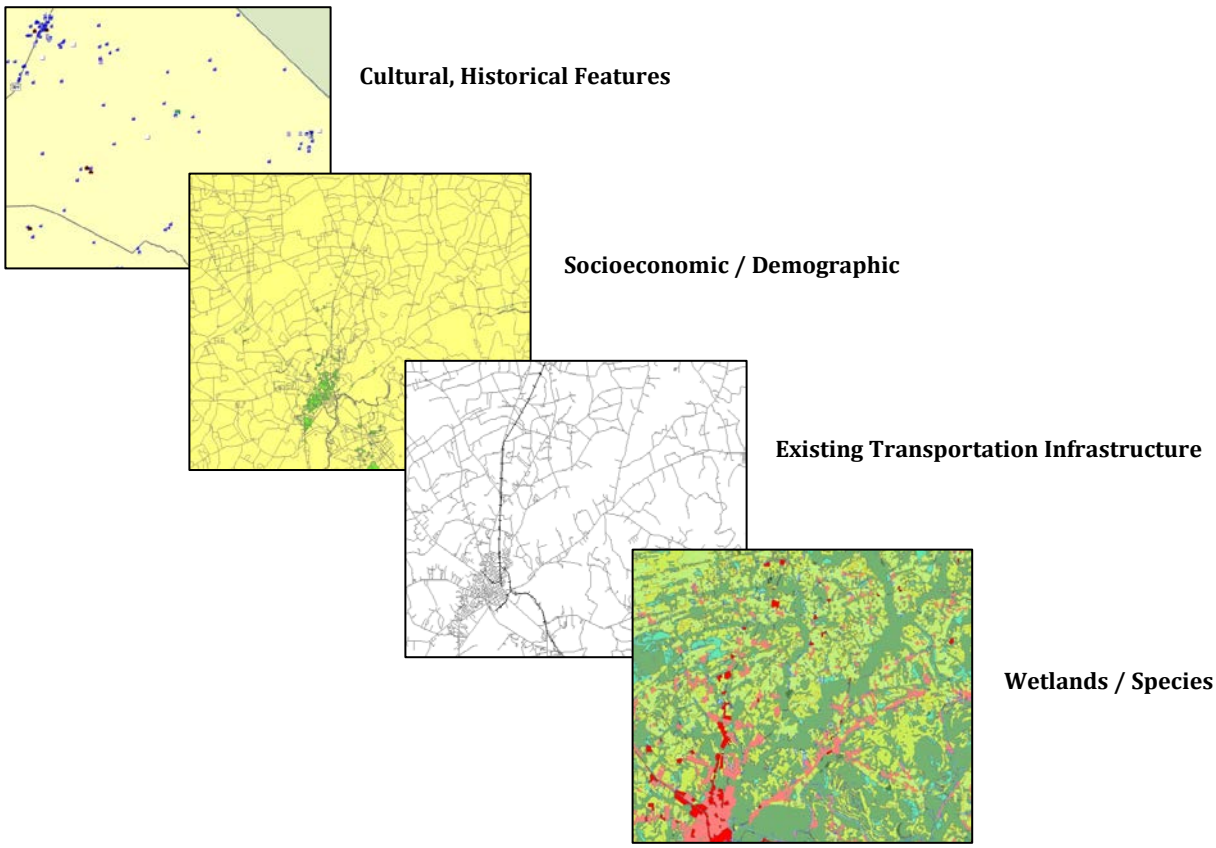


Figure 2 - Examples of GIS data layers

When AART is run, the input vector data layers are converted to raster layers using a user-specified cell size, as shown in **Figures 3** and **4**.

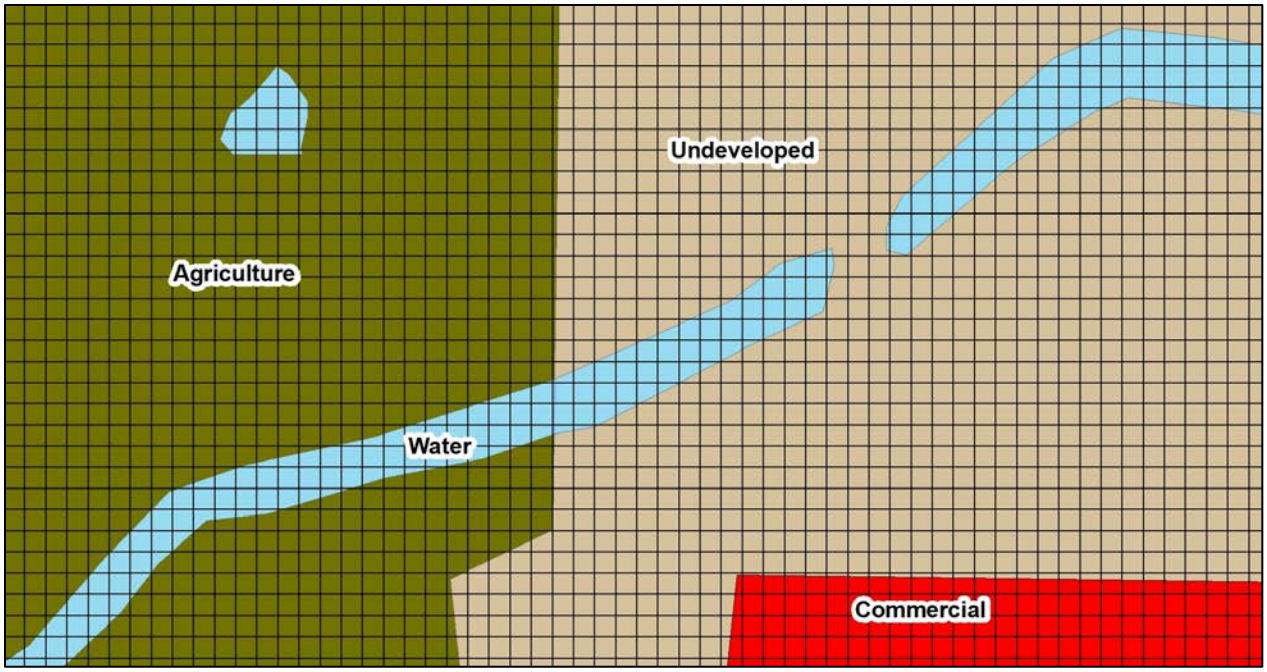


Figure 3: GIS data with grid cell overlay

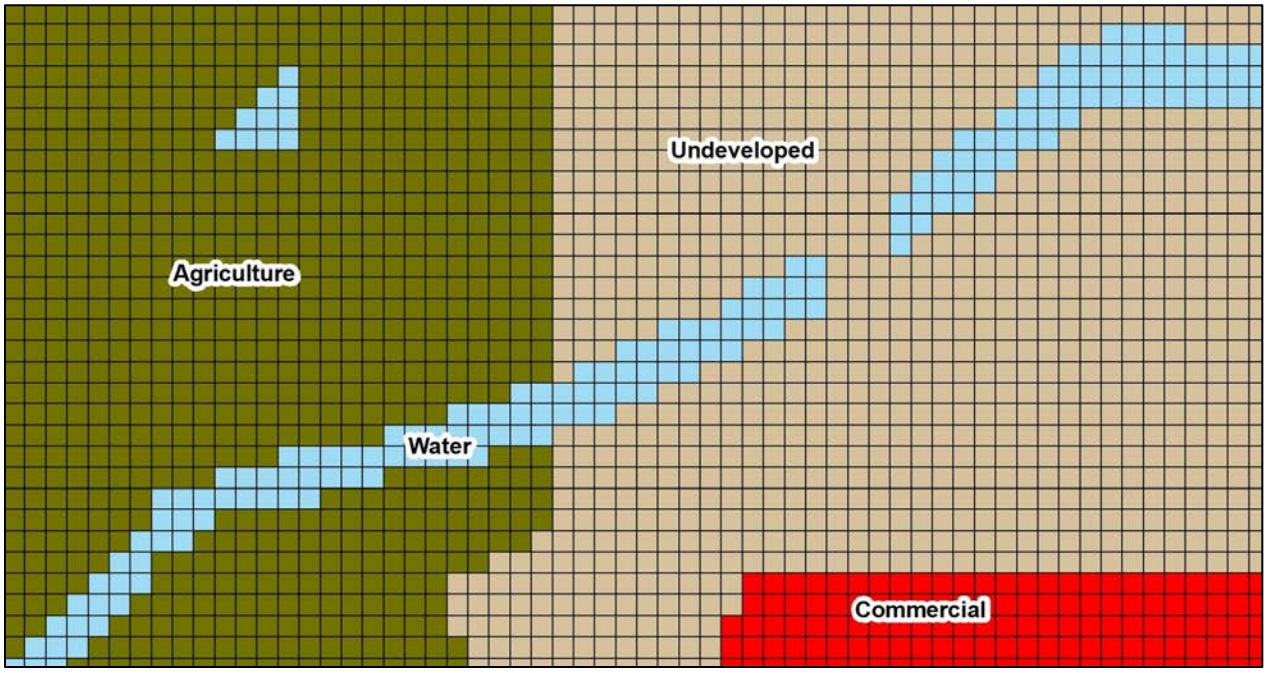


Figure 4: GIS data after conversion to raster (cell) data

Ranking - The GIS layers typically contain various features. For example, a wetlands layer contains polygons for the various types of wetlands. In order for AART to generate least-impact paths, these features must be ranked according to their suitability for locating a highway alignment. This ranking is based on a scale of 1-9, where low values indicate high suitability and high values indicate low suitability. In addition, there is a designation of "avoid" for features that are completely "off limits."

Input Parameters - The user may specify values for horizontal alignment curvature, corridor width, and layers to be evaluated for impacts.

Data Processing – Once the layer features have been ranked, the AART creates a single "suitability" layer. This layer is created by selecting the highest ranking for each corresponding cell in each layer. A sample suitability layer is illustrated in **Figure 5** in which the most suitable areas are in light green, the least suitable are dark green, and "avoids" are black.



Figure 5: Sample suitability layer

Outputs - Once the suitability layer has been created, AART finds the best path along the suitability layer between the user-provided start and end points (**Figure 6**). The user-defined corridor width is then applied to the path to create the corridor for impacts calculations.



Figure 6: Identification of path minimizing impacts

AART also generates a layer showing other potential corridors of interest that may be worth investigating (**Figure 7**). The final analysis output generated by AART is a table showing the impacts of the alternative corridor on polygon, linear, and point features (cultural and environmental).

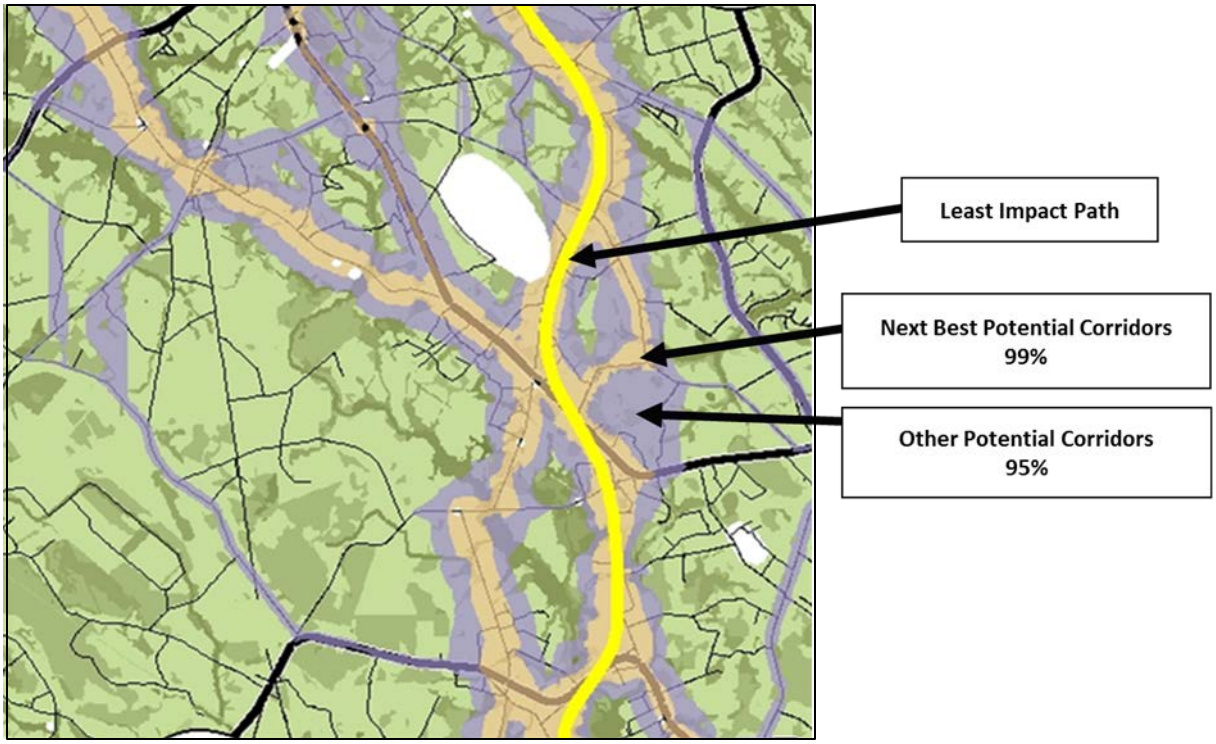


Figure 7: Additional corridors

3 Use of AART for the Regional Parkway Mobility Corridor

This section summarizes the methodology and data used in the application of AART to the Regional Parkway Mobility Corridor.

3.1 Methodology

The project team analyzed the study area and determined data requirements that would be needed in order to provide a sufficient base line. The establishment of this base line would be used to compare existing conditions with the impacts associated with build alternatives. A list of data layers was developed and the appropriate government agencies and organizations were contacted to request the data. The collection of information provided a base map sufficient for a solid base line for alternative comparison.

3.2 Data Formats

Existing GIS data were obtained in shapefile, geodatabase, and spreadsheet formats.

3.3 GIS Data Inventory

GIS data layers requested for incorporation into AART included the following:

- Schools
- Cemeteries
- Churches
- Oil and Gas Wells
- City and County Boundaries
- Public Water Supply Wells
- Parks/Managed Lands
- National Wetlands Inventory Maps
- Stream Crossings and Water Bodies
- County/FM Roads and Highways
- FEMA 100-year Floodplain
- Railroads/Intermodal Facilities
- Hazardous Material Sites
- Historic Sites
- Utilities
- Public Facilities
- Threatened & Endangered Species Habitats
- Archeological Sites

3.4 Pre-Processing Techniques

In preparation for the alternatives analysis process, the data were converted into a standard coordinate system. The RPMC study area falls in the Texas State Plane South Coordinate System, as described below:

Coordinate System: Texas State Plane – South

Projection: Lambert Conformal Conic

Datum: NAD83

Units: Feet

As the data were received, they were converted to this coordinate system.

Some data that might represent large areas in the real world were available only as points. In instances where it was determined that it would create more meaningful AART output, point data were buffered by reasonable and defensible distances to convert them to polygonal data, thus giving them some dimension. These buffers provided additional protection to a certain resource or the creation of an extension of a site or resource to insure that it was identified during inventory of the alignments. The features were combined into a GIS database as the next step to pre-processing in GIS. This data preparation process is illustrated in **Figure 8**.

The first step in processing the data was to clip the GIS data using the study area boundary so that only features falling inside the study area are used. This helps to reduce processing time while running AART. Next, a quality review of the data was conducted. Individual data layers were checked to ensure they were complete, accurately located, and current.

The National Wetlands Inventory (NWI) data required additional processing. Due to the large number and variety of types of wetlands present in the study area, it was necessary to group them into generalized categories. These groupings were applied to the NWI feature class in the geodatabase.

3.5 Ranking of Data Layers in AART

As mentioned previously, the various human and environmental data features incorporated into AART were ranked based on their relative importance.

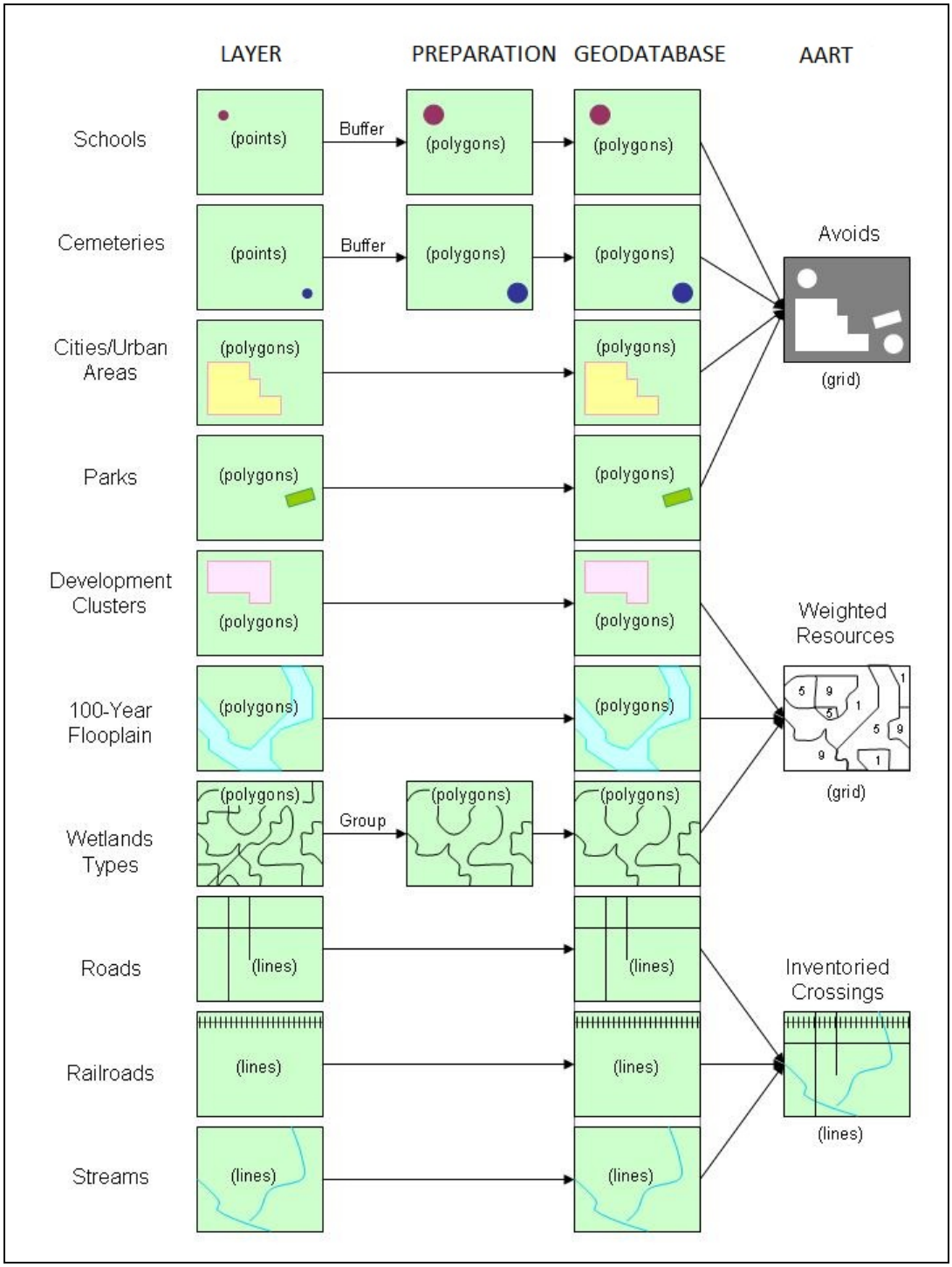


Figure 8 – Data pre-processing for AART

3.5.1 Avoids

An “avoid” is an area that AART totally avoids. These include critical habitats, wetlands, archaeological and historical sites, and many others, which are discussed below.

Threatened and Endangered Species and Critical Habitats – Based on the Texas Parks and Wildlife Department, there are two previously identified endangered plant species and one endangered animal species in the study area, namely the South Texas ambrosia, slender rushpea, and piping plover, respectively. These species locations, as well as designated piping plover critical habitat, were designated as “avoids” in AART for maximum protection.

Wetlands – Using NWI data, two general categories of wetlands were designated as “avoids”: Estuarine and Marine Deep Water and Estuarine and Marine Wetlands. Other wetland categories were assigned lower rankings.

Archaeological and Historical Sites – All sites that are listed on the National Register of Historic Places were considered potential Section 4(f) properties/protected resources and therefore designated as “avoids”. In addition, archeological sites were identified in the study area. These sites are protected to the extent that their locations are only available to certified archeologists. Therefore, a 50 to 100-foot buffer was applied to all cultural resources sites for additional protection.

Landmarks and Institutions – These categories include facilities such as schools and hospitals, which are well planned and serve their local communities. As such, relocation of these facilities would be extremely costly and cause major disruptions to their communities. Therefore, these facilities were designated as “avoids”. Buffers were applied to features that were only available as points.

Cemeteries – Relocation of a cemetery is a very time consuming and costly endeavor. Relocation of each grave also requires all living family members to be contacted prior to exhuming and moving the body. For this and other reasons, cemeteries were identified as “avoids.”

Parks & Recreation Sites – Parklands are protected under Section 4(f), Section 6(f), and Chapter 26 and require additional coordination when impacts occur to these resources. In order to protect these major resources, park boundaries were set as “avoids.”

Hazardous Materials Sites, Superfund Sites & Landfills – Due to numerous issues which could result if these sites are impacted, they were designated as “avoids.” Since the data were available as points, a 500-foot buffer was applied to the locations to provide sufficient protection.

3.5.2 Weighted Resources (Assignment of Rankings)

Certain types of land uses and land characteristics are more suitable for the location of a new transportation facility than others. For example, barren lands may be more appropriate for a new roadway than pristine forested areas. In

order to determine the most suitable locations for a new roadway, the features in the various GIS layers were ranked on a scale of 1 – 9, where 1 indicates high suitability and 9 indicates low suitability. In the preceding example, the barren lands might be assigned a value of 1, while the pristine forests might be assigned a 9.

In contrast to "avoids", the assignment of a ranking does not guarantee that the area would not be impacted. Rather, AART attempts to utilize the lower-ranked areas as much as possible while minimizing the overall length of the path/corridor. In some cases, AART may impact a few acres of highly-ranked areas if the overall impacts of the path are less than if those areas are avoided.

In this study, rankings for features such as wetlands, water bodies, prime farmlands, etc. were developed by consensus between the project team and the Project Coordinating Committee. The relative ranking of these features are described in the following sections.

Wetlands – The NWI wetlands in the study area were reviewed by various wetlands experts and ranked by consensus. Rankings were based on the characteristics of each category and their role in the region's ecology. In general, non-disturbed (non-impacted) wetlands were ranked higher than their disturbed (impacted) counterparts.

Water Bodies – These are typically ranked as 9 to minimize the length of a path that crosses over water.

Archaeological Site Probability – This output of an archaeological model identifies areas that have low, medium, and high probabilities of containing archaeological sites.

Places of Worship – Impacts to this type of facility may not always be a negative, and therefore, this resource was not made a constraint. For example, relocation of the church could provide for more conducive environment for worship, due to the changing land uses that have developed around it. Impacts to these types of facilities would need to be evaluated on a case-by-case basis. A buffer of 500 feet was created around each point to provide additional protection. This size buffer was designed to encompass an entire church campus so that outlaying facilities such as playground and parking lots would be protected. The buffer was ranked as 9.

Prime Farmlands – The loss of farmland across the country is an increasingly important issue. They are also protected by the Farmland Protection Policy Act, and as such it was decided that these lands should receive some level of protection in AART.

Land Use – Various general land uses were assigned a range of values, typically reflecting the intensity of development in those locations.

Oil and Gas Wells – Individual wells were given 100-ft buffers to provide protection and avoid the expense of plugging and cleaning up these sites. Impacts to pipelines were quantified but they were not ranked.

Miscellaneous Facilities – These facilities include fire stations, libraries, clinics, museums and shopping centers. Most were available as points and were buffered and assigned a range of rankings.

Rankings for individual data layers are summarized in **Table 1** which also includes layers that were not ranked but were included for the purpose of quantification of impacts (e.g. pipelines, roads, and railroads). Once AART generates a corridor, it quantifies the occurrences of resources, or "impacts," along that corridor (for example, the total acreages of each wetland occurring in a corridor). These corridor impacts are generated for each corridor and used in comparing, evaluating and selecting preferred corridors. Any available GIS layer may be quantified, whether or not it was ranked or designated as "avoid." Hence some of the data in Table 1, such as pipelines, roads, and railroads were quantified but not ranked.

3.5.3 Final Suitability Layer

After all of the "avoids" and Rankings were applied, AART generated the final "suitability" layer as shown in **Figure 9**.

Table 1: AART Environmental Data Layers

Environmental	Category	Ranking	Buffer (ft)	Comments
Threatened & Endangered Species				
	Piping Plover	Avoid		
	South Texas ambrosia, slender rushpea	Avoid		
Critical Habitat				
	Piping Plover	Avoid		
Wetlands (NWI)				
Estuarine and Marine Deepwater				
	E1AB3L	Avoid		
	E1UBL	Avoid		
	E1UBLx	Avoid		
Estuarine and Marine Wetland				
	E2AB3M	Avoid		
	E2EM1N	Avoid		
	E2EM1P	Avoid		
	E2EM1Ps	Avoid		
	E2USM	Avoid		
	E2USMs	Avoid		
	E2USMx	Avoid		
	E2USN	Avoid		
	E2USNs	Avoid		
	E2USNx	Avoid		
	E2USP	Avoid		
	E2USPs	Avoid		
	E2USPx	Avoid		
	M2USP	Avoid		

Environmental	Category	Ranking	Buffer (ft)	Comments
Freshwater Emergent Wetland				
	PEM1/SS1A	9		
	PEM1/SS1Ax	6		
	PEM1/SS1C	9		
	PEM1/SS1Ch	6		
	PEM1/SS1Cx	6		
	PEM1/SS1J	9		
	PEM1A	9		
	PEM1Ad	6		
	PEM1Ah	6		
	PEM1Ax	6		
	PEM1C	9		
	PEM1Cd	6		
	PEM1Ch	6		
	PEM1Cx	6		
	PEM1F	9		
	PEM1Fh	6		
	PEM1Fx	6		
	PEM1J	9		
	PEM1Jh	6		
	PEM1Kx	6		
	PEM1R	9		
Freshwater Forested/Shrub Wetland				
	PFO1/EM1J	5		
	PFO1/SS1A	8		
	PFO1/SS1C	8		
	PFO1/SS1Cx	6		
	PFO1A	8		
	PFO1Ax	6		
	PFO1C	8		
	PFO1Fx	5		
	PFO1S	5		
	PSS1A	8		
	PSS1Ah	6		
	PSS1C	5		
	PSS1Ch	3		
	PSS1Cx	3		
	PSS1F	5		
	PSS1Fx	3		
	PSS1J	5		
Freshwater Pond				
	PAB4Fh	3		
	PAB4Fx	3		
	PUBF	7		
	PUBFh	3		
	PUBFx	3		
	PUBH	7		

Environmental	Category	Ranking	Buffer (ft)	Comments
	PUBHh	3		
	PUBHx	3		
	PUBKx	3		
	PUSA	8		
	PUSAd	3		
	PUSAh	3		
	PUSAx	3		
	PUSC	8		
	PUSCh	3		
	PUSCx	3		
	PUSKx	3		
	PUSR	8		
Lake				
	L1UBHh	5		
	L1UBHx	5		
	L1UBKh	5		
	L1UBKx	5		
	L2UBF	5		
	L2UBFx	5		
	L2UBKh	5		
	L2USCh	5		
	L2USKh	5		
Riverine				
	R1UBV	7		
	R2UBF	7		
	R2UBH	7		
	R2USA	7		
	R2USC	7		
Other				
	Pf	4		
Prime Farmlands				
	Prime farmland	5		
	Prime farmland if drained	1		
	Prime farmland if irrigated	4		
Water Bodies, Linear				
	Canal/Ditch/Aqueduct			Quantified
	Stream/River	9		
Water Bodies, Linear		9		
Water Body Segments		9		
Water Bodies, Areal				
	Bay/Estuary/Gulf/Sound			
	Lake/Pond			
	Stream/River			
Water Bodies, Areal		9		
Significant Stream Segments (Nueces R.)		9		
Watersheds				Quantified
Floodplain				

Environmental	Category	Ranking	Buffer (ft)	Comments
	In			Quantified
	Out			
State Lands		Avoid		
Landfills		Avoid	500	
Landfills (closed)		Avoid		
Water Supply Wells		9	100	
Superfund Sites		Avoid	500	
HazMat Sites		Avoid	500	

Table 2: AART Cultural and Historical Data Layers

Cultural & Historical	Category	Ranking	Buffer (ft)	Comments
Archaeological Sites		Avoid	100	
Archaeological Sites		Avoid		
Archaeological Site Probability				
	Rest of Study Area	1		
	Low	4		
	Medium	6		
	High	8		
Cemeteries		Avoid		
Places of Worship		9	500	
Fire Stations		9	500	
Landmarks				
	Airport	Avoid		
	Hospital	Avoid		
	Recreation Area	Avoid		
	School	Avoid		
	Shopping Center	9		
Libraries		9	500	
Institutions				
	Cemetery	Avoid	500	
	Clinic	1		
	College/University	Avoid	1000	
	High School	Avoid	500	
	Hospital	Avoid	500	
	Junior High/Middle School	Avoid	500	
	Museum	5		
	Private School	Avoid	500	
	Rural Health Center	5	500	
	Unknown	1		
National Historic Register Sites		Avoid	50	
Historical Markers		1		
Local Surveys		5	50	
RTHL		Avoid	50	
Municipal Parks		Avoid		
Recreation Areas		Avoid	1000	
Schools		Avoid	500	

Cultural & Historical	Category	Ranking	Buffer (ft)	Comments
Land Use				
	Agriculture (Row Crops)	1		
	Agriculture (Pasture)	1		
	Agriculture (Old Field)	1		
	Cemetery	Avoid		
	Commercial	5		
	Conservation Easement	Avoid		
	Industrial	5		
	Oil Facility	9		
	Park	Avoid		
	Public	9		
	Residential	9		
	School	Avoid		
	Transportation (Roadway)			Quantified
	Transportation (Airport)	Avoid		
	Transportation (Rail)			Quantified
	Undeveloped	1		
	Open Water	9		

Table 3: AART Infrastructure Data Layers

Infrastructure	Category	Ranking	Buffer (ft)	Comments
Roads				Quantified
Railroads				Quantified
Airports		Avoid		
Wells, Oil & Gas		9	100	
Pipelines				Quantified

Table 4: AART Jurisdictional Data Layers

Jurisdictions	Category	Ranking	Buffer (ft)	Comments
City Boundaries		9		
Urban Area Boundaries		9		

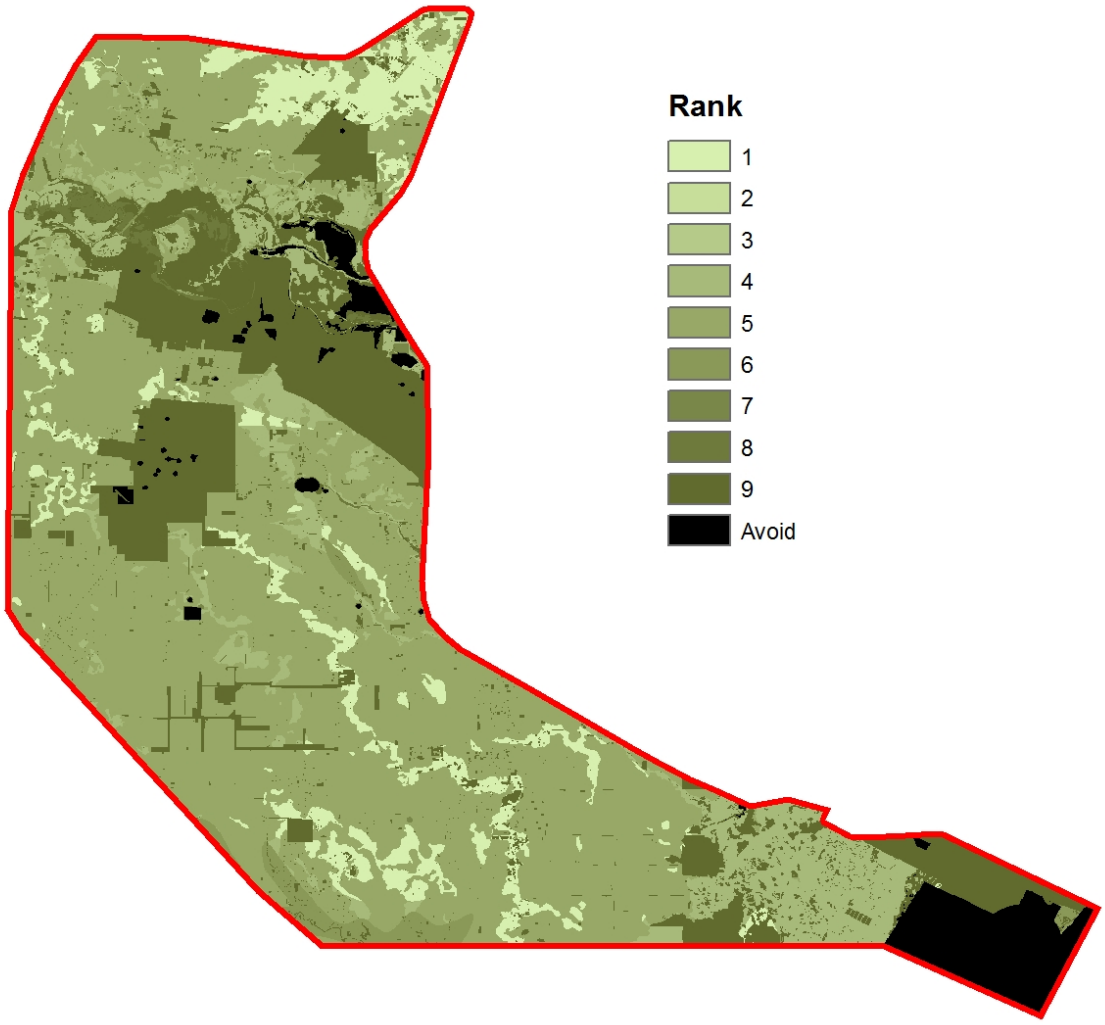


Figure 9 - Final suitability layer showing rankings and "avoids"

3.6 Identification of Start, End and Way Points

Among the issues considered in determining start and end points are logical “tie-ins” to the existing road network, potential for future development, avoidance of sensitive areas, etc. For this study, a total of four start/end points and six waypoints were used, as shown in **Figure 10**. Point S1 was chosen along US77 in the northeastern portion of the study area. On the northwestern side of the study area, Point S2 near Edroy was selected as a tie-in to I-37. Another tie-in to I-37 closer to Corpus Christi was added in Point S3. Due to the nature of the study area, there was only one ending point, E2, on Padre Island along road P22.

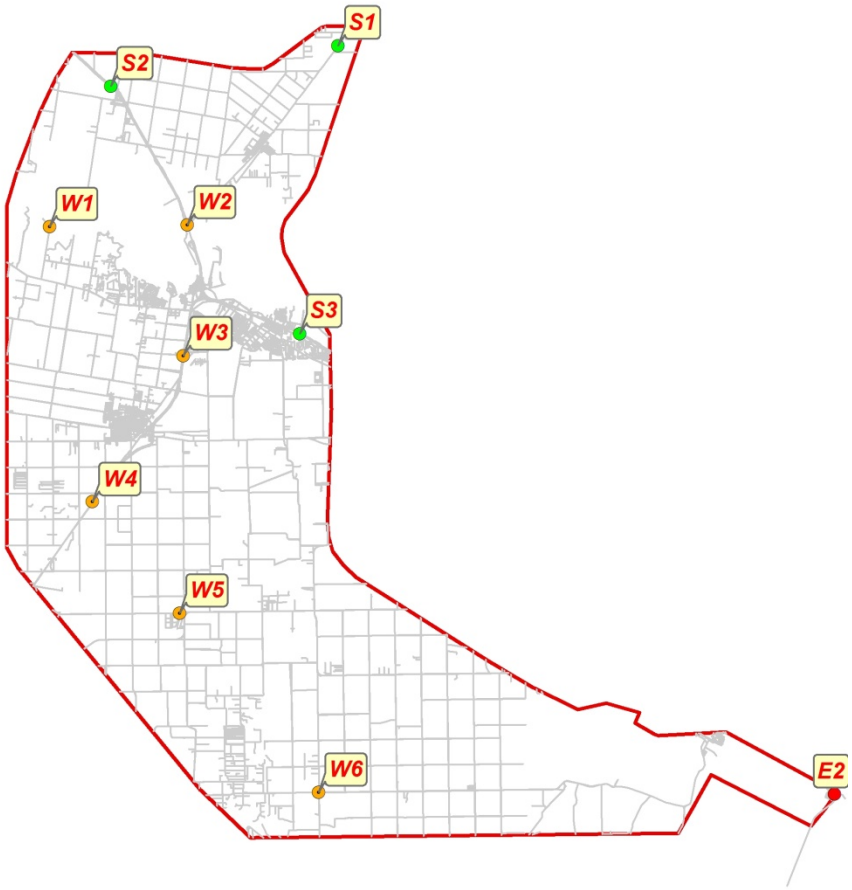


Figure 10: Start, end, and way points

The various waypoints, W1 – W6, were selected to generate additional corridors of interest. Point W1 was chosen to provide a corridor on the western side of the study area. Point W2 was used to force a tie-in at the interchange of I-37 and US77. Point W3 was chosen to provide a tie-in on US77 in the center of the study area, while point W4

connects to US77 further south. Points W5 and W6 help to generate corridors towards the western and southern regions of the study area.

3.7 Corridor Parameters

AART calculates impacts based on a corridor width which is specified by the user. For this study a corridor width of one mile was used. In order to meet engineering requirements, a horizontal curve radius value of 2,865 feet was used for “smoothing” the corridors.

3.8 Identification of Conceptual and Viable Alternatives

Once the data were compiled, the rankings determined, and the endpoints chosen, AART was ready to be used in generating conceptual corridors. Various combinations of start, end and waypoints were developed in order to generate a universe of alternatives. After these were reviewed and some eliminated from further review, a set of 10 conceptual alternatives were identified as follows:

- Alternative 1: S1-W2-W3-E2
- Alternative 2: S1-W4-W5-E2
- Alternative 3: S1-W2-W3-W6-E2
- Alternative 4: S1-W4-W6-E2
- Alternative 5: S2-W2-W3-E2
- Alternative 6: S2-W4-W5-E2
- Alternative 7: S2-W2-W3-W5-E2
- Alternative 8: S2-W2-W3-W6-E2
- Alternative 9: S3-E2
- Alternative 10: S3-W6-E2

The original AART-generated corridors were modified slightly based on engineering and other requirements, and the corridor impacts were recalculated.

After the conceptual alternatives were evaluated based on traffic/mobility, engineering, environmental, and public input criteria, a set of four viable alternatives were identified. These were as follows:

- Alternative 1: S1-W2-W3-E2
- Alternative 2: S1-W4-W5-E2
- Alternative 5: S2-W2-W3-E2
- Alternative 6: S2-W4-W5-E2

Similarly, viable alternatives were evaluated based on traffic/mobility, engineering, environmental, and public input criteria to identify the preferred corridor.

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	No Data	9	0.72
ArchSites_pt	Open Campsite	9	2.89
ArchSites_pt	Open Campsite/Possible Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	34.36
Arch_Prob	High	8	781.98
Arch_Prob	Low	4	14,005.52
Arch_Prob	Medium	6	6,297.27
Floodplain	A	0	8,871.71
Floodplain	X500	0	1,475.29
LandUse	Agriculture (Old Field)	1	1,868.29
LandUse	Agriculture (Pasture)	1	3,225.62
LandUse	Agriculture (Row Crops)	1	18,693.26
LandUse	Commercial	5	270.88
LandUse	Industrial	5	98.31
LandUse	Oil Facility	9	34.69
LandUse	Open Water	9	1,292.94
LandUse	Park	9	119.02
LandUse	Public	9	27.41
LandUse	Residential	9	925.48
LandUse	School	9	47.59
LandUse	Transportation (Roadway)	1	470.62
LandUse	Undeveloped	1	5,678.64
Oil_Gas_All	Oil/Gas Well	9	16.10
PrimeFarm	All areas are prime farmland	5	15,416.62
PrimeFarm	Prime farmland if drained	1	126.07
PrimeFarm	Prime farmland if irrigated	4	42.59
T_E	Environmental	0	508.47
USFWS_Wetlands	Environmental	0	5,013.75
Urban_Bndy	Urban Area	9	1,161.23
WaterBody	Lake	9	111.52
WaterWells	Water Well	9	17.73
Watersheds			32,753.01
	Total		**119,391.03**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Sharpsburg and Borden's Ferry	2
Oil_Gas_All	Surface ID: 33543	90
	Total	**92**

Crossings

Layer	Description	Count
Arch. Site (line)	---	3
Pipelines	Pipe ID: 16	99
Railroads	Union Pacific Railroad Company	4
Roads	County Road 34	72
Sig. Streams	Nueces River	1
Streams	---	21
	Total	**200**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Farm House	9	0.72
ArchSites_pt	Historic Farmstead	9	0.39
ArchSites_pt	Historic Ranch Headquarters	9	0.38
ArchSites_pt	Historic Scatter	9	0.72
ArchSites_pt	Large Lithic Scatter	9	0.72
ArchSites_pt	Lithic Procurement Site	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	127.76
Arch_Prob	High	8	375.44
Arch_Prob	Low	4	17,389.95
Arch_Prob	Medium	6	9,947.81
Floodplain	A	0	8,185.69
Floodplain	X500	0	1,197.10
LandUse	Agriculture (Old Field)	1	1,507.79
LandUse	Agriculture (Pasture)	1	2,726.00
LandUse	Agriculture (Row Crops)	1	23,477.75
LandUse	Commercial	5	223.98
LandUse	Industrial	5	385.12
LandUse	Oil Facility	9	56.64
LandUse	Open Water	9	1,284.47
LandUse	Public	9	27.41
LandUse	Residential	9	1,081.99
LandUse	Transportation (Roadway)	1	390.82
LandUse	Undeveloped	1	7,067.00
Oil_Gas_All	Oil/Gas Well	9	24.26
PrimeFarm	All areas are prime farmland	5	20,258.67
PrimeFarm	Prime farmland if drained	1	160.32
PrimeFarm	Prime farmland if irrigated	4	558.41
USFWS_Wetlands	Environmental	0	4,805.79
Urban_Bndy	Urban Area	9	520.32
WaterBody	Lake	9	128.71
WaterWells	Water Well	9	23.18
Watersheds			38,229.24
	Total		**140,165.99**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Rabb, Martha (Reagan)	1
Oil_Gas_All	Surface ID: 33543	135
	Total	**136**

Crossings

Layer	Description	Count
Arch. Site (line)	---	1
Pipelines	Pipe ID: 3360	128
Railroads	Union Pacific Railroad Company	4
Roads	FM 624	77
Sig. Streams	Nueces River	1
Streams	---	19
	Total	**230**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	No Data	9	0.72
ArchSites_pt	Open Campsite	9	2.89
ArchSites_pt	Open Campsite/Possible Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	33.65
Arch_Prob	High	8	406.54
Arch_Prob	Low	4	13,629.75
Arch_Prob	Medium	6	5,380.27
Cemeteries_py	Cemetery	9	1.37
Floodplain	A	0	7,821.71
Floodplain	X500	0	493.13
LandUse	Agriculture (Old Field)	1	2,609.51
LandUse	Agriculture (Pasture)	1	2,868.09
LandUse	Agriculture (Row Crops)	1	20,750.45
LandUse	Commercial	5	262.53
LandUse	Industrial	5	103.51
LandUse	Oil Facility	9	34.10
LandUse	Open Water	9	1,310.21
LandUse	Park	9	118.97
LandUse	Residential	9	853.16
LandUse	School	9	47.59
LandUse	Transportation (Roadway)	1	478.43
LandUse	Undeveloped	1	5,213.26
Oil_Gas_All	Oil/Gas Well	9	15.05
PrimeFarm	All areas are prime farmland	5	16,755.39
PrimeFarm	Prime farmland if drained	1	126.07
T_E	Environmental	0	508.67
USFWS_Wetlands	Environmental	0	5,335.56
Urban_Bndy	Urban Area	9	1,160.73
WaterBody	Lake	9	140.06
WaterWells	Water Well	9	15.15
Watersheds			34,650.07
	Total		**121,128.01**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Sharpsburg and Borden's Ferry	2
Oil_Gas_All	Surface ID: 22794	83
	Total	**85**

Crossings

Layer	Description	Count
Arch. Site (line)	---	3
Pipelines	Pipe ID: 16	90
Railroads	Union Pacific Railroad Company	4
Roads	County Road 34	75
Sig. Streams	Nueces River	1
Streams	---	20
	Total	**193**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Historic Farmstead	9	0.30
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	1.20
Arch_Prob	Low	4	13,011.89
Arch_Prob	Medium	6	4,171.56
Cemeteries_py	Cemetery	9	4.38
Floodplain	A	0	5,087.29
Floodplain	X500	0	228.99
LandUse	Agriculture (Old Field)	1	1,655.34
LandUse	Agriculture (Pasture)	1	2,779.56
LandUse	Agriculture (Row Crops)	1	23,697.37
LandUse	Cemetery	9	2.96
LandUse	Commercial	5	155.80
LandUse	Industrial	5	53.85
LandUse	Oil Facility	9	44.26
LandUse	Open Water	9	1,451.95
LandUse	Residential	9	548.07
LandUse	Transportation (Roadway)	1	252.42
LandUse	Undeveloped	1	5,800.51
Oil_Gas_All	Oil/Gas Well	9	22.29
PrimeFarm	All areas are prime farmland	5	21,030.98
PrimeFarm	Prime farmland if drained	1	94.95
PrimeFarm	Prime farmland if irrigated	4	658.34
T_E	Environmental	0	507.72
USFWS_Wetlands	Environmental	0	3,828.99
Urban_Bndy	Urban Area	9	409.34
WaterBody	Lake	9	121.05
WaterWells	Water Well	9	10.75
Watersheds			36,442.36
	Total		**122,075.17**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Rabb, Martha (Reagan)	1
Oil_Gas_All	Surface ID: 22794	123
	Total	**124**

Crossings

Layer	Description	Count
Arch. Site (line)	---	1
Pipelines	Pipe ID: 13204	88
Railroads	Union Pacific Railroad Company	3
Roads	County Road 81	66
Sig. Streams	Nueces River	1
Streams	---	18
	Total	**177**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Lithic Scatter	9	0.72
ArchSites_pt	No Data	9	0.72
ArchSites_pt	Open Campsite	9	2.89
ArchSites_pt	Open Campsite/Possible Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	37.28
Arch_Prob	High	8	788.21
Arch_Prob	Low	4	15,712.50
Arch_Prob	Medium	6	8,199.64
Floodplain	A	0	8,581.54
Floodplain	X500	0	1,487.70
LandUse	Agriculture (Old Field)	1	1,390.24
LandUse	Agriculture (Pasture)	1	3,596.81
LandUse	Agriculture (Row Crops)	1	16,225.94
LandUse	Commercial	5	174.46
LandUse	Industrial	5	97.03
LandUse	Oil Facility	9	44.62
LandUse	Open Water	9	1,280.76
LandUse	Park	9	119.54
LandUse	Public	9	27.41
LandUse	Residential	9	937.61
LandUse	School	9	47.54
LandUse	Transportation (Roadway)	1	580.09
LandUse	Undeveloped	1	6,182.75
Oil_Gas_All	Oil/Gas Well	9	16.38
PrimeFarm	All areas are prime farmland	5	16,495.06
PrimeFarm	Prime farmland if drained	1	127.68
PrimeFarm	Prime farmland if irrigated	4	42.59
T_E	Environmental	0	508.59
USFWS_Wetlands	Environmental	0	5,325.86
Urban_Bndy	Urban Area	9	1,079.63
WaterBody	Lake	9	139.98
WaterWells	Water Well	9	19.56
Watersheds			30,705.06
	Total		**119,977.80**

Point Impacts (Counts)

Layer	Description	Count
Oil_Gas_All	Surface ID: 33543	91
	Total	**91**

Crossings

Layer	Description	Count
Arch. Site (line)	---	2
Pipelines	Pipe ID: 16	100
Railroads	Union Pacific Railroad Company	3
Roads	County Road 34	64
Sig. Streams	Nueces River	1
Streams	---	19
	Total	**189**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Farm House	9	0.72
ArchSites_pt	Historic Farmstead	9	0.39
ArchSites_pt	Historic Scatter	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	127.76
Arch_Prob	High	8	375.44
Arch_Prob	Low	4	16,855.93
Arch_Prob	Medium	6	8,724.39
Cemeteries_py	Cemetery	9	3.01
Floodplain	A	0	6,153.65
Floodplain	X500	0	1,213.07
LandUse	Agriculture (Old Field)	1	915.59
LandUse	Agriculture (Pasture)	1	3,140.01
LandUse	Agriculture (Row Crops)	1	20,955.75
LandUse	Cemetery	9	2.96
LandUse	Commercial	5	155.06
LandUse	Industrial	5	381.16
LandUse	Oil Facility	9	45.65
LandUse	Open Water	9	1,443.98
LandUse	Public	9	27.41
LandUse	Residential	9	731.08
LandUse	Transportation (Roadway)	1	260.26
LandUse	Undeveloped	1	6,206.33
Oil_Gas_All	Oil/Gas Well	9	18.76
PrimeFarm	All areas are prime farmland	5	20,320.24
PrimeFarm	Prime farmland if drained	1	99.70
PrimeFarm	Prime farmland if irrigated	4	705.94
USFWS_Wetlands	Environmental	0	3,519.71
Urban_Bndy	Urban Area	9	409.34
WaterBody	Lake	9	96.04
WaterWells	Water Well	9	14.85
Watersheds			34,265.96
	Total		**127,171.59**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Rabb, Martha (Reagan)	1
Oil_Gas_All	Surface ID: 33543	104
	Total	**105**

Crossings

Layer	Description	Count
Pipelines	Pipe ID: 13204	95
Railroads	Union Pacific Railroad Company	3
Roads	County Road 81	62
Sig. Streams	Nueces River	1
Streams	Hondo Creek	20
	Total	**181**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Historic Scatter	9	0.72
ArchSites_pt	Lithic Scatter	9	0.72
ArchSites_pt	No Data	9	0.72
ArchSites_pt	Open Campsite	9	2.89
ArchSites_pt	Open Campsite/Possible Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	37.28
Arch_Prob	High	8	782.93
Arch_Prob	Low	4	18,974.85
Arch_Prob	Medium	6	10,809.19
Floodplain	A	0	8,574.46
Floodplain	X500	0	1,478.89
LandUse	Agriculture (Old Field)	1	1,390.21
LandUse	Agriculture (Pasture)	1	3,511.59
LandUse	Agriculture (Row Crops)	1	17,713.98
LandUse	Commercial	5	176.61
LandUse	Industrial	5	233.55
LandUse	Oil Facility	9	44.33
LandUse	Open Water	9	1,280.15
LandUse	Park	9	119.54
LandUse	Public	9	27.41
LandUse	Residential	9	1,052.84
LandUse	School	9	47.54
LandUse	Transportation (Roadway)	1	580.08
LandUse	Undeveloped	1	6,096.15
Oil_Gas_All	Oil/Gas Well	9	11.51
PrimeFarm	All areas are prime farmland	5	17,936.15
PrimeFarm	Prime farmland if drained	1	127.68
PrimeFarm	Prime farmland if irrigated	4	42.59
T_E	Environmental	0	508.59
USFWS_Wetlands	Environmental	0	5,315.93
Urban_Bndy	Urban Area	9	1,079.63
WaterBody	Lake	9	138.36
WaterWells	Water Well	9	19.90
Watersheds			32,274.26
	Total		**130,392.66**

Point Impacts (Counts)

Layer	Description	Count
Oil_Gas_All	Surface ID: 33543	64
	Total	**64**

Crossings

Layer	Description	Count
Arch. Site (line)	---	2
Pipelines	Pipe ID: 16	97
Railroads	Union Pacific Railroad Company	3
Roads	County Road 34	68
Sig. Streams	Nueces River	1
Streams	---	22
	Total	**193**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Lithic Scatter	9	0.72
ArchSites_pt	No Data	9	0.72
ArchSites_pt	Open Campsite	9	2.89
ArchSites_pt	Open Campsite/Possible Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	34.36
Arch_Prob	High	8	406.54
Arch_Prob	Low	4	15,234.72
Arch_Prob	Medium	6	7,223.12
Cemeteries_py	Cemetery	9	1.37
Floodplain	A	0	7,483.89
Floodplain	X500	0	495.90
LandUse	Agriculture (Old Field)	1	2,129.64
LandUse	Agriculture (Pasture)	1	3,161.08
LandUse	Agriculture (Row Crops)	1	18,014.32
LandUse	Commercial	5	164.28
LandUse	Industrial	5	102.14
LandUse	Oil Facility	9	43.74
LandUse	Open Water	9	1,296.63
LandUse	Park	9	119.02
LandUse	Residential	9	856.31
LandUse	School	9	47.59
LandUse	Transportation (Roadway)	1	577.95
LandUse	Undeveloped	1	5,675.06
Oil_Gas_All	Oil/Gas Well	9	15.05
PrimeFarm	All areas are prime farmland	5	17,537.32
PrimeFarm	Prime farmland if drained	1	126.07
T_E	Environmental	0	508.47
USFWS_Wetlands	Environmental	0	5,589.59
Urban_Bndy	Urban Area	9	1,075.01
WaterBody	Lake	9	168.34
WaterWells	Water Well	9	16.59
Watersheds			32,188.05
	Total		**120,297.94**

Point Impacts (Counts)

Layer	Description	Count
Oil_Gas_All	Surface ID: 22794	83
	Total	**83**

Crossings

Layer	Description	Count
Arch. Site (line)	---	2
Pipelines	Pipe ID: 16	87
Railroads	Union Pacific Railroad Company	3
Roads	County Road 34	69
Sig. Streams	Nueces River	1
Streams	---	20
	Total	**182**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Historic Farmstead	9	0.72
ArchSites_pt	Open Campsite	9	0.72
ArchSites_pt	Open Campsite/Occupation	9	0.72
ArchSites_pt	Shell Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	200.98
Arch_Prob	High	8	1,498.10
Arch_Prob	Low	4	11,422.12
Arch_Prob	Medium	6	4,731.45
Cemeteries_py	Cemetery	9	3.64
Floodplain	A	0	5,448.97
Floodplain	X500	0	1,089.83
LandUse	Agriculture (Old Field)	1	806.23
LandUse	Agriculture (Pasture)	1	1,033.33
LandUse	Agriculture (Row Crops)	1	13,317.74
LandUse	Cemetery	9	1.11
LandUse	Commercial	5	126.72
LandUse	Industrial	5	280.07
LandUse	Oil Facility	9	24.79
LandUse	Open Water	9	1,248.29
LandUse	Park	9	16.44
LandUse	Public	9	27.41
LandUse	Residential	9	889.92
LandUse	School	9	73.54
LandUse	Transportation (Roadway)	1	127.40
LandUse	Undeveloped	1	5,367.16
Mun_Parks	Mun. Park	9	0.17
Oil_Gas_All	Oil/Gas Well	9	29.69
PrimeFarm	All areas are prime farmland	5	11,502.75
PrimeFarm	Prime farmland if irrigated	4	81.67
T_E	Environmental	0	555.54
USFWS_Wetlands	Environmental	0	3,325.93
Urban_Bndy	Urban Area	9	1,152.69
WaterBody	Lake	9	102.82
WaterWells	Water Well	9	14.13
Watersheds			23,340.42
	Total		**87,844.65**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Saint Anthony's Catholic Church	1
Oil_Gas_All	Surface ID: 33543	165
	Total	**166**

Crossings

Layer	Description	Count
Arch. Site (line)	---	2
Pipelines	Pipe ID: 523	95
Railroads	Texas-Mexican Railyard	2
Roads	County Road 30	47
Streams	---	15
	Total	**161**

Run Results

Polygon Impacts

Layer	Description	Rank	Acreage Impact
ArchSites_pt	Historic Farmstead	9	0.72
ArchSites_pt	Open Campsite	9	0.72
ArchSites_pt	Open Campsite/Occupation	9	0.72
ArchSites_pt	Shell Midden	9	0.72
ArchSites_pt	Small Lithic Scatter	9	0.72
ArchSites_py	Arch. Sites (area)	9	200.98
Arch_Prob	High	8	1,122.72
Arch_Prob	Low	4	11,076.49
Arch_Prob	Medium	6	3,823.96
Cemeteries_py	Cemetery	9	5.01
Floodplain	A	0	4,417.81
Floodplain	X500	0	106.85
LandUse	Agriculture (Old Field)	1	1,547.48
LandUse	Agriculture (Pasture)	1	675.21
LandUse	Agriculture (Row Crops)	1	15,407.50
LandUse	Cemetery	9	1.11
LandUse	Commercial	5	117.62
LandUse	Industrial	5	285.28
LandUse	Oil Facility	9	24.21
LandUse	Open Water	9	1,265.67
LandUse	Park	9	16.44
LandUse	Residential	9	818.24
LandUse	School	9	73.54
LandUse	Transportation (Roadway)	1	127.40
LandUse	Undeveloped	1	4,901.92
Mun_Parks	Mun. Park	9	0.17
Oil_Gas_All	Oil/Gas Well	9	28.64
PrimeFarm	All areas are prime farmland	5	12,857.35
PrimeFarm	Prime farmland if irrigated	4	39.08
T_E	Environmental	0	555.54
USFWS_Wetlands	Environmental	0	3,647.15
Urban_Bndy	Urban Area	9	1,152.69
WaterBody	Lake	9	131.27
WaterWells	Water Well	9	11.54
Watersheds			25,261.89
	Total		**89,704.35**

Point Impacts (Counts)

Layer	Description	Count
HistoricalMarkers	Saint Anthony's Catholic Church	1
Oil_Gas_All	Surface ID: 22794	159
	Total	**160**

Crossings

Layer	Description	Count
Arch. Site (line)	---	2
Pipelines	Pipe ID: 523	86
Railroads	Texas-Mexican Railyard	2
Roads	County Road 30	52
Streams	---	14
	Total	**156**

Results for Run: Alt_1

Date Run Created: 6/29/2012

Polygon Impacts

Layer	Description	Acreage Impact
ArchSites_pt	Campsite	0.70
ArchSites_pt	Open Campsite	2.89
ArchSites_pt	Open Campsite/Burial Site	0.72
ArchSites_pt	Open Campsite/Possible Midden	0.72
ArchSites_pt	Small Lithic Scatter	0.72
ArchSites_pt	Small Midden	0.72
ArchSites_pt	Unknown	0.72
		7.19
ArchSites_py	Arch. Sites (area)	188.59
		188.59
Arch_Prob	High	1,922.05
Arch_Prob	Low	15,701.65
Arch_Prob	Medium	8,162.16
		25,785.86
Churches	Church	32.93
		32.93
CityBndy	City	6,831.31
		6,831.31
Critical_Habitat	Piping Plover	656.11
		656.11
Fire_Depts	Fire Station	18.03
		18.03
Floodplain	A	8,800.91
Floodplain	X500	1,343.92
		10,144.82
Hazmat	Hazmat Site	18.03
		18.03
Institutions	Hospital	18.03
Institutions	School	18.03
		36.06

LandUse	Agriculture (Old Field)	1,222.41
LandUse	Agriculture (Pasture)	3,312.31
LandUse	Agriculture (Row Crops)	22,894.66
LandUse	Commercial	485.93
LandUse	Conservation Easement	42.63
LandUse	Industrial	230.82
LandUse	Oil Facility	36.38
LandUse	Open Water	1,357.89
LandUse	Park	132.65
LandUse	Public	27.41
LandUse	Residential	1,737.74
LandUse	School	99.64
LandUse	Transportation (Roadway)	429.74
LandUse	Undeveloped	6,051.24
		38,061.46
Landfills	Landfill	33.43
		33.43
Landfills_Closed	Landfill (Closed)	0.62
		0.62
Landmarks	Hospital	75.96
Landmarks	Recreation Area	104.41
Landmarks	School	15.49
Landmarks	Shopping Center	23.05
		218.90
LocalSurveys	Local Survey	0.18
		0.18
Mun_Parks	Mun. Park	101.33
		101.33
NHRDist	King Ranch	6,261.21
		6,261.21
Oil_Gas_All	Oil/Gas Well	36.40
		36.40
PrimeFarm	All areas are prime farmland	22,914.36
PrimeFarm	Prime farmland if drained	128.92
PrimeFarm	Prime farmland if irrigated	37.65
		23,080.93
Rec_Areas	Country Club	70.52

		70.52
Schools	School	90.15
		90.15
T_E	Environmental	549.28
		549.28
USFWS_Wetlands	Environmental	5,551.80
		5,551.80
WaterBody	Lake	155.64
		155.64
WaterWells	Water Well	16.50
		16.50
Watersheds		38,061.79
		38,061.79

Point Impacts (Counts)

Layer	Description	Count
Arch. Sites (point)	Open Campsite/Burial Site	1
Arch. Sites (point)	Campsite	1
Arch. Sites (point)	Open Campsite	4
Arch. Sites (point)	Open Campsite/Possible Midden	1
Arch. Sites (point)	Small Lithic Scatter	1
Arch. Sites (point)	Small Midden	1
Arch. Sites (point)	Unknown	1
Cultural & Historic	Recreation Area	1
Fire Stations	Fire Station	1
HazMat Sites	Hazmat Site	1
Institutions	School	6
Institutions	Hospital	1
Local Survey	Local Survey	1
Oil/Gas Well	Oil/Gas Well	202
Places of Worship	Church	2
Water Wells	Water Well	23
	Total	**248**

Results for Run: Alt_2

Date Run Created: 6/29/2012

Polygon Impacts

Layer	Description	Acreage Impact
ArchSites_pt	Campsite	0.69
ArchSites_pt	Historic Ranch Headquarters	0.72
ArchSites_pt	Historic Scatter	0.72
ArchSites_pt	Large Lithic Scatter	0.72
ArchSites_pt	Lithic Procurement Site	0.72
ArchSites_pt	Small Lithic Scatter	0.72
		4.30
ArchSites_py	Arch. Sites (area)	110.42
		110.42
Arch_Prob	High	728.15
Arch_Prob	Low	17,498.21
Arch_Prob	Medium	10,317.84
		28,544.20
CityBndy	City	4,331.37
		4,331.37
Critical_Habitat	Piping Plover	656.11
		656.11
Floodplain	A	7,894.95
Floodplain	X500	1,315.75
		9,210.70
LandUse	Agriculture (Old Field)	956.30
LandUse	Agriculture (Pasture)	3,351.90
LandUse	Agriculture (Row Crops)	26,223.18
LandUse	Commercial	127.26
LandUse	Conservation Easement	42.63
LandUse	Industrial	309.06
LandUse	Oil Facility	61.49
LandUse	Open Water	1,310.40
LandUse	Public	27.41
LandUse	Residential	981.47
LandUse	Transportation (Roadway)	179.42
LandUse	Undeveloped	7,570.61
		41,141.12

LocalSurveys	Local Survey	0.18
		0.18
NHRDist	King Ranch	6,261.20
		6,261.20
Oil_Gas_All	Oil/Gas Well	47.20
		47.20
PrimeFarm	All areas are prime farmland	26,138.64
PrimeFarm	Prime farmland if drained	165.96
PrimeFarm	Prime farmland if irrigated	440.16
		26,744.76
T_E	Environmental	544.94
		544.94
USFWS_Wetlands	Environmental	5,415.30
		5,415.30
WaterBody	Lake	156.61
		156.61
WaterWells	Water Well	22.80
		22.80
Watersheds		41,141.44
		41,141.44

Point Impacts (Counts)

Layer	Description	Count
Arch. Sites (point)	Small Lithic Scatter	1
Arch. Sites (point)	Lithic Procurement Site	1
Arch. Sites (point)	Large Lithic Scatter	1
Arch. Sites (point)	Historic Scatter	1
Arch. Sites (point)	Historic Ranch Headquarters	1
Arch. Sites (point)	Campsite	1
Historical Marker	Historical Marker	1
Local Survey	Local Survey	1
Oil/Gas Well	Oil/Gas Well	261
Water Wells	Water Well	32
	Total	**301**

Results for Run: Alt_5

Date Run Created: 6/11/2012 9:52:21 AM

Polygon Impacts

Layer	Description	Acreage Impact
ArchSites_pt	Campsite	0.70
ArchSites_pt	Lithic Scatter	0.72
ArchSites_pt	No Data	0.72
ArchSites_pt	Open Campsite	2.89
ArchSites_pt	Open Campsite/Burial Site	0.72
ArchSites_pt	Open Campsite/Possible Midden	0.72
ArchSites_pt	Small Lithic Scatter	0.72
ArchSites_pt	Small Midden	0.72
ArchSites_pt	Unknown	0.72
ArchSites_pt	Unknown, Possible Shell Midden	0.72
		9.35
ArchSites_py	Arch. Sites (area)	308.13
		308.13
Arch_Prob	High	2,641.34
Arch_Prob	Low	21,034.71
Arch_Prob	Medium	12,266.11
		35,942.16
Churches	Church	72.12
		72.12
CityBndy	City	7,675.75
		7,675.75
Critical_Habitat	Piping Plover	656.11
		656.11
Fire_Depts	Fire Station	18.03
		18.03
Floodplain	A	10,783.40
Floodplain	X500	1,747.42
		12,530.81
Hazmat	Hazmat Site	18.03
		18.03
Institutions	Hospital	18.03
Institutions	School	18.03
		36.06

LandUse	Agriculture (Old Field)	1,894.02
LandUse	Agriculture (Pasture)	4,680.00
LandUse	Agriculture (Row Crops)	24,762.31
LandUse	Commercial	523.08
LandUse	Conservation Easement	42.63
LandUse	Industrial	238.39
LandUse	Oil Facility	53.89
LandUse	Open Water	1,423.38
LandUse	Park	135.11
LandUse	Public	27.41
LandUse	Residential	2,084.17
LandUse	School	99.64
LandUse	Transportation (Roadway)	949.24
LandUse	Undeveloped	7,463.21
		44,376.47
Landfills	Landfill	33.43
		33.43
Landfills_Closed	Landfill (Closed)	0.62
		0.62
Landmarks	Hospital	75.96
Landmarks	Recreation Area	104.40
Landmarks	School	15.49
Landmarks	Shopping Center	23.05
		218.90
LocalSurveys	Local Survey	0.18
		0.18
Mun_Parks	Mun. Park	101.33
		101.33
NHRDist	King Ranch	6,261.12
		6,261.12
Oil_Gas_All	Oil/Gas Well	50.47
		50.47
PrimeFarm	All areas are prime farmland	26,514.85
PrimeFarm	Prime farmland if drained	128.92
PrimeFarm	Prime farmland if irrigated	53.02
		26,696.79
Rec_Areas	Country Club	70.51
		70.51

Schools	School	90.15
		90.15
T_E	Environmental	549.28
		549.28
USFWS_Wetlands	Estuarine and Marine Deepwater	2,388.83
USFWS_Wetlands	Estuarine and Marine Wetland	457.09
USFWS_Wetlands	Freshwater Emergent Wetland	3,123.21
USFWS_Wetlands	Freshwater Forested/Shrub Wetland	269.36
USFWS_Wetlands	Freshwater Pond	163.61
USFWS_Wetlands	Lake	20.55
USFWS_Wetlands	Other	133.59
USFWS_Wetlands	Riverine	23.28
		6,579.52
WaterBody	Lake	232.09
		232.09
WaterWells	Water Well	23.23
		23.23
Watersheds		44,376.79
		44,376.79

Point Impacts (Counts)

Layer	Count
Historical Marker	2
Oil/Gas Well	280
Total	**282**

Results for Run: Alt_6

Date Run Created: 6/11/2012 9:53:39 AM

Polygon Impacts

Layer	Description	Acreage Impact
ArchSites_pt	Campsite	0.70
ArchSites_pt	Historic Scatter	0.72
ArchSites_pt	Small Lithic Scatter	0.72
		2.14
ArchSites_py	Arch. Sites (area)	109.51
		109.51
Arch_Prob	High	728.15
Arch_Prob	Low	17,288.84
Arch_Prob	Medium	9,029.02
		27,046.01
CityBndy	City	4,330.15
		4,330.15
Critical_Habitat	Piping Plover	656.11
		656.11
Floodplain	A	6,543.77
Floodplain	X500	1,346.00
		7,889.77
LandUse	Agriculture (Old Field)	967.27
LandUse	Agriculture (Pasture)	3,675.57
LandUse	Agriculture (Row Crops)	28,032.14
LandUse	Commercial	216.72
LandUse	Conservation Easement	42.63
LandUse	Industrial	298.11
LandUse	Oil Facility	54.48
LandUse	Open Water	1,368.71
LandUse	Public	27.41
LandUse	Residential	995.16
LandUse	Transportation (Roadway)	203.74
LandUse	Undeveloped	7,043.44
		42,925.39

LocalSurveys	Local Survey	0.18
		0.18
NHRDist	King Ranch	6,261.06
		6,261.06
Oil_Gas_All	Oil/Gas Well	43.11
		43.11
PrimeFarm	All areas are prime farmland	28,360.76
PrimeFarm	Prime farmland if drained	63.78
PrimeFarm	Prime farmland if irrigated	655.66
		29,080.21
T_E	Environmental	544.94
		544.94
USFWS_Wetlands	Estuarine and Marine Deepwater	2,343.85
USFWS_Wetlands	Estuarine and Marine Wetland	362.48
USFWS_Wetlands	Freshwater Emergent Wetland	1,201.96
USFWS_Wetlands	Freshwater Forested/Shrub Wetland	150.04
USFWS_Wetlands	Freshwater Pond	29.31
USFWS_Wetlands	Lake	5.92
USFWS_Wetlands	Other	0.10
USFWS_Wetlands	Riverine	13.10
		4,106.76
WaterBody	Lake	124.12
		124.12
WaterWells	Water Well	22.24
		22.24
Watersheds		42,925.71
		42,925.71

Point Impacts (Counts)

Layer	Count
Historical Marker	1
Oil/Gas Well	239
Total	**240**

Appendix B

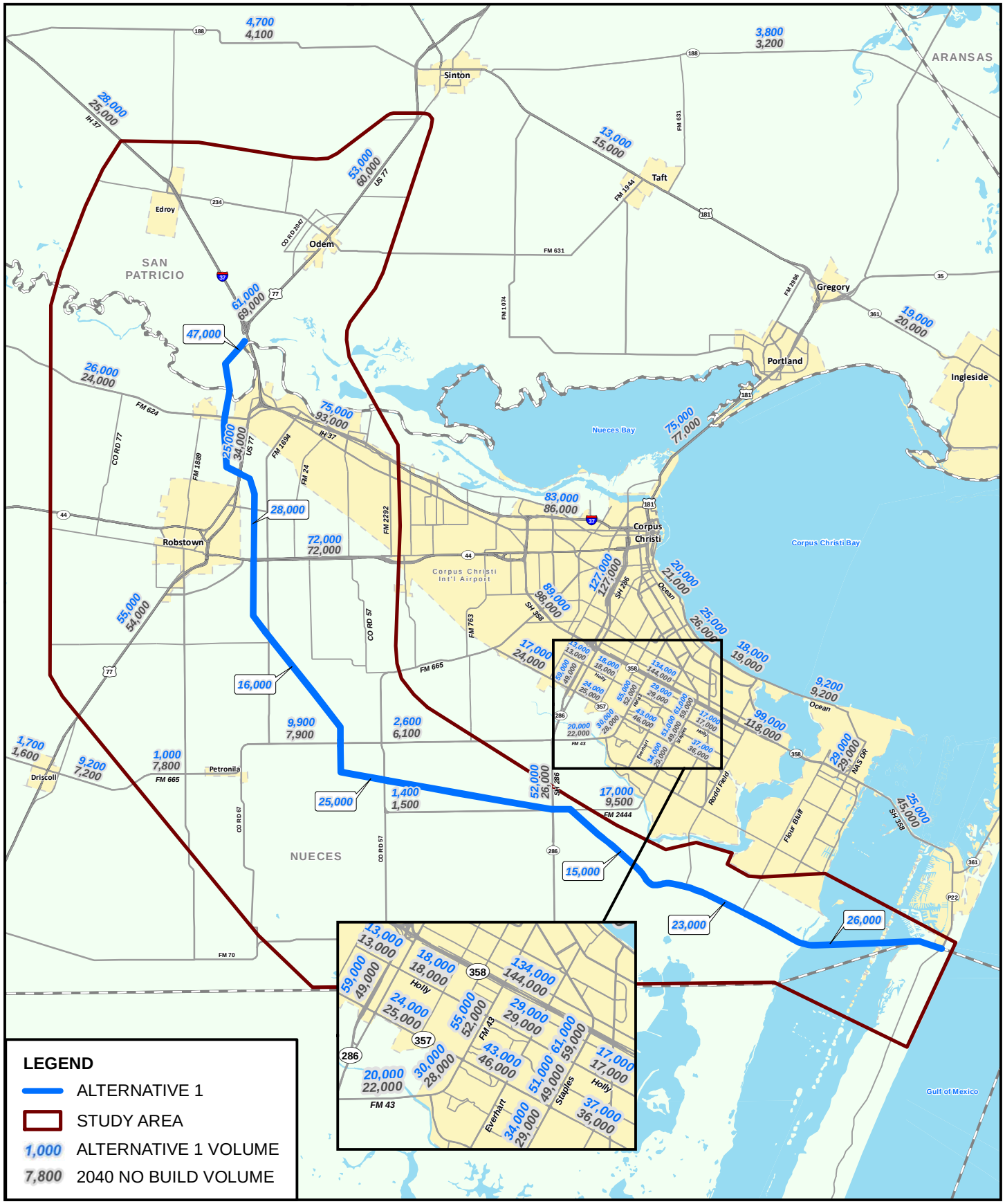
Table of Data Sources Used for Social and Environmental Analysis

DESCRIPTION	ITEM	SOURCE	YEAR
GIS data	Aerial Photography (0.5 meter)	MPO	2010
Jurisdictions	City Boundaries	Texas Natural Resources Information Services (TNRIS)	2010
	County Boundaries	Texas Parks and Wildlife Department (TPWD)	2004
	US Congressional Districts	U.S. Census Bureau (USCB)	2009
	State Boundaries	ESRI	
Landuse	Existing landuse from 2010 aerial photography	Blanton and Assoc.	2010
Environmental Features	Known Archaeological Sites	Texas Historic Commission (THC)	2008
	National Historic Register Sites (points and polygons)	THC	2004/sites and 2005/districts
	Historic Structures	THC	2009
	Historic Areas	THC	2008
	Soils and Farmlands	Soil Survey Geographic Database (SSURGO)	Nueces, San Patricio, Kleberg Co./2009
	Wetlands	U.S. Fish and Wildlife Service (USFWS)	2009
	Watersheds	Texas Water Development Board (TWDB)	2012
	Flood Zones	Federal Emergency Management Association (FEMA)	Nueces, San Patricio/ 1998
	Waterbodies (Impaired, non-impaired, and ecologically significant)	Texas Commission on Environmental Quality (TCEQ)	2008
	Significant Stream Segments	TPWD	2009
	Wildlife preserves	Texas General Land Office/ USFWS National Wildlife Refuges in Texas	2012
	Critical Habitat	USFWS	2012
	Threatened & Endangered Species	TPWD	2012
	Federal Parks	National Park Service	2009
	State Parks	TPWD	2009
	Farmland	U.S. Department of Agriculture (USDA)	2004
	Federal Lands	National Atlas	

DESCRIPTION	ITEM	SOURCE	YEAR
	Oil and Gas wells	Texas Railroad Commission (RRC)	2010
	Oil and Gas pipelines	Nueces Co.	
	Landfills, Solid Waste	TCEQ	2008
	Permitted Industry/Hazardous Waste Sites	TCEQ	
	Hazmat sites	TCEQ	1996
	Public Water Supply Wells	TWDB	2010
	Superfund Sites	Environmental Protection Agency (EPA)	2012
	Superfund Sites (State)	TCEQ	2007
	Geology	Geologic Atlas of Texas (GAT)	1975
Infrastructure	Airport	ESRI	2010
	Railroads	TNRIS	2005
	Roads	TNRIS	2006
	Maintained Roads	Nueces Co.	
Census Data	Block Groups 1990	ESRI	1990
	Block Groups 2000	ESRI	2000
	Census Blocks 1990	ESRI	1990
	Census Blocks 2000	ESRI	2000
	Census Block Group 2010	Census / MPO	2010
	Census Block Group population (CTPP)	Census / MPO	2010
Cultural Resources	Cemetery	THC	2005
	Church	ESRI Street Map Data	2010
	Hospital	ESRI Street Map Data	2010
	Institutions	Texas Gazetteer	2010
	Park, Municipal	ESRI Street Map Data	2010
	Recreational Areas	ESRI Street Map Data	2010
	School	ESRI Street Map Data	2010
	Landmarks	ESRI Street Map Data	2010

DESCRIPTION	ITEM	SOURCE	YEAR
	Public Libraries	ESRI Street Map Data	2010
	School District Boundaries	TEA	2009
	Police Stations	Geographic Names Information System (GNIS)	2012
	Fire Stations	GNIS	2012
	Voter Precincts	Nueces Co	2012
	Rural Subdivisions	Nueces Co	2012
	Property	Nueces Co	2012

Appendix C
Traffic Analysis Exhibits



Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

2040 DAILY VOLUMES
NO BUILD AND ALTERNATIVE 1

CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County

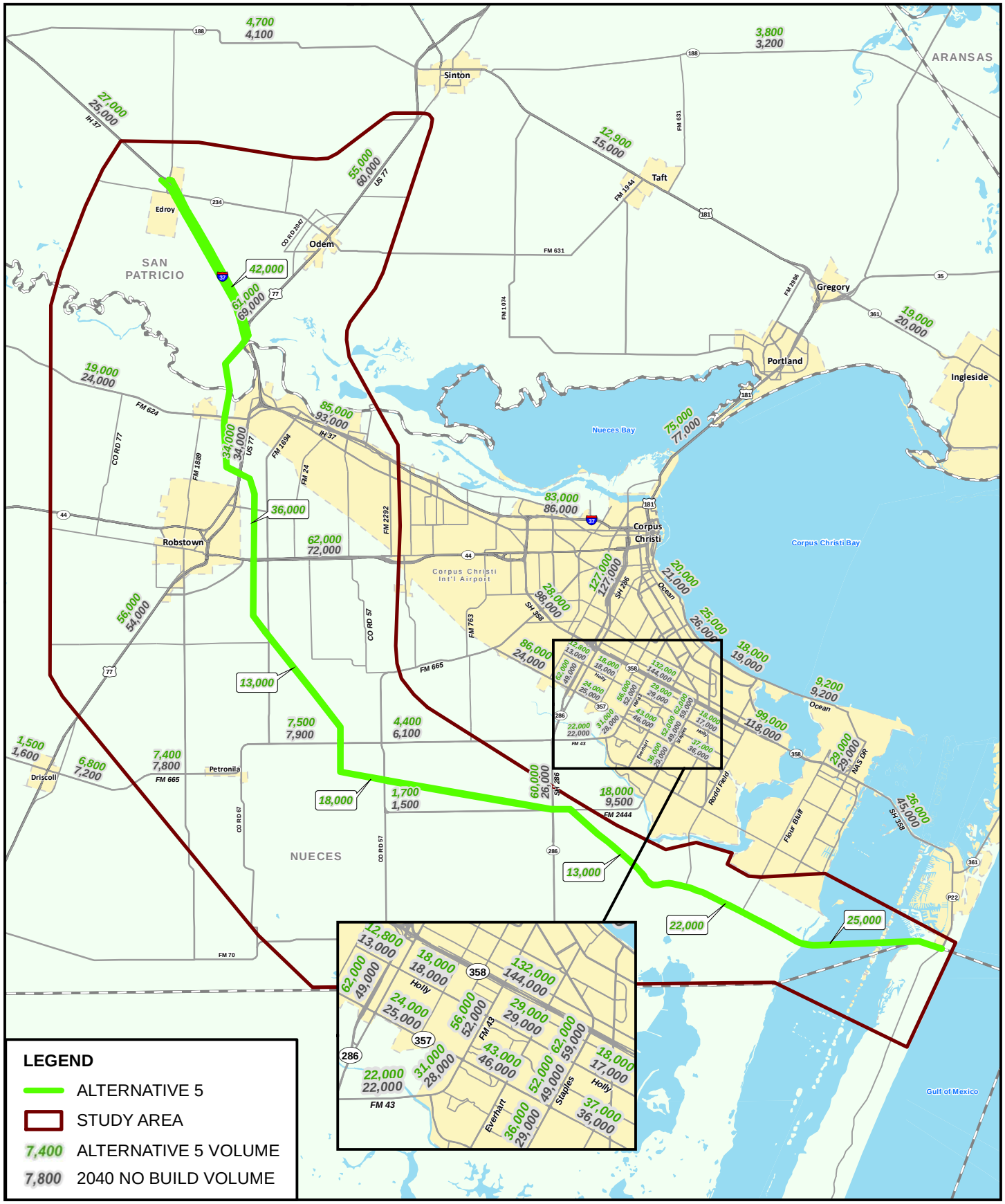
HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
972-960-4400

BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES

NOVEMBER 2012

EXHIBIT 1


ARANSAS
SAN PATRICIO
NUECES
Sinton
Taft
Edroy
Odem
Gregory
Portland
Ingleside
Robstown
Petronila
Driscoll
Corpus Christi
Corpus Christi Int'l Airport
Nueces Bay
Corpus Christi Bay
Ocean
Rudd Field
Flour Bluff
NAS DR
Holly
Staples
Everhart
FM 43
Gulf of Mexico
4,700
4,100
3,800
3,200
27,000
25,000
IH 37
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60,000
US 77
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LEGEND
ALTERNATIVE 2
STUDY AREA
7,400 ALTERNATIVE 2 VOLUME
7,800 2040 NO BUILD VOLUME
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MILES
Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES
2040 DAILY VOLUMES
NO BUILD AND ALTERNATIVE 2
CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County
HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
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ECOMM CORPORATION; OLIVARRI & ASSOCIATES
NOVEMBER 2012
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ARANSAS
SAN PATRICIO
NUECES
Sinton
Taft
Edroy
Odem
Gregory
Portland
Ingleside
Robstown
Petronila
Driscoll
Corpus Christi
Corpus Christi Int'l Airport
Nueces Bay
Corpus Christi Bay
Gulf of Mexico
Ocean
Rudd Field
Flour Bluff
NAS DR
Holly
Staples
Everhart
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LEGEND
ALTERNATIVE 5
STUDY AREA
7,400 ALTERNATIVE 5 VOLUME
7,800 2040 NO BUILD VOLUME
Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES
2040 DAILY VOLUMES
NO BUILD AND ALTERNATIVE 5
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MILES
CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County
HDR
HDR ENGINEERING, INC.
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972-960-4400
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ECOMM CORPORATION; OLIVARRI & ASSOCIATES
NOVEMBER 2012
EXHIBIT 3



Regional Parkway

CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

2040 DAILY VOLUMES

NO BUILD AND ALTERNATIVE 6

N

0 1.25 2.5 5

MILES

CORPUS CHRISTI MPO

Texas Department of Transportation

City of Corpus Christi

State of Texas County of Nueces

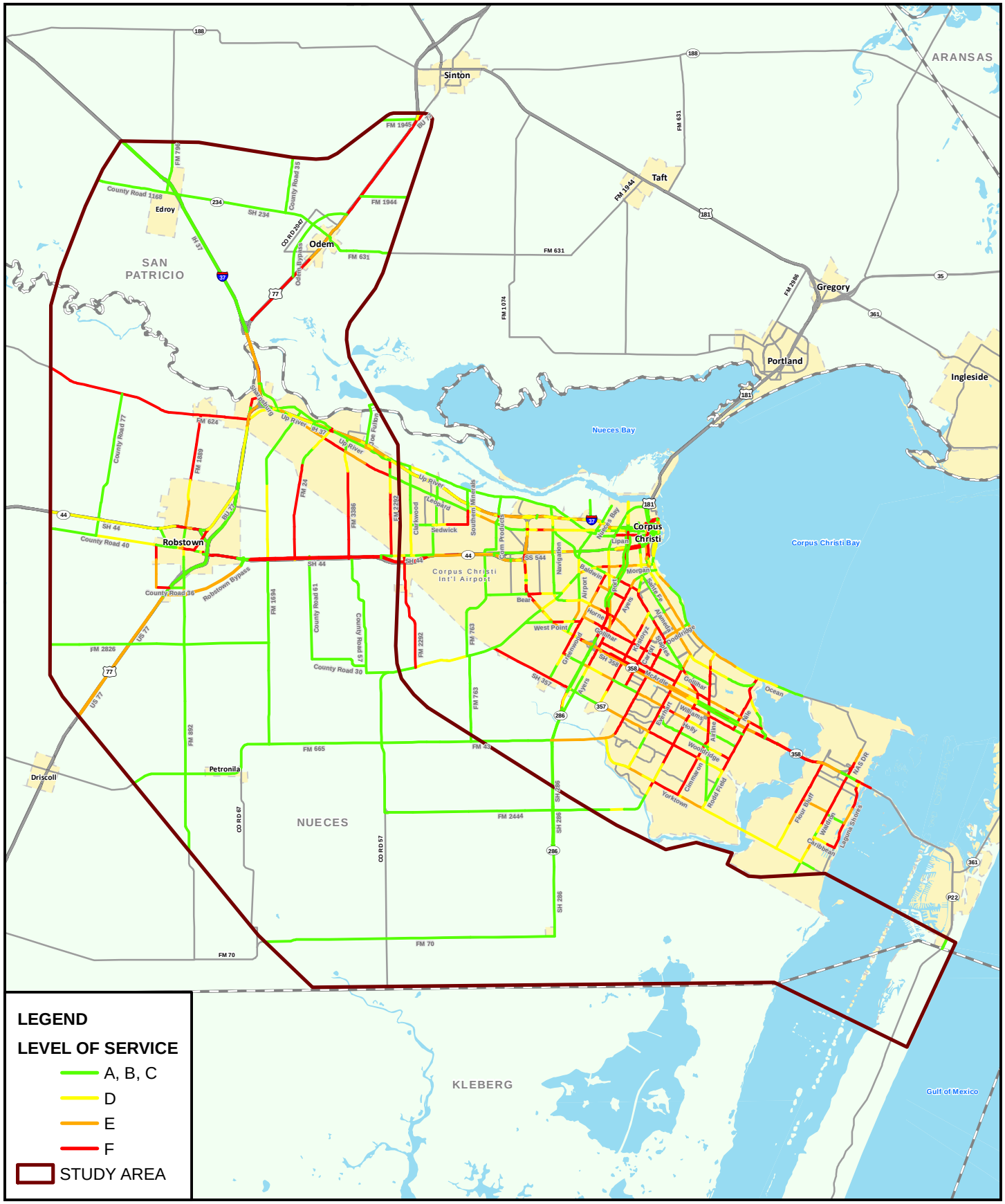
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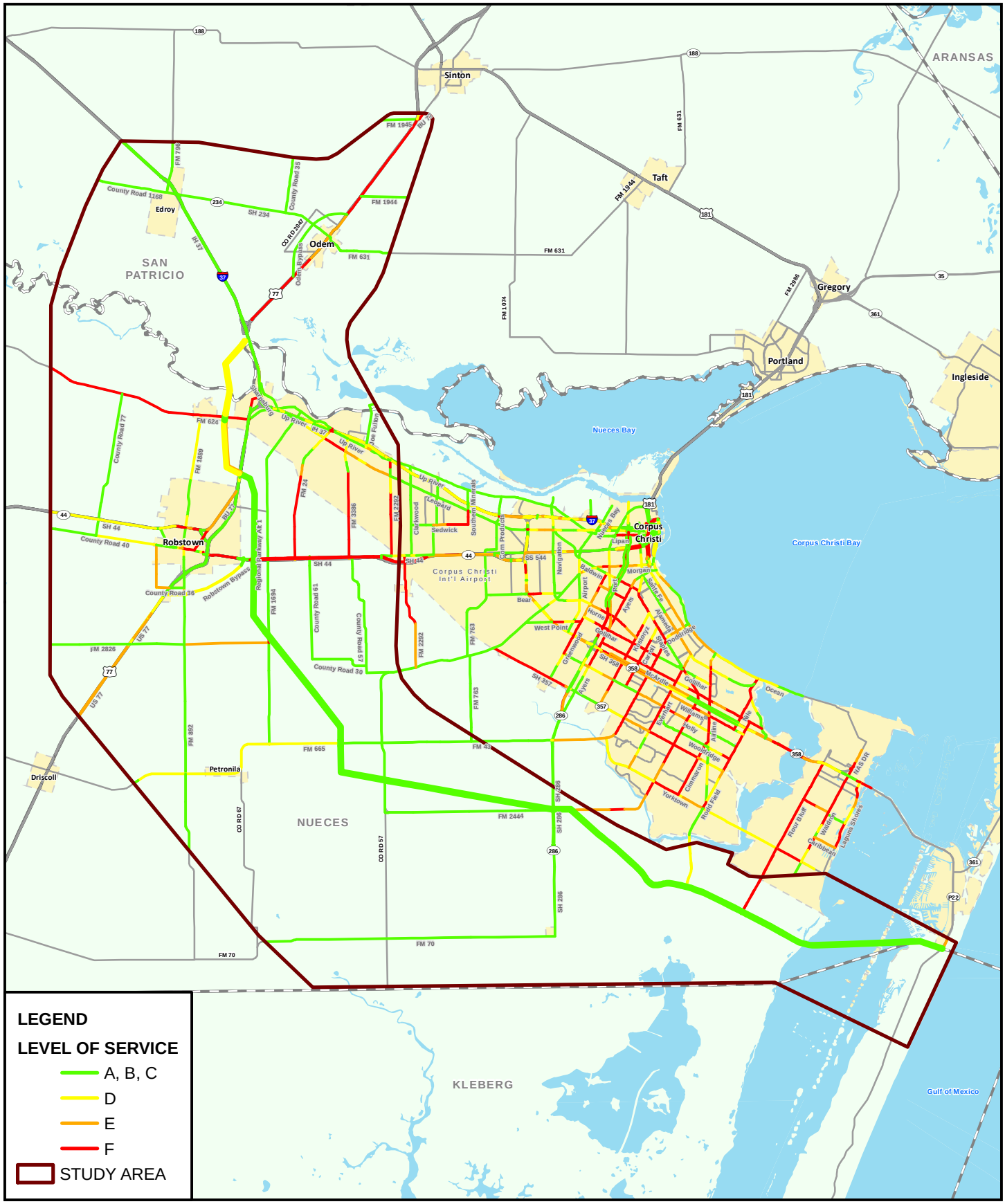
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DALLAS, TEXAS 75248-1232
972-960-4400

BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES

NOVEMBER 2012

EXHIBIT 4


LEGEND
LEVEL OF SERVICE
A, B, C
D
E
F
STUDY AREA
SAN PATRICIO
NUECES
KLEBERG
ARANSAS
Sinton
Odem
Edroy
Taft
Gregory
Portland
Ingleside
Robstown
Petronila
Driscoll
Corpus Christi
Nueces Bay
Corpus Christi Bay
Gulf of Mexico
Corpus Christi Int'l Airport
Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES
2040 LEVEL OF SERVICE
NO BUILD
N
0 1.25 2.5 5
MILES
CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
STATE OF TEXAS COUNTY OF NUECES
SAN PATRICIO COUNTY
HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
972-960-4400
BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES
NOVEMBER 2012
EXHIBIT 5



Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

2040 LEVEL OF SERVICE
ALTERNATIVE 1

N
0 1.25 2.5 5
MILES

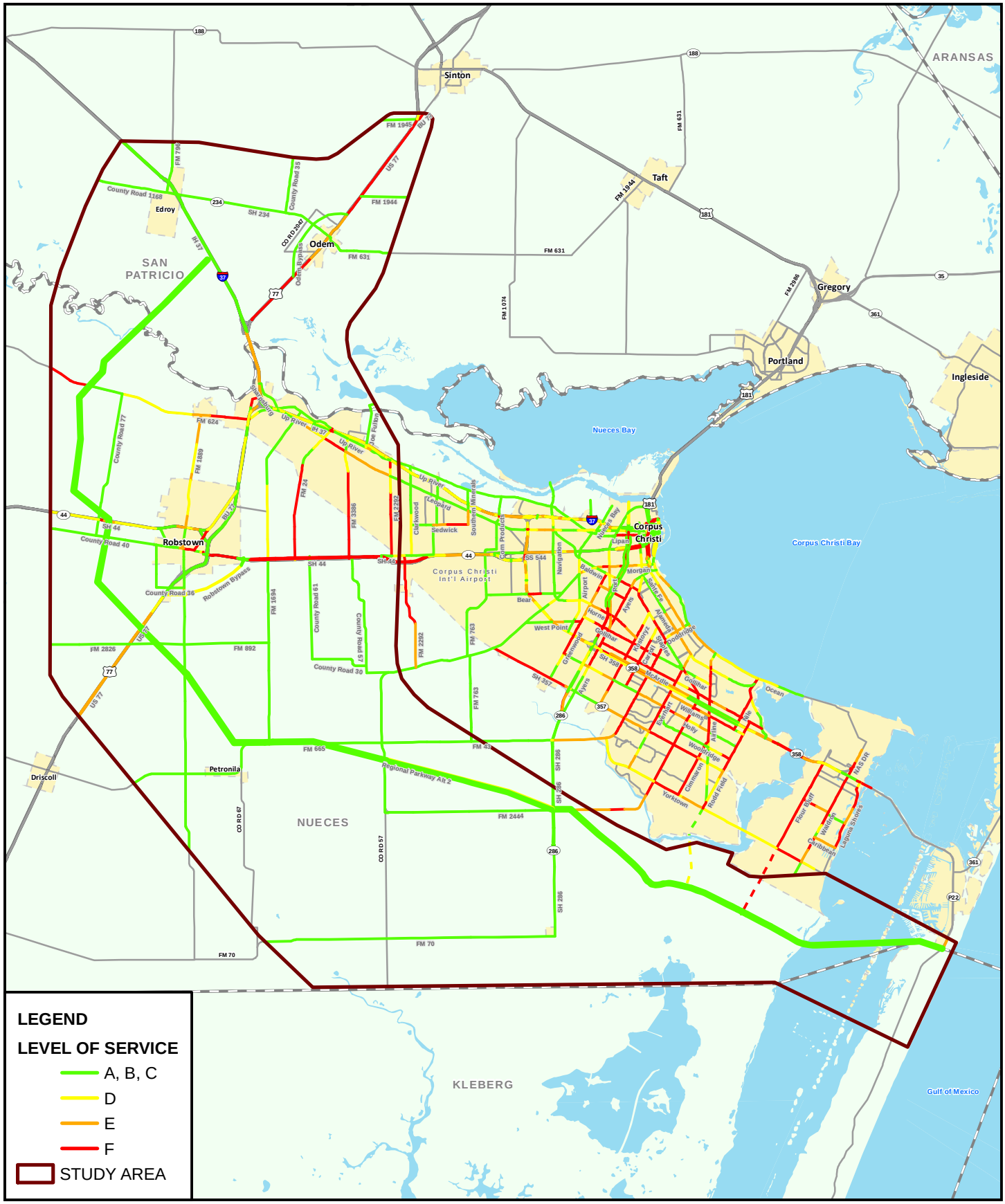
CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County

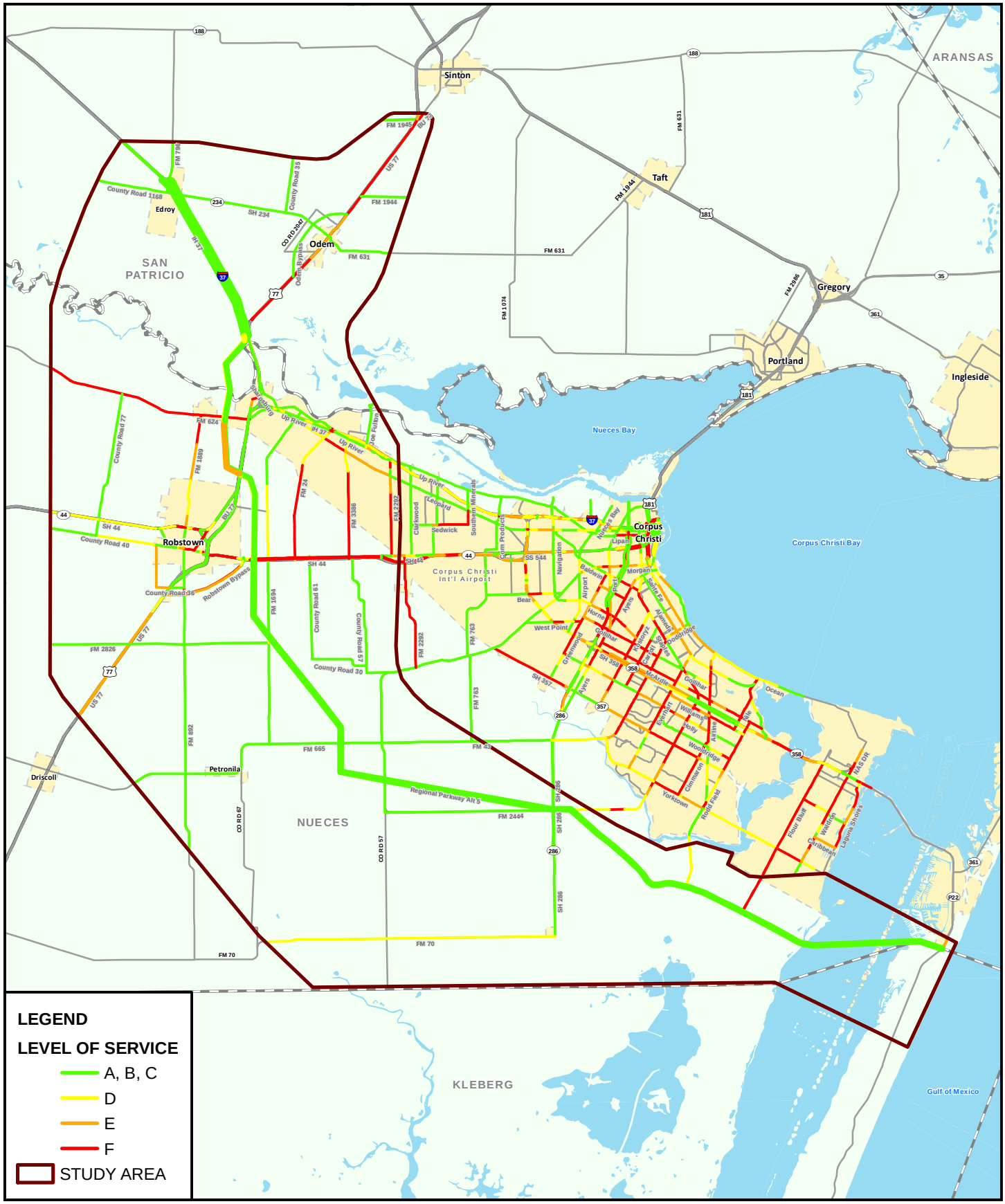
HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
972-960-4400

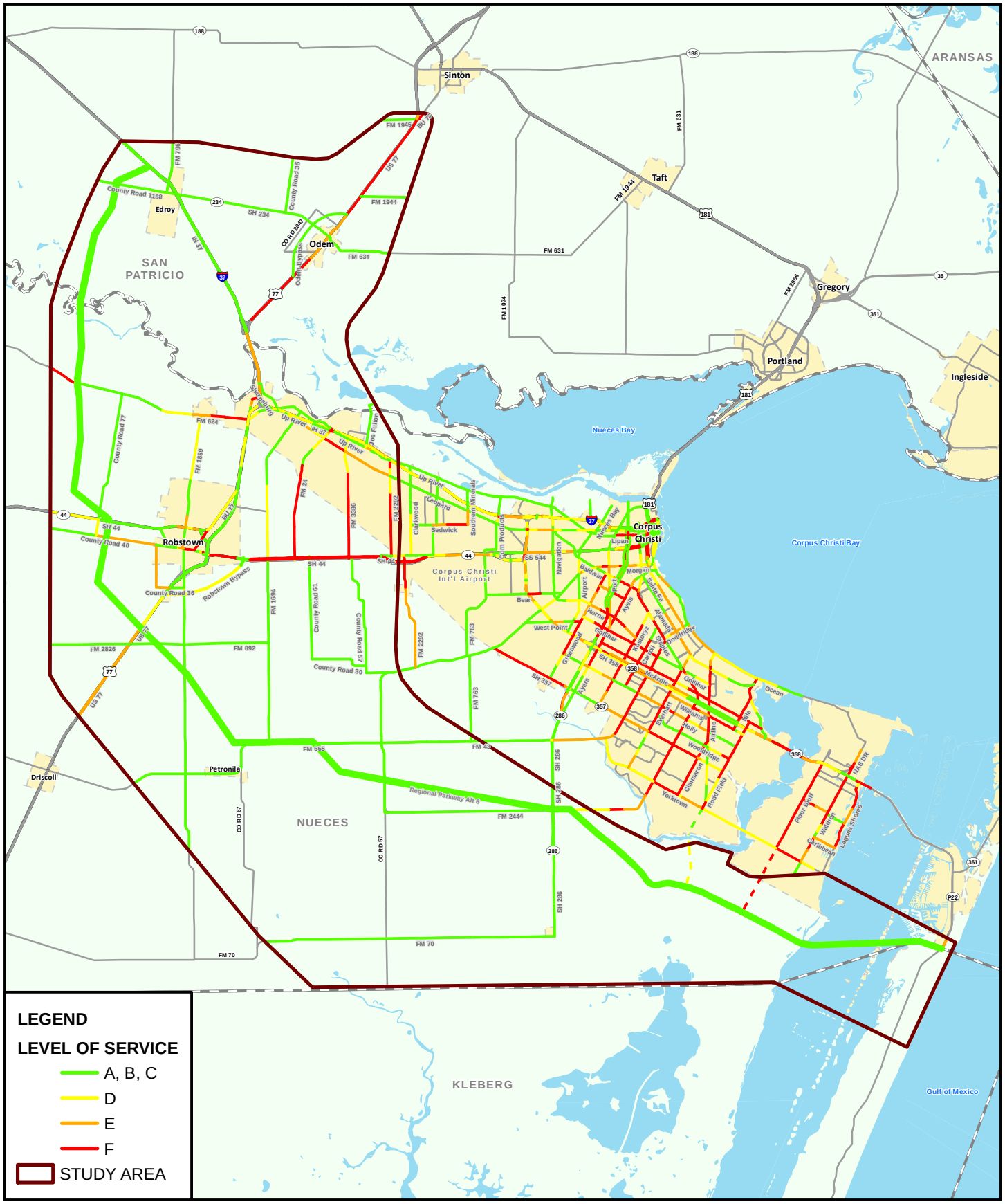
BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES

NOVEMBER 2012

EXHIBIT 6


LEGEND
LEVEL OF SERVICE
A, B, C
D
E
F
STUDY AREA
ARANSAS
SAN PATRICIO
NUECES
KLEBERG
Sinton
Odem
Edroy
Taft
Gregory
Portland
Ingleside
Robstown
Petronila
Driscoll
Corpus Christi
Nueces Bay
Corpus Christi Bay
Gulf of Mexico
Corpus Christi Int'l Airport
Regional Parkway Alt 2
FM 1945
FM 1944
FM 631
FM 1074
FM 2986
FM 624
FM 1889
FM 24
FM 3366
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FM 1694
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US 77
US 181
US 188
US 35
SH 234
County Road 1168
County Road 77
County Road 40
County Road 36
County Road 61
County Road 57
County Road 30
Robstown Bypass
Odem Bypass
Up River
Leopard
Sedwick
Clarkwood
Southern Minerals
Corn Products
Navigation
Baldwin
Airport
Morgan
Lipan
Ayers
Horne
Carlin
Greenwood
Doddridge
Goliad
Ocean
Williams
Holly
Woodridge
Cimarron
Yorktown
Road Field
Four Bluff
Waldron
Caribbean
Laguna Shores
MIS DR
Alameda
Alameda Slip
Bear
West Point
Lexington
Slip
Adams
Baldwin
Gen Cavazos
Ayers
McArdle
Goliad
Doddridge
Navigation
Corn Products
Southern Minerals
Leopard
Sedwick
Clarkwood
Up River
Regional Parkway
0 1.25 2.5 5
MILES
2040 LEVEL OF SERVICE
ALTERNATIVE 2
HDR ENGINEERING, INC.
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DALLAS, TEXAS 75248-1232
972-960-4400
BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES
NOVEMBER 2012
EXHIBIT 7


LEGEND
LEVEL OF SERVICE
A, B, C
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STUDY AREA
ARANSAS
SAN PATRICIO
NUECES
KLEBERG
Sinton
Taft
Gregory
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Corpus Christi
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Nueces Bay
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Gulf of Mexico
Regional Parkway Alt 5
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County Road 1168
County Road 40
County Road 36
County Road 30
Robstown Bypass
Odem Bypass
Up River
Leopard
Sedwick
Clarkwood
Southern Minerals
Corn Products
Navigation
Airport
Baldwin
Morgan
Lipan
Ayers
Horne
Carlin
Williams
Holly
Woodridge
Cimarron
Yorktown
Road Field
Flour Bluff
Waldron
Caribbean
Laguna Shores
Doddridge
Alameda
Staples
Gollihar
McArdle
Ocean
Agnes
Elsik
Everhart
Gladwell
Greenwood
Kostoryz
Port Ave
Bear
West Point
MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County
Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES
2040 LEVEL OF SERVICE
ALTERNATIVE 5
N
0 1.25 2.5 5
MILES
HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
972-960-4400
BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES
NOVEMBER 2012
EXHIBIT 8



Regional Parkway
CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

2040 LEVEL OF SERVICE
ALTERNATIVE 6

N
0 1.25 2.5 5
MILES

CORPUS CHRISTI MPO
Texas Department of Transportation
City of Corpus Christi
State of Texas County of Nueces
San Patricio County

HDR ENGINEERING, INC.
17111 PRESTON ROAD, SUITE 200
DALLAS, TEXAS 75248-1232
972-960-4400

BLANTON & ASSOCIATES, INC.; CDM SMITH
ECOMM CORPORATION; OLIVARRI & ASSOCIATES

NOVEMBER 2012

EXHIBIT 9

Appendix D
Traffic and Revenue Analysis Technical Memorandum

Regional Parkway

CONNECTIVITY FOR NUECES AND SAN PATRICIO COUNTIES

CCMPO / TxDOT - Corpus Christi District /
Nueces County / City of Corpus Christi / San Patricio County

Regional Parkway Mobility Study
Technical Memorandum
Traffic and Toll Revenue Analysis Sketch-Level Study

October 5, 2012

HDR

HDR Engineering, Inc.
555 N. Carancahua, Suite 1650
Corpus Christi, Texas 78401

Blanton & Associates; CDM Smith,
ECOMM; Olivarri & Associates.

Regional Parkway Mobility Study
Technical Memorandum
Traffic and Toll Revenue Analysis Sketch-Level Study

Table of Contents

1.0 Introduction 1
2.0 Alternatives Description 1
3.0 Assumptions 2
4.0 Revenue Estimates 4

1.0 INTRODUCTION

CDM Smith conducted a sketch-level traffic and toll revenue analysis as part of the alternatives evaluation for the proposed Regional Parkway Mobility Study in Corpus Christi, Texas.

2.0 ALTERNATIVES DESCRIPTION

This sketch level analysis was conducted for two alternatives (Alternative 2 and Alternative 6). Alternative 2, as shown in **Figure 1** extends from Park Road 22 in the south to IH 37 in the north for a length of approximately 49 miles. Alternative 6, as shown in **Figure 2**, follows a very similar alignment and ends slightly further north along IH 37 and has a length of approximately 51 miles. The proposed build-out of the two alternatives includes the possibility of a four-lane tolled parkway (two lanes in each direction) along the entire length of the project.



Figure 1: Alternative 2 Corridor Centerline



Figure 2: Alternative 6 Corridor Centerline

3.0 ASSUMPTIONS

The annual traffic and toll revenue estimates for the two scenarios described above are based on the following basic assumptions:

- The **opening year** for both alternatives is assumed to be 2020.
- The configuration used for both alternatives along with Average Daily Traffic (ADT) are as shown in **Figure 3** and **Figure 4.**
- **Toll Collection Method**: The tolls will be collected using electronic toll collection (ETC) with revenue-neutral video tolling, no cash will be accepted.
- **Revenue Leakage**: ETC revenue leakage of 2.5% and Video toll leakage of 30% was assumed for both alternatives.
- **Background Projects**: Transportation improvements as detailed in the Corpus Christi Metropolitan Planning Organization's Metropolitan Transportation Plan were used and no changes were made to the background projects.
- **Ramp-Up**: Estimates of annual toll revenue were adjusted to reflect ramp-up of 60% in 2020, 70% in 2021, 80% in 2022, 90% in 2023; and 100% in 2024 and beyond.

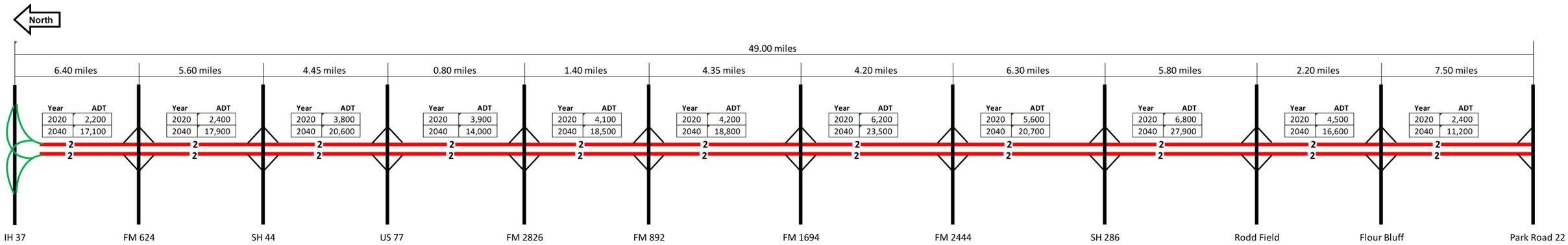


Figure 3: Alternative 2 Line Diagram with Average Daily Traffic

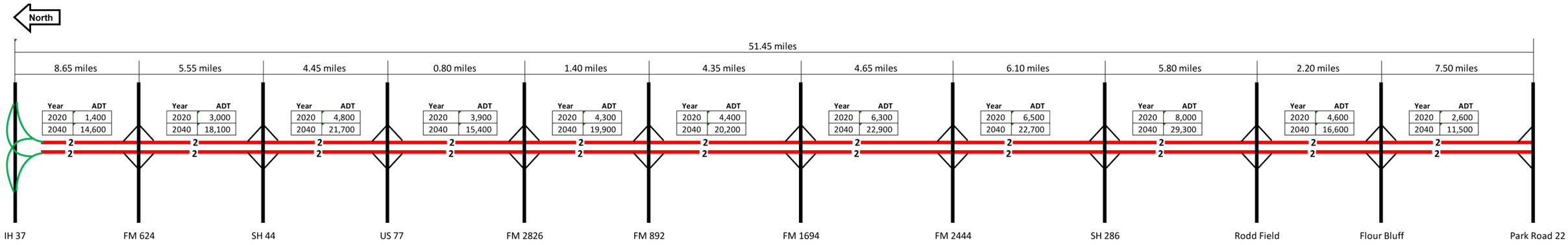
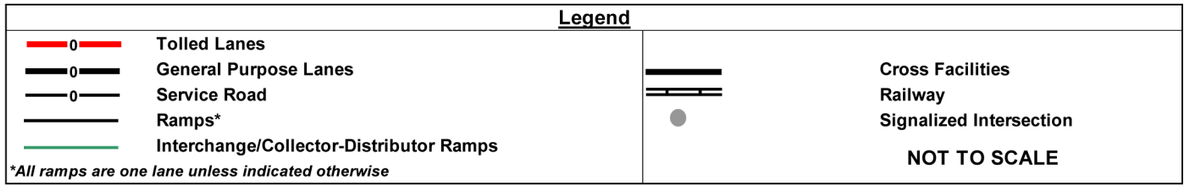


Figure 4: Alternative 6 Line Diagram with Average Daily Traffic



- Both **Single Occupancy Vehicles (SOVs)** and **High Occupancy Vehicles (HOVs)** were assumed to pay the same toll rate (no HOV discount) which was assumed to remain constant throughout the day.
- **Trucks/Commercial Vehicles** were allowed to access the facility and were assumed to pay an average toll rate of 2.7 times the auto toll rate.
- **ETC toll rate** of 20 cents/mile in 2020 and 36 cents/mile in 2040 was assumed for both
- alternatives. Tolls rates were escalated based on the CPI escalation rate.
- **Video toll surcharge** is assumed to be the 0.33 times the ETC toll charge. Video toll surcharge revenues were not included in the total revenues.
- **ETC Penetration**: ETC/Video toll split rate is 50% in 2020, growing to a maximum of 90% in 2040 for both alternatives;
- **Annual revenue days**: 320.
- **Annual traffic growth rate** beyond the modeled years is assumed as follows: 2.5% from 2041 to 2050, 2.0% from 2051 to 2060.
- **Annual toll revenue estimates** were developed for a 40-year forecast horizon, from 2020 through 2060.
- **Consumer Price Index (CPI) Escalation**: 3% per year.

4.0 REVENUE ESTIMATES

CDM Smith used the model developed as part of Regional Parkway Mobility Study for this analysis. The model analysis years were 2020 and 2040. The annual traffic and toll revenue estimates for Alternative 2 and Alternative 6 are shown in **Table 1** and **Table 2** respectively.

It should be noted that the 33 percent video surcharge is not included in the determination of total annual revenue in these tables. The video surcharge is intended to cover the cost of license plate recognition technology to provide electronic tolling. This amount is not considered part of the toll revenue for the project as it is a direct collection cost charged to the customer who chooses this option (the cost it is typically not marked up for profit). The video surcharge fee for this project has been established as 33% which is consistent with what TxDOT charges for their toll facilities in Austin (TxDOT calls it “pay my mail”).

When reviewing revenue streams for projects that include video tolling it is better to provide the toll revenue calculation and the video surcharge separately for clarity. It is possible the surcharge amount could change over time due to technological changes or collection efficiency adjustments.

Table 1: Annual Revenues for Alternative 2

Year	Annual Revenue			Video Surcharge
	ETC Revenue	Video Base Revenue	Total Revenue	
2020	$6,594,000	$4,545,000	$11,139,000	$1,500,000
2021	$9,480,000	$5,343,000	$14,823,000	$1,763,000
2022	$12,990,000	$6,150,000	$19,140,000	$2,030,000
2023	$17,174,000	$6,965,000	$24,139,000	$2,299,000
2024	$22,084,000	$7,787,000	$29,871,000	$2,570,000
2025	$25,248,000	$7,830,000	$33,078,000	$2,584,000
2026	$28,582,000	$7,869,000	$36,451,000	$2,597,000
2027	$32,094,000	$7,903,000	$39,997,000	$2,608,000
2028	$35,791,000	$7,932,000	$43,723,000	$2,617,000
2029	$39,681,000	$7,955,000	$47,636,000	$2,625,000
2030	$43,772,000	$7,973,000	$51,745,000	$2,631,000
2031	$48,073,000	$7,985,000	$56,058,000	$2,635,000
2032	$52,593,000	$7,990,000	$60,583,000	$2,637,000
2033	$57,341,000	$7,989,000	$65,330,000	$2,636,000
2034	$62,326,000	$7,980,000	$70,306,000	$2,633,000
2035	$67,560,000	$7,963,000	$75,523,000	$2,628,000
2036	$73,051,000	$7,938,000	$80,989,000	$2,620,000
2037	$78,811,000	$7,905,000	$86,716,000	$2,609,000
2038	$84,852,000	$7,862,000	$92,714,000	$2,595,000
2039	$91,184,000	$7,810,000	$98,994,000	$2,577,000
2040	$97,819,000	$7,747,000	$105,566,000	$2,557,000
2041	$103,273,000	$8,179,000	$111,452,000	$2,699,000
2042	$109,030,000	$8,635,000	$117,665,000	$2,850,000
2043	$115,109,000	$9,117,000	$124,226,000	$3,008,000
2044	$121,526,000	$9,625,000	$131,151,000	$3,176,000
2045	$128,301,000	$10,161,000	$138,462,000	$3,353,000
2046	$135,454,000	$10,728,000	$146,182,000	$3,540,000
2047	$143,006,000	$11,326,000	$154,332,000	$3,738,000
2048	$150,978,000	$11,958,000	$162,936,000	$3,946,000
2049	$159,395,000	$12,624,000	$172,019,000	$4,166,000
2050	$168,281,000	$13,328,000	$181,609,000	$4,398,000
2051	$176,797,000	$14,002,000	$190,799,000	$4,621,000
2052	$185,742,000	$14,711,000	$200,453,000	$4,855,000
2053	$195,141,000	$15,455,000	$210,596,000	$5,100,000
2054	$205,015,000	$16,237,000	$221,252,000	$5,358,000
2055	$215,389,000	$17,059,000	$232,448,000	$5,629,000
2056	$226,288,000	$17,922,000	$244,210,000	$5,914,000
2057	$237,738,000	$18,829,000	$256,567,000	$6,214,000
2058	$249,767,000	$19,782,000	$269,549,000	$6,528,000
2059	$262,405,000	$20,783,000	$283,188,000	$6,858,000
2060	$275,683,000	$21,834,000	$297,517,000	$7,205,000

Year	Annual Revenue			Video Surcharge
	ETC Revenue	Video Base Revenue	Total Revenue	
2020	$7,369,000	$5,070,000	$12,439,000	$1,673,000
2021	$10,484,000	$5,952,000	$16,436,000	$1,964,000
2022	$14,259,000	$6,840,000	$21,099,000	$2,257,000
2023	$18,745,000	$7,733,000	$26,478,000	$2,552,000
2024	$23,995,000	$8,630,000	$32,625,000	$2,848,000
2025	$27,335,000	$8,662,000	$35,997,000	$2,858,000
2026	$30,853,000	$8,688,000	$39,541,000	$2,867,000
2027	$34,558,000	$8,708,000	$43,266,000	$2,874,000
2028	$38,457,000	$8,722,000	$47,179,000	$2,878,000
2029	$42,560,000	$8,728,000	$51,288,000	$2,880,000
2030	$46,874,000	$8,727,000	$55,601,000	$2,880,000
2031	$51,409,000	$8,718,000	$60,127,000	$2,877,000
2032	$56,174,000	$8,700,000	$64,874,000	$2,871,000
2033	$61,178,000	$8,674,000	$69,852,000	$2,862,000
2034	$66,433,000	$8,638,000	$75,071,000	$2,850,000
2035	$71,948,000	$8,592,000	$80,540,000	$2,835,000
2036	$77,734,000	$8,535,000	$86,269,000	$2,817,000
2037	$83,803,000	$8,468,000	$92,271,000	$2,794,000
2038	$90,166,000	$8,389,000	$98,555,000	$2,768,000
2039	$96,835,000	$8,297,000	$105,132,000	$2,738,000
2040	$103,824,000	$8,192,000	$112,016,000	$2,703,000
2041	$109,612,000	$8,649,000	$118,261,000	$2,854,000
2042	$115,723,000	$9,131,000	$124,854,000	$3,013,000
2043	$122,174,000	$9,640,000	$131,814,000	$3,181,000
2044	$128,986,000	$10,178,000	$139,164,000	$3,359,000
2045	$136,177,000	$10,745,000	$146,922,000	$3,546,000
2046	$143,768,000	$11,344,000	$155,112,000	$3,744,000
2047	$151,784,000	$11,977,000	$163,761,000	$3,952,000
2048	$160,245,000	$12,644,000	$172,889,000	$4,173,000
2049	$169,179,000	$13,349,000	$182,528,000	$4,405,000
2050	$178,611,000	$14,093,000	$192,704,000	$4,651,000
2051	$187,649,000	$14,807,000	$202,456,000	$4,886,000
2052	$197,144,000	$15,556,000	$212,700,000	$5,133,000
2053	$207,119,000	$16,343,000	$223,462,000	$5,393,000
2054	$217,599,000	$17,170,000	$234,769,000	$5,666,000
2055	$228,610,000	$18,039,000	$246,649,000	$5,953,000
2056	$240,177,000	$18,951,000	$259,128,000	$6,254,000
2057	$252,330,000	$19,910,000	$272,240,000	$6,570,000
2058	$265,098,000	$20,918,000	$286,016,000	$6,903,000
2059	$278,512,000	$21,976,000	$300,488,000	$7,252,000
2060	$292,605,000	$23,088,000	$315,693,000	$7,619,000

Table 2: Annual Revenues for Alternative 6

DISCLAIMER

Current accepted professional practices and procedures were used in the development of these traffic and revenue forecasts. However, as with any forecast of the future, it should be understood that there may well be differences between forecasted and actual results that may be caused by events and circumstances beyond the control of the forecasters. The CDM Smith review and analysis has relied upon the accuracy and completeness of all of the information provided (both written and oral) by Corpus Christi Metropolitan Planning Organization (CCMPO), Texas Department of Transportation (TxDOT), and several local and state agencies. Publicly available and obtained material has neither been independently verified, nor does CDM Smith assume responsibility for verifying, such information and has relied upon the assurances of the independent parties that they are not aware of any facts that would make such information misleading.

CDM Smith has made qualitative judgments related to several key variables within the analysis used to develop the traffic and revenue forecasts that must be considered as a whole; therefore selecting portions of any individual results without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. CDM Smith gives no opinion as to the value or merit to partial information extracted from the report.

All estimates and projections reported herein are based on CDM Smith's experience and judgment and on a review of independent third party projections and information obtained from multiple state and local agencies including CCMPO and TxDOT. These estimates and projections may not be indicative of actual or future values, and are therefore subject to substantial uncertainty. Future developments cannot be predicted with certainty, and may affect the estimates or projections expressed in the report, such that CDM Smith does not specifically guarantee or warrant any estimate or projections contained within this report. While CDM Smith believes that some of the projections or other forward-looking statements contained within the report are based on reasonable assumptions as of the date in the report, such forward looking statements involve risks and uncertainties that may cause actual results to differ materially from the results predicted. CDM Smith takes no responsibility or obligation to advise of changes that may in any matter affect the assumptions contained within the report, following the date of this report as they pertain to: socioeconomic and demographic forecasts, proposed residential or commercial land use development projects and/or potential improvements to the regional transportation network.

The report and its content are confidential and intended solely for use by CCMPO and TxDOT for the Regional Parkway Mobility Study. Any use by third-parties, other than as noted above, is expressly prohibited. The results contained in this report are not intended to be used to secure or obtain project financing therefore disclosure of the material in any official statement, prospectus, private placement memorandum or other document used to facilitate, offer, buy, or sell securities is strictly prohibited.