



Final SH 68 Project History and EA Alternatives Report

SH 68 from US 83/IH-2 to US 281/IH-69C
CSJ: 3629-01-001, 3629-01-002,
3629-01-003

Hidalgo County, Texas

Texas Department of Transportation – Pharr District
July 2016

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

Table of Contents

1.0	INTRODUCTION	1
2.0	PROJECT HISTORY	2
2.1	Hidalgo County Loop	2
2.2	SH 68	3
2.2.1	SH 68 Project Development.....	6
2.2.2	SH 68 Purpose and Need.....	6
2.2.3	SH 68 Stakeholder Involvement.....	7
2.2.4	Public Meetings and Public Outreach.....	7
2.2.5	Public Input.....	8
2.2.6	Transition to an EIS process.....	8
3.0	EA ALTERNATIVES	9
3.1	Alternatives Development.....	9
3.2	Evaluation Criteria and Alternatives Screening.....	10
3.2.1	Evaluation Criteria.....	11
3.2.2	Alternatives Evaluation	11
3.2.3	Screening Process	13
4.0	ENVIRONMENTAL CONSTRAINTS	15
4.1	EA Study Area.....	15
4.2	EA Alternatives.....	16
4.3	EA Recommended Alternative	16
4.3.1	Land Use and Potential Displacements	17
4.3.2	Cultural Resources.....	18
4.3.3	Air Quality.....	18
4.3.4	Airway-Highway Clearance:.....	19
4.3.5	Traffic Noise	19
4.3.6	Hazardous Materials.....	19
4.3.7	Vegetation and Wildlife.....	19
4.3.8	Threatened/Endangered Species.....	19
4.3.9	Water Resources.....	20
5.0	POST-EA ALTERNATIVES	22
5.1	EA Modified Routes 1-4	22
5.2	FM 493/La Blanca Road	22
5.3	FM 907/Alamo Road.....	23
5.4	FM 1423/Val Verde Road.....	23
5.5	US 281	23
6.0	EIS TRANSITION.....	24
6.1	EIS Study Area and Preliminary Study Corridors	24
6.2	EIS Process	24
6.3	EIS Purpose and Need	25
7.0	SUMMARY	25
8.0	REFERENCES.....	28

Figures

Figure 1. Report Outline	1
Figure 2. SH 68 Map from Minute Order 113515.....	4
Figure 3. Resolution from the Hidalgo County Commissioners Court	5
Figure 4. EA Alternatives Development Process.....	9
Figure 5. EA Evaluation Sections	13
Figure 6. EA Recommended Study Corridor.....	14
Figure 7. Proposed SH 68 EIS Study Area.....	26
Figure 8. SH 68 EIS Phased Approach	27

Tables

Table 1: Goals and Criteria from the EA Alternatives Screening Process	11
Table 2: Environmental Constraints Overview for EA Study Area	15
Table 3: Federal and State-listed Threatened and Endangered Species in Hidalgo County ..	21

Appendices**Appendix A – Exhibits**

Exhibit 1. Hidalgo County Loop
Exhibit 2. SH 68 1,000-foot-wide Study Corridors
Exhibit 3. SH 68 600-foot-wide Corridors and EA Recommended Alternative
Exhibits 4.1 and 4.2. SH 68 Environmental Constraints
Exhibit 5. SH 68 Low Income Population
Exhibit 6. SH 68 Minority Population
Exhibit 7. SH 68 Water Resources
Exhibit 8. SH 68 Irrigation Districts
Exhibit 9. SH 68 Hazardous Materials
Exhibits 10.1 and 10.2. SH 68 EA Alternatives Environmental Constraints Matrix
Exhibits 11.1 through 11.25. SH 68 Land Use and Land Cover
Exhibit 12. SH 68 Preliminary EIS Alternatives

Appendix B – HCRMA Section D Alternatives

Exhibit B-1. Hidalgo County Loop Map from May 2008 Open House
Exhibit B-2. Hidalgo County Loop Map from August 2008 Open House
Exhibit B-3. Hidalgo County Loop Map from February 2009 Open House
Exhibit B-4. Alternatives Evaluation Matrix from February 2009 Open House

Appendix C – Technical Memorandum, SH 68 Alternatives Evaluation Methodology (Draft)

1.0 INTRODUCTION

The Pharr District of the Texas Department of Transportation (TxDOT) proposes to construct State Highway (SH) 68, a new location roadway from U.S. Highway (US) 83 (also known as Interstate 2 [IH-2]) to US 281 (also known as IH-69C), located in Hidalgo County. The proposed project corridor would begin at US 83/IH-2 and travel north then west to connect to US 281/IH-69C. The exact route and location of connections to existing facilities have not been determined, but a reasonable range of alternatives will be evaluated in a future Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA). The total length of the proposed project is estimated to be approximately 22 miles.

This report summarizes the project history, the study area constraints, and the preliminary range of alternatives that were developed during the Environmental Assessment (EA) process for the SH 68 project. As depicted in **Figure 1**, **Section 2** of this report describes the project history, from the project's beginnings as part of the proposed Hidalgo County Loop to designation as SH 68 and project activities under the EA process. **Section 3** outlines the alternatives development process and summarizes the evaluation procedures that led to a recommended alternative under the EA process. **Section 4** describes the environmental constraints examined during the EA process. Finally, this report briefly describes additional routes identified since the public meetings held as part of the EA process in September 2014 (**Section 5**) and introduces the proposed EIS study area and phased EIS process (**Section 6**).

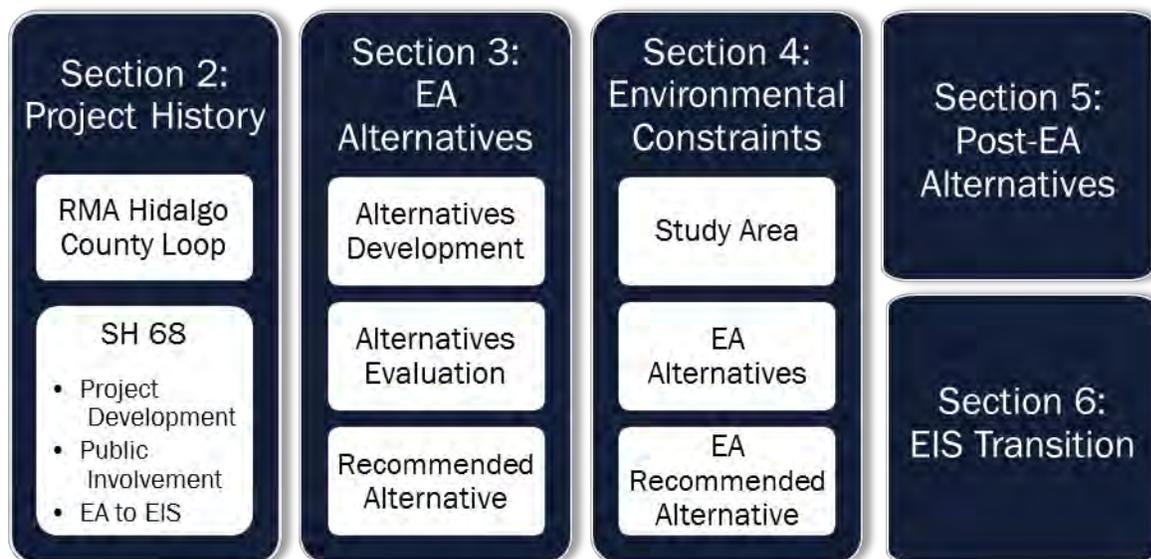


Figure 1. Report Outline

2.0 PROJECT HISTORY

2.1 Hidalgo County Loop

The SH 68 project was originally conceived as a portion of a county-wide transportation improvement project known as the Hidalgo County Loop. In 2000, the Hidalgo County Metropolitan Planning Organization (HCMPO) added the Hidalgo County Loop to its Metropolitan Transportation Plan (MTP). Initial route and corridor studies to develop a loop around the perimeter of the major cities within Hidalgo County were initiated starting in 2002 by the Hidalgo County Commissioners Court. A route analysis study within a six-mile-wide corridor identified a preferred route for the Hidalgo County Loop, as documented in a *Hidalgo County Loop Alternatives Route Analysis Report*, adopted by the Commissioners Court on May 13, 2003 (Hidalgo County 2005).

Between 2004 and 2005, the Hidalgo County Regional Mobility Authority (HCRMA) was established. The process was initiated on October 26, 2004 by Order of Hidalgo County, continued by a Petition of the County dated April 21, 2005, and concluded by Minute Order 110315 of the Texas Transportation Commission (TTC) on November 17, 2005. A key project for establishment of the HCRMA was planning and development of the Hidalgo County Loop (**Exhibit 1** in **Appendix A**), a proposed toll-road network approximately 104 miles long that, according to the Minute Order, “will provide an important reliever route for some of the noncommercial traffic, and will provide for improved traffic circulation within the county” (TTC 2005).

In 2007, the HCRMA hired a team of consultants operating under the name Hidalgo County Roadbuilders to provide the engineering and environmental services to refine the corridors and alignments for the Hidalgo County Loop. The HCRMA, in cooperation with TxDOT, conducted three sets of open house public meetings in 2008 and 2009 to inform the public and solicit public comment on the proposed Hidalgo County Loop project. The proposed Hidalgo County Loop was described in a 2009 public meeting summary report as “a system of projects that is approximately 122 miles long and is composed of six interconnected but independent projects.” What would later become the SH 68 project is similar to the former Section D portion of the proposed Hidalgo County Loop (see **Exhibit 1**), which was also called the Mid Valley North Section.

A summary describing the HCRMA Section D Alternatives that were presented at the public meetings held by the HCRMA is included in **Appendix B**.

A display at the 2009 Section D public meeting identified the following needs for the project:

- Lack of adequate north/south highway capacity in the eastern part of Hidalgo County.

- There is poor circumferential access between northern Hidalgo County and destinations along the border east of Pharr.
- US 281 and US 83, the two primary routes serving local, regional and international traffic in Hidalgo County, are forecasted to have insufficient capacity, particularly at the interchange of these two facilities.
- Forecasted transportation funding is insufficient to finance needed transportation improvements.

In late 2008, HCRMA coordinated with TxDOT to submit a classification letter to the Federal Highway Administration (FHWA) for the western sections (Sections A and C in **Exhibit 1**) of the Hidalgo County Loop. The purpose of the classification letter was to seek concurrence that the two sections could be evaluated environmentally as separate projects and documented as EAs. FHWA's response in April 2009 indicated that Sections A and C appeared to be interdependent and that the two sections should be analyzed environmentally in one document as an EIS.

Since the public meetings held in February 2009, the HCRMA has continued work on two distinct projects on the Hidalgo County Loop system: SH 365 and the International Bridge Trade Corridor (IBTC). Both of these proposed projects are located south of US 83/IH-2 near the border with Mexico. SH 365, the eastern 13-mile-long portion of the original Section A and formerly called the Trade Corridor Connector, is a proposed controlled access, tolled facility extending from FM 1016/Conway Avenue east to US 281/Military Highway. A Finding of No Significant Impact (FONSI) was signed by TxDOT for the SH 365 project on July 2, 2015. The IBTC, formerly Section B or the Mid Valley South Section of the Hidalgo County Loop, is a proposed tolled facility that would connect to US 83/IH-2 between Alamo and Donna and extend both southeast to FM 493 and southwest to US 281.

2.2 **SH 68**

In February 2013, the TTC designated SH 68 as a new state highway facility by Minute Order 113515. The map included with the Minute Order (**Figure 2**), resembles the general location of the Section D alternative route from the HCRMA's 2009 open house public meeting.

In May 2013, TxDOT published a solicitation for preliminary engineering (schematic design and environmental studies) services for the SH 68 project. A series of preliminary schematic roll plots for Section D of the Hidalgo County Loop, dated December 17, 2009, were made available as part of the solicitation. These exhibits showed a preliminary alignment for a 19.9 mile long route extending north from US 83, then west to connect with US 281 along the north side of FM 2812. The preliminary schematic showed proposed right-of-way (ROW), mainlanes, frontage roads, ramps, overpasses, and intersections for the facility. A question and response document associated with the solicitation indicated that no environmental

documents had been prepared for the project and that there was the possibility for tolling on the project in the future.

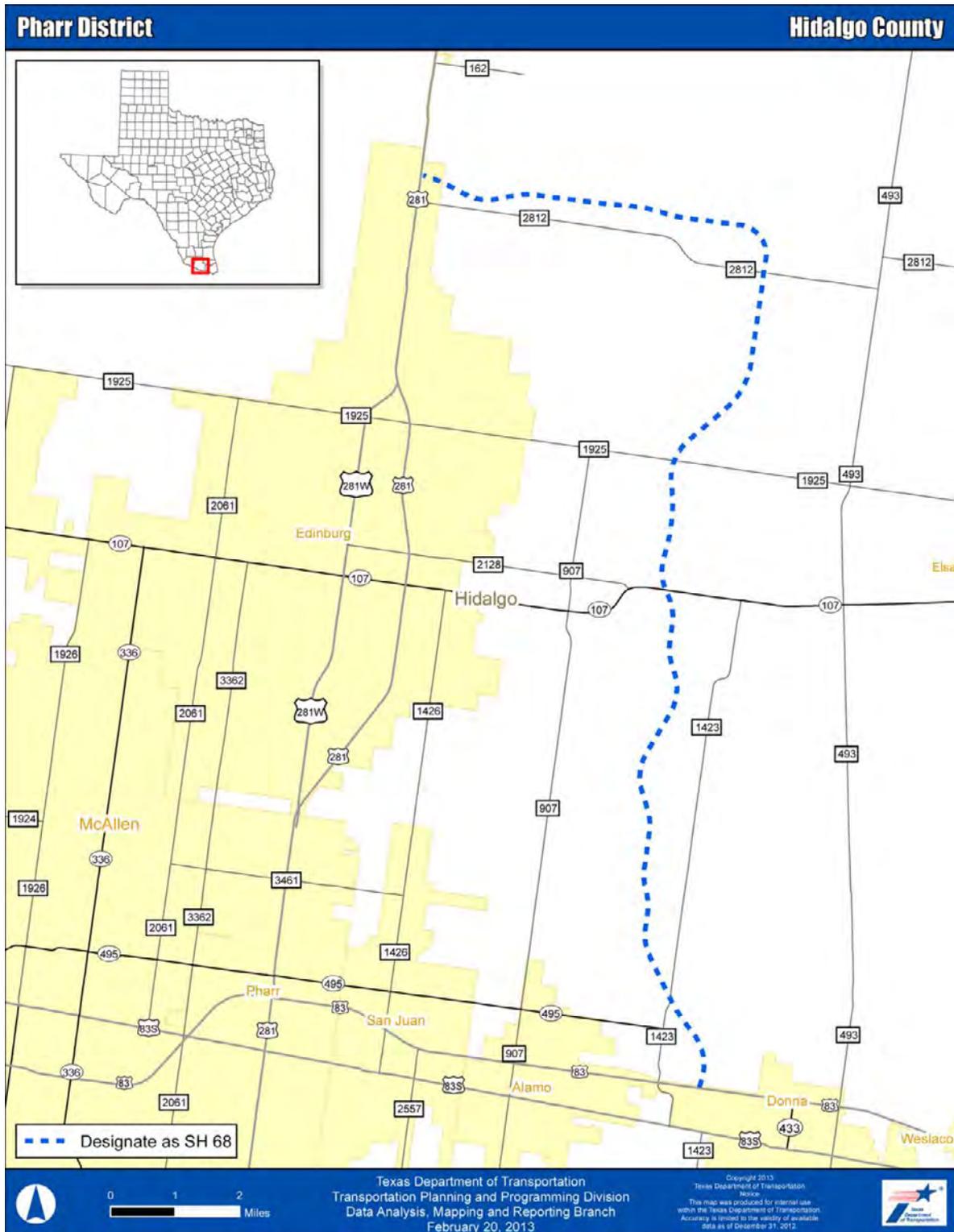


Figure 2. SH 68 Map from Minute Order 113515

In August 2013, the contract was awarded to the consultant team lead by RJ RIVERA Associates (the project team).

Also in August 2013, the City of Edinburg requested that TxDOT extend the limits of SH 68 to the Edinburg Municipal Airport (also known as the South Texas International Airport at Edinburg) so that SH 68 could connect to US 281/IH-69C in that area. The Hidalgo County Commissioners Court supported this request with a resolution on August 20, 2013 (**Figure 3**).

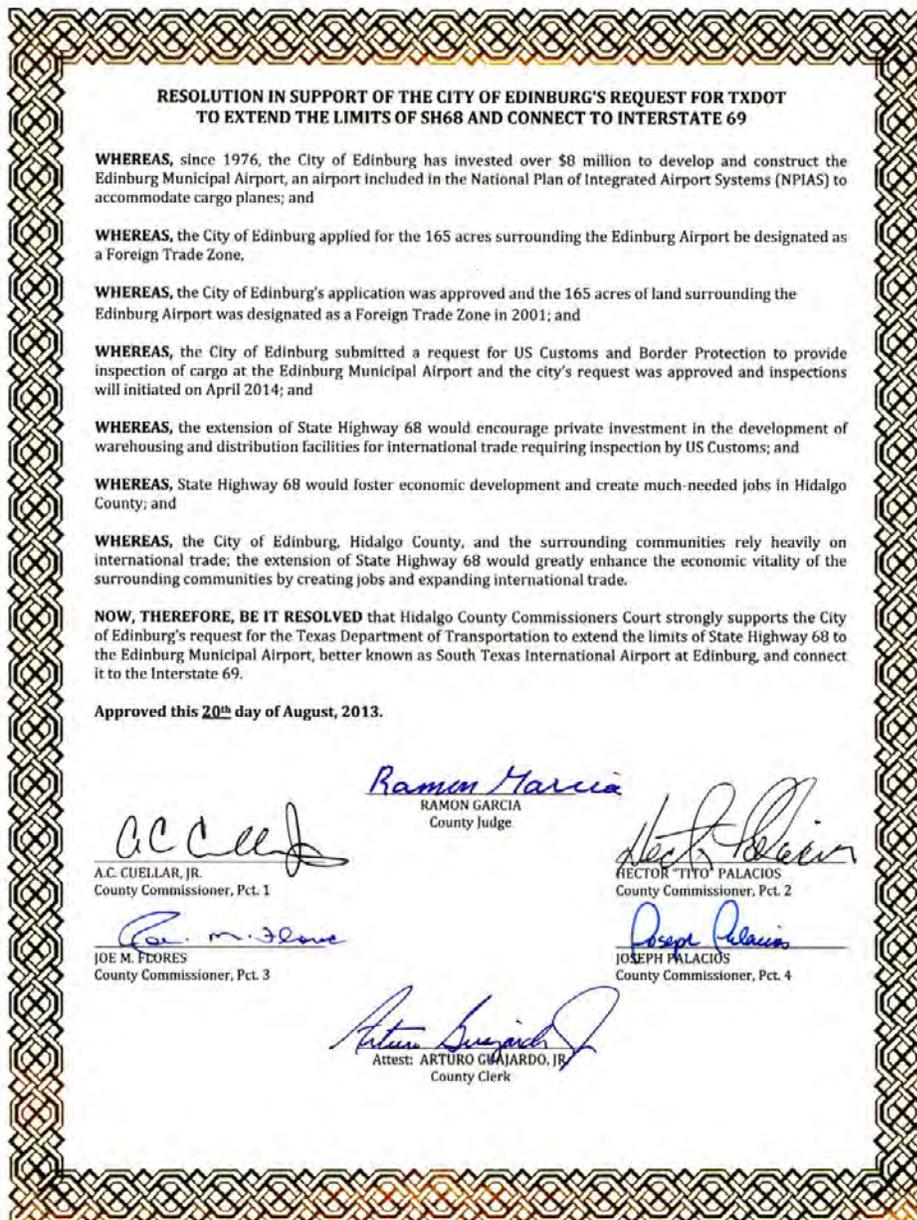


Figure 3. Resolution from the Hidalgo County Commissioners Court

2.2.1 SH 68 Project Development

In early 2014, the project team, in close coordination with TxDOT, proceeded with development of the SH 68 project. The proposed project would be phased, with funding only available and programmed for preliminary engineering, environmental studies for the entire corridor, and construction of frontage roads for the first 10 miles from US 83/IH-2 to FM 1925/Monte Cristo Road. Letting for this first phase of the project was set to occur in FY 2016.

Given that more than four years had passed since the alternatives development performed by the HCRMA, one of the first tasks for the project team was to re-examine the project area and the feasibility of the HCRMA's 2009 schematic design. Considerations included changes to land use within the SH 68 project area, updates to TxDOT design standards, and changes to the transportation needs in the region. For example, development had continued to occur within the HCRMA's preferred Section D route, including construction of several schools in or adjacent to the corridor, expansion of the Edinburg Municipal Landfill, and several areas of residential development.

Based on preliminary constraints analysis and in keeping with the NEPA process, the team began preparing an EA for the entire project corridor (from US 83/IH-2 to US 281/IH-69C). The project team re-examined the project area, developed alternatives based on the previous work by the HCRMA and current factors, performed desktop evaluations of constraints, performed limited field work, and initiated public involvement activities.

Four alternative corridors were evaluated and a recommended alternative corridor was identified. The project team prepared a draft classification letter based on a preliminary desktop analysis of potential impacts within the recommended alternative corridor. The purpose of the classification letter was to gain concurrence from TxDOT that the project could proceed as an EA (see **Section 2.2.6**).

Section 3 of this report describes the EA alternatives development process, while **Section 4** summarizes the results of the environmental constraints analysis.

2.2.2 SH 68 Purpose and Need

The purpose of the project under the EA process was to improve north-south mobility and travel capacity within eastern Hidalgo County and the Lower Rio Grande Valley Region. Per Minute Order 113515, the TTC designated SH 68 "for the purpose of facilitating the flow of traffic, promoting public safety, and maintaining the continuity of the state highway system."

The needs identified for SH 68 under the EA process were:

- Insufficient north-south traffic capacity within eastern Hidalgo County and the Lower Rio Grande Valley Region.
- Lack of alternate north-south evacuation routes during emergency events, including hurricanes.
- Compromised traffic safety due to the high ratio of slow-moving, heavy truck traffic to faster, local commuter traffic on US 281/IH-69C.

2.2.3 SH 68 Stakeholder Involvement

Beginning in April 2014, the team worked closely with TxDOT and stakeholders, including local government officials, to identify the project's purpose and need, develop alternatives, gather information and analyze constraints, and evaluate alternatives. Six stakeholder meetings were held between April and September 2014 (RJ RIVERA 2014b through 2014g). Stakeholders at these meetings included representatives from the City of Donna, City of Edinburg, Donna Irrigation District, HCMPO, HCRMA, Hidalgo County Drainage District #1, Hidalgo County Precinct 4, Texas House of Representatives District 39, and U.S. House of Representatives District 34.

2.2.4 Public Meetings and Public Outreach

A Meeting with Affected Property Owners (MAPO) was held on September 9, 2014 at Economedes High School in Edinburg, Texas. More than 500 affected property owners from approximately 600 parcels within the 600-foot-wide recommended alternative corridor were invited to this meeting by a mailed invitation letter that included a project location map. Registered meeting attendance consisted of 122 persons (RJ RIVERA 2015a).

Public Meeting #1 was held on September 25, 2014, at Donna North High School in Donna, Texas. Invitation letters were mailed to the affected property owners and public officials. Notices announcing the meeting were published on TxDOT's website and in local newspapers. In addition, changeable message signs announcing the meeting were placed near the meeting location during the week prior to the meeting. Registered meeting attendance consisted of 261 persons and 2 public officials (RJ RIVERA 2015b).

The MAPO and Public Meeting #1 materials consisted of a PowerPoint presentation, displays, and handouts. Consultants and TxDOT staff were on hand to answer questions. Four 600-foot-wide corridor alternatives, evaluation criteria, and alternatives screening matrices were discussed in the presentation and available on mounted exhibits. Diagrammatic representations of the ultimate proposed facility, showing potential ROW and parcels that would potentially be affected by the proposed recommended alternative, were also on display.

The MAPO and Public Meeting #1 are documented in two draft public meeting summary reports (RJ RIVERA 2015a, 2015b).

The public involvement team continued outreach to interested members of the public by conducting 20 individual stakeholder meetings with community members between the end of September and December 31, 2014. TxDOT also coordinated public outreach efforts by meeting individually with interested members of the public, irrigation districts, Hidalgo County Drainage District #1, and local municipalities, including the Cities of Alamo and Edinburg.

To keep the public informed about the project and to make project materials available, TxDOT developed a SH 68 project webpage. In 2015, the project team also opened a SH 68 project information office on Alamo Road (FM 907) near the SH 68 project area and established a telephone hotline.

2.2.5 Public Input

As a result of the MAPO and Public Meeting #1, over 100 documented comments were received from the public through written comment cards, oral comments recorded at the public meeting, emails, phone calls, and individual meetings. Several commenters expressed opposition to the project, suggested alternate routes for the project, or were opposed to potential tolling of the proposed project. Commenters also expressed concern about potential impacts to houses, residential property, businesses, irrigation access, or commercial property.

The project prompted the formation of at least one opposition group on social media. Members of the public independently organized two community meetings in San Carlos in October 2014 to discuss the project (RJ RIVERA 2015b). Members of the public also spoke against the project during the open comment period at TTC meetings in November 2014 and January 2015 (TTC 2014 and 2015).

Despite the fact that the public meeting reports from the HCRMA in 2008 and 2009 had indicated positive public support for the project, the seemingly negative reactions to the proposed project led the TxDOT and the project team to reconsider its approach to the project. At the direction of TxDOT, and based on public comments, the project team examined several modified versions of the recommended alternative and developed several additional routes for consideration (see **Section 5**).

2.2.6 Transition to an EIS process

On December 16, 2014, TxDOT and FHWA executed a Memorandum of Understanding (MOU) for NEPA Assignment. Under the MOU, TxDOT assumed most of the responsibilities previously performed by FHWA for environmental review and approval of transportation projects in Texas.

Based on the results of initial public outreach and because the project would consist of a new location facility with up to 1,000 acres of new ROW with displacements it was decided in February 2015 that the project would proceed as an EIS.

The EIS process for SH 68 officially began on August 28, 2015, with the publication of a Notice of Intent (NOI) in both the Federal Register (FHWA 2015) and the Texas Register (TxDOT 2015). **Section 6** of this report describes the anticipated EIS process for SH 68.

3.0 EA ALTERNATIVES

This section of the report summarizes the analysis process that led to the EA Recommended Alternative, prior to the initiation of the EIS process. Alternatives development under the EA process is shown as a flow chart in **Figure 4**.

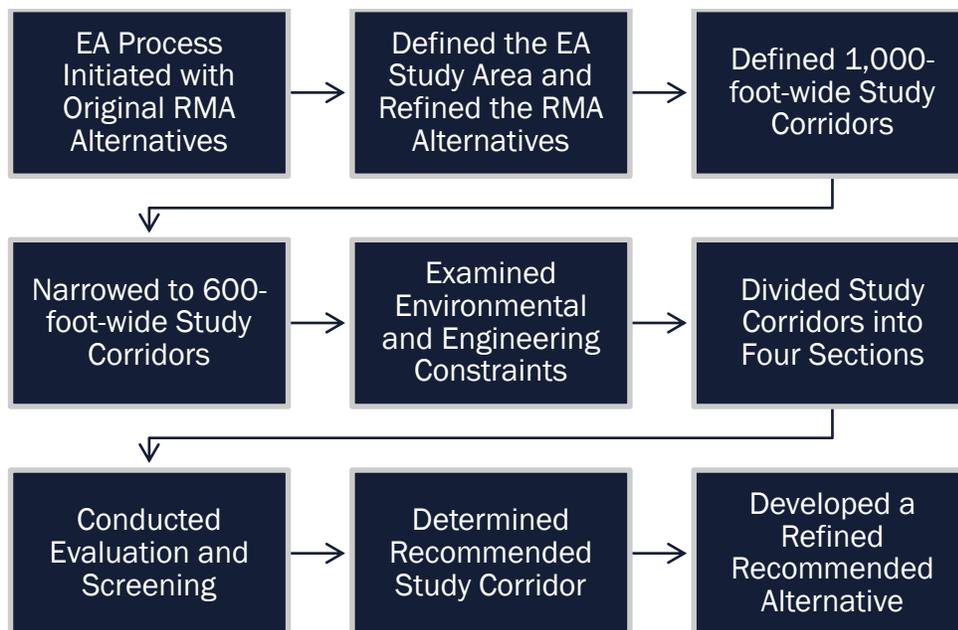


Figure 4. EA Alternatives Development Process

3.1 Alternatives Development

The four study corridors evaluated during the SH 68 EA process were based on the HCRMA's alternative corridors developed for Section D of the Hidalgo County Loop project (see **Appendix B**). At the direction of the TxDOT, the SH 68 project team established 1,000-foot-wide study corridors using refined versions of three alternatives shown at the HCRMA's 2009 open house public meeting (see **Exhibit B-3** in **Appendix B**), with the addition of a corridor that connected to US 281 at FM 490. These new SH 68 EA alternative corridors were identified by color: Orange, Red, Green, and Blue (See **Exhibit 2** in **Appendix A**).

The SH 68 EA alternative corridors were based on engineering and environmental constraints, including a 70 mile per hour (mph) design speed for the ultimate facility, design accommodations for heavy trucks, and baseline environmental constraints. The alternatives were also evaluated against the purpose and need for the project.

A width of 1,000 feet for the initial study corridors (**Exhibit 2**) was defined to provide some latitude for refinement and avoidance of potential constraints, because the ultimate facility had an anticipated ROW width of 300 to 400 feet. In order to accommodate potential interchange designs, the corridor study areas at the connection points with US 83/IH-2 and US 281/IH-69C were expanded to include a one-half-mile radius circle. Due to its proximity to the South Texas International Airport at Edinburg, the interchange radius for the Blue Alternative study corridor at US 281/IH-69C and FM 490 was one mile wide.

The four study corridors ranged in length from approximately 15 miles to 24 miles. All four corridors began at US 83/IH-2, roughly midway between the cities of Donna and Alamo, and traveled north relatively close to one another to FM 1925. At FM 1925, the **Orange Alternative** turned west then northwest to tie into US 281/IH-69C near Ramseyer Drive in the City of Edinburg. The three remaining corridors continued traveling north from FM 1925 before each study corridor turned west to connect to US 281/IH-69C at various locations: the **Red Alternative** connecting near FM 2812, the **Green Alternative** near El Cibolo Road, and the **Blue Alternative** near FM 490 (see **Exhibit 2**)

After an initial evaluation, the study corridor widths were narrowed to 600 feet for further evaluation prior to identification of a recommended study corridor and recommended alternative (**Exhibit 3**). Environmental constraints were examined and quantified for each of the 600-foot-wide study corridors (see **Section 4**). Environmental constraints included land use/land cover acreage totals, water features, farmland soils, houses, commercial properties, churches, schools, and colonias.

In addition to engineering factors, such as design speed and design accommodations for heavy trucks, the alternatives development process also considered future travel patterns, physical site limitations, potential impacts to social and natural resources, connections with the existing roadway network and major destinations, safety, mobility, and constructability.

3.2 Evaluation Criteria and Alternatives Screening

Development of the evaluation criteria and the alternatives screening process is documented in the draft *Technical Memorandum: SH 68 Alternatives Evaluation Methodology* report (RJ RIVERA 2014h and **Appendix C**). The following sections summarize the major points of the evaluation, which was conducted using the 600-foot-wide study corridors.

3.2.1 Evaluation Criteria

Table 1 shows the evaluation criteria that were developed for during the EA process based on stakeholder input. Stakeholders included representatives from TxDOT, HCRMA, HCMPO, City of Edinburg, the City of Donna, Hidalgo County Drainage District #1 and irrigation districts (RJ RIVERA 2014a through 2014g). The criteria were based on safety, engineering, environmental, and financial goals.

Table 1: Goals and Criteria from the EA Alternatives Screening Process

Goals	Evaluation Weight	Evaluation Criteria
Safety Goal	15%	Provides grade separations at major crossings Provides route for larger/heavier vehicles Accommodates bicycles and pedestrians
Mobility Goal	15%	Proposes additional capacity Provides continuous major route between IH-2 and IH-69C Enhances system access and connectivity Enhances congestion management Improves transportation system reliability
Community and Environmental Goal	50%	Minimizes impacts to residential property Minimizes impacts to commercial/industrial property Minimizes impacts to schools Minimizes impacts to churches Avoids cemeteries Minimizes impacts to farmlands/ranchlands Minimizes impacts to irrigation/drainage canals Other constraints
Feasibility/Design Goal	5%	Driver expectancy Constructability
Cost Effectiveness Goal	10%	Approximate total relative cost
Economic Factors	5%	Connectivity to port of entry Located within Hidalgo County tax re-investment zone (TIRZ)
Source: RJ RIVERA 2014h.		

3.2.2 Alternatives Evaluation

Environmental and engineering constraints information was collected to support the evaluation criteria. Due to the length of the project and because individual alternative corridors overlapped in some areas, three nodes were identified along each of the alternative corridor routes to separate the alternatives into sections for more detailed evaluation (**Figure**

5). The nodes were used as transitions between the different routes in order to select the best possible alternative. Four sections were evaluated for each of the four alternative study corridors.

These sections were:

- The South Section: This section extended from US 83/IH-2 to near Owassa Road. In this area, the Blue and Red Alternatives overlapped. Though the Blue/Red Alternatives and the Green Alternative followed different routes in this section, all three alternatives connected to US 83/IH-2 near the same location, which was east of FM 1423/Val Verde Road. The Orange Alternative connected to US 83/IH-2 west of Val Verde Road and closer to the City of Alamo.
- The Transition Section: This section extended from near Owassa Road north to near FM 1925/Monte Cristo Road. The Blue, Red, and Green Alternatives were very similar through this area, while the Orange Alternative generally followed a more westerly path until just south of FM 1925/Monte Cristo Road.
- The North Section: This section extended from FM 1925/Monte Cristo Road to the points where each alternative turned to connect to US 281/IH-69C. The North Section did not include the Orange Alternative, which turned west near FM 1925/Monte Cristo Road. The Blue, Green, and Red alternative corridors were very similar through this area.
- 281 Connector Section: This section included the areas where each alternative turned from a north-south direction to an east-west direction in order for the proposed roadway to connect to US 281/IH-69C. In the 281 Connector Section, the alternatives are the most dissimilar.

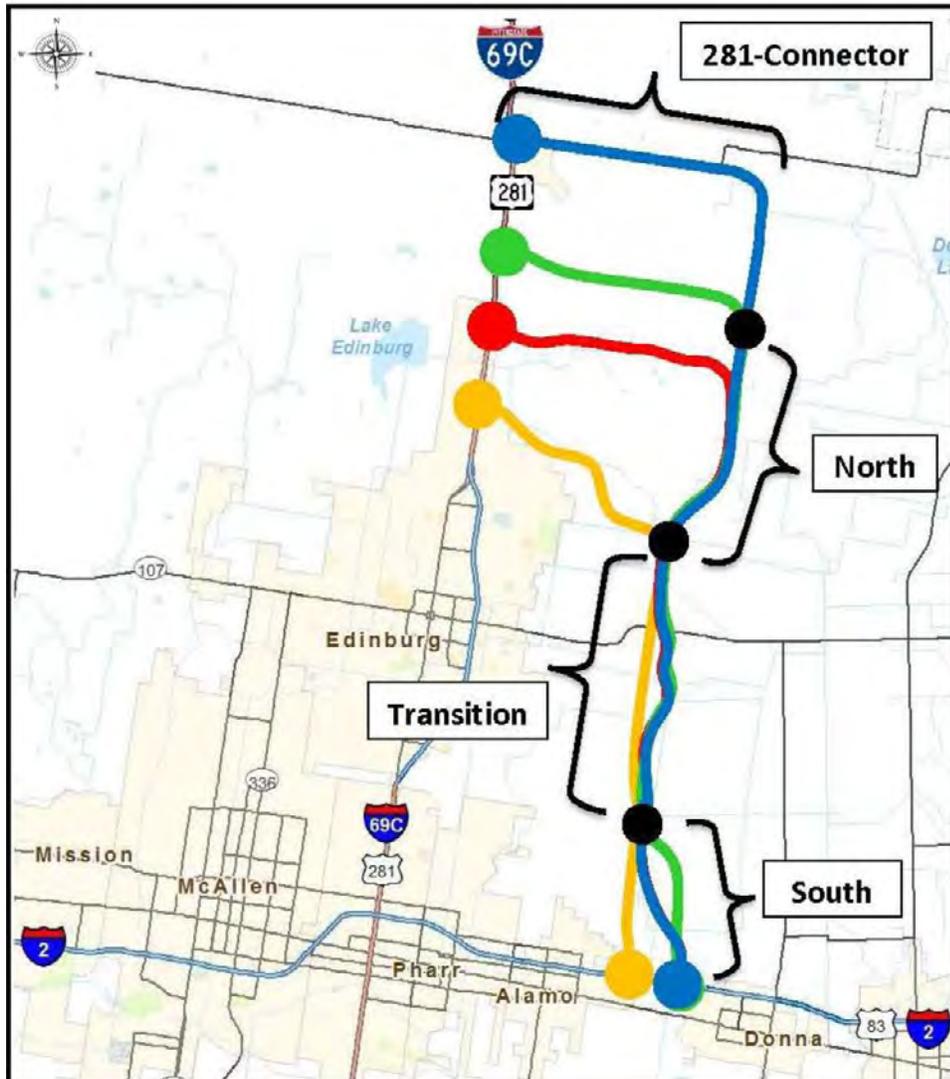


Figure 5. EA Evaluation Sections

Environmental constraints within each section of each alternative corridor were identified and quantified to support the evaluation criteria identified in the Environmental and Community Goals (**Table 1**). For example, for the “minimize impacts to residential property” criterion, the team estimated the number of houses and calculated the acreage of residential land use. The data developed during this quantification effort for each section is detailed in the *Draft Technical Memorandum: SH 68 Alternatives Evaluation Methodology* report (RJ RIVERA 2014h and **Appendix C**).

3.2.3 Screening Process

The environmental constraints data and engineering considerations for each section of each alternative were then used to perform a qualitative scoring or ranking by criterion. Criteria were ranked as 0, 1 or 3. A score of 0 was assigned for options with most impacts or least

desirable conditions; 1 assigned for neutral or somewhat desirable conditions; and 3 assigned for options with least impacts or most desirable conditions. Based on this scoring methodology, the section with the highest total score would be more desirable or have fewer potential impacts than a section with a lower score. The scores were totaled and weighted as outlined in **Table 1**.

Based on this evaluation, screening, and weighting process, a recommended 600-foot-wide study corridor (**Figure 6**) was identified, which consisted of the Red Alternative in the South Section, the Green Alternative in the Transition Section, and the Blue Alternative in the North and 281 Connector Sections (RJ RIVERA 2014h).



Figure 6. EA Recommended Study Corridor

The recommended study corridor was further refined into the EA Recommended Alternative, which was presented to the public in September 2014, and is shown in yellow in **Exhibit 3**.

4.0 ENVIRONMENTAL CONSTRAINTS

The following information provides a description of the EA study area and the environmental constraints identified within the study area. These constraints were used during the alternatives development process to evaluate alternatives and identify the EA Recommended Alternative (**Section 3**).

4.1 EA Study Area

The SH 68 EA study area was located in eastern Hidalgo County, within an area generally bounded by FM 490 to the north, US 83/IH-2 to the south, US 281/IH-69C and North Alamo Road to the west, and FM 1423/Val Verde Road to the east. The EA study area was located outside of the city limits and developed areas of the nearby communities of Alamo, Donna, and Edinburg. Native vegetation in much of the project area had been cleared or otherwise modified by human activities. The study area was located within the Western Gulf Coastal Plain/Lower Rio Grande Valley ecoregions. Potential environmental constraints within the EA study area are shown in **Exhibits 4.1** and **4.2** and described below in **Table 2**.

Table 2: Environmental Constraints Overview for EA Study Area

Issue	Study Area Environmental Constraint Overview
Land Use	Land use in the study area was mostly rural, containing a mix of residential, row-crop agriculture, orchard-based agriculture, undeveloped rangeland and pasture, and small amounts of industrial uses.
Socioeconomic Issues	Low income (Exhibit 5) and minority (Exhibit 6) populations were identified within the EA study area. Limited English Proficiency (LEP) populations were present, who spoke primarily Spanish. There were several colonias within or adjacent to the study area. Because the proposed project was on new location, there was the potential for residential and business displacements.
Air Quality Issues	Hidalgo County was in attainment of all National Ambient Air Quality Standards (NAAQS). No air quality impacts were anticipated as a result of the proposed project.
Traffic Noise Issues	Because the proposed project was on new location, there were potential noise receivers, such as residences, within the study area.
Farmland Soils	Farmland soils were present within the study area.
Water Resources	Water resources within the study area included irrigation canals, drainage systems, and National Wetland Inventory (NWI) features (Exhibit 7).

Issue	Study Area Environmental Constraint Overview
Floodplains	According to Federal Emergency Management Agency (FEMA) maps, 100-year floodplains extended across several sections of the project area (Exhibit 7).
Cultural Resource Issues and Section 4(f)/6(f) Issues	The study area included one National Register of Historic Places (NRHP)-listed and two NRHP-eligible Irrigation Districts (Exhibit 8). Other constraints included cemeteries and archeological sites.
Hazardous Materials Issues	Oil/gas wells, oil/gas pipelines, hazardous material generators, and hazardous material spills and contamination were identified as potential hazardous materials issues within the study area (Exhibit 9).
Biological Resource Issues	Though much of the study area has been disturbed, there were isolated areas of brushlands that may have provided suitable habitat for rare, threatened, or endangered species. A tract associated with the Lower Rio Grande National Wildlife Refuge and two properties with conservation easements were also located within the study area.
Other Issues	The Edinburg Landfill, the Edinburg Airport, multiple schools, and utilities were additional constraints identified within the SH 68 study area during the EA process.

4.2 EA Alternatives

During alternatives development, four alternative study corridors within the EA study area were identified and described (see **Section 3.1**). The environmental constraints used to compare the alternatives included land use/land cover acreage totals, water features, farmland soils, houses, commercial properties, churches, schools, and colonias (**Exhibits 10.1** and **10.2**). The potential environmental impacts quantified in these tables were based on desktop research, supplemented with limited field work, on the 600-foot-wide study corridors for each of the four EA alternatives (**Exhibit 3**).

Detailed maps showing land use and land cover information on aerial imagery for each of the four, 600-foot-wide EA alternative corridors are provided in **Exhibits 11.1** through **11.25**.

4.3 EA Recommended Alternative

The alternatives analysis and screening process identified a recommended study corridor that combined the most desirable sections of the originally developed alternative routes (**Section 3.2**). The study corridor was then further refined to identify the EA Recommended Alternative. The goals for developing the EA Recommended Alternative was a corridor that minimized potential impacts, improved safety, created mobility, and met design requirements.

This corridor is almost entirely on new location, approximately 22 miles in length, is 600 feet in width, and includes an area of approximately 1,946 acres. It connects to US 83/IH-2 approximately 7 miles east of US 281/IH-69C, between the FM 1423/Val Verde Road overpass and the North Hutto Road overpass, near the existing intersection of the US 83/IH-2 westbound frontage road and South Valley View Road.

From US 83/IH-2, the EA Recommended Alternative corridor would travel northwest for approximately 3 miles to near Minnesota Road before turning generally northward for approximately 7 miles through the communities of Muniz and San Carlos, beyond SH 107 to FM 1925/Monte Cristo Road.

North of FM 1925/Monte Cristo Road, the corridor would curve to the east for approximately 1.5 miles, approaching Mile 19 N Road, where it would then run parallel to the west side of Val Verde Road for approximately 4 miles. The corridor would then curve to the northwest for approximately 4 miles before running along the north side of the existing FM 490 for 3 miles and connecting to US 281/IH-69C near the South Texas International Airport at Edinburg.

The potential environmental issues discussed below are based on an analysis of the 600-foot-wide study corridor for the EA Recommended Alternative, which was approximately 22 miles long. A 600-foot-wide corridor was used to allow room to avoid and/or minimize potential impacts to residential and commercial developments, including colonias. During the EA process, the ROW width for the proposed SH 68 facility was estimated to vary from approximately 300 feet to 400 feet, but with a usual width of 350 feet. It was also estimated that the new location project would require between 800 and 1,100 acres of additional ROW.

The environmental constraints for the 600-foot-wide EA Recommended Alternative are quantified in **Exhibits 10.1** and **10.2** and discussed below.

4.3.1 Land Use and Potential Displacements

A majority of the land use within the 600-foot-wide EA study corridor consisted of agriculture and ranching operations, with scattered clusters of residential and commercial developments throughout. For example, approximately 35 percent of the EA Recommended Alternative included cultivated cropland and orchards, compared to approximately 13 percent of land in residential and commercial development (approximately 10 percent residential, 3 percent commercial, and less than 1 percent mixed use). Native vegetation consisting of grassland, shrubs, and brush common to local ranching operations comprised approximately 45 percent of the recommended corridor.

Although the EA Recommended Alternative corridor traversed a largely rural landscape consisting of cultivated cropland, orchards, and natural grassland and mesquite scrub-shrub

vegetation (approximately 80 percent of the corridor), a scattering of residential and commercial developments were also within the corridor (approximately 13 percent). As a result, it was estimated that the EA Recommended Alternative would require displacement and relocation of residences and commercial businesses. Preliminary analysis indicated that there were an estimated 325 residential structures located within the 600-foot-wide recommended route. However, the number of potential displacements were to be minimized to the extent practicable when the preferred corridor width was refined and reduced to a usual 350-foot ROW width. Residential properties within the EA Recommended Alternative included both small-lot subdivisions as well as large-acreage residences.

No industrial land uses were identified within the EA Recommended Alternative corridor. In addition, there were no schools, hospitals, churches, cemeteries, landfills, airports, or properties with known conservation easements within the EA recommended route.

4.3.2 Cultural Resources

According to the Texas Archeological Research Laboratory (TARL) database, no recorded archeological sites were located within the recommended alternative corridor. Properties currently listed in the National Register of Historic Places (NRHP) within or adjacent to the corridor included the Louisiana-Rio Grande Canal Company Irrigation System (Hidalgo County Irrigation District [HCID] #2). In addition, the Donna and Engleman Irrigation Districts have been identified by TxDOT as eligible for listing in the NRHP (**Exhibit 8**). As a result, each canal crossing within these Districts would have required coordination with FHWA for a potential Section 4(f) impact; however, the SH 68 roadway would likely have been designed to span each canal crossing and a Section 4(f) *de minimis* determination was anticipated at each of these crossings.

Surveys for archeological and non-archeological historic-age resources were planned for the EA Recommended Alternative corridor in order to identify any additional NRHP-eligible or listed resources affected by the proposed project, and to confirm potential Section 4(f) issues. No other Section 4(f) properties were anticipated to be impacted by the proposed project.

4.3.3 Air Quality

Hidalgo County is an attainment area of National Ambient Air Quality Standards (NAAQS); therefore, transportation conformity regulations did not apply. The proposed new location facility was not anticipated to exceed 140,000 vehicles per day (vpd) for the EA design year 2036; thus, a Traffic Air Quality Analysis (TAQA) was not anticipated because previous analysis of similar projects did not result in a violation of NAAQS. No substantial air quality impacts were anticipated for this project.

4.3.4 Airway-Highway Clearance:

The South Texas International Airport, owned and operated by the City of Edinburg, was located within five miles of the EA Recommended Alternative near the northern terminus at US 281/IH-69C. As a result, coordination with the Federal Aviation Administration (FAA) was noted as required; however, it was anticipated that no potential aeronautical hazards would be created by the proposed project and that the navigable airspace would be preserved.

4.3.5 Traffic Noise

Because the proposed SH 68 was a new location facility, there was the potential for traffic noise impacts along the EA Recommended Alternative corridor. A traffic noise analysis was planned in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Highway Traffic Noise*. Noise contours were to be developed along the project corridor where the land use is currently undeveloped, and a noise impact analysis would have been conducted for the EA Recommended Alternative in areas of residential, commercial, and/or institutional development.

4.3.6 Hazardous Materials

Based on a preliminary database review, potential hazardous material concerns within the EA Recommended Alternative corridor included oil/gas wells, oil/gas pipelines, reported hazardous material generators, and potential hazardous material spills and contamination. Further evaluation of all potential hazardous materials sites was planned in accordance with applicable state and federal laws and regulations, as well as TxDOT's Standard Specifications on hazardous materials.

4.3.7 Vegetation and Wildlife

The EA Recommended Alternative corridor was located in the Western Gulf Coastal Plain/Lower Rio Grande Valley ecoregions of Texas. Characteristics of this region include relatively flat to rolling topography. Native vegetation typically includes natural grassland vegetation and mesquite scrub-shrub vegetation. Open pastures, row crops and orchards were observed throughout the EA study area. Portions of the EA Recommended Alternative corridor extended through residential and commercial developments and were characterized by non-native and ornamental plant species that are common to highly disturbed areas. The majority of vegetation impacts for the EA Recommended Alternative were anticipated to occur within cropland. No substantial impacts to wildlife were anticipated.

4.3.8 Threatened/Endangered Species

A review of the U.S. Fish and Wildlife Service's (USFWS) Environmental Online Conservation System and Texas Parks and Wildlife Department's (TPWD) Annotated County Lists of Rare

Species indicated threatened and endangered species and/or their habitat as potentially occurring in Hidalgo County (**Table 3**). The USFWS lists six animal and plant species as endangered, and two candidate bird species, for Hidalgo County. In addition to the species listed by the USFWS, the TPWD lists three state-endangered animals and 32 state-threatened animal and plant species as potentially occurring in Hidalgo County. The TPWD identifies an additional 32 animal and plant species as species of greatest conservation need (SGCN).

Potentially suitable habitats for threatened and endangered species may have existed within the project study area. Field assessments by qualified biologists were planned during the EA process to determine if suitable habitats were present.

4.3.9 Water Resources

Collection of preliminary water resources information indicated that approximately 8 acres of mapped National Wetland Inventory features and 6 acres of open water were located within the EA Recommended Alternative corridor. Field investigations were planned to determine if waters of the U.S. and/or actual wetlands were present in the study corridor. Coordination with the U.S. Army Corps of Engineers (USACE) would have been conducted, if necessary, to determine jurisdictional impacts and compensatory mitigation. Approximately 372 acres of the EA Recommended Alternative crossed mapped 100-year floodplains, representing approximately 11 percent of the land area within the corridor.

Table 3: Federal and State-listed Threatened and Endangered Species in Hidalgo County

6 Federally-listed Species and 2 Candidate Species	35 State-listed Species	
<p><u>Endangered</u> Northern Aplomado Falcon (<i>Falco femoralis septentrionalis</i>) Star Cactus (<i>Astrophytum asterias</i>) Texas Ayenia (<i>Ayenia limitaris</i>) Walker's Manioc (<i>Manihot walkerae</i>) Gulf Coast Jaguarundi (<i>Herpailurus yagouaroundi cacomitli</i>) Ocelot (<i>Leopardus pardalis</i>)</p>	<p><u>Endangered</u> Interior Least Tern (<i>Sterna antillarum athalassos</i>) Rio Grande Silvery Minnow (<i>Hybognathus amarus</i>) Jaguar (<i>Panthera onca</i>)</p> <p><u>Threatened</u> Black-spotted Newt (<i>Notophthalmus meridionalis</i>) Mexican Treefrog (<i>Smilisca baudinii</i>) Sheep Frog (<i>Hypopachus variolosus</i>) South Texas Siren (large form) (<i>Siren</i> sp 1) White-lipped Frog (<i>Leptodactylus fragilis</i>) Cactus Ferruginous Pygmy-owl (<i>Glaucidium brasilianum cactorum</i>) Common Black-Hawk (<i>Buteogallus anthracinus</i>) Gray Hawk (<i>Asturina nitida</i>) Northern Beardless-Tyrannulet (<i>Camptostoma imberbe</i>) Peregrine Falcon (<i>Falco peregrinus</i>) Reddish Egret (<i>Egretta rufescens</i>) Rose-throated Becard (<i>Pachyramphus aglaiae</i>) Texas Botteri's Sparrow (<i>Aimophila botterii texana</i>) Tropical Parula (<i>Parula pitiayumi</i>) White-faced Ibis (<i>Plegadis chihi</i>)</p>	<p>White-tailed Hawk (<i>Buteo albicaudatus</i>) Wood Stork (<i>Mycteria americana</i>) Zone-tailed Hawk (<i>Buteo albonotatus</i>) River Goby (<i>Awaous banana</i>) Coues' Rice Rat (<i>Oryzomys couesi</i>) Southern Yellow Bat (<i>Lasiurus ega</i>) White-nosed Coati (<i>Nasua narica</i>) False Spike Mussel (<i>Quadrula mitchelli</i>) Salina Mucket (<i>Potamilus metnecktayi</i>) Texas Hornshell (<i>Popenaias popeii</i>) Black-striped Snake (<i>Coniophanes imperialis</i>) Northern Cat-eyed Snake (<i>Leptodeira septentrionalis septentrionalis</i>) Reticulate Collared Lizard (<i>Crotaphytus reticulates</i>) Speckled Racer (<i>Drymobius margaritiferus</i>) Texas Horned Lizard (<i>Phrynosoma cornutum</i>) Texas Indigo Snake (<i>Drymarchon melanurus erebennus</i>) Texas Tortoise (<i>Gopherus berlandieri</i>)</p>
<p><u>Candidate</u> Spragues's Pipit (<i>Anthus spragueii</i>) Red-crowned Parrot (<i>Amazona viridigenalis</i>)</p>		
Sources: USFWS and TPWD county lists for Hidalgo County, 2015.		

5.0 POST-EA ALTERNATIVES

Since the public meetings held in September 2014, the SH 68 project team has continued to engage the public through the project information office and small stakeholder meetings in the community. As part of this public involvement, the team has recorded 17 instances in which members of the public and other entities have suggested other routes or options for the SH 68 project corridor. These suggestions included: modifications to the EA Recommended Alternative (six instances); improvements to existing US 281 (one instance); using FM 493 (seven instances); and using other north-south corridors such as Alamo Road, Tower Road, and Val Verde Road (three instances).

At the direction of the TxDOT, the project team has developed the following additional alternative routes, which may be carried forward for evaluation during the EIS process. These alternatives have not yet been fully evaluated.

5.1 EA Modified Routes 1-4

At the request of several land owners, modifications to the EA Recommended Alternative corridor were developed between SH 107 and FM 1925. The constraints within this area posed a challenge to the team due to an existing electric transmission line and power station in the area. The best route of the four versions developed would follow the same route as the 2014 Study Corridor except for a section between Curve Road to the south and a point approximately 0.5 mile north of FM 1925/Monte Cristo Road, just east of Sharp Road. Between those two points, the corridor would curve west of the EA Recommended Alternative to a maximum distance of approximately 0.3 mile near Mile 17 ½ Road. The EA Modified Route is approximately 23 miles in length, is 600 feet in width, and includes an area of approximately 1,954 acres.

5.2 FM 493/La Blanca Road

The FM 493/La Blanca Road route is approximately 25 miles in length, is 600 feet in width, and includes an area of approximately 2,123 acres. The FM 493/La Blanca Road corridor would begin at US 83/IH-2, approximately 9 miles east of the US 281/IH-69C interchange.

This route would generally follow the on-system roadway FM 493, also known as La Blanca Road, northward for approximately 17 miles from the intersection with US 83/IH-2 to a point approximately 1.5 miles south of the community of Hargill. At this point, the FM 493/La Blanca Road route would curve to the west for approximately 3.5 miles before running along the north side of FM 490 for approximately 4.5 miles to the intersection with US 281/IH-69C near the South Texas International Airport at Edinburg.

This route would pass through the City of Donna and the community of La Blanca.

5.3 FM 907/Alamo Road

The FM 907/Alamo Road route is approximately 23 miles in length, is 600 feet in width, and includes approximately 1,980 acres in area. The FM 907/Alamo Road Study Corridor would begin at US 83/IH-2, approximately 4 miles east of US 281/IH-69C.

This route would generally follow FM 907/Alamo Road, an existing on-system roadway, approximately 10 miles from the existing US 83/IH-2 intersection in the south, northward to FM 1925/Monte Cristo Road. North of FM 1925, the corridor would curve to the northeast for approximately 4 miles before joining with the 2014 Study Corridor route at FM 2812 for the remaining approximately 9 miles to FM 490 near the South Texas International Airport at Edinburg.

This route would pass through the City of Alamo and the communities of North Alamo, Murillo, Cesar Chavez, and Doolittle.

5.4 FM 1423/Val Verde Road

The FM 1423/Val Verde Road route is approximately 22 miles in length, is 600 feet in width and includes an area of approximately 1,912 acres. The FM 1423/Val Verde Road corridor would begin at US 83/IH-2, approximately 6 miles east of US 281/IH-69C.

This route would generally follow the existing on-system roadway FM 1423/Val Verde Road northward for approximately 7.5 miles from the intersection with US 83/IH-2 to SH 107 in the community of San Carlos. From SH 107, the corridor would continue northward along Val Verde Road approximately 2 miles to FM 1925/Monte Cristo Road. Approximately 1.5 miles north of FM 1925/Monte Cristo Road, between Mile 19 Road and Davis Road, the route would then follow the EA Recommended Alternative route for approximately 11 miles north and west to US 281/IH-69C.

This route would pass through the City of Donna and the community of San Carlos.

5.5 US 281

This alternative route would follow the existing US 281/IH-69C corridor from the interchange at US 83/IH-2 in the south to the intersection with FM 490 in the north near the South Texas International Airport at Edinburg. The study corridor has a length of approximately 17 miles, is 600 feet in width, and includes an area of approximately 1,320 acres, which includes existing ROW. The facility generally consists of two-lane or three-lane frontage roads in each direction and two-lane, three-lane, or four-lane main lanes in each direction, with ramps, overpasses, and direct connect ramps at the US 83/IH-2 interchange.

This route would pass through the Cities of Pharr and Edinburg, as well as the communities of Lopezville and Faysville.

6.0 EIS TRANSITION

Based on public input and initial refinement of the universe of alternatives, the project team has recommended six study corridors for initial evaluation at the outset of the EIS process. Since the EIS process requires additional scoping and coordination during the early phases, these alternative corridors could change based on input from agencies, stakeholders, and the public.

6.1 EIS Study Area and Preliminary Study Corridors

As part of the transition from an EA to an EIS, the project team recommended the expansion of the study area in order to ensure all reasonable alternatives for the proposed action are examined, as required by the NEPA process for an EIS. The proposed study area for the EIS is shown in **Figure 7**.

The EIS Study Area is a rectangular area in eastern Hidalgo County oriented generally parallel to US 281/IH-69C and US 83/IH-2. The study area runs from south of US 83/IH-2 to north of FM 490 (approximately 18.8 miles in length) and from east of FM 493 to west of US 281/IH-69C (approximately 9.5 miles in width). The area encompasses approximately 179 square miles or 114,627 acres. It includes portions of the Cities of Edinburg, Pharr, San Juan, Alamo, and Donna. The area also includes unincorporated portions of Hidalgo County and the communities (census-designated places) of Faysville, Hargill, Doolittle, Cesar Chavez, San Carlos, La Blanca, Murillo, Muniz, Lopezville, and North Alamo.

The preliminary EIS alternative routes are shown as 600-foot-wide corridors in **Exhibit 12**. These preliminary routes are subject to change, but include the EA Recommended Alternative (now called the 2014 corridor), an EA Modified route (now called the 2014 Modified corridor), and the four additional routes along existing roadways suggested by the public and described in **Section 5**.

6.2 EIS Process

The SH 68 project team and TxDOT have discussed a phased approach that would meet the requirements for developing an EIS. The proposed phased approach for the EIS process is shown in **Figure 8**.

6.3 EIS Purpose and Need

As stated in the NOI, the purpose of the SH 68 EIS project is to improve north/south mobility, increase travel capacity for local and regional traffic, and provide an alternate north-south evacuation route during emergency events.

The project need is a lack of sufficient north/south mobility for local and regional traffic and for additional emergency evacuation routes, which are the result of historical and continued growth in the region's population as well as continued growth of traffic in the region.

7.0 SUMMARY

The SH 68 project began as a portion of the HCRMA's new location Hidalgo County Loop in eastern Hidalgo County. In 2013, SH 68 was designated as a new state highway facility and project development began as an EA. Under the EA process, TxDOT re-examined and evaluated four alternatives to develop the EA Recommended Alternative. As part of this process, a MAPO and a Public Meeting were held in September 2014. In February 2015, TxDOT decided to transition the environmental classification of the project from an EA to an EIS. The SH 68 project is currently proceeding under the EIS process.

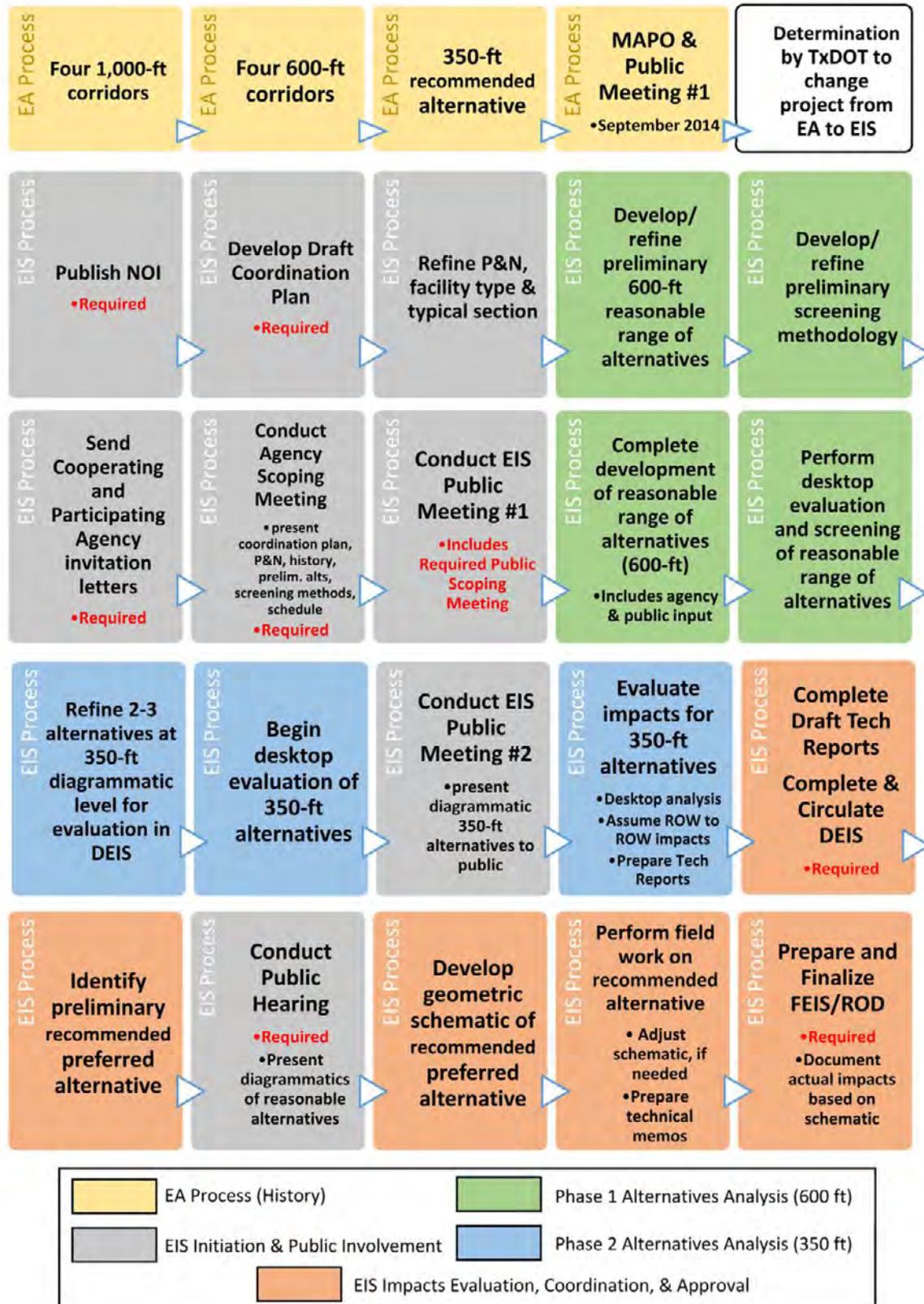


Figure 8. SH 68 EIS Phased Approach

8.0 REFERENCES

Federal Highway Administration (FHWA). 2015. Environmental Impact Statement: Hidalgo County, Texas. "Federal notice of intent to prepare an Environmental Impact Statement (EIS)" *Federal Register*, volume 80, number 167 (August 28, 2015): 52359-52360. <https://www.federalregister.gov/articles/2015/08/28/2015-20968/environmental-impact-statement-hidalgo-county-texas>.

Hidalgo County. 2005. Amended and Restated Petition of Hidalgo County for Authorization to Form a Regional Mobility Authority to the Texas Transportation Commission. Resolution and Order passed, approved, adopted, and ordered on March 30, 2005 by the Commissioners Court of Hidalgo County, Texas.

Hidalgo County Regional Mobility Authority (HCRMA). 2008a. Public Meeting Summary and Analysis Report. May 2008. Hidalgo Loop Section D (North Loop) Project, From US 83 Expressway, 0.38 mile west of FM 1423 (Valverde Road) to US 281 Expressway, 0.61 mile south of FM 162 (Cibolo Road). CSJ: 0921-02-203.

HCRMA. 2008b. Public Meeting Summary and Analysis Report. August 2008. Hidalgo Loop Section D (North Loop) Project, From US 83 Expressway, 0.38 mile west of FM 1423 (Valverde Road) to US 281 Expressway, 0.61 mile south of FM 162 (Cibolo Road). CSJ: 0921-02-203.

HCRMA. 2009. Public Meeting Summary and Analysis Report. February 26, 2009. Hidalgo Loop. Section D: From US 83 to US 281 (North of Edinburg). CSJ: 0921-02-203.

RJ RIVERA Associates. 2014a. SH 68 Design Concept Conference (DCC) Meeting Report (Draft). Meeting held May 7, 2014.

RJ RIVERA Associates. 2014b. SH 68 Study, Stakeholder Meeting #1 Summary Report. Meeting held April 8, 2014.

RJ RIVERA Associates. 2014c. SH 68 Stakeholder Meeting #2 Minutes (Draft). Meeting held April 30, 2014.

RJ RIVERA Associates. 2014d. SH 68 Stakeholder Meeting #3 Minutes (Draft). Meeting held May 1, 2014.

RJ RIVERA Associates. 2014e. SH 68 Stakeholder Meeting #4 Minutes (Draft). Meeting held May 7, 2014.

RJ RIVERA Associates. 2014f. SH 68 Stakeholder Meeting #5 Minutes (Draft). Meeting held July 11, 2014.

RJ RIVERA Associates. 2014g. SH 68 Stakeholder Meeting #6 Minutes (Draft). Meeting held August 18, 2014.

RJ RIVERA Associates. 2014h. Technical Memorandum. SH 68 Alternatives Evaluation Methodology (Draft). December 2014. (Copy also attached as **Appendix C.**)

RJ RIVERA Associates. 2015a. SH 68 Meeting with Affected Property Owners (MAPO) Report (Draft), CSJ: 3629-01-001. January 2015.

RJ RIVERA Associates. 2015b. SH 68 Public Meeting #1 Report (Draft), CSJ: 3629-01-001. January 2015.

Texas Department of Transportation (TxDOT). 2015. Notice of Intent – State Highway (SH) 68, Hidalgo County, Texas. *Texas Register* Volume 40, Number 35 (August 28, 2015): 5546-5547.

Texas Transportation Commission (TTC). 2005. Minute Order 110315, authorizing the creation of the Hidalgo County Regional Mobility Authority. November 17, 2005.

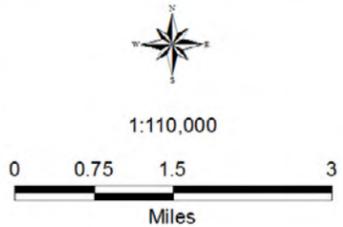
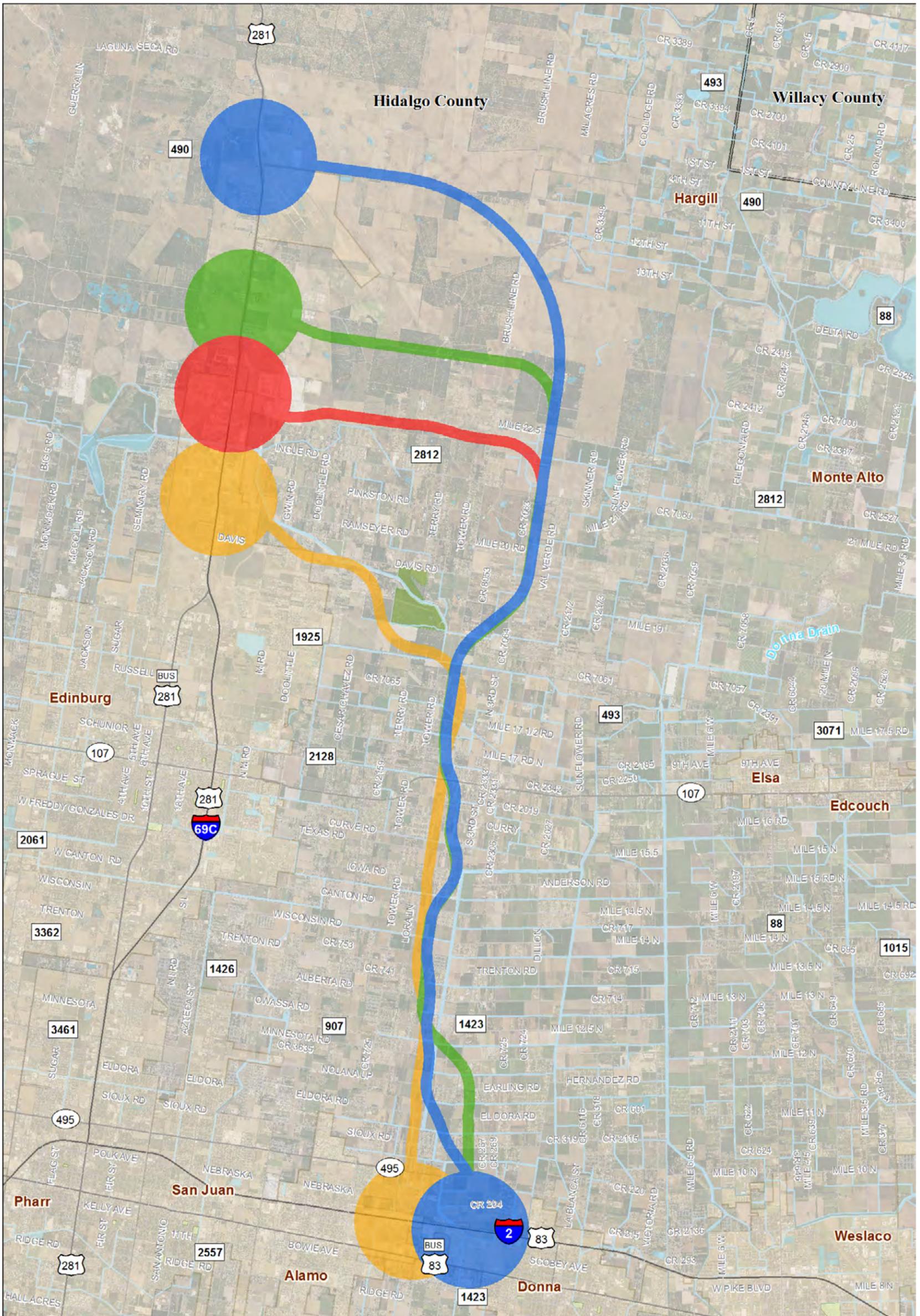
TTC. 2014. Texas Department of Transportation Commission Meeting Transcript, Thursday, November 20, 2014.

TTC. 2015. Texas Department of Transportation Commission Meeting Transcript, Thursday, January 29, 2015.

Appendix A

Exhibits

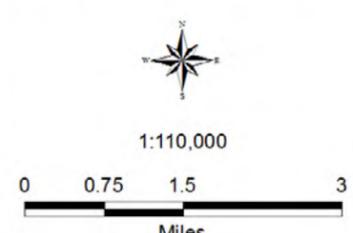
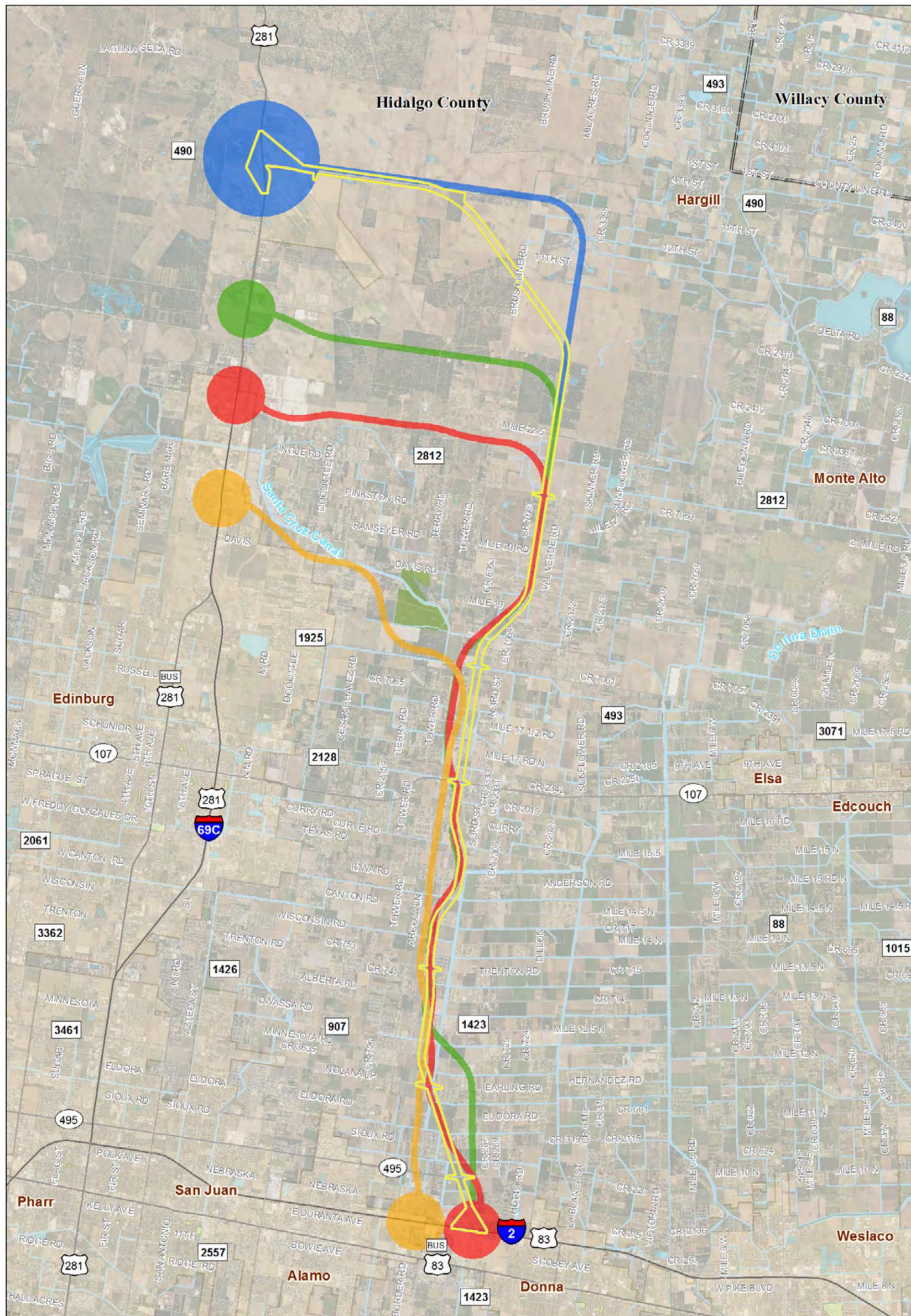
- Exhibit 1. Hidalgo County Loop
- Exhibit 2. SH 68 1,000-foot-wide Study Corridors
- Exhibit 3. SH 68 600-foot-wide Corridors and EA Recommended Alternative
- Exhibits 4.1 and 4.2. SH 68 Environmental Constraints
- Exhibit 5. SH 68 Low Income Population
- Exhibit 6. SH 68 Minority Population
- Exhibit 7. SH 68 Water Resources
- Exhibit 8. SH 68 Irrigation Districts
- Exhibit 9. SH 68 Hazardous Materials
- Exhibits 10.1 and 10.2. SH 68 EA Alternatives Environmental Constraints Matrix
- Exhibits 11.1 through 11.25. SH 68 Land Use and Land Cover
- Exhibit 12. SH 68 Preliminary EIS Alternatives



- EA Blue
- EA Green
- EA Red
- EA Orange

Exhibit 2
SH 68 1,000-foot-wide Study Corridors
From US 83/I-2 to US 281/I-69C
Hidalgo County, Texas
CSJs: 3629-01-001, -002, -003

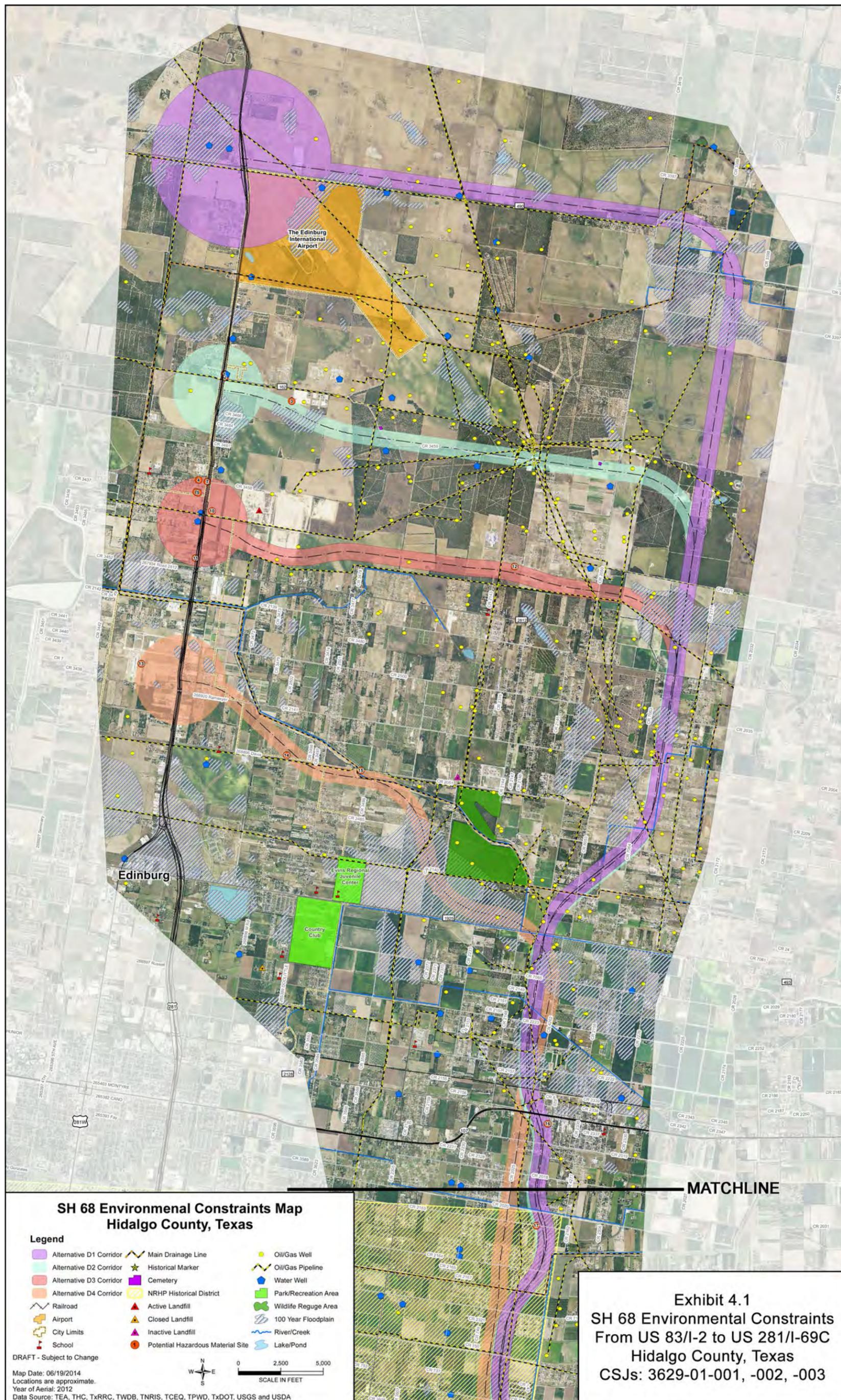
Date: 7/31/2015
 Sources: TxDOT Roadways 2013, TNRS StratMap 2014,
 USFWS NWRs 2015, NHD Hydrography 2015, NAIP Aerial Imagery 2014

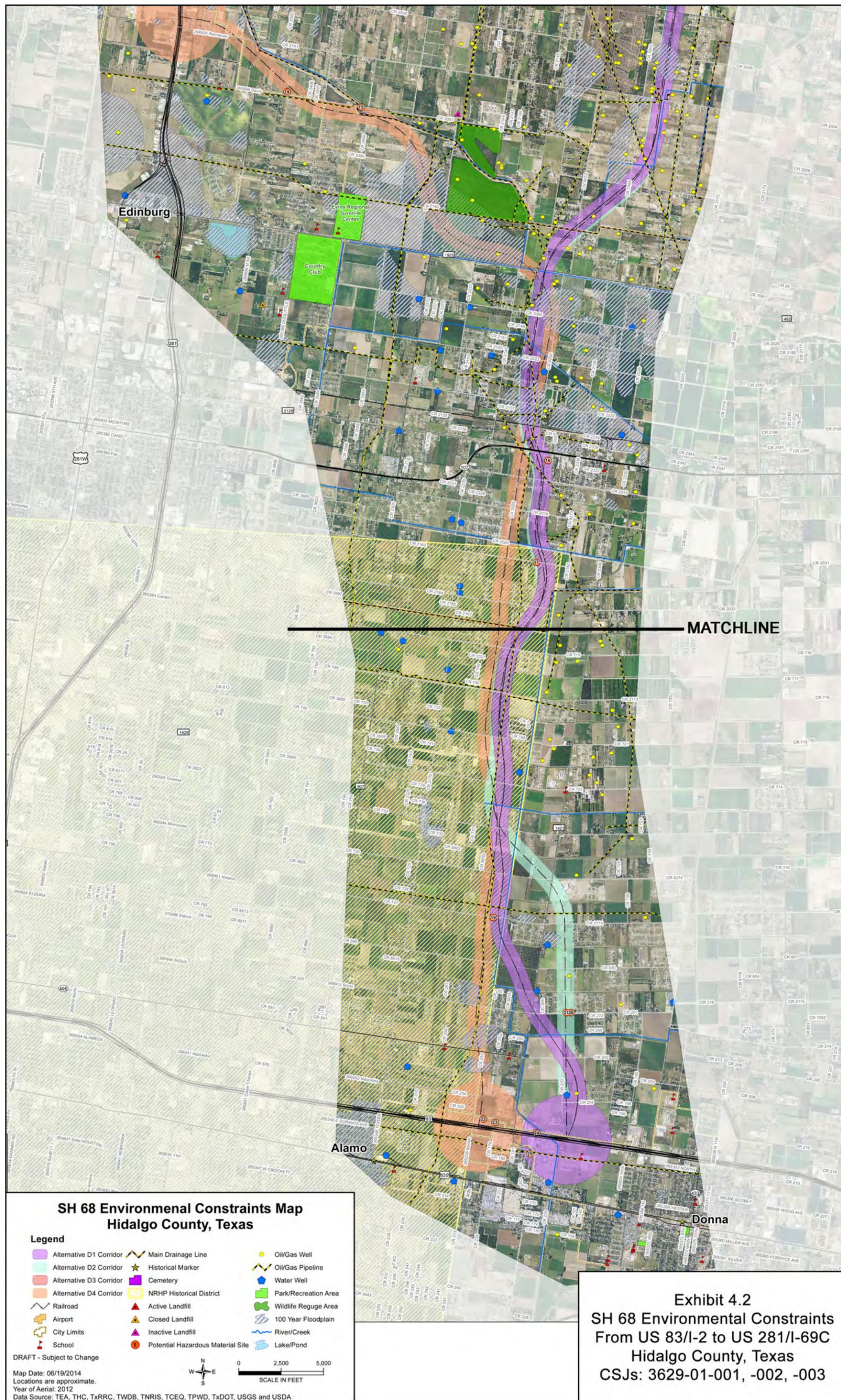


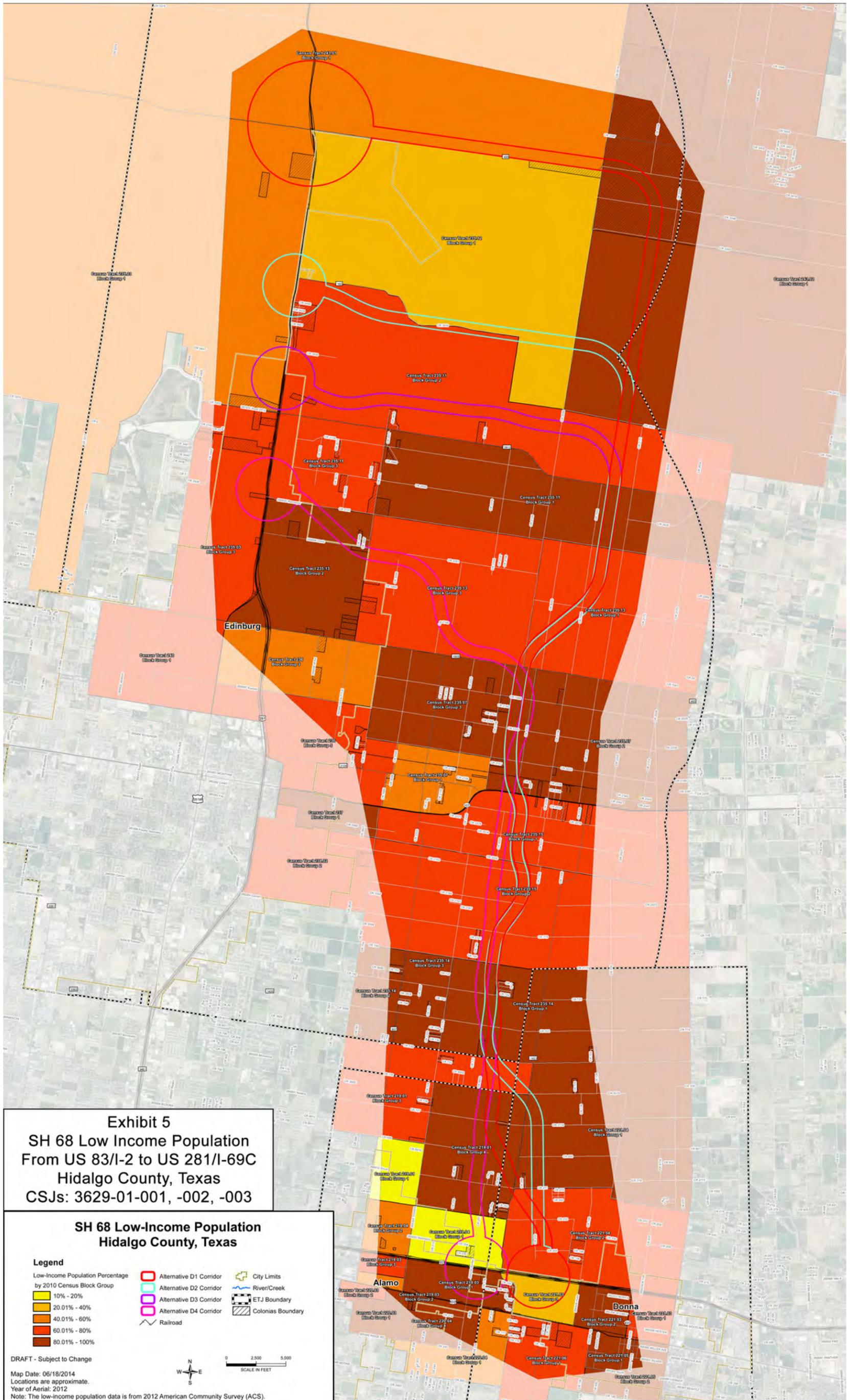
- EA Blue
- EA Green
- EA Red
- EA Orange
- EA Recommended Alternative

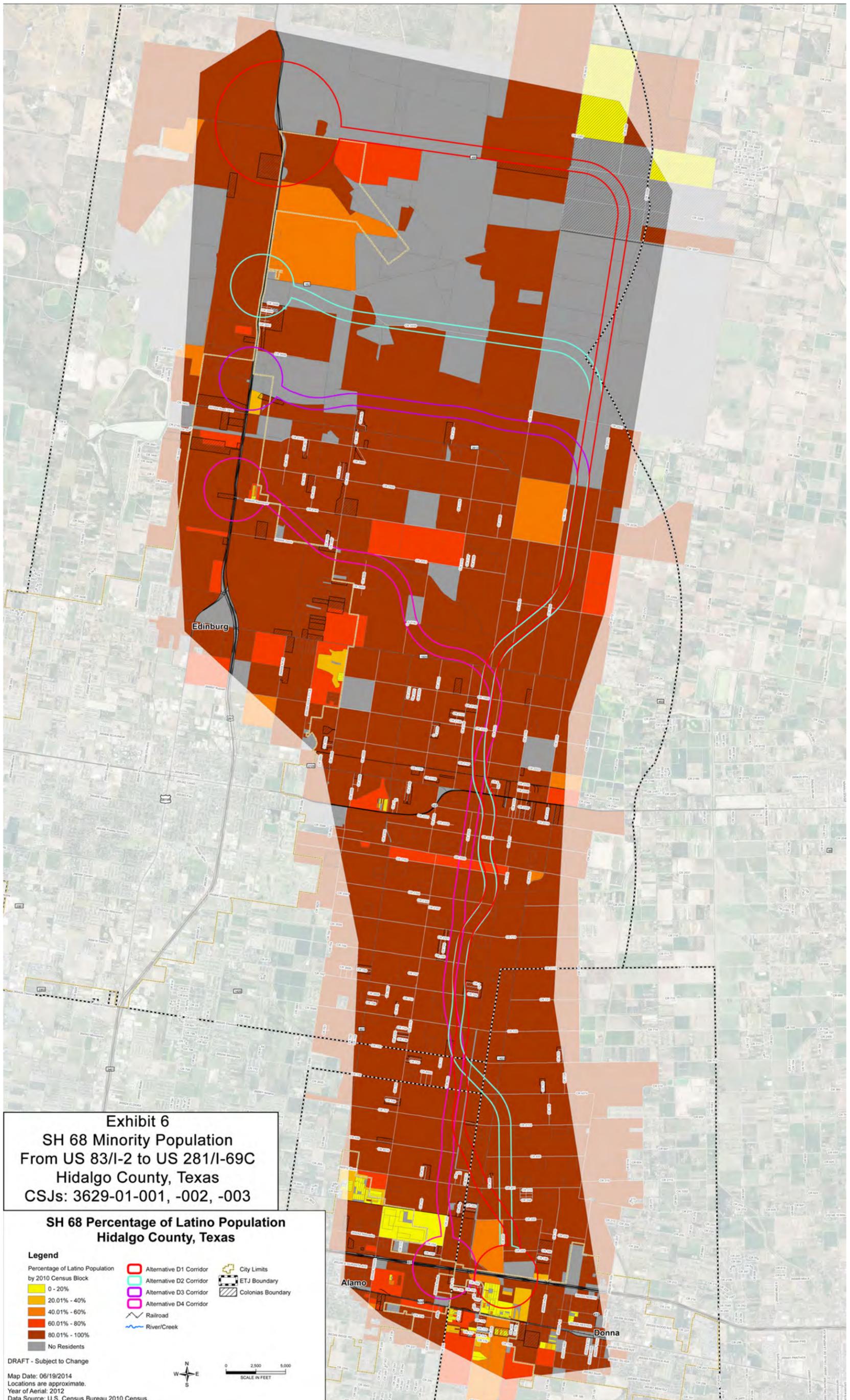
Exhibit 3
SH 68 600-foot-wide Corridors and
EA Recommended Alternative
From US 83/I-2 to US 281/I-69C
Hidalgo County, Texas
CSJs: 3629-01-001, -002, -003

Date: 7/31/2015
 Sources: TxDOT Roadways 2013; TNRS StratMap 2014;
 USFWS NWRs 2015; NHD Hydrography 2015; NAIP Aerial Imagery 2014









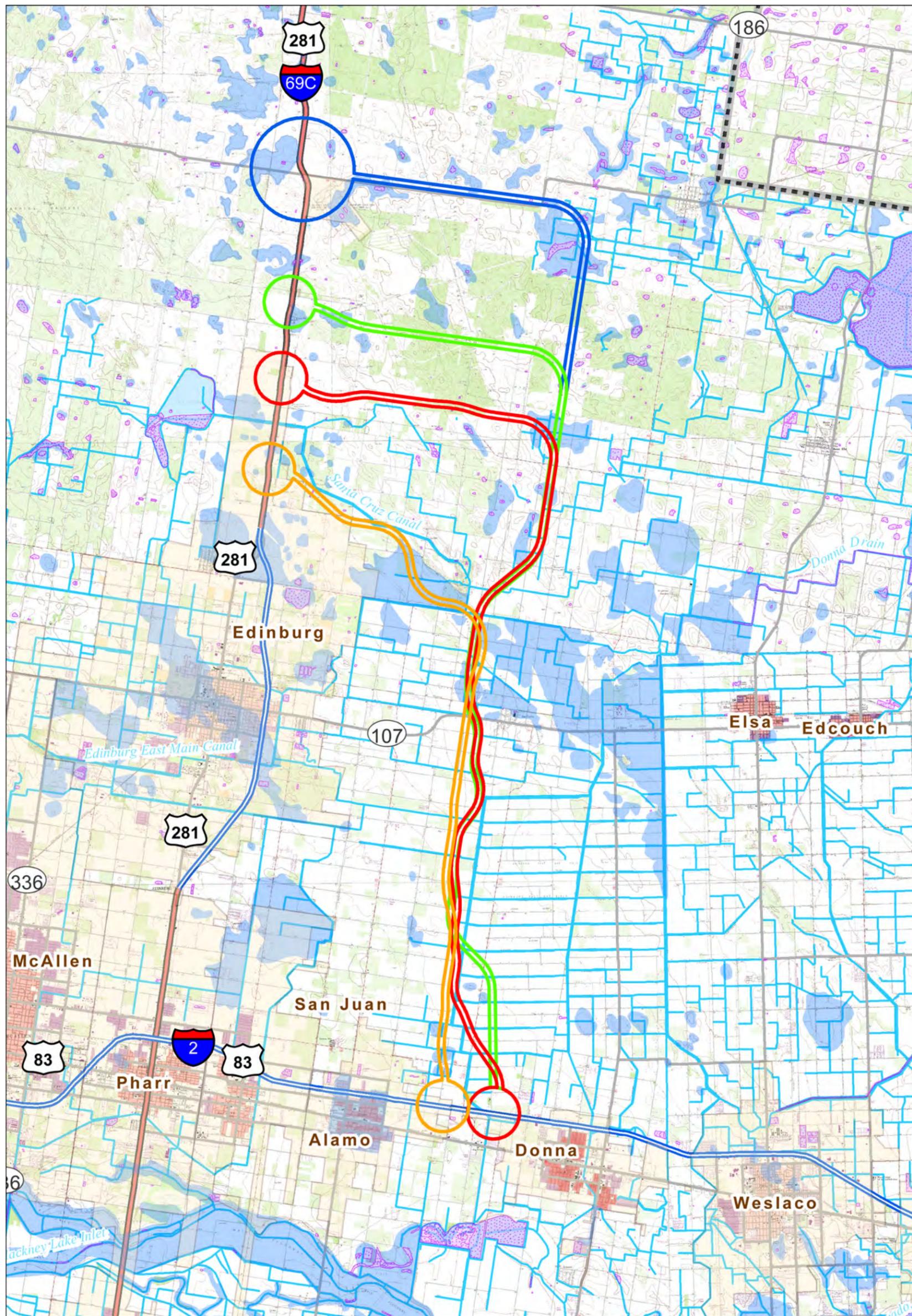
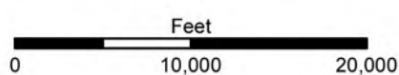


Exhibit 7
 SH 68 Water Resources
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

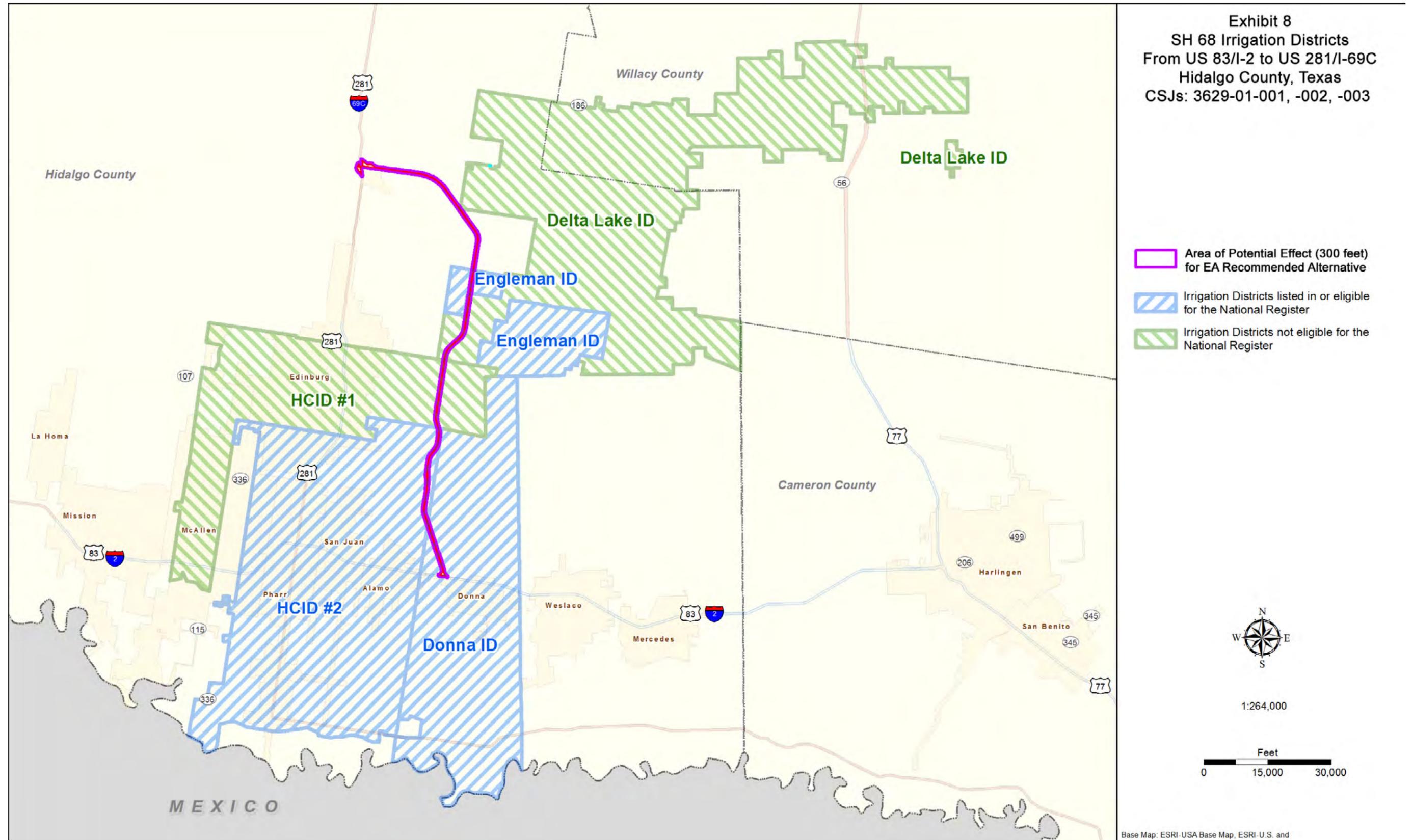


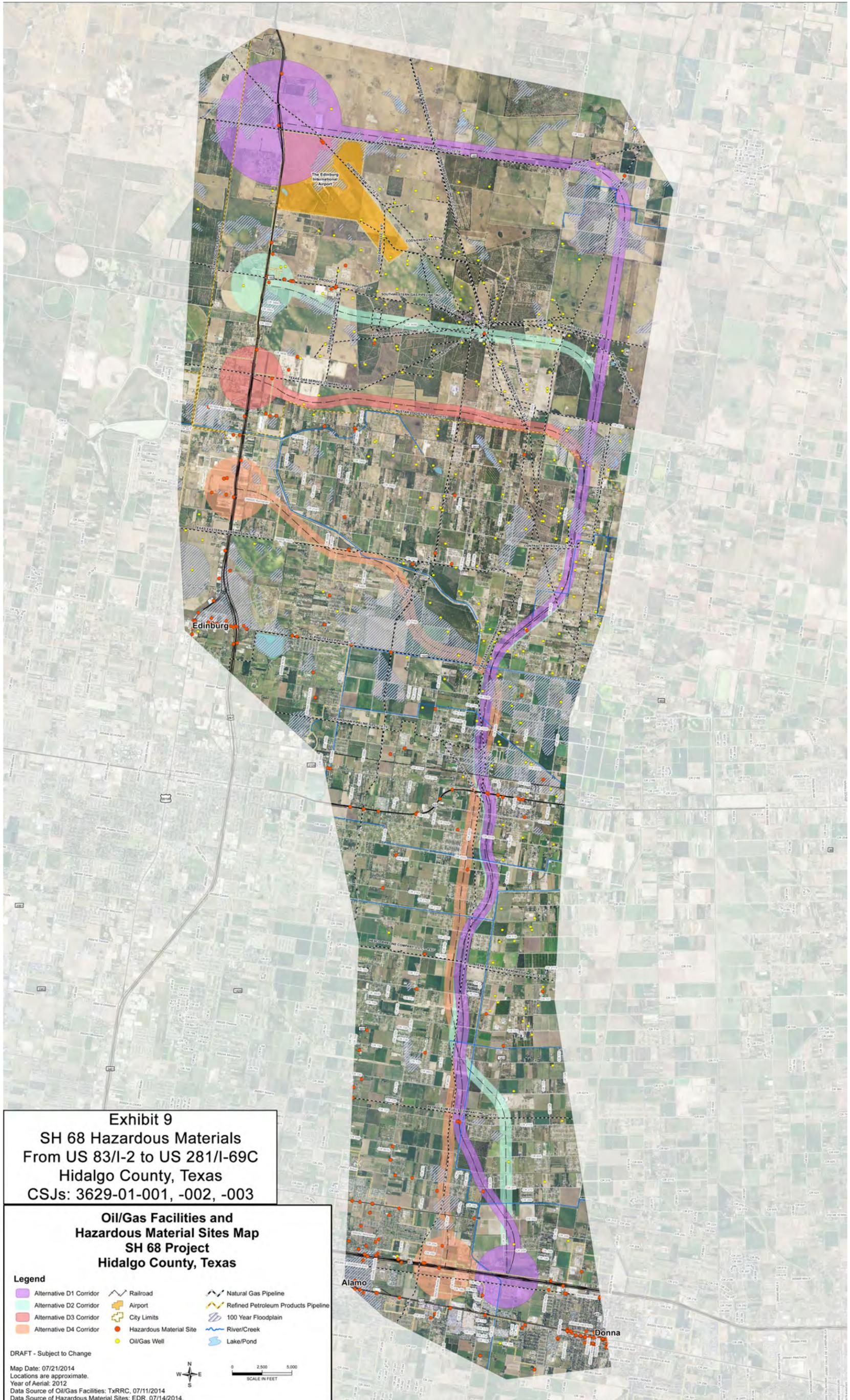
1:125,000



- ▭ EA Blue
- ▭ EA Green
- ▭ EA Red
- ▭ EA Orange
- NWI Features
- 100 Year Floodplain
- ~ Rivers/Streams/Canals

Service Layer Credits: USGS Topographic Map





CENTERLINE LENGTH	EA BLUE ALTERNATIVE			EA GREEN ALTERNATIVE			EA RED ALTERNATIVE			EA ORANGE ALTERNATIVE			EA RECOMMENDED ALTERNATIVE		
	23.9 miles			20.9 miles			19.6 miles			14.9 miles			22.4 miles		
LAND USE/LAND COVER	EA BLUE ALTERNATIVE			EA GREEN ALTERNATIVE			EA RED ALTERNATIVE			EA ORANGE ALTERNATIVE			EA RECOMMENDED ALTERNATIVE		
	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor
Airport	1	348.8	8.4%		--	--		--	--		--	--	1	76.9	2.2%
Brush		484.1	11.7%		314.7	12.8%		81.4	3.5%		178.9	8.9%		369.5	10.4%
Cemetery		--	--	1	1.9	0.1%		--	--		--	--		0.0	0.0%
Church	1	1.6	--	2	1.2	0.0%	1	1.6	--	2	3.4	--	1	1.6	0.0%
Commercial		112.9	2.7%		101.6	4.1%		105.9	4.5%		313.2	15.5%		108.5	3.1%
Cultivated Cropland		1161.4	28.0%		895.3	36.4%		887.5	37.6%		546.5	27.1%		1110.5	31.4%
Orchard		139.9	3.4%		91.0	3.7%		139.9	5.9%		159.4	7.9%		126.5	3.6%
Grassland		1093.5	26.4%		389.9	15.9%		401.9	17.0%		248.8	12.3%		987.7	27.9%
Industrial		0.9	0.0%		4.8	0.2%		0.9	0.0%		1.8	0.1%		0.0	0.0%
Irrigation/Drainage Canals		41.9	1.0%		39.5	1.6%		40.8	1.7%		18.8	0.9%		37.0	1.0%
Landfill		--	--		--	--	1	53.3	2.3%		--	--		0.0	0.0%
Open Water		9.7	0.2%		2.6	0.1%		3.3	0.1%		2.8	0.1%		6.1	0.2%
Residential		310.1	7.5%		293.1	11.9%		382.5	16.2%		316.9	15.7%		359.0	10.1%
RV Park		49.7	1.2%		49.7	2.0%		49.7	2.1%		--	--		13.0	0.4%
School	1	29.9	0.7%	2	40.4	1.6%	2	33.1	1.4%	0	--	--	1	12.3	0.3%
Shrubland		270.2	6.5%		150.3	6.1%		101.1	4.3%		139.4	6.9%		216.8	6.1%
Transportation		93.0	2.2%		83.5	3.4%		75.8	3.2%		87.2	4.3%		112.1	3.2%
Total Acres:	4147.5			2459.6			2358.5			2017.1			3537.5		

Exhibit 10.1
SH 68 EA Alternatives
Environmental Constraints Matrix
From US 83/I-2 to US 281/I-69C
Hidalgo County, Texas
CSJs: 3629-01-001, -002, -003

WATER FEATURES	EA BLUE ALTERNATIVE			EA GREEN ALTERNATIVE			EA RED ALTERNATIVE			EA ORANGE ALTERNATIVE			EA RECOMMENDED ALTERNATIVE		
	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor
NWI Features	15	16.8	0.4%	4	5.5	0.2%	1	1.6	0.1%	2	5.0	0.2%	10	7.7	0.2%
100-Year Floodplain		610.7	14.7%		200.7	8.2%		110.8	4.7%		271.2	13.4%		372.3	10.5%
Approx. # of Canal Crossings	28			32			27			24			39		

SOIL TYPE	EA BLUE ALTERNATIVE			EA GREEN ALTERNATIVE			EA RED ALTERNATIVE			EA ORANGE ALTERNATIVE			EA RECOMMENDED ALTERNATIVE		
	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor
Prime Farmland Soils		2,082.9	50.2%		1,331.0	54.1%		1,458.6	61.8%		1,478.0	73.3%		1,936.4	54.7%

OTHER CONSTRAINTS	EA BLUE ALTERNATIVE			EA GREEN ALTERNATIVE			EA RED ALTERNATIVE			EA ORANGE ALTERNATIVE			EA RECOMMENDED ALTERNATIVE		
	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor	Count	Acres	Percentage of Corridor
Colonias	4			2			4			7			5		
Houses	285			269			342			478			373		
Commercial	22			24			25			44			22		
Churches	1			2			1			2			1		
Schools	1			2			2			0			1		
Farmland (Cultivated Cropland + Orchard)		1301.3	31.4%		986.3	40.1%		1027.4	43.6%		705.9	35.0%		1237.0	35.0%
Wildlife Habitat/Vegetation (Grassland + Brush + Shrubland)		1847.8	44.6%		854.9	34.8%		584.3	24.8%		567.1	28.1%		1574.1	44.5%

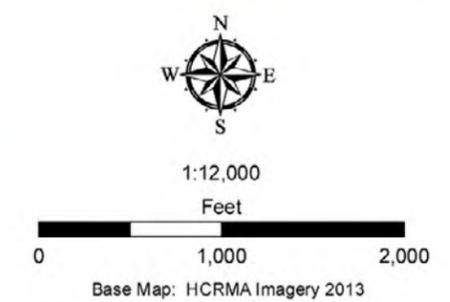
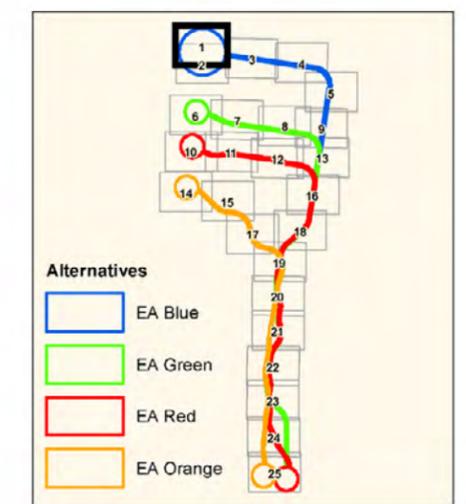
Exhibit 10.2
SH 68 EA Alternatives
Environmental Constraints Matrix
From US 83/I-2 to US 281/I-69C
Hidalgo County, Texas
CSJs: 3629-01-001, -002, -003



Exhibit 11.1 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility



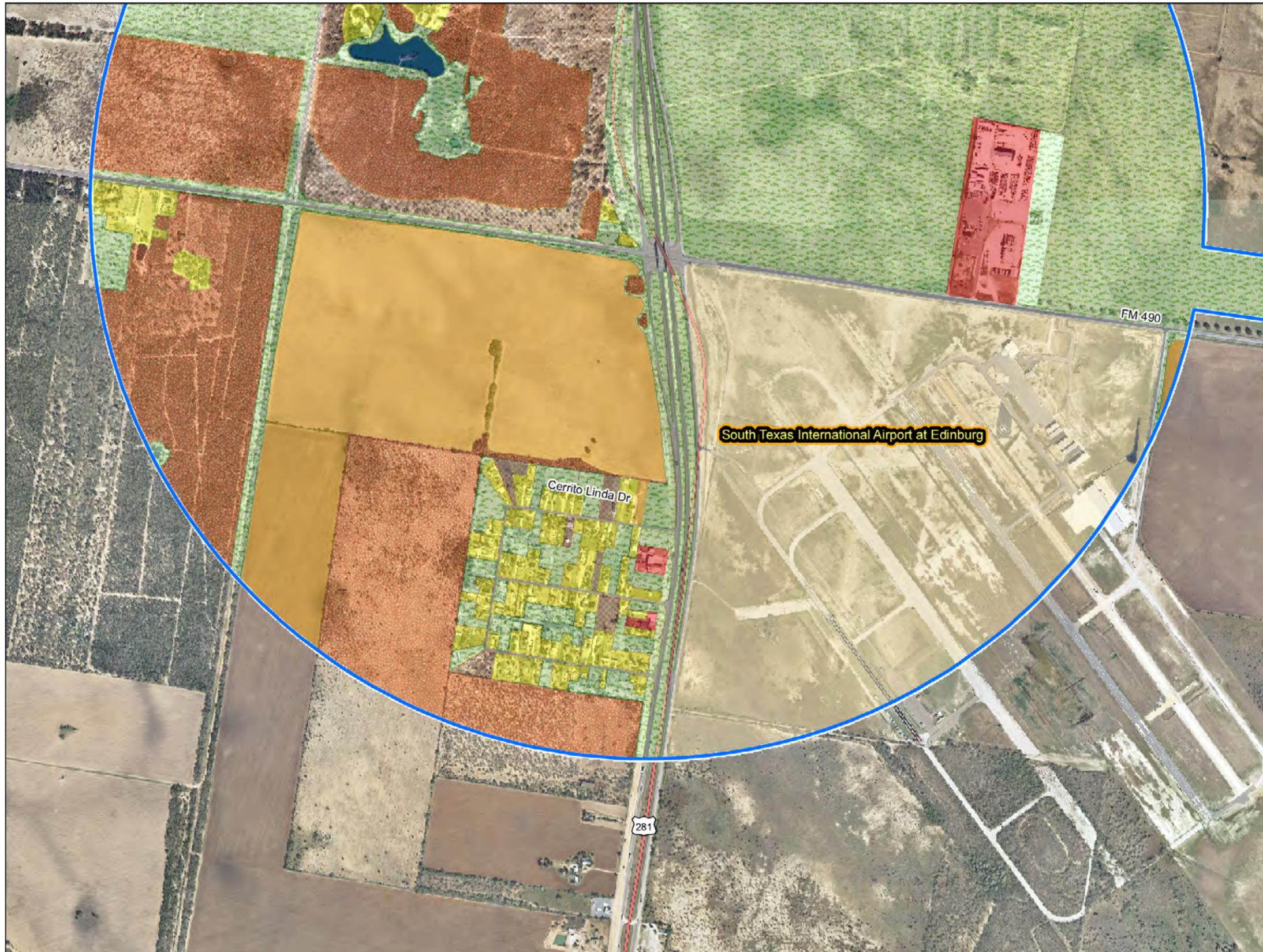


Exhibit 11.2 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility

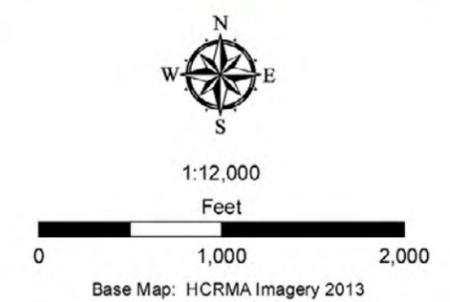
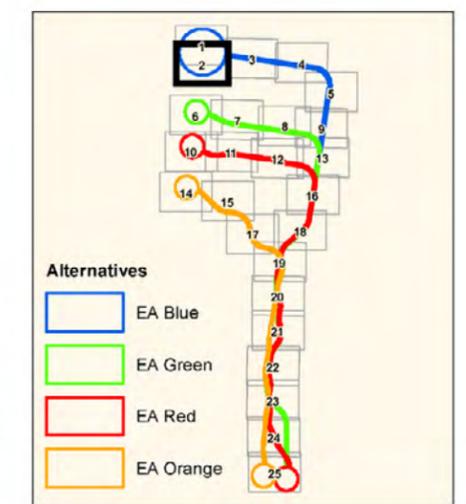
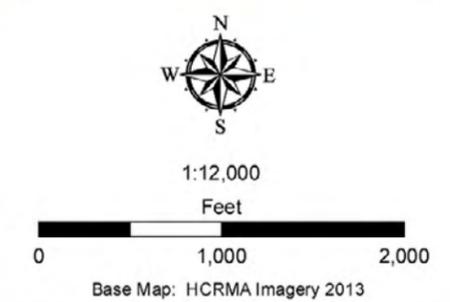
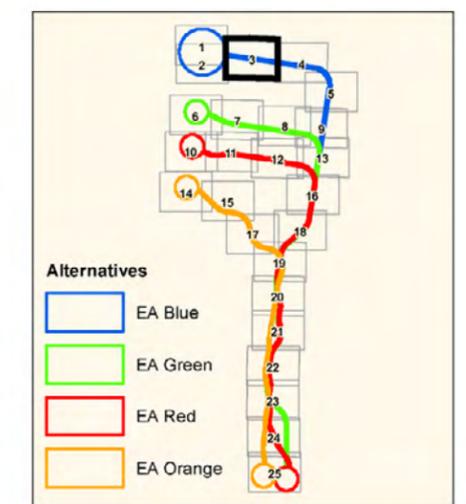
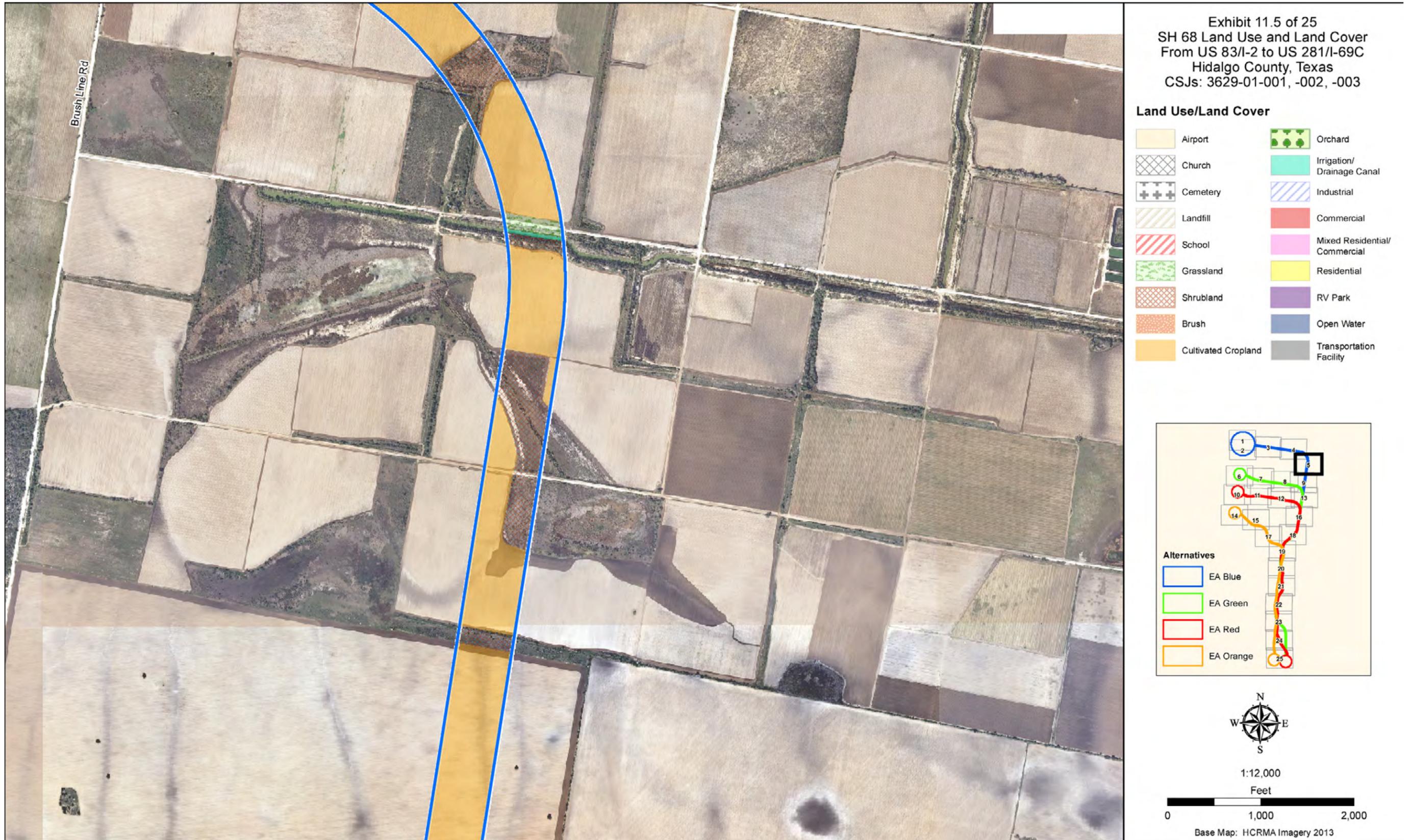




Exhibit 11.3 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003







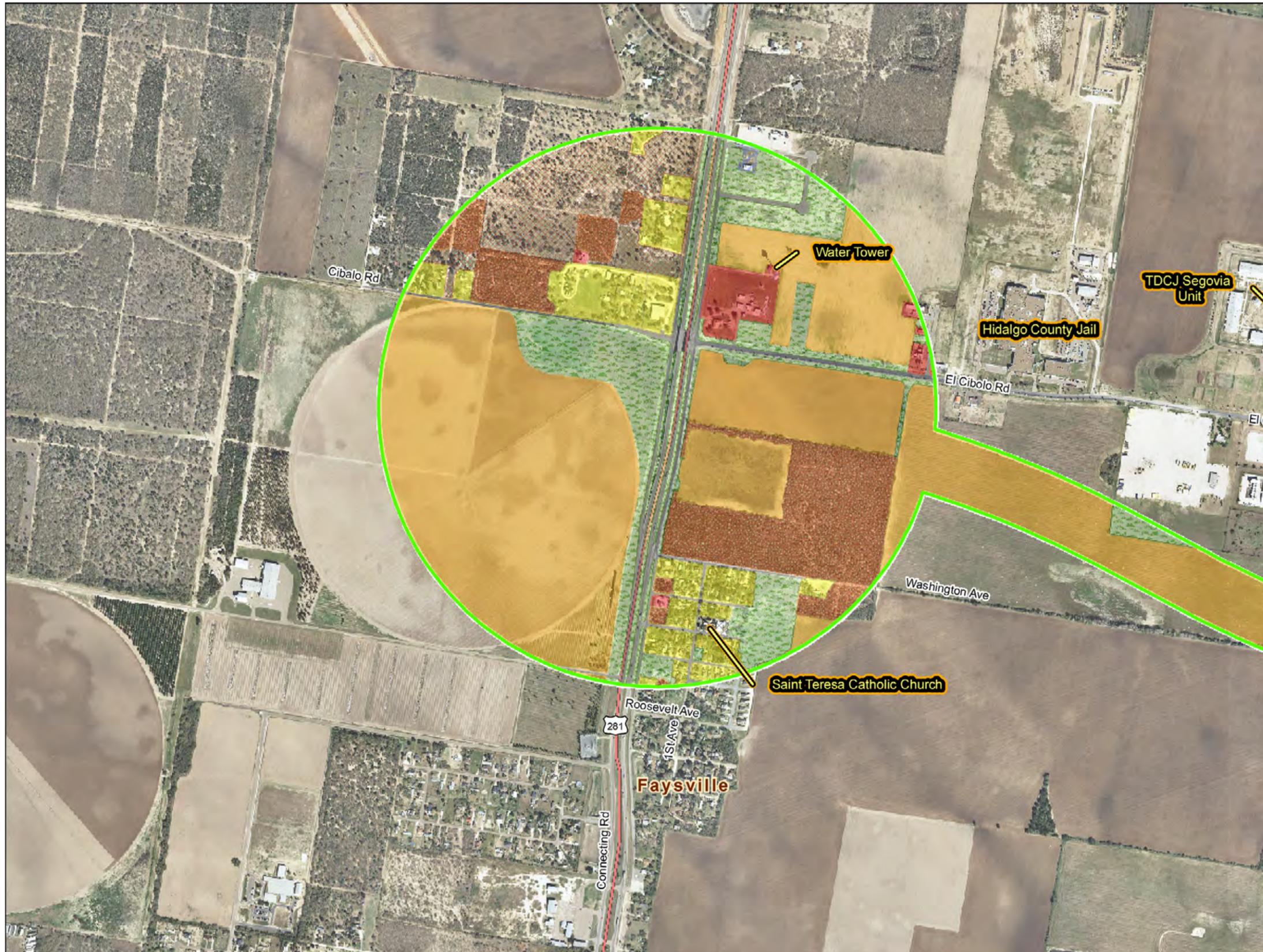


Exhibit 11.6 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

	Airport		Orchard
	Church		Irrigation/Drainage Canal
	Cemetery		Industrial
	Landfill		Commercial
	School		Mixed Residential/Commercial
	Grassland		Residential
	Shrubland		RV Park
	Brush		Open Water
	Cultivated Cropland		Transportation Facility

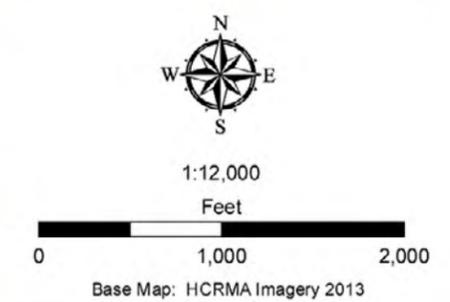
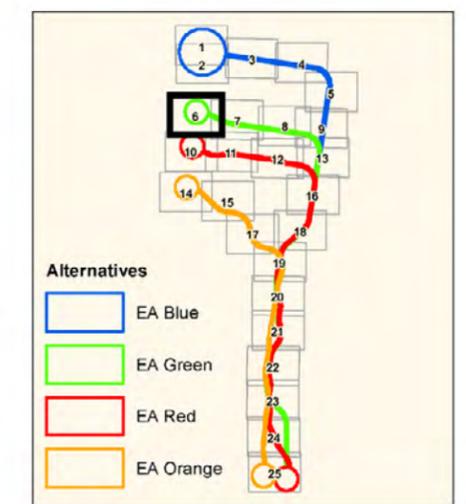
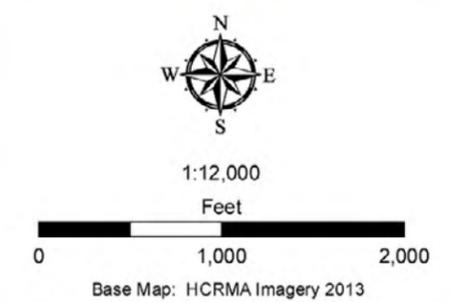
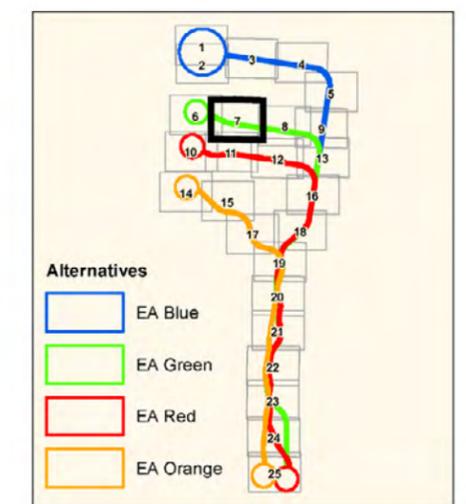




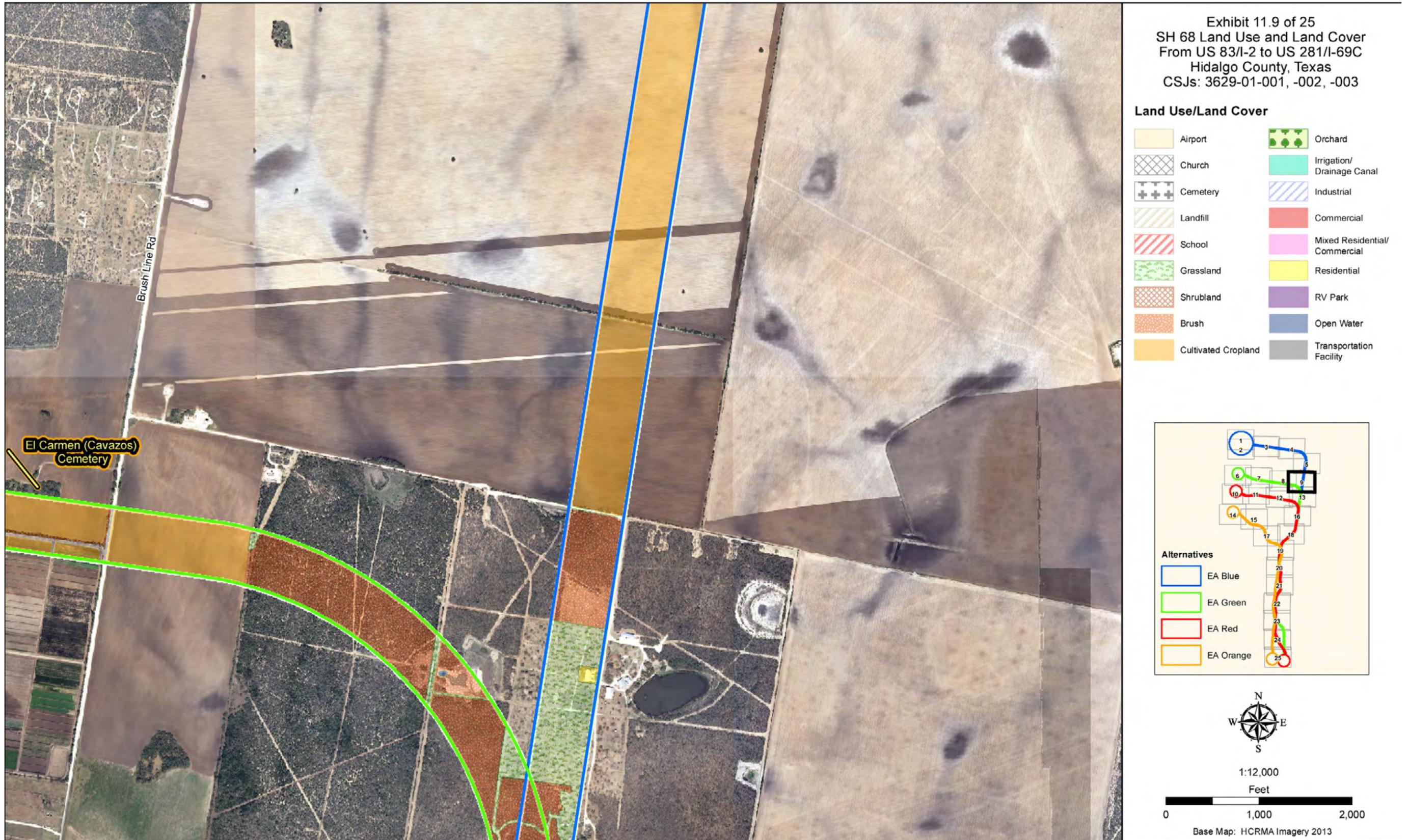
Exhibit 11.7 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility









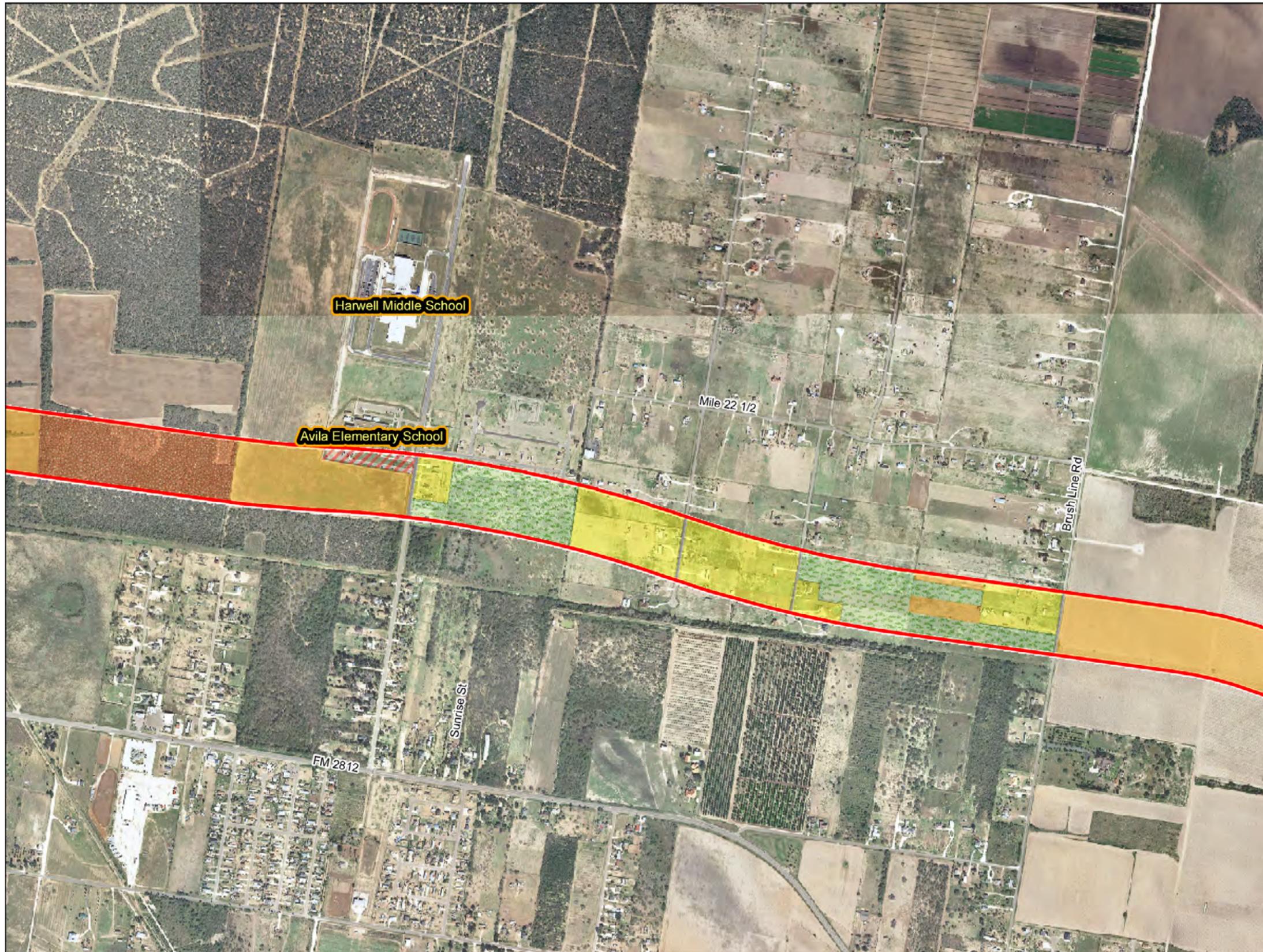
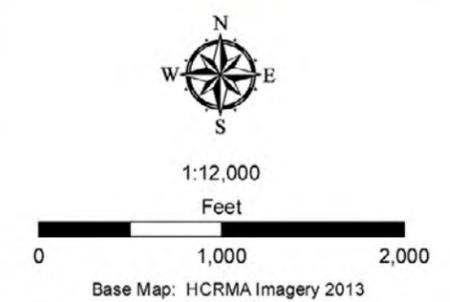
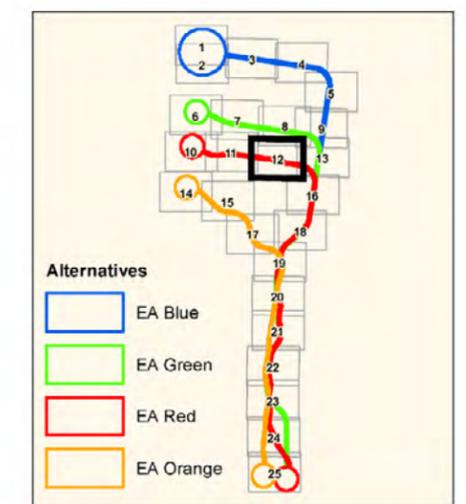
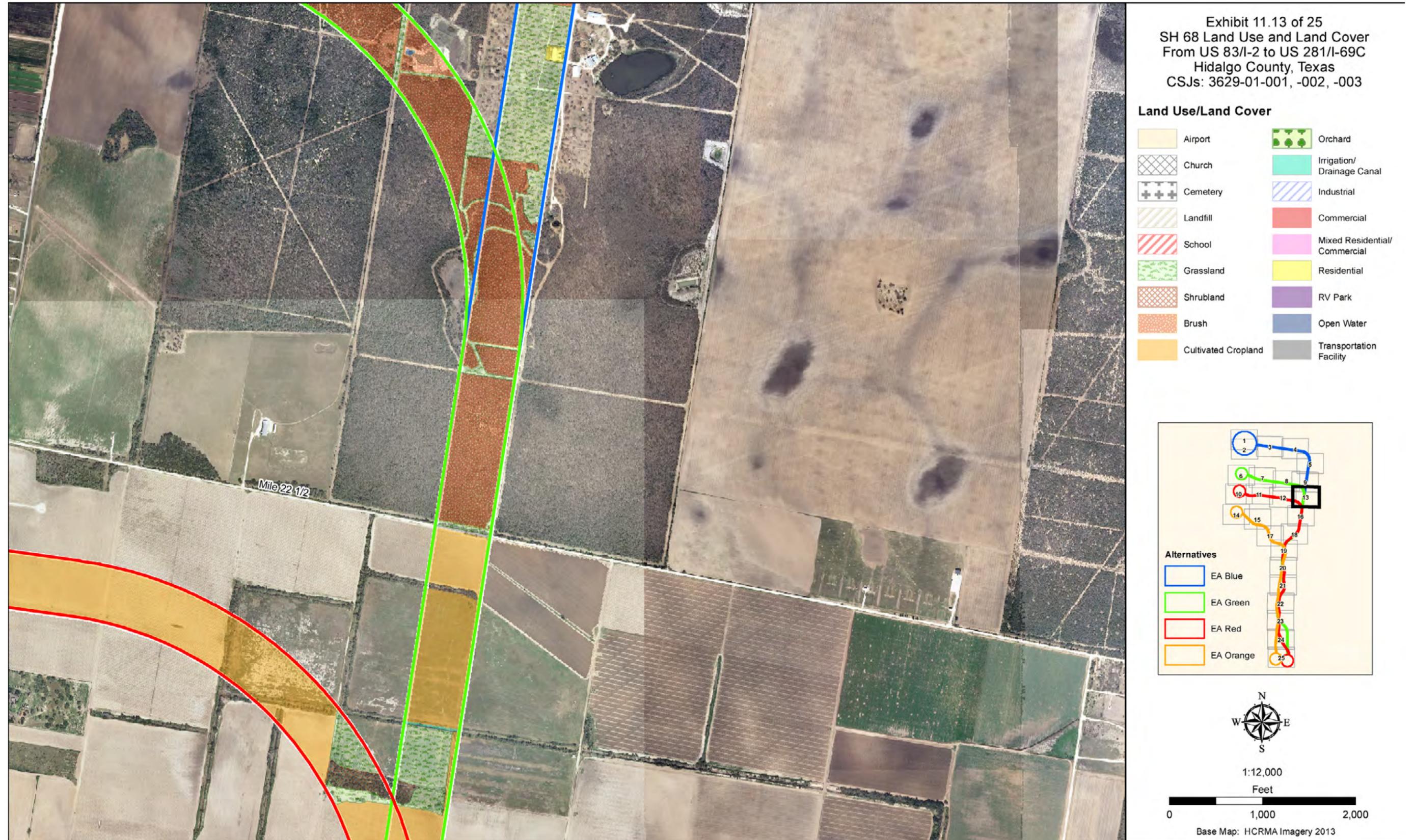


Exhibit 11.12 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility





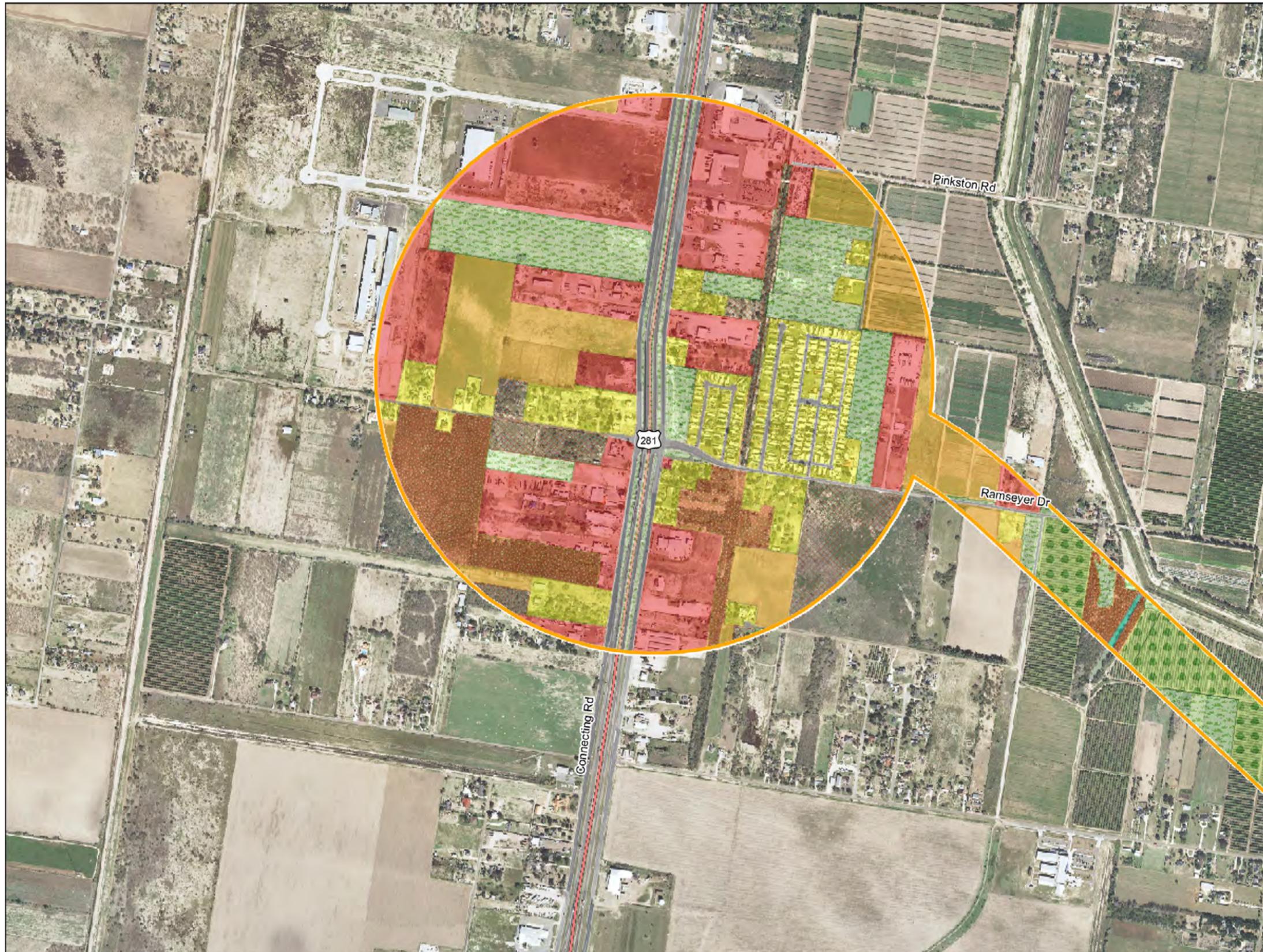
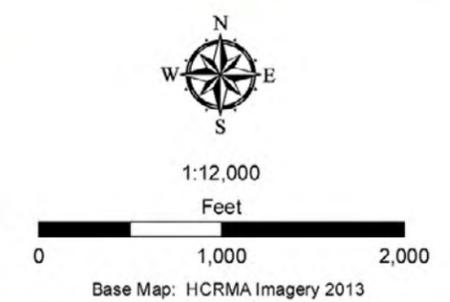
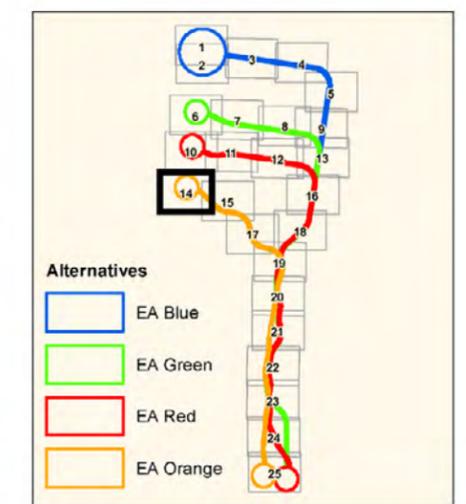


Exhibit 11.14 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility



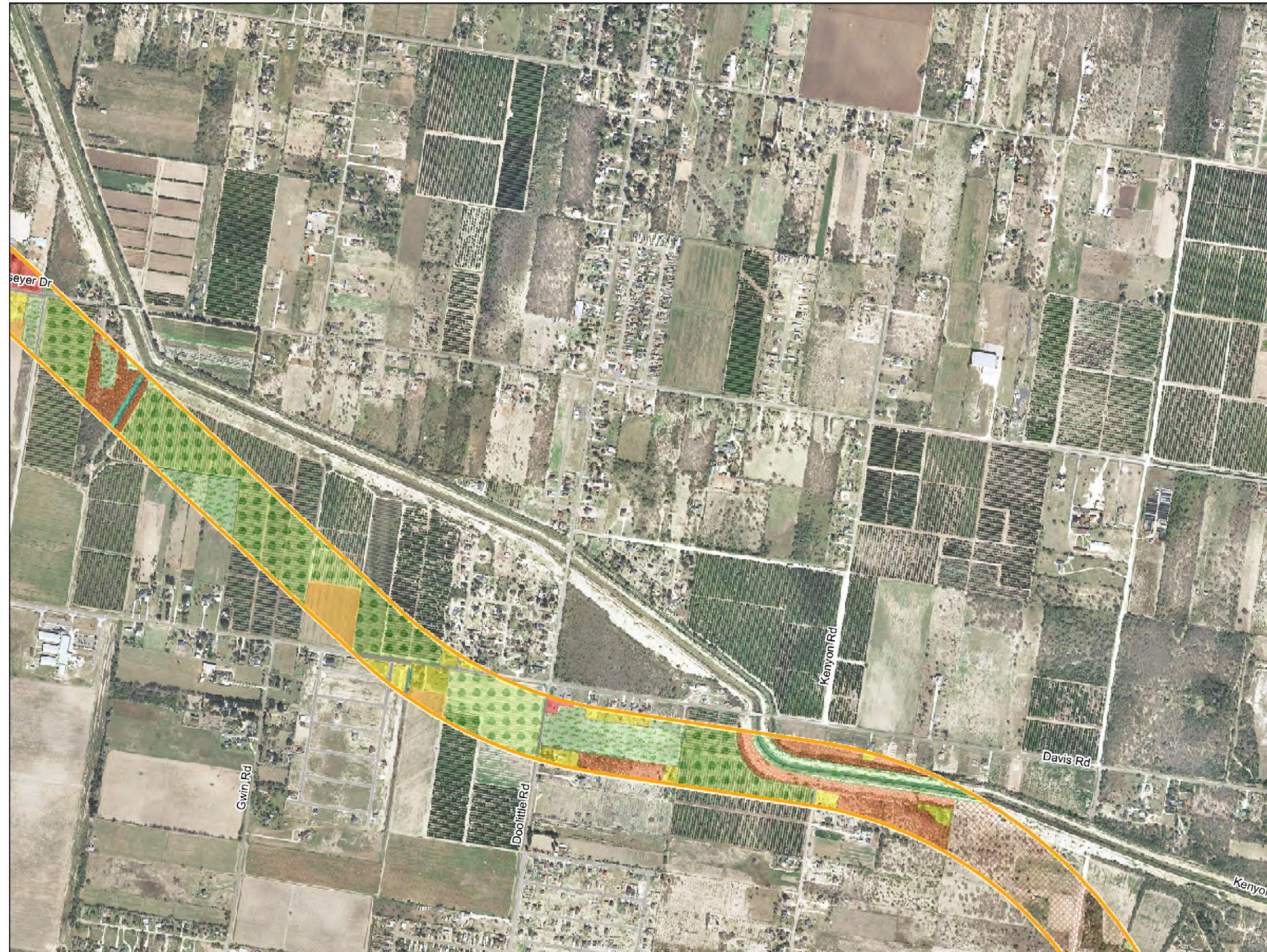


Exhibit 11.15 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

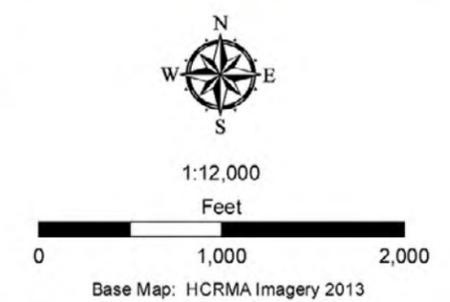
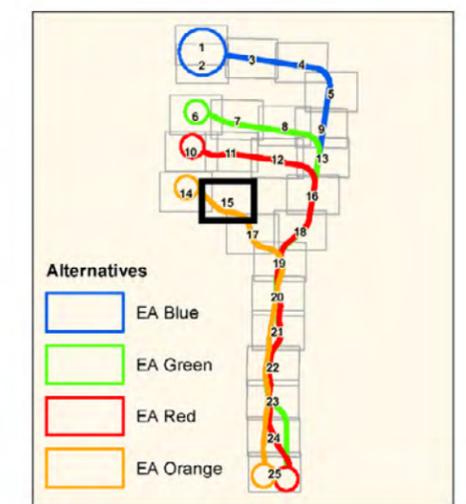




Exhibit 11.16 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility

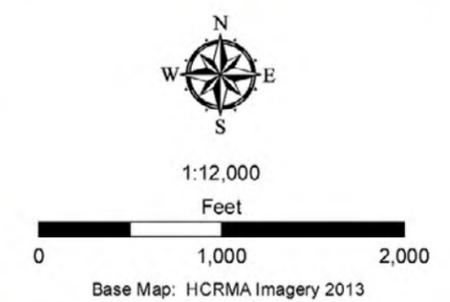
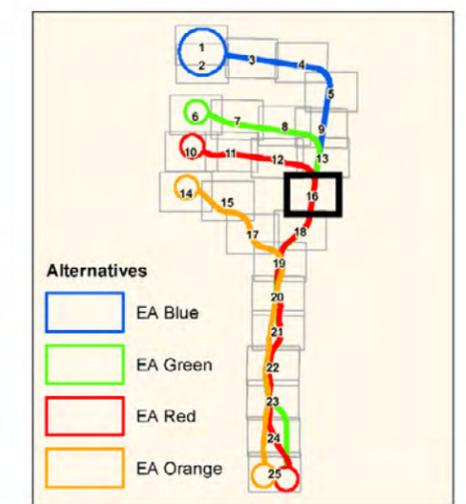
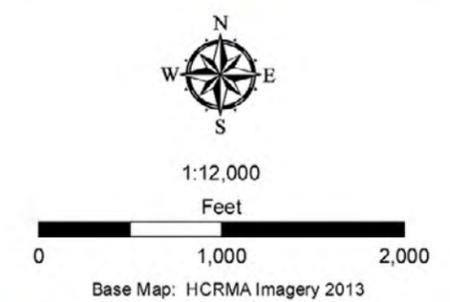
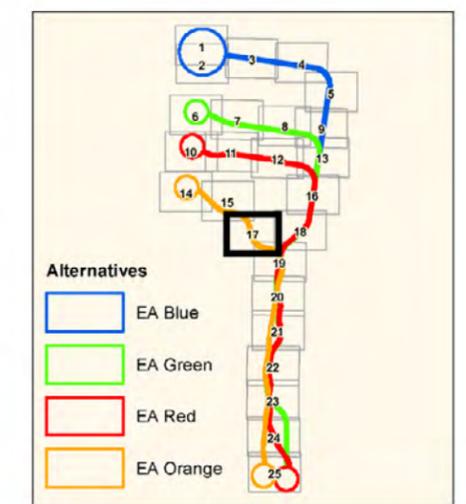




Exhibit 11.17 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility



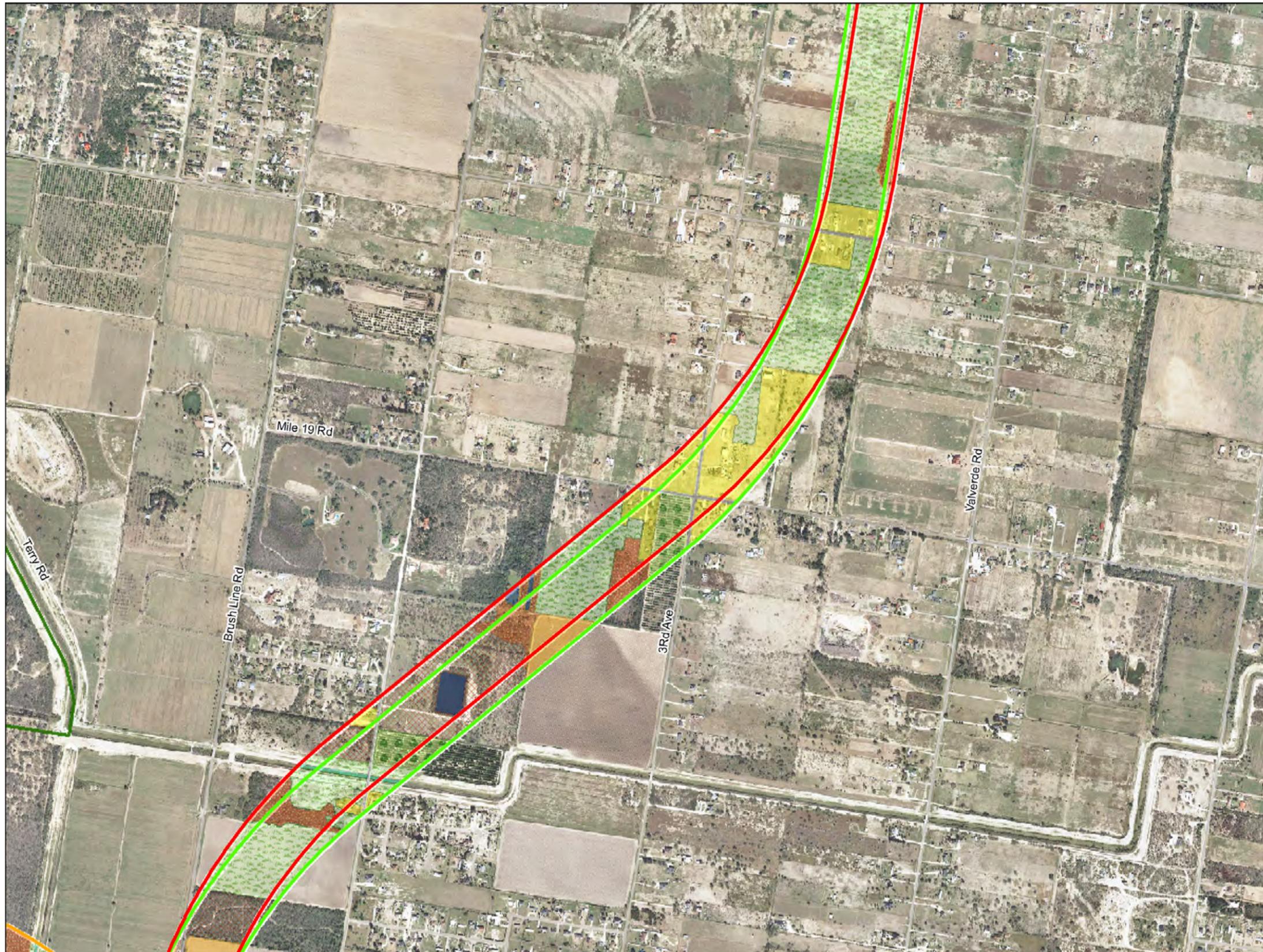
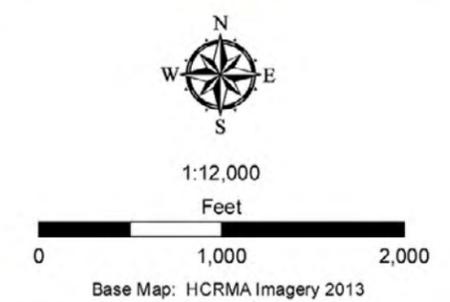
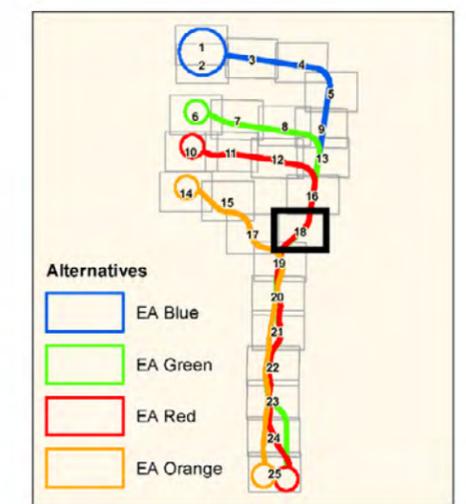


Exhibit 11.18 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility



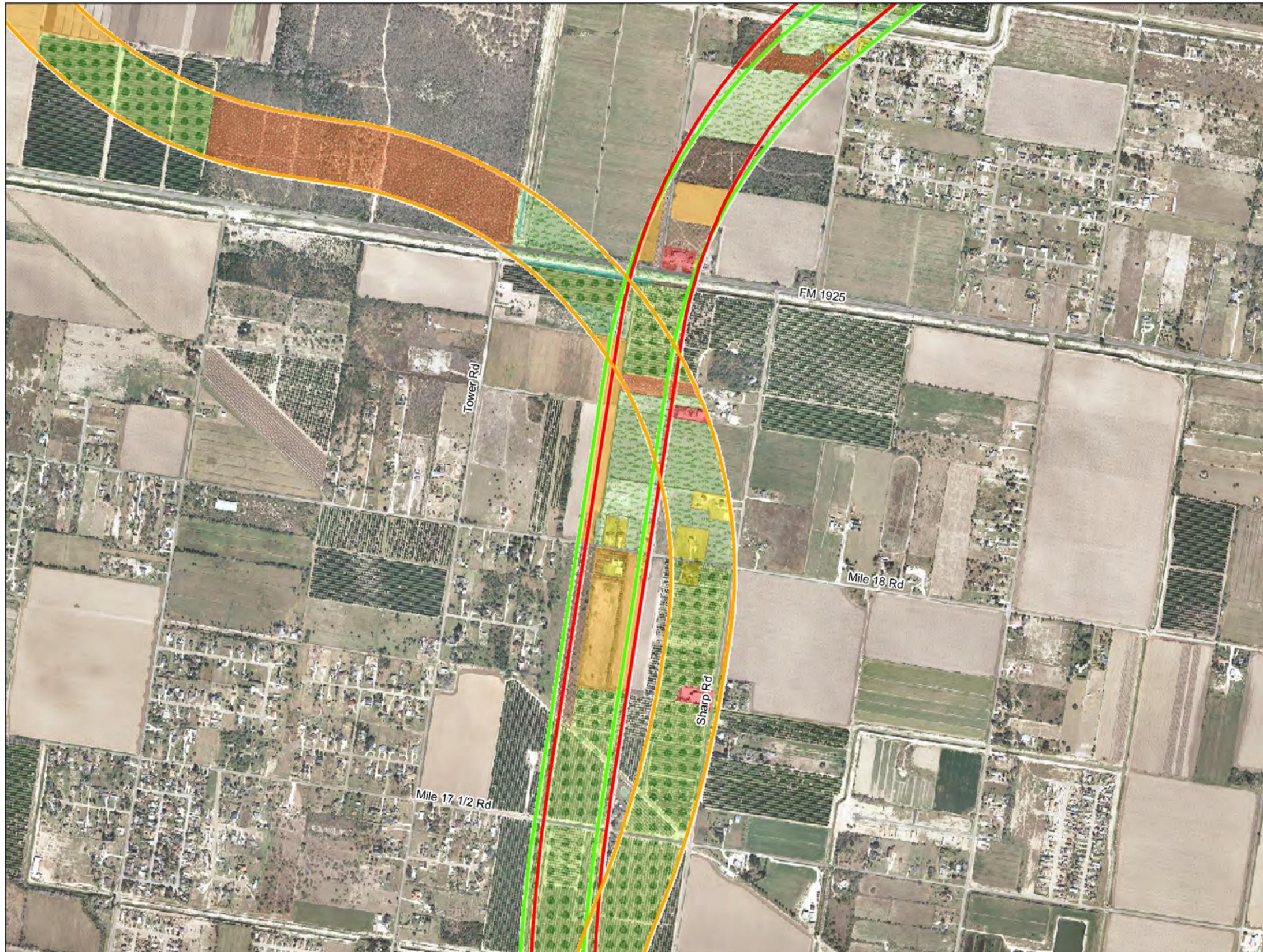
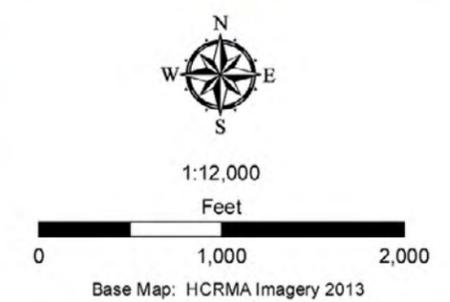
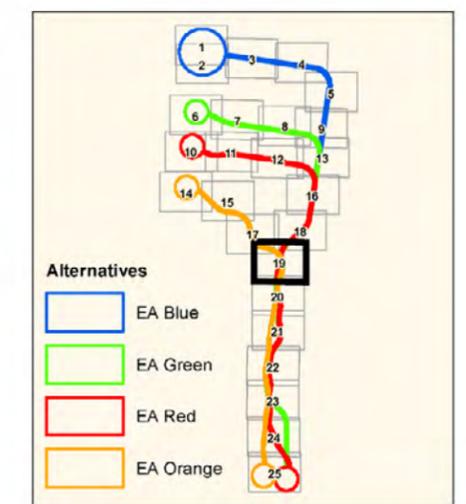


Exhibit 11.19 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

	Airport		Orchard
	Church		Irrigation/Drainage Canal
	Cemetery		Industrial
	Landfill		Commercial
	School		Mixed Residential/Commercial
	Grassland		Residential
	Shrubland		RV Park
	Brush		Open Water
	Cultivated Cropland		Transportation Facility



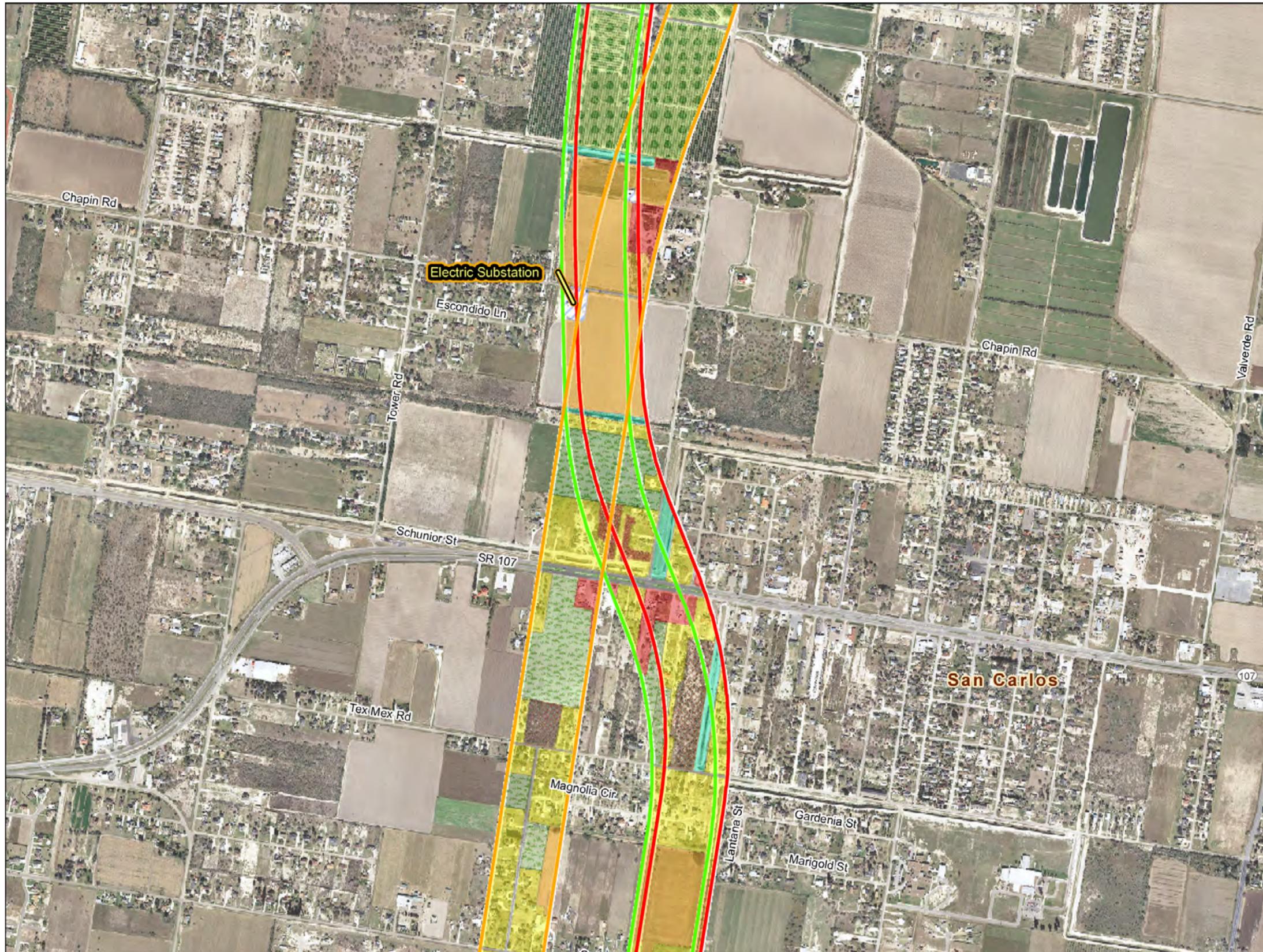
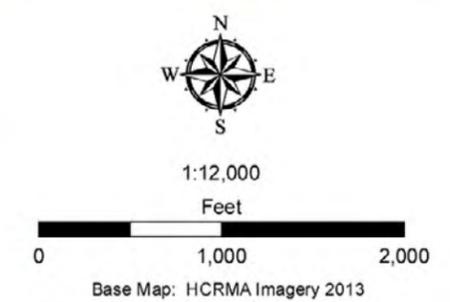
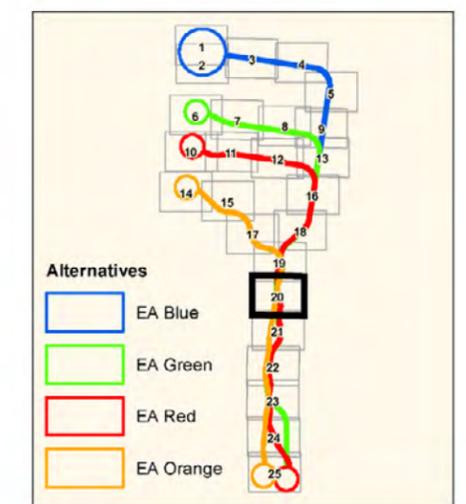


Exhibit 11.20 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Land Use/Land Cover

Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility



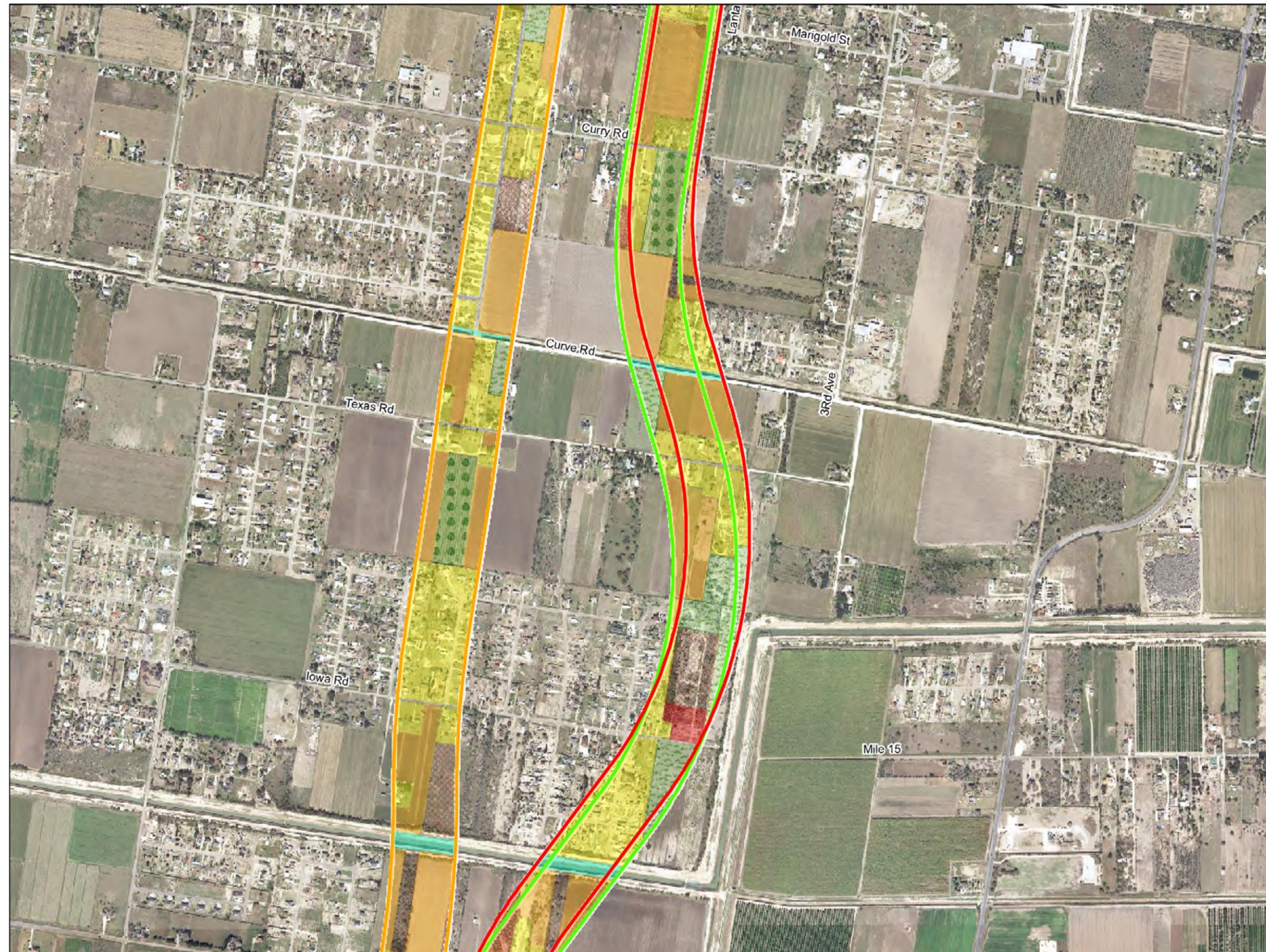
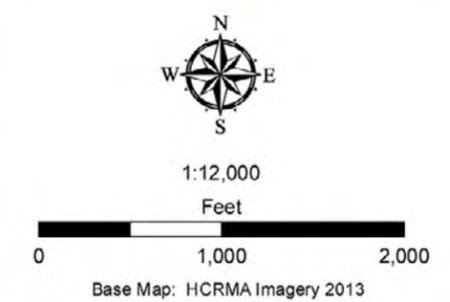
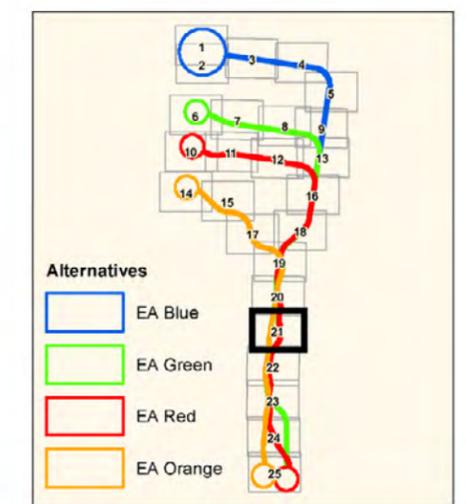
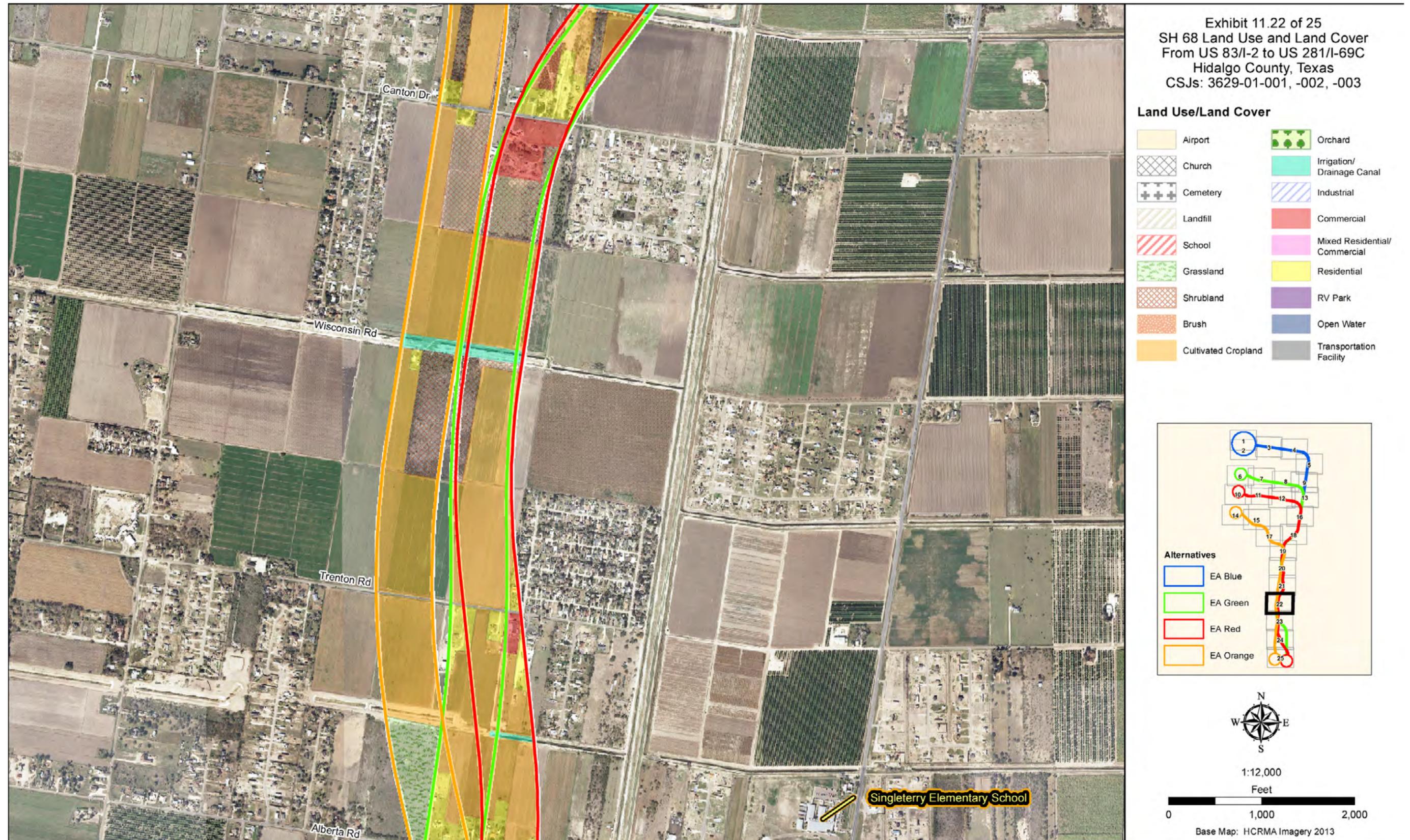


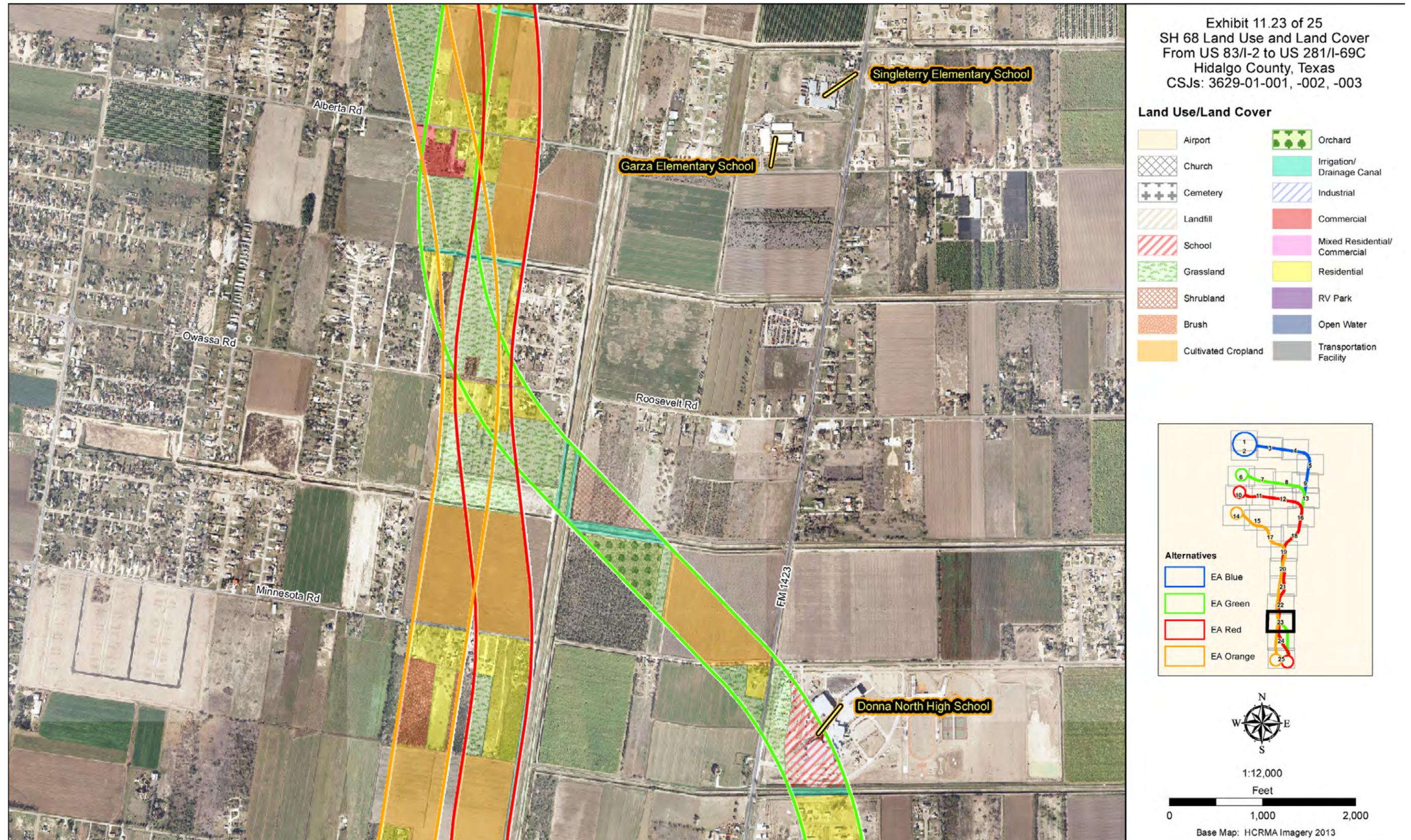
Exhibit 11.21 of 25
 SH 68 Land Use and Land Cover
 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

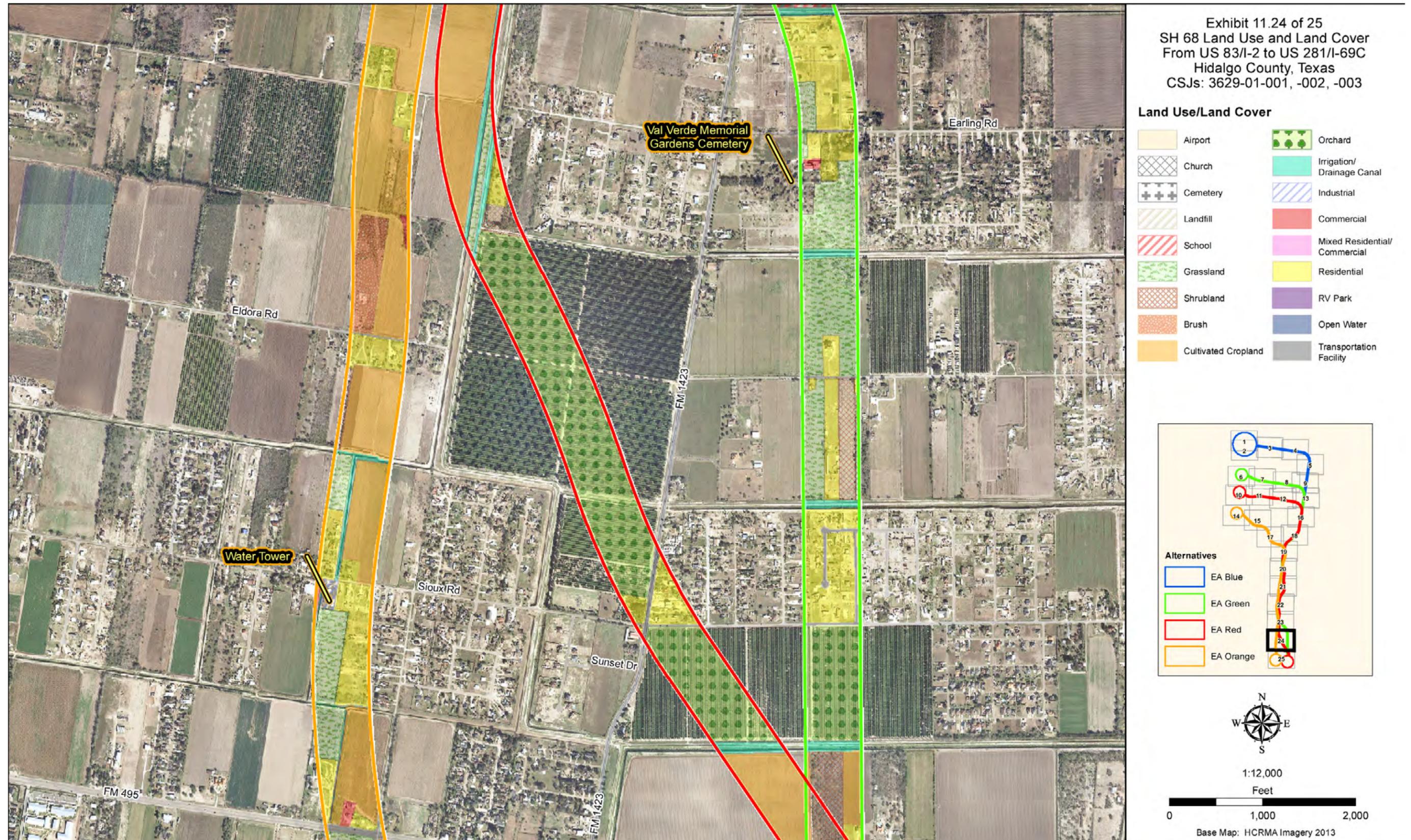
Land Use/Land Cover

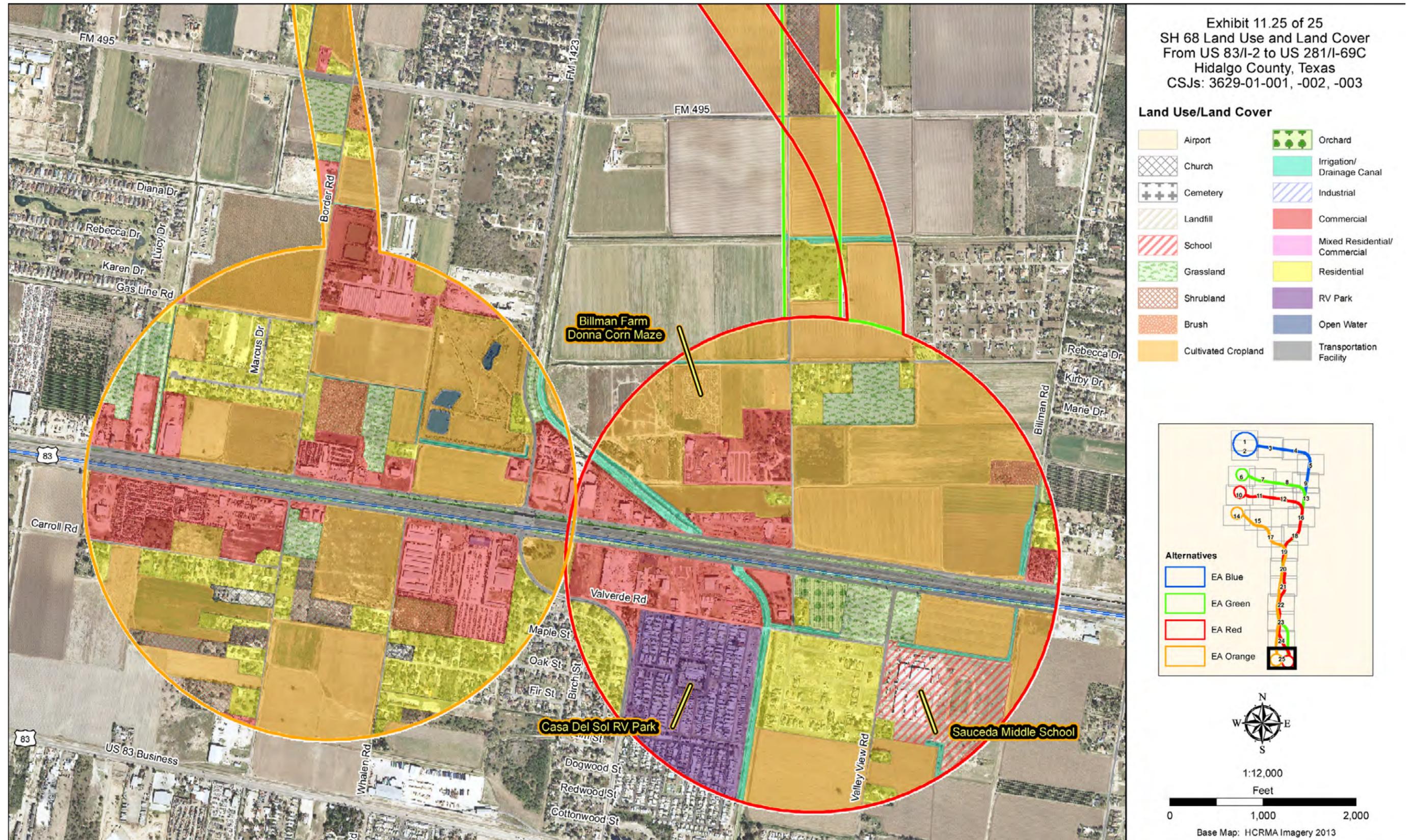
Airport	Orchard
Church	Irrigation/ Drainage Canal
Cemetery	Industrial
Landfill	Commercial
School	Mixed Residential/ Commercial
Grassland	Residential
Shrubland	RV Park
Brush	Open Water
Cultivated Cropland	Transportation Facility











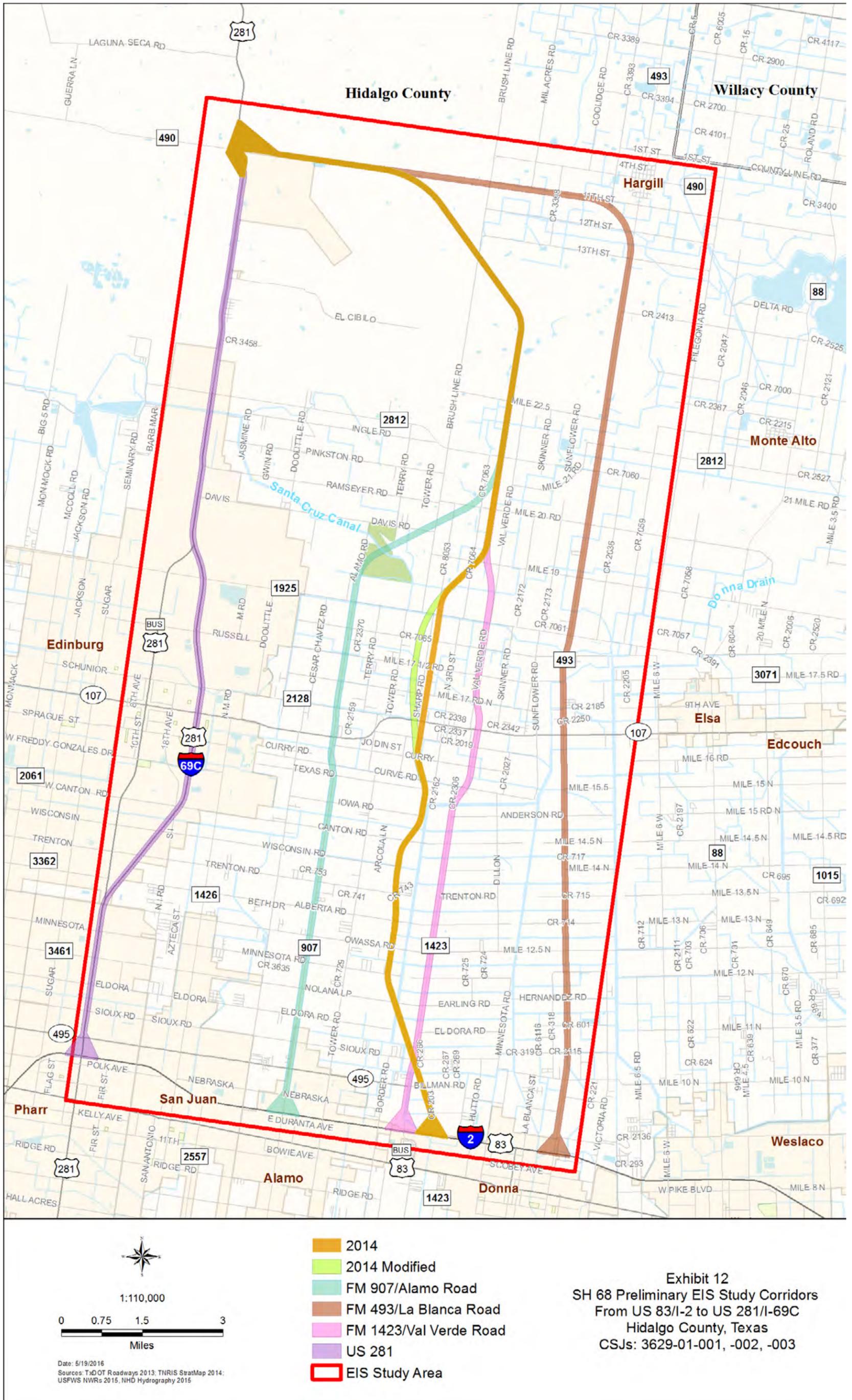


Exhibit 12
SH 68 Preliminary EIS Study Corridors
From US 83/I-2 to US 281/I-69C
Hidalgo County, Texas
CSJs: 3629-01-001, -002, -003

Appendix B

Hidalgo County Loop Section D Alternatives

Appendix B - Hidalgo County Loop Section D Alternatives

Because the HCRMA's alternatives evaluation for Section D was not formally documented in a report or environmental document, the following summary describes the alternatives that were presented to the public, as indicated on exhibits included in public meeting summary reports from the open house public meetings held in May 2008, August 2008, and February 2009 (HCRMA 2008a, 2008b, and 2009).

May 2008 Open House Public Meeting

A series of open house public meetings were held for Sections A, B, C, and D of the Hidalgo County Loop in May 2008. The open house for Section D was held on May 14, 2008, at Edinburg North High School. Registered attendance was 72 persons, consisting of 41 property owners, residents, and business owners, 1 public entity representative, 1 public official, 3 TxDOT staff, and 26 consultants. Displays at this meeting included potential routes for Section D and a list of evaluation criteria.

Five potential alternative routes for Section D were shown on a display at the May 2008 open house (**Exhibit B-1**). Four of the alternatives (Alternatives A through D) connected to US 83 between the cities of Alamo and Donna, but varied in the route and connection to US 281. A fifth alternative (Alternative E) connected to US 83 further east. These initial 2,000-foot-wide corridors were:

- Alternative A (Blue) followed a route generally west of FM 1423 (Val Verde Road) northward to FM 490;
- Alternative B (Red) was a shorter, more easterly route connecting to US 281 at Ramseyer Road, with part of the east-west alignment following a proposed TxDOT realignment of FM 1925;
- Alternatives C (Pink) followed a northward route similar to Alternative B, but turned eastward to connect to US 281 at FM 490;
- Alternative D (Green) also followed a northward route similar to Alternatives B and C, but connected to US 281 at El Cibolo Road (FM 162); and
- Alternative E (Orange), followed a more easterly route, connecting to US 83 east of FM 493 and extending to US 281 at FM 490.

August 2008 Open House Public Meeting

In early August 2008, a second series of open house public meetings for Sections A, B, C, and D of the Hidalgo County Loop were held, after being postponed due to Hurricane Dolly. The open house for Section D was held on August 12, 2008, at Edinburg North High School. Registered attendance was 76 persons, consisting of 36 property owners, residents, and business owners, 1 public official, 5 TxDOT staff, and 34 consultants.

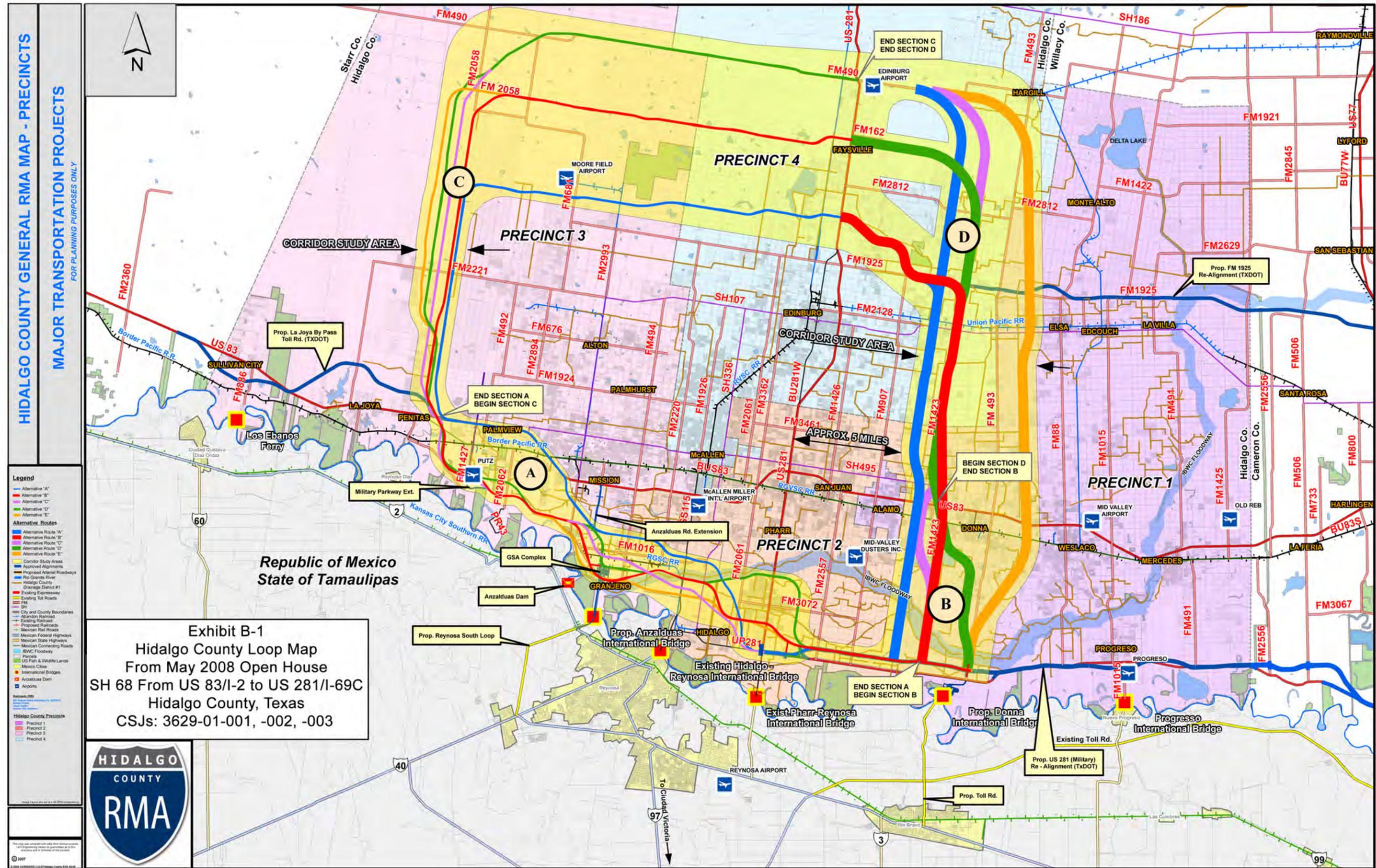
Exhibits from the open house showed generally the same 2,000-foot-wide alternative corridors from the May 2008 open house, except for modifications to Alternatives A and B (**Exhibit B-2**). Alternative A (Red) was identified as the Technically Preferred Alternative. This route followed an alignment generally west of Val Verde Road (FM 1423) and connected to US 281 at Ramseyer Road. Alternative B (Blue) followed an alignment east of Val Verde Road and also connected to US 281 at Ramseyer Road. Alternatives C, D, and E followed the same routes as shown in the May 2008 public meeting. An evaluation matrix for the five alternatives was also presented, based on a 2,000-foot-wide corridor analysis, with relocation/displacement estimates based on structures within ten feet of the proposed ROW.

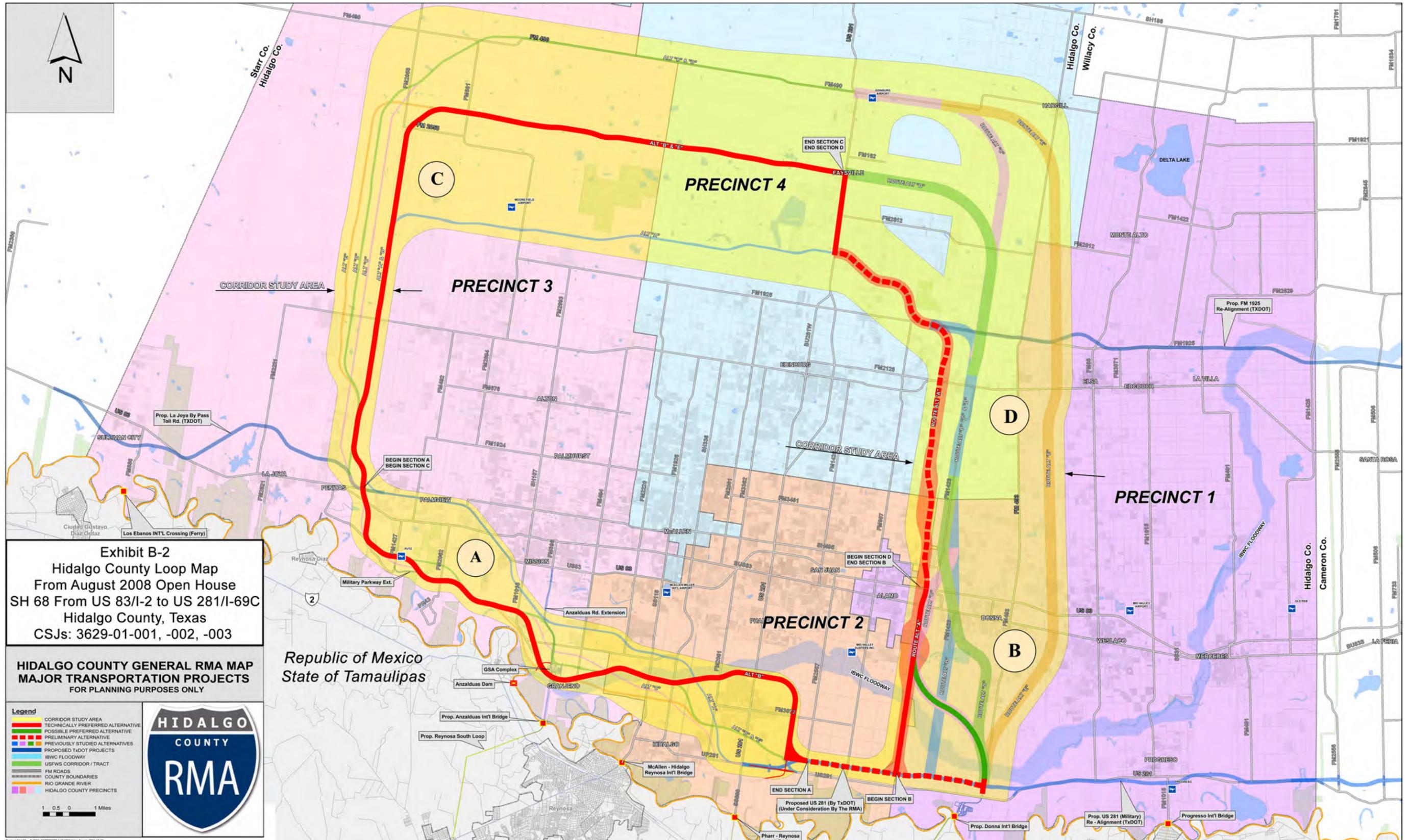
February 2009 Open House Public Meeting

In late February 2009, a third series of open house public meetings were held for Sections B, D, E, and F. The open house for Section D was held on February 26, 2009, at Edinburg North High School. Attendance at this meeting consisted of 32 public attendees and 28 staff.

The displays at this public meeting showed three alternative routes (**Exhibit B-3**): South of El Cibolo Road (Alternative A/Blue), North of FM 2812 (Alternative B/Red), and Ramseyer Road (Alternative C/Pink). Alternative B was identified as the technically preferred alternative. The exhibits also showed potential connections between Section D and Section F of the Loop System. The proposed Section F alternatives extended farther east and had alternative routes that connected to US 281 at FM 490, taking the place of the previously described Pink (C) and Orange (E) Section D Alternatives.

According to the alternatives matrix exhibit, Alternative B route (North of FM 2812) was selected as the technically preferred alternative because it had strong local support, it minimized community impacts, it minimized division of tracts of land by optimizing the use of existing property/lot lines, and it required a lower number of relocations than the other alternatives (**Exhibit B-4**).





Alternatives Evaluation Criteria

Hidalgo Loop Section D

From US 83 Expwy Between the Cities of Alamo and Donna to US 281 North of Edinburg

ALTERNATIVE "B" WAS SELECTED AS THE TECHNICALLY PREFERRED ALTERNATIVE (TPA) FOR THE FOLLOWING REASONS:				
<ul style="list-style-type: none"> * Strong local support * Minimizes community impacts * Minimizes the division of tracts of land by optimizing the use of existing property/lot lines * Requires lower number of relocations 				
Performance Measures	Evaluation Parameters	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
	Units	(South of Cibolo)	(N of FM 2812)	(Ramseyer Road)
Addresses Purpose and Need	Yes/No	YES	YES	YES
Facility Issues				
Total Length of Route	Miles	20.90	19.48	14.80
Right-of-Way (ROW) Taking	Acres	811	779	583
Construction Cost				
Roadway Cost	\$	\$ 57,769,000.00	\$ 49,168,000.00	\$ 46,635,000.00
Overpasses/Direct Connectors	\$	\$ 48,000,000.00	\$ 43,000,000.00	\$ 48,746,000.00
TOTAL Construction Cost	\$	\$ 105,769,000.00	\$ 100,158,000.00	\$ 95,381,000.00
Construction Issues				
Gas Pipeline Crossings/Gas Line Relocation	Each/LF	27/10,613	21/8,632	18/12,727
Utility (Transmission/Distribution Line X-ing/Transmission/Distribution Line Relocation)	Each/Each/LF/LF	3/0/0/0	3/0/0/0	4/0/0/0
Irrigation Canal Crossings/Line Crossings/Canal Relocation/Line Relocation	Each/Each/LF/LF	14/15/1,350/6,467	14/21/2,567/3,692	4/19/2,770/3,099
Communication Tower Relocation/Facility Building	Each/Each	0	0	4/1
Stream-Creek Crossings/Low Drain Area X-ings	Each/Each	0/40	0/39	0/34
Railroad Crossings	Each	0	0	0
Exist. Drain Ditch X-ings/Prop. Drain Ditch X-ings	Each	8/6	9/5	5/6
Human Environment				
Potential Relocations/Displacements				
Residential	Each	109	52	115 *
Commercial	Each	4	7	10
Industrial	Each	0	0	0
Parks	Each	0	0	0
Schools	Each	0	0	0
Churches	Each	0	0	0
Cemeteries	Each	0	0	0
Other Public Facilities	Each	0	0	0
Private Irrig Pump System	Each	1	0	0
Oil/Gas Facilities	Each	1	0	1
Wildlife Refuge	Each	0	0	0
Potential Hazardous Materials Sites	Each	4	3	2
Potential Impacts on Sensitive Receptors				
Noise Receivers	Each	8	13	4
Air Receptors	Each	29	31	37
Cultural Resource Impacts				
NRHP Listed Historic Structures	Each	0	0	0
Recorded Archaeological Sites	Each	0	0	0
Natural Environment				
Potential Water Resources Impacts				
100-Year Floodplains (FEMA)	Acres	73	68	40
Stream-Creek Crossings/Low Drain Area X-ings	Each	0/40	0/39	0/34
Wetlands (NWI)	Acres	0	0	0
Threatened/Endangered Species Potential				
Flora (Based on Potential Habitat)	Yes/No	Yes	Yes	Yes
Fauna (Based on Potential Habitat)	Yes/No	Yes	Yes	Yes
Vegetation				
Residential	Acres	80	75	79
Commercial	Acres	18	22	32
Riparian Community	Acres	14	18	5
Scrub Shrub/Brush Community	Acres	167	67	47
Grassland/Pastures	Acres	104	112	100
Farmland	Acres	428	485	320
Note:				
* Includes denial of access to 8 residential lots with improvements. 2/24/2009				

Exhibit B-4
 Alternatives Evaluation Matrix
 From February 2009 Open House
 SH 68 From US 83/I-2 to US 281/I-69C
 Hidalgo County, Texas
 CSJs: 3629-01-001, -002, -003

Appendix C

Technical Memorandum: SH 68 Alternatives Evaluation Methodology (Draft)



TECHNICAL MEMORANDUM

SH 68 ALTERNATIVES EVALUATION METHODOLOGY (DRAFT)

Project Title: SH 68 **Date:** December 17, 2014
Consultant: RJ RIVERA Associates, Inc. (RJRA)
Subject: Evaluation of Alternative Study Corridors for the Proposed SH 68
CSJ: 3629-01-001
To: Texas Department of Transportation (TxDOT)
Prepared by: Peter Magaro, RJRA

<i>INTRODUCTION</i>	1
<i>BACKGROUND</i>	2
<i>SCREENING AND EVALUATION</i>	6
<i>EVALUATION CRITERIA</i>	7
<i>QUANTITATIVE ASSESSMENT</i>	9
<i>QUALITATIVE ASSESSMENT</i>	19
<i>CONCLUSION</i>	26
<i>REFERENCES</i>	29
<i>ATTACHMENT A</i>	31

INTRODUCTION

This memorandum presents the evaluation methodology of alternative study corridors for the proposed State Highway (SH) 68. Project alternatives for SH 68 were preceded by studies accomplished by the Hidalgo County Regional Mobility Authority (HCRMA).

The more recent Texas Department of Transportation (TxDOT) study identifies numerous criteria, which have been defined to allow an appropriate evaluation of alternatives for the proposed project. The criteria were identified for the project on the basis of safety; mobility; community and environment; feasibility and design; cost effectiveness; and economic factors. These criteria categories are associated with the goals, needs, and purpose of the proposed

project, which are expected to improve the driving experience in the area and minimize impacts to surrounding communities and the environment.

The roadway network in the Lower Rio Grande Valley, including Hidalgo County, continues to be strained due to international trade and local traffic. To facilitate traffic continuity and relieve congestion, the Texas Transportation Commission officially designated a new road extending from US 83 to US 281 as SH 68—the proposed project. To take advantage of previous studies and public input, three of the alternative alignments for the proposed project were originally adapted from the former Section D of the Hidalgo County Loop project. The alternatives from the Loop project and an additional two alternatives were initially evaluated for the proposed project.

BACKGROUND

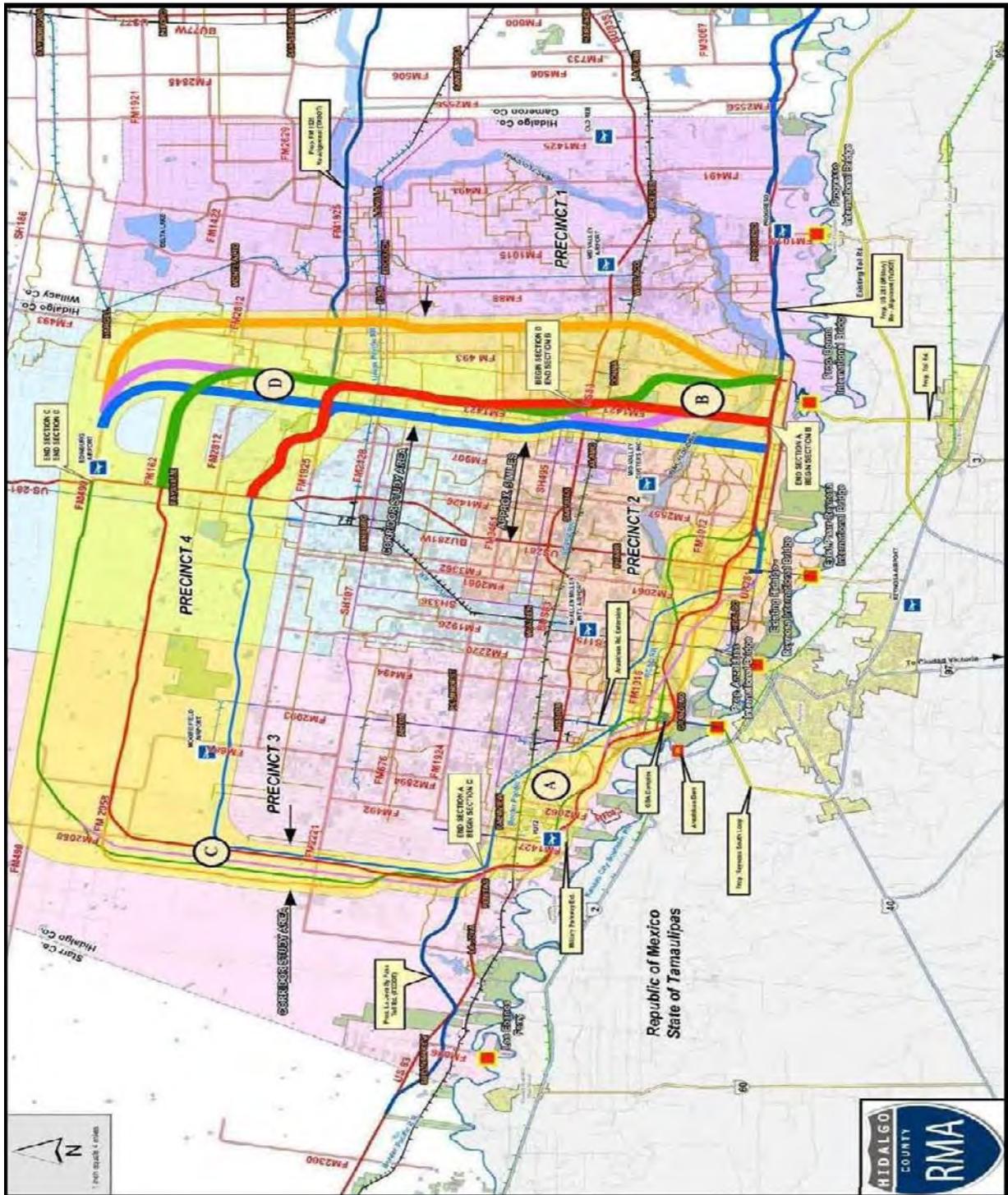
In 1996, the Hidalgo County Metropolitan Planning Organization (HCMPO) and TxDOT Pharr District agreed on the need to construct a loop within a corridor study area. From 2000 to 2004, Hidalgo County and the HCMPO identified a need for a new eastern roadway connection between US 83 and US 281. During that time, they performed route/corridor studies as part of the Hidalgo County Loop project. In 2002, the Hidalgo County Commissioners Court conducted a route study to develop an entire loop highway system around the perimeter of the major cities and the outer Hidalgo County limits. This corridor was presented at various stakeholders meetings and public information workshops. The technically preferred corridors were approved in April 2003 (HCRMA 2013).

In 2005, the HCRMA was created to develop and finance various projects within Hidalgo County, including the Loop project. In 2007, the HCRMA continued to advance the Loop project, and selected Hidalgo County Road Builders to oversee its development (**Figure 1**). The Loop project was divided into various portions containing independent utility with its Section D representing the proposed SH 68 project (**Figure 2**). As shown in **Figure 2**, the study area, developed and evaluated by HCRMA, consisted of a six-mile wide area, which is highlighted in yellow.

From 2007 to 2009, the HCRMA continued to study and refine various alignments making up different portions of the Loop project. The studies included obtaining input from stakeholders and the general public at workshops and meetings. In addition to developing more defined alternative alignments within the established corridors, the HCRMA decided to study a new mid-valley corridor study area. This new corridor would provide needed mobility from the newly proposed Donna International Bridge, presently under construction, to access US 83 and US 281 north of the county.

In 2009, the feasibility of the original Hidalgo Loop concept was reevaluated. This led to the removal of the Hidalgo Loop, as previously envisioned from the *2010-2035 Hidalgo County Metropolitan Transportation Plan*. As a result, the HCRMA redefined and advanced two independent projects (the Hidalgo International Bridge Trade Corridor (IBTC) and the SH 365/Trade Corridor Connector) to address the regional transportation needs relating to border crossing traffic on the local street network and connectivity to the freeway system and local freight facilities (HCRMA 2013).





Source: Hidalgo County Regional Mobility Authority 2005

Figure 1: General Study Area Map

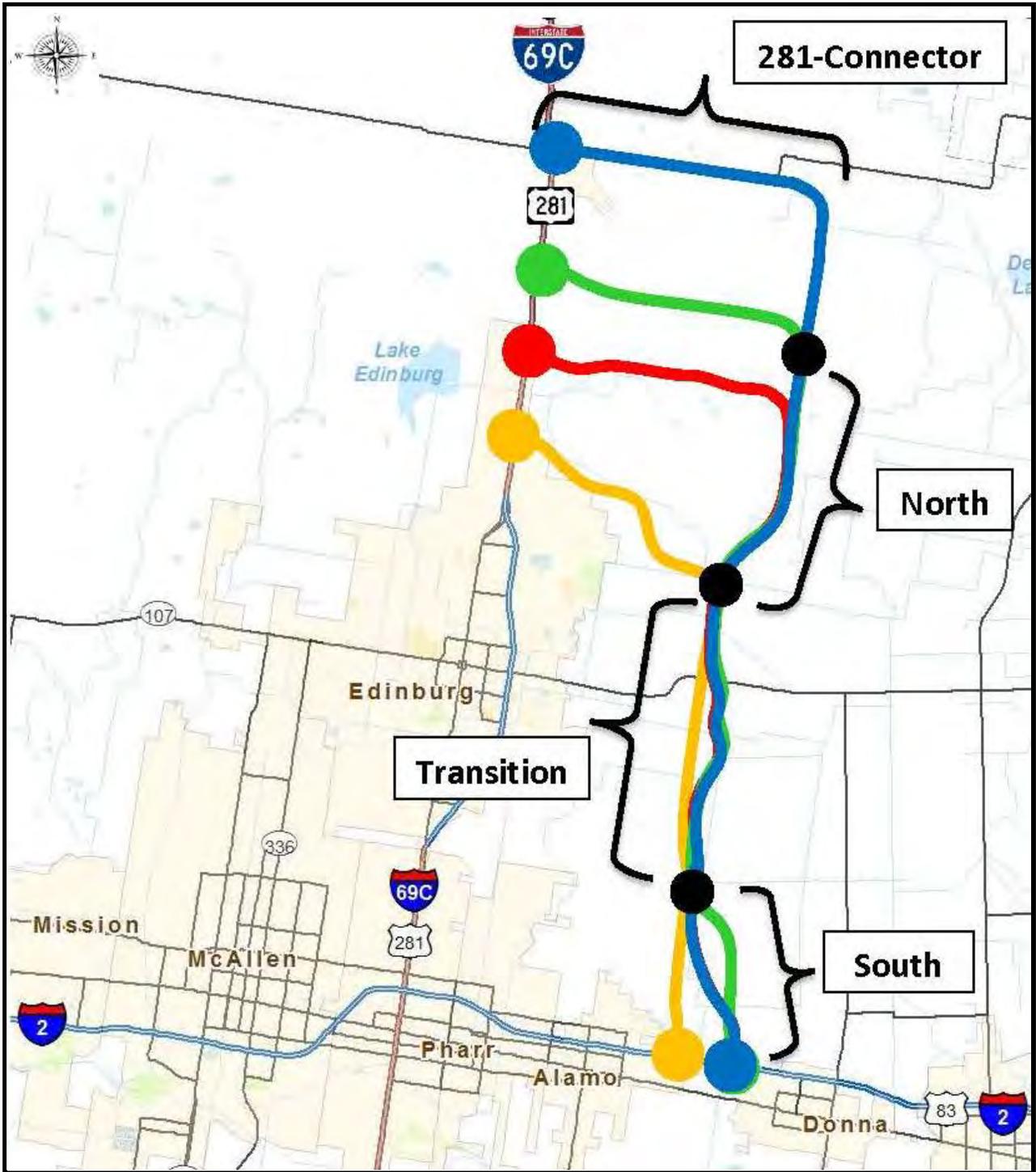


Figure 3: Proposed Project Sections

In 2010, a public meeting was held to present to the public the evaluation of the alternatives shown in **Figure 2** (HCRMA 2013). In 2014, TxDOT continued the study of the alternatives adopted from previous studies for the evaluation of SH 68 alternative alignments.

The Blue, Green, Red, and Orange alternatives were evaluated within the context of the most recent study evaluation methodology. As shown in **Figure 3**, the four alternatives were separated into the four different Sections—South, Transition, North and 281-Connector sections, which make up a total combination of 24 possible routes. The initial route development, refinement, evaluation, further refinements, and screening were based on the following general conditions:

- A 70 mile/hour design speed;
- Heavy truck (WB-67) design vehicle;
- Baseline environmental constraints; and
- Minimization of impacts.

SCREENING AND EVALUATION

The screening and evaluation of project alternatives (made up of 24 possible routes) has been an iterative process that began with preliminary project goals. Goals were established early in the project to provide a basis for the development of alternative alignments. The purpose and need of the proposed project were used to refine the project alternatives. In addition to project goals, and the purpose and need, the development of project alternatives involved the consideration of future travel patterns, physical site limitations, potential impacts, and connections with the existing roadway network and major destinations. Specifically, the project alternatives were developed to:

- Include grade separations at major crossings;
- Include specifications to safely and efficiently accommodate heavy vehicles;
- Provide additional roadway capacity;
- Provide connectivity with other major existing and planned facilities;
- Provide additional north-south facility between US 83 and US 281 to provide alternative route in case of incident on US 281, and for an alternative hurricane route;
- Minimize or avoid impacts to social resources;
- Minimize or avoid impacts to ecological or natural resources;
- Minimize or avoid impacts to hazardous material sites and water wells;
- Maximize connection with the International Bridge Trade Corridor (IBTC) Project; and
- Minimize project costs.

Evaluation criteria for the proposed project were separated into the following goals: safety, mobility, community and environment, feasibility/design goal, cost effectiveness goal, and economic factors. The alternatives evaluation was conducted through two iterations of scoring—quantitative and qualitative. The quantitative assessment included the evaluation of criteria under the community and environment goal. Criteria associated with project goals were evaluated for the alternatives to identify a recommended alignment.



The Blue, Green, Red and Orange alternatives (600-foot study corridors) were compared and evaluated within project sections. There were two to four alternative study corridors within each project section. The total combination of alternatives provides 24 possible routes for the proposed project.

Quantitative and qualitative evaluations were conducted to compare the applicable alternatives within each project section. A recommended alternative was selected from each section based on the best alternative scoring. Thereafter, each of the recommended alternative study corridors were connected as the recommended study corridor for the proposed project.

EVALUATION CRITERIA

The screening of alternatives consisted of an in-depth evaluation of the project alternatives left over from the previous studies, which were separated into the four project sections. Evaluation criteria were identified and defined in order to select a route from the combination of alternatives within each section to be carried forward into the development and environmental processes. The criteria were defined so that they could be measured, counted, calculated, or qualified for each alternative within each project section. Appropriate units of measurement were assigned to each criterion depending on the resource or transportation element being measured. Criteria that were qualitatively assessed will not have a unit of measurement. **Table 1** presents the descriptions of the evaluation criteria and units of measurement for each criterion, where applicable.

Table 1: Descriptions of Evaluation Criteria

Evaluation Criteria	Criteria Descriptions
Safety Goal	
Provides Grade Separations at Major Crossings	Where the proposed alignment would go under or over another road, railroad, or other crossing.
Provides route for Larger/Heavier Vehicles	The number of miles for each alternative by measuring the centerlines from US 83 to US 281.
Accommodates Bicycles and Pedestrians	Route would be designed to accommodate bicycles and pedestrians.
Mobility Goal	
Additional Capacity Proposed	Miles for each alternative multiplied by the number of proposed lane widths (alternative length*total number of lanes*lane width).
Provides Continuous Major Route Between I-2 and I-69C	An alternate route for drivers to get from I-2 to I-69.
Enhances System Access and Connectivity	Access and connectivity to the local and regional roadway network.
Enhances Congestion Management	Miles of existing highway portions (i.e. US 83 and US 281) that would be by-passed for each alternative.



Table 1: Descriptions of Evaluation Criteria

Evaluation Criteria	Criteria Descriptions
Improves Transportation System Reliability	Route would be reliable and would provide an alternative when crashes or construction occur on other major roads. The route would also provide another hurricane evacuation route.
Community and Environmental Goal	
Minimizes Impacts to Residential Property	
Residential Structures Displacement	Number of residential structures within the 600-foot study corridors.
Residential Property/Land Use	Acres of residential properties within the 600-foot study corridors.
Colonias	Number of colonias within the 600-foot study corridor.
Neighborhood Division	Number of neighborhood divisions bisected by each study corridor. neighborhood cohesiveness.
Minimizes Impacts to Commercial/Industrial Property	
Commercial Land Use	Acres of commercial property within the 600-foot study corridors.
Commercial Structures Displacement	Number of residential structures within the 600-foot study corridors.
Industrial Land Use	Acres of industrial property within the 600-foot study corridors.
Minimizes Impacts to Schools	
Schools	Number of schools within the 600-foot study corridors.
School Area	School property within the 600-foot study corridors.
Minimizes Impacts to Churches	
Churches/Places of Worship	Number of churches within the 600-foot study corridors.
Church Land Use	Acres of church property within a 600-foot study corridor for each alternative.
Avoid Cemeteries	
Cemeteries	Number of cemeteries within the 600-foot study corridor for each alternative. Field studies are required to identify recorded archaeological sites.
Cemetery Land Use	Cemetery property within a 600-foot study corridor for each alternative.
Minimizes Impacts to Farmlands/Ranchlands	
Cultivated Cropland	Acres of cropland or row crops within the 600-foot study corridors.
Prime Farmland Soils	Acres of prime farmland within 600-foot study corridors.
Orchard	Acres of orchards within the 600-foot study corridors.
Grassland	Acres of grassland within the 600-foot study corridors.
Brush	Acres of brush land within the 600-foot study corridors.
Shrubland	Acres of shrubland within the 600-foot study corridors.
Minimize Impacts to Irrigation/Drainage Canals	
Drainage and Irrigation Canal Crossings	Irrigation and drainage canals intersecting the 600-foot study corridors.



Table 1: Descriptions of Evaluation Criteria

Evaluation Criteria	Criteria Descriptions
Drainage and Irrigation Canal Land Use	The area of irrigation and drainage canals within the 600-foot study corridor for each alternative.
Other Constraints	
Open Water	Lakes, ponds, streams, resacas (oxbow lakes), and other water bodies.
Transportation Land Use	Roadway to railroad uses.
National Wetland Inventory Features	Number of features defined within the National Wetland Inventory (NWI) defined by the U.S. Fish and Wildlife Service.
100-Year Floodplains	Federal Emergency Management Agency 100-Year Floodplain.
Airport	Airports and other major destinations.
Landfills	Landfill areas within the 600-foot study corridors
Parks and Recreation	Parks and recreation areas within the 600-foot study corridors.
Feasibility/Design Goal	
Driver Expectancy	How common, or familiar, a roadway design is to a driver.
Constructability	This is how complex or typical a route is for construction purposes
Cost Effectiveness Goal	
Approximate Total Relative Cost	Total costs with consideration of benefits to drivers and improvement of regional roadway network.
Economic Factors	
Connectivity to Port of Entry	Alternatives would be identified that connect easily to the proposed International Bridge Trade Corridor at the southern project terminus at US 83.
Located within Hidalgo County Tax Re-investment Zone	This is a specific zone around a planned transportation project established to capture the property tax increment arising from the planned project. These tax increments from the TRZ are used to defray capital costs of a project. The SH 68 project and a few other roadway projects are part of a County TRZ within Hidalgo County (TTI 2007).

QUANTITATIVE ASSESSMENT

The next step of the alternatives evaluation process involved the collection of raw data for the measureable environmental criterion, as described in **Table 1**. Resource data collected for criteria under the community and environment goal were identified within the 600-foot corridors for each alternative within each project section. In addition to the 600-foot corridor, the study area included circular boundaries around major interchanges.

Resource data was collected using aerial photography (HCRMA 2013), GIS applications, desktop studies, field visits, and other applicable reference material. Environmental resource data collected for each alternative study corridor are presented in **Table 2** through **Table 5** by project section. **Exhibit 1** through **Exhibit 4 (Attachment A)** show irrigation/drainage canals, wetlands, and 100-year floodplains located within the study corridors for the South, Transition, North, and 281-Connector sections, respectively.



Exhibit 5 through **Exhibit 8 (Attachment A)** show the land use/land cover constraints located within the 600-foot study corridors for the four project sections.

Table 2: Raw Data for South Section

Environmental Constraints	Units	Blue	Green	Red	Orange
Land Area within 600-foot Corridor	Acres	745.58	747.06	745.58	715.42
RESIDENTIAL CONSTRAINTS					
Estimated # of Houses	Each	104	137	104	141
Residential Land Use	Acres	87.79	119.64	87.79	130.93
RV Park Land Use	Acres	49.68	49.68	49.68	--
Estimated # of Colonias	Each	--	--	--	4
COMMERCIAL/INDUSTRIAL CONSTRAINTS					
Estimated # of Commercial Businesses	Each	11	12	11	17
Commercial Land Use	Acres	68.43	68.82	68.43	124.30
Industrial Land Use	Acres	--	--	--	1.13
SCHOOL CONSTRAINTS					
Schools	Each	1	2	1	--
School Land Use	Acres	29.90	40.36	29.90	--
CHURCH CONSTRAINTS					
Churches	Each	--	--	--	2
Church Land Use	Acres	--	--	--	3.37
CEMETERY CONSTRAINTS					
Cemeteries	Each	--	1	--	--
Cemetery Land Use	Acres	--	1.86	--	--
FARMLAND/RANGLAND CONSTRAINTS					
Cultivated Cropland Land Use	Acres	303.12	253.90	303.12	294.62
Prime Farmland Soils	Acres	669.65	636.93	669.65	656.76
Orchard Land Use	Acres	81.86	31.04	81.86	0.03
Grassland Land Cover	Acres	49.48	86.15	49.48	59.72
Brush Land Cover	Acres	3.32	3.27	3.32	30.25
Shrubland Land Cover	Acres	8.43	24.60	8.43	17.92
Total Farmland/Ranchland	Acres	1,115.86	1,035	1,115.86	1,059.30
IRRIGATION/DRAINAGE CANAL CONSTRAINTS					
Potential # of Canal Crossings	Each	14	17	14	11
Irrigation/Drainage Canal Land Use	Acres	25.30	26.65	25.30	7.80
OTHER ENVIRONMENTAL CONSTRAINTS					
Open Water	Acres	--	--	--	2.85
Transportation Land Use	Acres	38.26	41.08	38.26	42.50
National Wetland Inventory Features	Acres	--	--	--	3.45
100-Year Floodplains	Acres	--	0.16	--	38.39

Table 3: Raw Data for Transition Section

Environmental Constraints	Units	Blue	Green	Red	Orange
Land Area within 600-foot Corridor	Acres	457.13	458.20	457.13	451.86
RESIDENTIAL CONSTRAINTS					
Estimated # of Houses	Each	62	52	62	90
Residential Land Use	Acres	96.82	90.75	96.82	95.98
RV Park Land Use	Acres	--	--	--	--
Estimated # of Colonias	Each	1	1	1	1
COMMERCIAL/INDUSTRIAL CONSTRAINTS					
Estimated # of Commercial Businesses	Each	5	5	5	6
Commercial Land Use	Acres	16.29	19.45	16.29	12.65
Industrial Land Use	Acres	0.86	1.55	0.86	0.62
SCHOOL CONSTRAINTS					
Schools	Each	--	--	--	--
CHURCH CONSTRAINTS					
Churches	Each	--	--	--	--
CEMETERY CONSTRAINTS					
Cemeteries	Each	--	--	--	--
FARMLAND/RANCLAND CONSTRAINTS					
Cultivated Cropland Land Use	Acres	175.48	165.91	175.48	138.59
Prime Farmland Soils	Acres	337.55	332.75	337.55	352.35
Orchard Land Use	Acres	48.09	47.59	48.09	64.24
Grassland Land Cover	Acres	55.28	66.09	55.28	80.26
Brush Land Cover	Acres	6.49	7.94	6.49	3.55
Shrubland Land Cover	Acres	37.74	42.37	37.74	40.08
Total Farmland/Ranchland		660.63	662.65	660.63	679.07
IRRIGATION/DRAINAGE CANAL CONSTRAINTS					
Potential # of Canal Crossings	Each	16	17	16	14
Irrigation/Drainage Canal Land Use	Acres	14.60	11.56	14.60	7.62
OTHER ENVIRONMENTAL CONSTRAINTS					
Transportation Land Use	Acres	5.50	4.99	5.50	8.25
100-Year Floodplains	Acres	53.39	48.94	53.39	69.37

Table 4: Raw Data for North Section

Environmental Constraints	Units	Blue	Green	Red	Orange
Land Area within 600-foot Corridor	Acres	374.17	374.17	278.98	--
RESIDENTIAL CONSTRAINTS					
Estimated # of Houses	Each	22	22	22	--
Residential Land Use	Acres	40.82	40.82	38.56	--
COMMERCIAL/INDUSTRIAL CONSTRAINTS					
Estimated # of Commercial Businesses	Each	1	1	1	--
Commercial Land Use	Acres	1.46	1.46	1.46	--
SCHOOL CONSTRAINTS					
Schools	Each	--	--	--	--
CHURCH CONSTRAINTS					
Churches	Each	--	--	--	--
CEMETERY CONSTRAINTS					
Cemeteries	Each	--	--	--	--
FARMLAND/RANGLAND CONSTRAINTS					
Cultivated Cropland Land Use	Acres	82.77	82.77	44.91	--
Prime Farmland Soils	Acres	179.49	179.49	163.76	--
Orchard Land Use	Acres	12.38	12.39	9.92	--
Grassland Land Cover	Acres	134.54	134.54	123.57	--
Brush Land Cover	Acres	55.81	55.81	12.57	--
Shrubland Land Cover	Acres	39.11	39.11	40.17	--
Total Farmland/Ranchland	Acres	504.10	504.10	394.9	
IRRIGATION/DRAINAGE CANAL CONSTRAINTS					
Potential # of Canal Crossings	Each	10	10	7	--
Irrigation/Drainage Canal Land Use	Acres	1.33	1.33	0.92	--
OTHER ENVIRONMENTAL CONSTRAINTS					
Open Water	Acres	3.11	3.11	3.11	--
Transportation Land Use	Acres	4.16	4.16	3.78	--
National Wetland Inventory Features	Acres	3.76	3.76	1.61	--
100-Year Floodplains	Acres	63.94	63.94	27.44	--

Table 5: Raw Data for 281 Connection Section

Environmental Constraints	Units	Blue	Green	Red	Orange
Land Area within 600-foot Alternative Section	Acres	2,570.64	880.91	876.78	849.86
RESIDENTIAL CONSTRAINTS					
Estimated # of Houses	Each	97	60	154	247
Residential Land Use	Acres	86.88	41.89	159.34	90.00
Estimated # of Colonias	Each	3	1	3	2
COMMERCIAL/INDUSTRIAL CONSTRAINTS					
Estimated # of Commercial Businesses	Each	5	6	8	21
Commercial Land Use	Acres	28.33	12.10	21.33	176.23
Industrial Land Use	Acres	--	3.26	--	--
SCHOOL CONSTRAINTS					
Schools	Each	--	--	1	--
School Land Use	Acres	--	--	3.16	--
CHURCH CONSTRAINTS					
Churches	Each	--	1	--	--
Church Land Use	Acres	--	0.98	--	--
CEMETERY CONSTRAINTS					
Cemeteries	Each	--	--	--	--
FARMLAND/RANGLAND CONSTRAINTS					
Cultivated Cropland Land Use	Acres	601.63	392.72	363.98	113.25
Prime Farmland Soils	Acres	899.27	181.84	287.59	468.88
Orchard Land Use	Acres	--	--	--	95.13
Grassland Land Cover	Acres	852.16	103.09	173.54	108.79
Brush Land Cover	Acres	418.50	249.15	59.00	145.11
Shrubland Land Cover	Acres	181.94	44.22	14.71	81.44
Total Farmland/Ranchland		2,953.5	971.02	898.82	1,012.60
IRRIGATION/DRAINAGE CANAL CONSTRAINTS					
Potential # of Canal Crossings	Each	7	--	5	7
Irrigation/Drainage Canal Land Use	Acres	0.70	--	0.02	3.42
OTHER ENVIRONMENTAL CONSTRAINTS					
Airport	Each	1	--	--	--
Airport Land Use	Acres	348.81	--	--	--
Landfill	Each	--	--	1	--
Landfill Land Use	Acres	--	--	53.28	--
Open Water	Acres	6.61	0.16	0.15	--
Transportation Land Use	Acres	45.08	33.34	28.26	36.49
National Wetland Inventory Features	Acres	13.04	1.68	--	1.59
100-Year Floodplains	Acres	493.25	87.67	30.00	163.45

Residential Property

The following four constraints were evaluated to minimize impacts to residential property: estimated number of houses, residential land use, recreational vehicle (RV) Park land use, and estimated number of colonias.

Number of Houses and Residential Land Use

These constraints include the number of houses and acres of residential land use affected by the alternative study corridors within each section (Blanton 2014). Within the South Section, the Blue and Red alternatives cover the same 600-foot corridor. These alternative corridors have the least impacts to residential property with 104 houses and approximately 88 acres of property impacts. Within the Transition Section, the Green Alternative has the least impacts on residential property with 52 houses and approximately 91 acres of impacts. The Orange Alternative has the most with 90 houses and approximately 69 acres of property impacts. Within the North Section, the Blue and Green alternatives cover the same alignment, which would affect 22 houses and approximately 41 acres of property. Within the 281-Connector Section, the Green Alternative has the least impacts on residential property with 60 houses and approximately 42 acres of property impacts. The Red and Orange alternatives have the most impacts to residential land uses within the 281-Connector Section: 247 houses and 90 acres and 154 houses and approximately 159 acres of residential impacts, respectively. Neighborhood impacts were avoided for the recommended alternatives in each project section.

RV Park Land Use

Within the South Section, area of RV parks affected by the Blue, Green, and Red alternatives had the same impact with approximately 50 acres of RV Park impacts. The Orange Alternative would have no impact on RV Parks within the South Section. No other RV Parks were located within the 600-foot study areas of the Transition, North, or 281-Connector project sections.

Number of Colonias

The Texas Government Code (Title 7, Chapter 775) defines a colonia as an economically distressed geographic area consisting of 11 or more dwellings that are located in close proximity to each other in an area that may be described as a community or neighborhood. These communities may lack basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing. The following colonias are located within the alternative study corridors within each project section (Census Bureau 2010):

- a) **South Section** within the Orange Alternative:
 1. Colonia Guadalupe;
 2. Colonia Guadalupe #2;
 3. Colonia Guadalupe #3;
 4. Colonia Whalen Road.
- b) **Transition Section:**



1. Muniz Subdivision within the Blue and Red alternatives ; and
2. Owassa Road /Tower Road within the Orange and Green alternatives.
- c) **North Section:** there are no colonias located within the alternative corridors in the North Section.
- d) **281-Connector Section:**
 1. Blue Alternative:
 - a) Los Cerritos Subdivision;
 - b) La Coma Heights;
 - c) Harding Gill Tract; and
 2. Green Alternative: Town of Faysville.
 3. Red Alternative:
 - a) Monte Cristo Heights;
 - b) North Santa Cruz Subdivision; and
 - c) Highway Frontage Subdivision.
 4. Orange Alternative:
 - a) Twin Lake Subdivision; and
 - b) Santa Cruz Orange Gardens.

Commercial/Industrial Property

The following three constraints were evaluated to minimize impacts to commercial and industrial properties: estimated number of commercial businesses; commercial land use, and industrial land use (Blanton 2014).

Commercial Businesses and Land Use

Within the South Section, the Orange Alternative would have the highest impacts to commercial property with impacts to 17 businesses and approximately 125 acres of commercial property. The Red and Blue alternatives would have the least impacts to commercial property with impacts to 11 businesses and 68.48 acres. Within the Transition Section, the Orange Alternative would have impacts to six businesses and approximately 13 acres. Within the North Section, the alternatives would impact one business and 1.46 acres of commercial property. Within the 281-Connector Section, the Orange Alternative would impact the most commercial property with impacts to 21 businesses and approximately 176 acres. The Blue and Green alternatives would have the least impacts with five and six impacts to businesses, respectively; and approximately 28 and 12 acres of impacts, respectively.

Industrial Land Use

Within the South Section, the Orange Alternative would impact approximately one acre of industrial land uses. The other alternatives would not impact industrial land uses. Within the Transition Section, the Green Alternative would impact the most industrial land use with 1.55 acres. The Orange Alternative would impact the least amount of industrial land use with impacts to 0.62 acres. Within the north Section, there would be no impacts to industrial land uses.



School Constraints

Three schools were identified within the 600-foot study corridors in the South and 281-Connector sections. Saucedo Middle School, within Donna Independent School District (ISD), is located south of US 83 within the Blue, Green, and Red Alternatives within the South Section.

Donna North High School is located at the corner of Valverde Road and Minnesota Road within the Green Alternative and South Section (Donna ISD 2013). Within the 281-Connector Section, Avila Elementary School, within Edinburg ISD, is located north of FM 2812 on Carmen Avila Road within the Red Alternative (Edinburg ISD 2011).

Churches

Three churches are located within the alternative study corridors (HCRMA 2013 and Blanton 2014). Within the South Section, two churches would be affected within the Orange Alternative—Iglesia Cristo Vive at 503 Border Road and Iglesia Evangelica Cristiana Espiritual at Whalen Road/Church Street. Within the 281-Connector Section, Saint Teresa Catholic Church at 205 Jefferson Avenue is within the study area for the Red Alternative.

Cemeteries

One cemetery was identified within the South Section and Green Alternative. The Valverde Memorial Gardens was identified through the Texas Archeological Research Laboratory (TARL 2013). It is located in Donna, Texas on Valverde Road between Nolana and Earling roads.

Farmland and Ranch Land Constraints

Farmland and ranch lands were derived from preliminary land use/land cover data. Based on aerial imagery (HCRMA 2013) and field work, areas that appear to be cultivated cropland, prime farmlands, orchards, grassland, brush, and shrub land were identified (Blanton 2014).

For the purpose of the evaluation of alternatives, farmland includes cultivated cropland, prime farmland, and orchard. Cropland and orchards were identified through the use of aerial photography (HCRMA 2013). Acreages under prime farmlands were calculated using the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) prime farmland soil designation from the county soil map for Hidalgo County (NRCS 2004). Prime farmland, as defined by the NRCS, consists of soil types that are physically and chemically suitable for growing crops. The designation may not reflect whether or not the land associated with those soils has been or is currently being used for agricultural purposes. If affected above a certain threshold, prime farmland soils within a federally-funded project would require coordination under the Farmland Protection Policy Act.



Ranch land includes areas containing grassland, brush, and shrub land within the alternative study corridors. Data for this criterion was obtained from the land use/land cover data set. Endangered and threatened species and their associated habitats would be assessed during the environmental assessment for the recommended alternative (Blanton 2014).

To enable a comparison between the alternatives within each section, criteria under farmland and ranch land were totaled (**Tables 2 through 5**). Within the South Section, the Blue and Red alternatives would have the greatest impacts on farmland/ranch land with a total of approximately 1,116 acres of impact. The Green and Orange alternatives would have approximately 1,035 and 1,059 acres of impact, respectively.

Within the Transition Section, there was not much difference in the impacts to farmland/ranch land among the alternatives, which range from 661 to 679 acres of impact. Within the 281-Connector Section, the Blue Alternative had the most impacts to farmland/ranchland at approximately 2,954 acres of impacts. The Red Alternative had the least impacts to farmland/ranchland at approximately 899 acres of impacts.

Irrigation and Drainage Canals

This criterion includes the number of drainage and irrigation canals crossing each of the alternative corridors. The canal data is based on the National Hydrography Dataset (USGS 2003). Differentiating between drainage and irrigation canals will occur during the environmental assessment field studies. Within the South Section, the Green Alternative has the most impacts to canals with 17 canal crossings and approximately 27 acres of impact. The Orange Alternative would have the least amount of impacts with 11 canal crossings and approximately eight acres of impact.

Other Environmental Constraints

For the purpose of the alternatives evaluation, other environmental constraints includes: open water, transportation use, wetland features, 100-year floodplain, airport property, landfill property, as applicable.

Open Water

This criterion includes impacts to lakes, ponds, resacas (oxbow lakes), and other bodies of water. Within the South Section, the Orange Alternative would affect approximately three acres of open water. No impacts on open water within the Transition Section. Within the North Section, the Blue, Red, and Orange alternatives have an equal amount of impact to open water of approximately three acres. The Green Alternative would impact slightly less open water with a 2.46-acre impact. Within the 281-Connector Section, the Blue Alternative would impact approximately seven acres of open water; while the Green and Red would affect approximately 0.15 acres.



Transportation Use

Transportation use would include impacts on roadways. Within the South Section, the Orange and Green alternatives would have the most impacts with approximately 43 and 41 acres, respectively. The Blue and Red alternatives would have slightly less impacts with approximately 38 acres of impact to roadways. Within the Transition Section, impacts from the alternative study corridors range from eight to five acres of impact to roadways. Alternatives within the North Section would also have a relatively minimal impact on roadways with approximately four acres of impact. Within the 281-Connector Section, the Blue Alternative would have the greatest amount impact to roadways at approximately 45 acres of impact. The Red Alternative would have the least amount of impacts at approximately 28 acres.

National Wetlands Inventory Features

Many of impacts from the construction of a roadway can be avoided by spanning the stream or wetland with a bridge or culvert. This criterion measures the amount of waters of the U.S. affected by the 600-foot study corridors. The data for this criterion was collected from the National Wetland Inventory (NWI) (USFWS 2014). Waters of the U.S., including wetlands that are unable to be avoided are most likely to be mitigated by a number of mitigation options.

Within the South Section, the Orange Alternative affects approximately three acres of wetland features. No impacts to wetlands within the Transition Section. Within the North Section, the Blue and Green alternatives would affect approximately four acres of wetland features; while the Red Alternative would affect approximately two acres of wetlands. Within the 281-Connector Section, the Blue Alternative would affect approximately 13 acres of wetland features; while the Green and the Orange alternatives would affect approximately two acres. The Red Alternative would have no impacts to wetland features within the 281-Connector Section.

Floodplains

This criterion includes the amount the 100-year floodplain that lies within the alternative study corridors within each section (FEMA 1981). Within the South Section, the Orange Alternative would affect approximately 38 acres of floodplain; while the Green Alternative would impact less than a half of acre. Blue and Red alternatives would have no impacts on floodplains. Within the Transition Section, the Orange Alternative would affect the most amount of floodplain with approximately 69 acres of impact. The Green Alternative would affect the least with approximately 49 acres of impact. Within the North Section, the Blue and Green alternatives would have the greatest impact to floodplains with approximately 64 acres of impact. The Red Alternative would affect less floodplain area with approximately 27 acres of impact. Within the 281-Connector Section, the Blue Alternative would have the most impacts on floodplain with approximately 493 acres of impact. The Red Alternative would have the least with approximately 30 acres of impact. The Green and Orange alternative would affect approximately 88 and 163 acres of floodplain, respectively.



Airport Property

There is one airport within the entire study area for the SH 68 project, which lies with the 281-Connector Section. The South Texas International Airport at Edinburg would be affected by the Blue Alternative with approximately 349 acres of impact on airport land use.

Landfills

During the data collection, one landfill was identified within the SH 68 study area (City of Edinburg 2005 and HCRMA 2013). The Edinburg Regional Landfill would be affected by the Red Alternative within the 281-Connector Section with approximately 53 acres of impact on landfill use.

Parks and Recreation Areas

No parks or recreation areas were identified within 600-foot study corridors within the four project sections. Recreation areas located on school properties have been included in the school calculations.

QUALITATIVE ASSESSMENT

The qualitative assessment was also conducted by comparing the project alternative study corridors within each of the four project sections. For the community and environment goal, the qualitative assessment is based on the data evaluation conducted during the quantitative assessment (presented above). Criteria under the other goals were qualified with the use of specialists' opinion and reasoning, which was used in order to score the alternative corridors for each criterion within the four project sections. The criteria were qualified to enable practitioners to add criteria scores across each project goal for a total score for each alternative. Each criterion was assigned a rating for each alternative.

The qualitative assessment was accomplished using the quantitative assessment, initial scoring, and several reviews by the project team. Definitions of scoring or ranking of the criteria are as follows:

- 0 = Most impacts/least desirable
- 1 = Neutral/somewhat desirable
- 3 = Least impacts/most desirable

The qualitative scores were subtotaled and weighted for each project goal, and totaled for each of the alternative study corridors within the project sections. As shown in **Table 6**, project goals were weighted by assigning heavier weights or percentages to goals that were considered more important for the selection of a recommended alternative. Criteria scores were summed for each goal and calculated with the assigned weights. Thereafter, the weighted scores for each goal were totaled so that each of the alternative study corridors would have a total score and total weighted score for each of the four project sections.



Table 6: Weights for Project Goals

Goals	Evaluation Weights
Safety Goal	15%
Mobility Goal	15%
Community and Environment Goal	50%
Feasibility and Design Goal	5%
Cost Effectiveness Goal	10%
Economic Factors	5%

South Section

As shown in **Table 7**, the alternatives within the South Section would provide the same amount of safety and mobility. Therefore, the criteria under these goals were scored the same for the four alternatives. There are no churches within the alternative study corridors in the South Section, and each corridor lies within the Hidalgo County Tax Re-Investment Zone.

Within the South Section, the Blue and Red alternatives contain the highest total scores. For this section, the total and weighted scores were the same at 56 points. This weighted score is from four to 16 points higher than the other South Section alternative scores. The Blue and Red alternatives have the highest scores because they had the least impacts to residential properties, schools, and cemeteries; better constructability and relative cost; and connectivity to a port of entry.

Table 7: Qualitative Evaluation—South Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Safety Goal—Weighted at 15%				
Provides for Grade Separations at Major Crossings	3	3	3	3
Provides Route for Larger/Heavier Vehicles	3	3	3	3
Accommodates Bicycles and Pedestrians	3	3	3	3
Mobility Goal—Weighted at 15%				
Provides Additional Capacity to Relieve Existing Roads	3	3	3	3
Provides Continuous Major Route Between I-2 and I-69C	3	3	3	3
Enhances System Access/Connectivity	3	3	3	3
Enhances Congestion Management	3	3	3	3
Improves Transportation System Reliability	3	3	3	3
Community and Environment Goal—Weighted at 50%				
Minimizes Impacts to Residential Property	3	1	3	0



Table 7: Qualitative Evaluation—South Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Minimizes Impacts to Commercial/Industrial Property	1	1	1	0
Minimizes Impacts to Schools	3	0	3	3
Minimizes Impacts to Churches	3	3	3	3
Avoid Cemeteries	3	0	3	3
Minimize Impacts to Farmlands/Ranchlands	0	1	0	1
Minimize Impacts Irrigation/Drainage Canals	1	1	1	3
Other Constraints	3	3	3	3
Feasibility/Design Goal—Weighted at 5%				
Driver Expectancy	3	3	3	3
Constructability	3	1	3	1
Cost Effectiveness Goal—Weighted at 10%				
Approximate Total Relative Cost	3	1	3	1
Economic Factors—Weighted at 5%				
Located within Hidalgo County Tax Re-investment Zone	3	3	3	3
Connectivity to Port of Entry	3	3	3	1
TOTALS				
Total	56	45	56	49
Weighted Total	56	40	56	52

0 = Most impacts/least desirable; 1 = Neutral/somewhat desirable; 3 = Least impacts/most desirable

Transition Section

As shown in **Table 8**, the four alternatives within this section would provide the same amount of safety and mobility within the Transition Section. Therefore, criteria under the safety and mobility goals were scored the same for the four alternatives. There are no schools or churches in the alternative study corridors within the Transition Section, and each corridor would have the same level of constructability and driver expectancy.

Within the Transition Section, the Green Alternative contained the highest total scores. For this section, the total and weighted scores were the same at 54 points. This score is from one to four points higher than the other Transition Section alternative scores. The selection of the Green Alternative would avoid impacts to individual houses and residential property as compared to the other alternatives in this section. Alternative alignments within the Transition and North sections were limited because of the locations of two major environmental constraints—Conservation Easement to the Valley Land Fund and Exotic Wildlife 480 Ranch (see **Exhibits 7 and 8** in **Attachment A**). The recommended 600-foot study corridor, within the Transition Section, minimized impacts to these ecological resources by turning to the east of the resources.

Table 8: Qualitative Evaluation—Transition Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Safety Goal—Weighted at 15%				
Provides for Grade Separations at Major Crossings	3	3	3	3
Provides Route for Larger/Heavier Vehicles	3	3	3	3
Accommodates Bicycles and Pedestrians	3	3	3	3
Mobility Goal—Weighted at 15%				
Provides Additional Capacity to Relieve Existing Roads	3	3	3	3
Provides Continuous Major Route Between I-2 and I-69C	3	3	3	3
Enhances System Access/Connectivity	3	3	3	3
Enhances Congestion Management	3	3	3	3
Improves Transportation System Reliability	3	3	3	3
Community and Environment Goal—Weighted at 50%				
Minimizes Impacts to Residential Property	1	3	1	0
Minimizes Impacts to Commercial/Industrial Property	1	1	1	1
Minimizes Impacts to Schools	3	3	3	3
Minimizes Impacts to Churches	3	3	3	3
Avoid Cemeteries	3	3	3	3
Minimize Impacts to Farmlands/Ranchlands	1	1	1	1
Minimize Impacts Irrigation/Drainage Canals	1	1	1	3
Other Constraints	3	3	3	3
Feasibility/Design Goal—Weighted at 5%				
Driver Expectancy	3	3	3	3
Constructability	3	3	3	3
Cost Effectiveness Goal—Weighted at 10%				
Approximate Total Relative Cost	3	3	3	3
Economic Factors—Weighted at 5%				
Located within Hidalgo County Tax Re-investment Zone	3	3	3	3

Table 8: Qualitative Evaluation—Transition Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
TOTALS				
Total	52	54	52	53
Weighted Total	50	54	50	52

* 0 = Most impacts/least desirable; 1 = Neutral/somewhat desirable; 3 = Least impacts/most desirable

North Section

The Blue, Green and Red alternatives are located within the North Section. The Orange Alternative turns towards US 281 before entering into the North Section; therefore, it is not contained within this section. Within the North Section, the study corridors generally covered the same area due to the location of the Conservation Easement to the Valley Land Fund (**Exhibits 7 and 8 in Attachment A**).

The quantitative assessment for the North Section had a limitation because of the shorter length of the Red Alternative within this section. As shown in **Figure 3**, the Red Alternative turns towards US 281 before the northern end of the North Section. As shown in **Table 9**, the Green and Blue alternatives scored higher for the safety and mobility goals. Because the Red Alternative is shorter within the North Section, it scored higher for many of the community and environment criteria. However, the Red Alternative scored less than the other alternatives for many criteria under the other goals because of the Red Alternative's lack of continuity within this section.

As shown in **Table 9**, the Blue and Green alternatives contained the highest total weighted score with 50 points within the North Section. This is 14 points higher than the Red Alternative due to the lack of continuity within this section. The three alternatives in the North Section had the same weighted score of 50 points due to the similarity of alignment.

Table 9: Qualitative Evaluation—North Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Safety Goal—Weighted at 15%				
Provides for Grade Separations at Major Crossings	3	3	3	--
Provides Route for Larger/Heavier Vehicles	3	3	1	--
Accommodates Bicycles and Pedestrians	3	3	3	--
Mobility Goal—Weighted at 15%				
Provides Additional Capacity to Relieve Existing Roads	3	3	1	--
Provides Continuous Major Route Between I-2 and I-69C	3	3	0	--



Table 9: Qualitative Evaluation—North Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Enhances System Access/Connectivity	3	3	0	--
Enhances Congestion Management	3	3	1	--
Improves Transportation System Reliability	3	3	0	--
Community and Environment Goal—Weighted at 50%				
Minimizes Impacts to Residential Property	1	1	1	--
Minimizes Impacts to Commercial/Industrial Property	1	1	1	--
Minimizes Impacts to Schools	3	3	3	--
Minimizes Impacts to Churches	3	3	3	--
Avoid Cemeteries	3	3	3	--
Minimize Impacts to Farmlands/Ranchlands	0	0	1	--
Minimize Impacts to Landfills	3	3	3	--
Minimize Impacts Irrigation/Drainage Canals	1	1	3	--
Other Constraints	1	1	3	--
Feasibility/Design Goal—Weighted at 5%				
Driver Expectancy	3	3	1	--
Constructability	3	3	3	--
Cost Effectiveness Goal—Weighted at 10%				
Approximate Total Relative Cost	1	1	1	--
Economic Factors—Weighted at 5%				
Located within Hidalgo County Tax Re-investment Zone	3	3	1	--
TOTALS				
Total	50	50	36	--
Weighted Total	50	50	50	--

* 0 = Most impacts/least desirable; 1 = Neutral/somewhat desirable; 3 = Least impacts/most desirable

281-Connector Section

As shown in **Table 10**, the alternative study corridors within the 281-Connector Section did not contain cemeteries, and therefore scored the same under this criterion. The Blue Alternative is expected to impact more of the ecological criteria within the 281-Connector Section. However, impacts to the community criteria are relatively low since the Blue Alternative is located farther from urban areas.

Within the 281-Connector Section, the Blue Alternative scored a total of 50 points, which is from eight to 18 points higher than the other alternatives. The weighted score for the Blue Alternative was also 50 points. The weighted score of the Blue Alternative was from 11 to 16 points higher than the other alternatives. As shown in **Table 10**, the Blue Alternative scored higher than the Green Alternative due to the following criteria:

- Provides route for larger/heavier vehicles;
- Provides additional capacity to relieve existing roads;
- Enhances system access and connectivity;
- Improves transportation system reliability; and
- Proximity to the airport.

Table 10: Qualitative Evaluation—281-Connector Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Safety Goal—Weighted at 15%				
Provides for Grade Separations at Major Crossings	3	3	3	3
Provides Route for Larger/Heavier Vehicles	3	1	1	1
Accommodates Bicycles and Pedestrians	3	3	3	3
Mobility Goal—Weighted at 15%				
Provides Additional Capacity to Relieve Existing Roads	3	1	1	1
Provides Continuous Major Route Between I-2 and I-69C	3	3	1	1
Enhances System Access/Connectivity	3	1	1	0
Enhances Congestion Management	3	3	1	1
Improves Transportation System Reliability	3	1	1	1
Community and Environment Goal—Weighted at 50%				
Minimizes Impacts to Residential Property	1	1	0	0
Minimizes Impacts to Commercial/Industrial Property	1	1	1	0
Minimizes Impacts to Schools	3	3	0	3
Minimizes Impacts to Churches	3	0	3	3
Avoid Cemeteries	3	3	3	3
Minimize Impacts to Farmlands/Ranchlands	0	1	1	0
Minimize Impacts to Landfills	3	3	0	3
Minimize Impacts to Irrigation/Drainage Canals	1	3	1	0
Other Constraints	1	3	3	3
Feasibility/Design Goal—Weighted at 5%				
Driver Expectancy	3	3	3	3
Constructability	3	3	3	3
Cost Effectiveness Goal—Weighted at 10%				
Approximate Total Relative Cost	0	1	1	3

Table 10: Qualitative Evaluation—281-Connector Section

Criteria by Goal	Qualitative Scoring of Alternatives*			
	Blue	Green	Red	Orange
Economic Factors—Weighted at 5%				
Proximity to Airport	3	0	0	0
Located within Hidalgo County Tax Re-investment Zone	1	1	1	3
TOTALS				
Total	50	42	32	38
Weighted Total	50	49	34	41

* 0 = Most impacts/least desirable; 1 = Neutral/somewhat desirable; 3 = Least impacts/most desirable

CONCLUSION

Previous HCRMA studies identified three alternatives (Green, Red, and Orange) that have been adapted for the more recent SH 68 alternatives evaluation documented within this memorandum. Previous studies also identified the Blue Alternative and an alternative to widen US 281; however, the US 281 Alternative was removed from further study because it would not meet the project purpose to improve north-south mobility and travel capacity within Eastern Hidalgo County and the Lower Rio Grande Valley region.

During the recent evaluation of SH 68 project alternatives, the Blue, Green, Red, and Orange study corridors within each project section (South, Transition, North, and 281-Connector sections) were studied as 24 possible routes within the study area. As shown in **Figure 4**, the recommended study corridors connect together to form the recommended alignment as the result of the alternatives evaluation. These recommended study corridors had the highest total qualitative and weighted scores within the evaluation methodology presented in this memorandum. In addition to meeting the goals, needs, and purpose of the proposed project, each of the recommended corridors minimized impacts to the environment and maximized the other project goals. The connected study corridors or recommended alignment will be revised with ongoing community input, studies, engineering, and design elements.

As shown in **Tables 2 through 5**, criteria under the community and environment goal were quantitatively evaluated by identifying the locations of each criterion/constraint in relation to the 600-foot study corridors. **Exhibits 1 through 8 (Attachment A)** show the applicable community and environmental constraints. The quantitative evaluation for the community and environment criteria was used to score the applicable criteria during the qualitative evaluation. Criteria under the other goals were not quantitatively evaluated in this fashion. However, measurements were taken into consideration during the qualitative scoring of the other criteria.



The qualitative evaluation, presented in **Tables 7 through 10**, was based upon a comparison of alternatives within each project section for each criterion. The qualitative evaluation of alternatives was conducted for criteria under the project goals using the following weights:

1. Safety (15%);
2. Mobility (15%);
3. Community and Environment (50%);
4. Feasibility and Design (5%);
5. Cost Effectiveness (10%); and
6. Economic Factors (5%).

The community and environment goal was weighted heavier than the other project goals with a weight of 50 percent. Criteria under this goal are considered highly important to the project team and the surrounding community. The other five project goals had lesser weights, which make up the other 50 percent of the weightings.

Within the weighted qualitative evaluation, selection of the recommended alternatives (**Figure 4**) minimized impacts to residential and commercial properties; reduced impacts on schools, churches, cemeteries and canals; and maximized design feasibility. Location of the alternative corridors within the Hidalgo County Tax Re-Investment Zone was also taken into consideration in the selection of the recommended alternative alignments within each section. Safety, mobility, cost, and economic factors were generally the same for the alternatives within each section, and did not play a large role in the evaluation.

The recommended study corridor will be refined so that it will further avoid impacts to social and environmental resources; as well as to improve safety, mobility, and design elements. To assist in the avoidance and minimization of project impacts, the study corridor will be reduced from 600 feet to between 350 and 400 feet of required project right-of-way. A public meeting will be organized to encourage comments on the refined corridor from interested residents and stakeholders in the Spring of 2015.





Figure 4: Recommended Study Corridor

REFERENCES

- Blanton & Associates, Inc. 2014. Preliminary desktop and field data collection of land use and land cover information for SH 68 study area.
- Donna Independent School District (ISD). 2013. 2013-2014 District and Campus Boundaries.
- Edinburg, City of. 2005. Future Land Use Map.
- Edinburg, Planning and Zoning Department. 2005. Edinburg Gateway Plan: An Agenda for 2025. <http://www.cityofedinburg.com/comprehensiveplan.php>
- Edinburg Consolidated Independent School District (ISD). 2011. School Locations Map.
- Environmental Data Resources, Inc. (EDR). August 2014. Hazardous material database search conducted by Halff Associates, Inc.
- Federal Emergency Management Agency (FEMA). Hidalgo County 100-year floodplains from Flood Insurance Rate Maps (FIRMs), including panels 4803340125B (effective date 1/2/1981), 4803340325D (effective date 6/6/2000) and 4803340425C (effective date 11/16/1982).
- Hidalgo County Metropolitan Planning Organization (HCMPO). 2004. Land Use Map.
- Hidalgo County Metropolitan Planning Organization (HCMPO). 2009. Land Use Map.
- Hidalgo County Regional Mobility Authority (HCRMA). 2013. Aerial Imagery of the SH 68 project area.
- Hidalgo County Regional Mobility Authority (HCRMA). June 19, 2013. *Notice of and Agenda for a Regular Meeting to be Held by the Board of Directors*. Presiding Chairman: Dennis Burleson.
- Lower Rio Grande Valley Development Council. undated. GIS data of Irrigation District boundaries and mapped Colonia boundaries.
- Natural Resources Conservation Service (NRCS), US Department of Agriculture (USDA). November 5, 2004. Soil Data for Hidalgo County–Farmland Soils.
- Texas Transportation Institute (TTI). 2007. Transportation Reinvestment Zone Handbook. In cooperation with TxDOT, and collaboration with Texas A&M Corpus Christi and University of Texas in Austin
- Texas Archeological Research Laboratory (TARL), University of Texas at Austin. April 23, 2013. Archeological site location data search for 100-meter buffer of 1,000 foot wide SH 68 study alternatives.



Texas Department of Transportation (TxDOT), Historical Studies Section. April 2014. Irrigation District Table for tracking NRHP status.

Texas Historical Commission (THC). 2014. Texas Historic Sites Atlas.

US Census Bureau. 2010. Census 2010 Data for Hidalgo County.

US Census Bureau. 2012. American Community Survey Data for Hidalgo County.

US Fish and Wildlife Service (USFWS). May 1, 2014. National Wetlands Inventory.

US Geological Survey (USGS). December 9, 2003. National Hydrography Dataset.

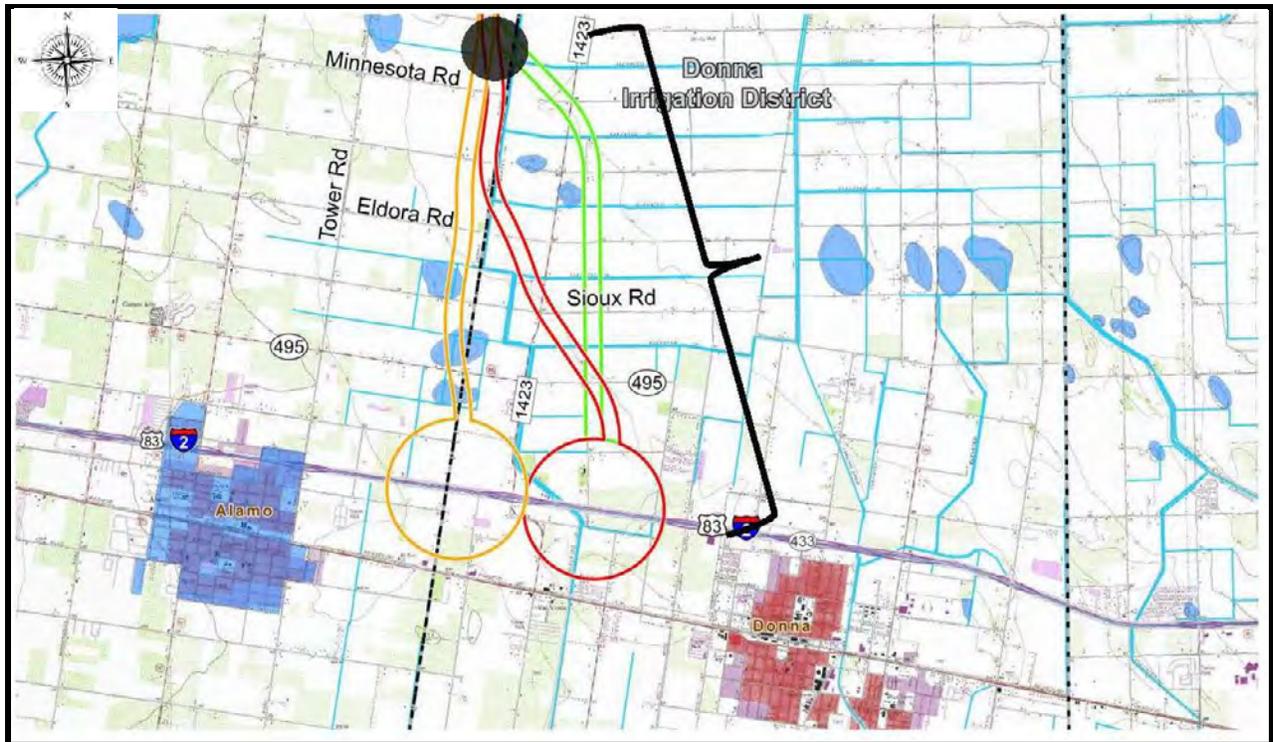
US Geological Survey (USGS). Topographic County Mosaic, including the following quadrangles: Donna (1984), Faysville (1965), Hargill (1965), and La Blanca (1984).



ATTACHMENT A

ENVIRONMENTAL CONSTRAINTS MAPPING EXHIBIT 1 THROUGH EXHIBIT 8

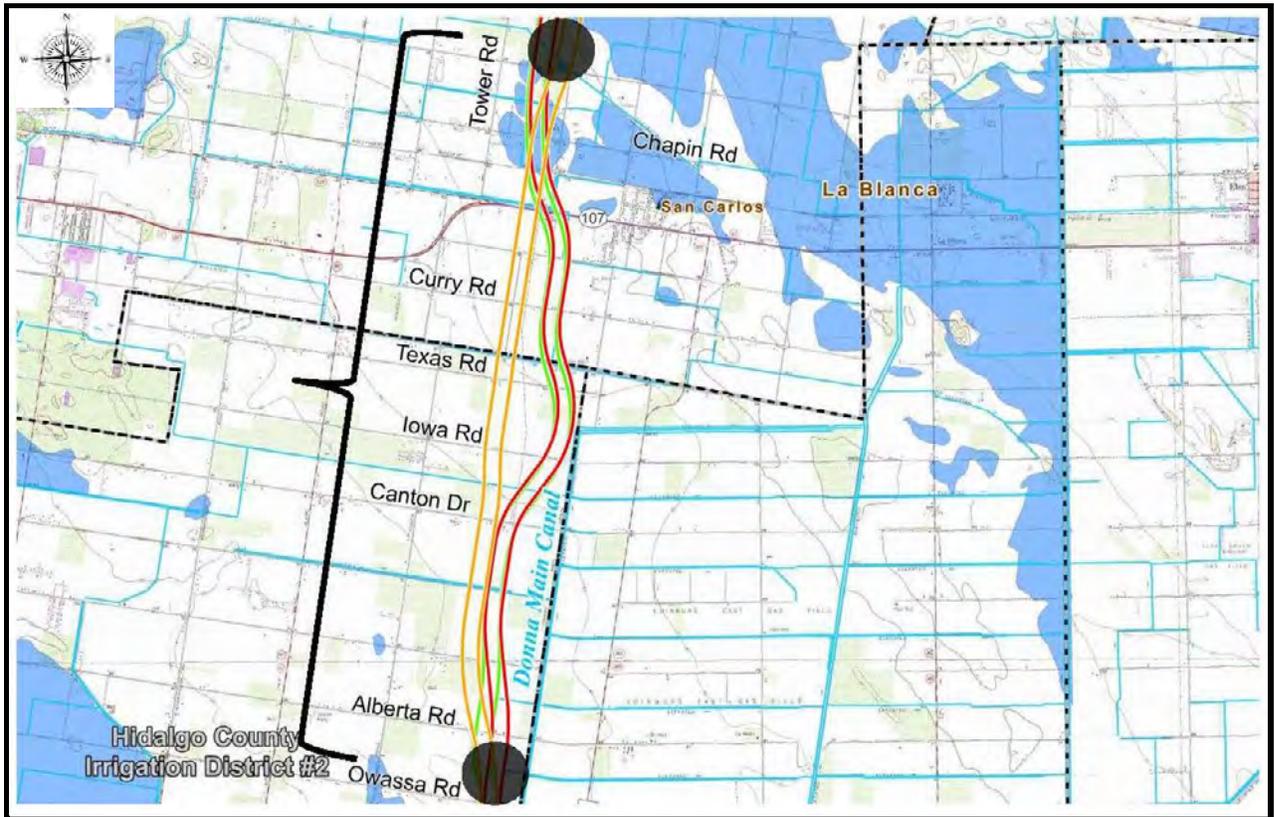




-  Irrigation/Drainage Canals
-  National Wetland Inventory Features
-  100 Year Floodplain
-  Irrigation Districts

Floodplain Data from FEMA
Irrigation/Drainage Data from National Hydrography Dataset
NWFI Data from USFWS
Base Map: USGS Topographic County Mosaic
[Donna (1984), Faysville (1965), Hargill (1965)
La Blanca (1984)]
Hidalgo County, Texas

Exhibit 1: Water Resource Information – South Section



- Irrigation/Drainage Canals
- National Wetland Inventory Features
- 100 Year Floodplain
- Irrigation Districts

Floodplain Data from FEMA
 Irrigation/Drainage Data from National Hydrography Dataset
 NWI Data from USFWS
 Base Map: USGS Topographic County Mosaic
 [Donna (1984), Faysville (1965), Hargill (1965)
 La Blanca (1984)]
 Hidalgo County, Texas

Exhibit 2: Water Resource Information – Transition Section

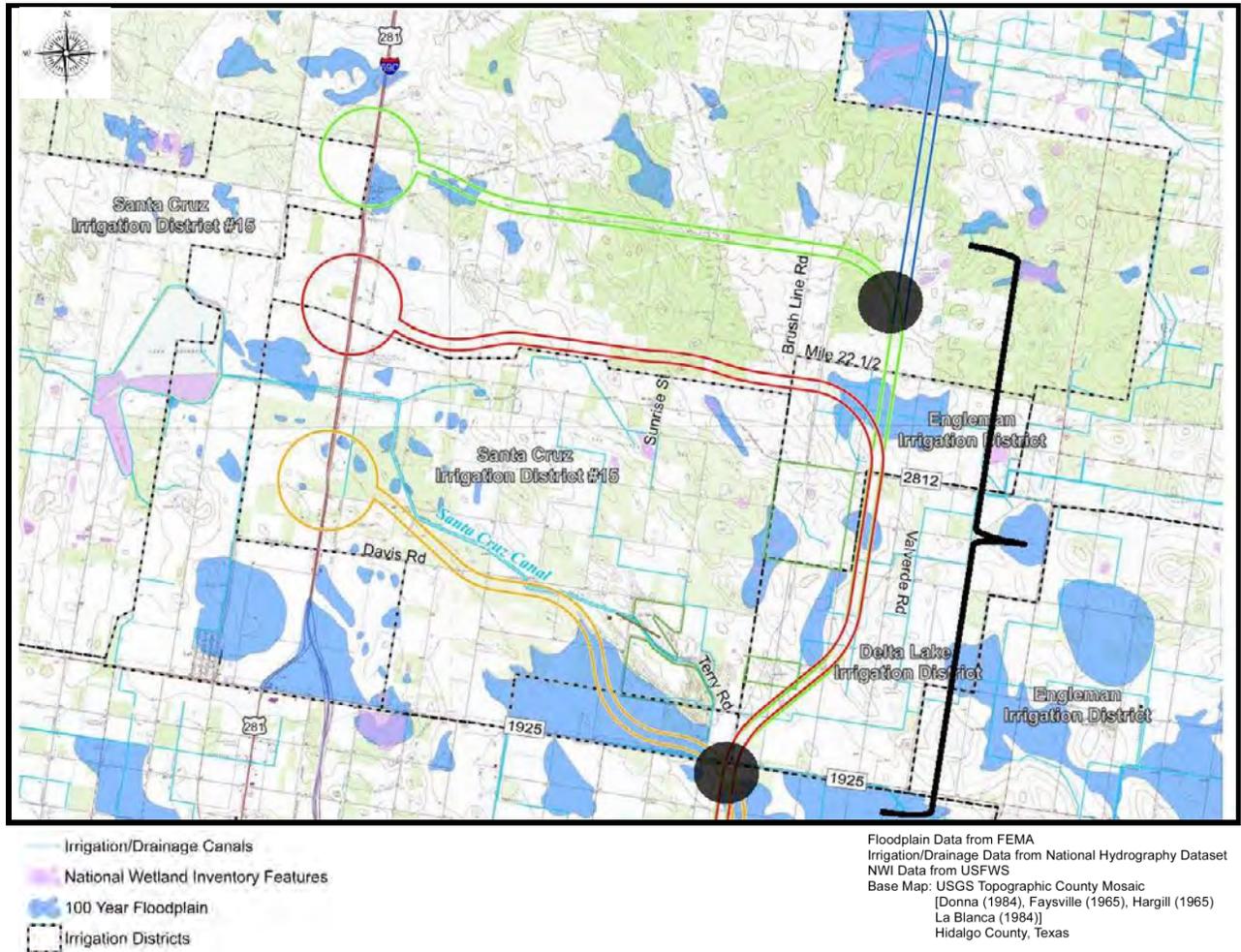
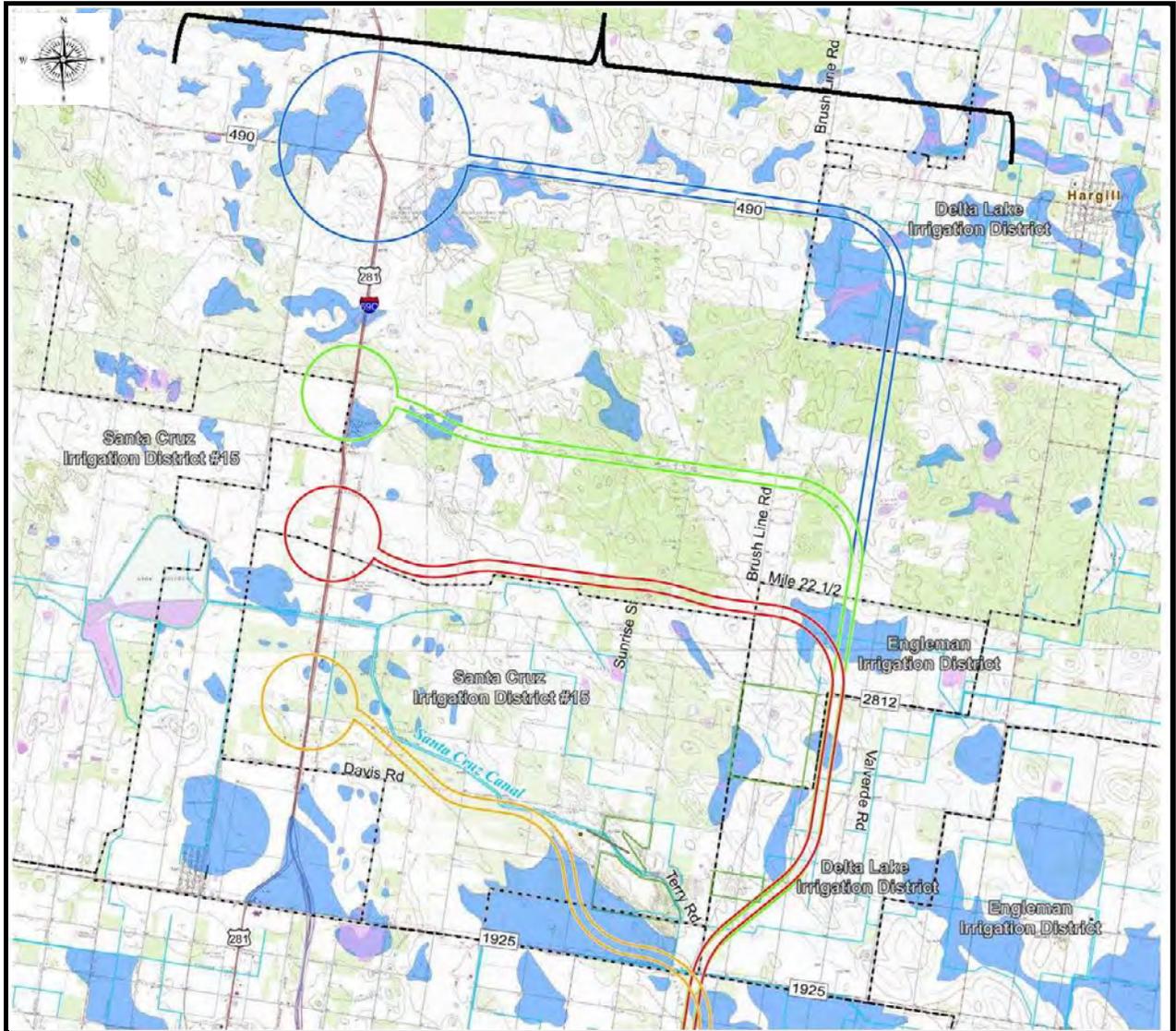


Exhibit 3: Water Resource Information – North Section



-  Irrigation/Drainage Canals
-  National Wetland Inventory Features
-  100 Year Floodplain
-  Irrigation Districts

Floodplain Data from FEMA
 Irrigation/Drainage Data from National Hydrography Dataset
 NWI Data from USFWS
 Base Map: USGS Topographic County Mosaic
 [Donna (1984), Faysville (1965), Hargill (1965)
 La Blanca (1984)]
 Hidalgo County, Texas

Exhibit 4: Water Resource Information – 281-Connector Section

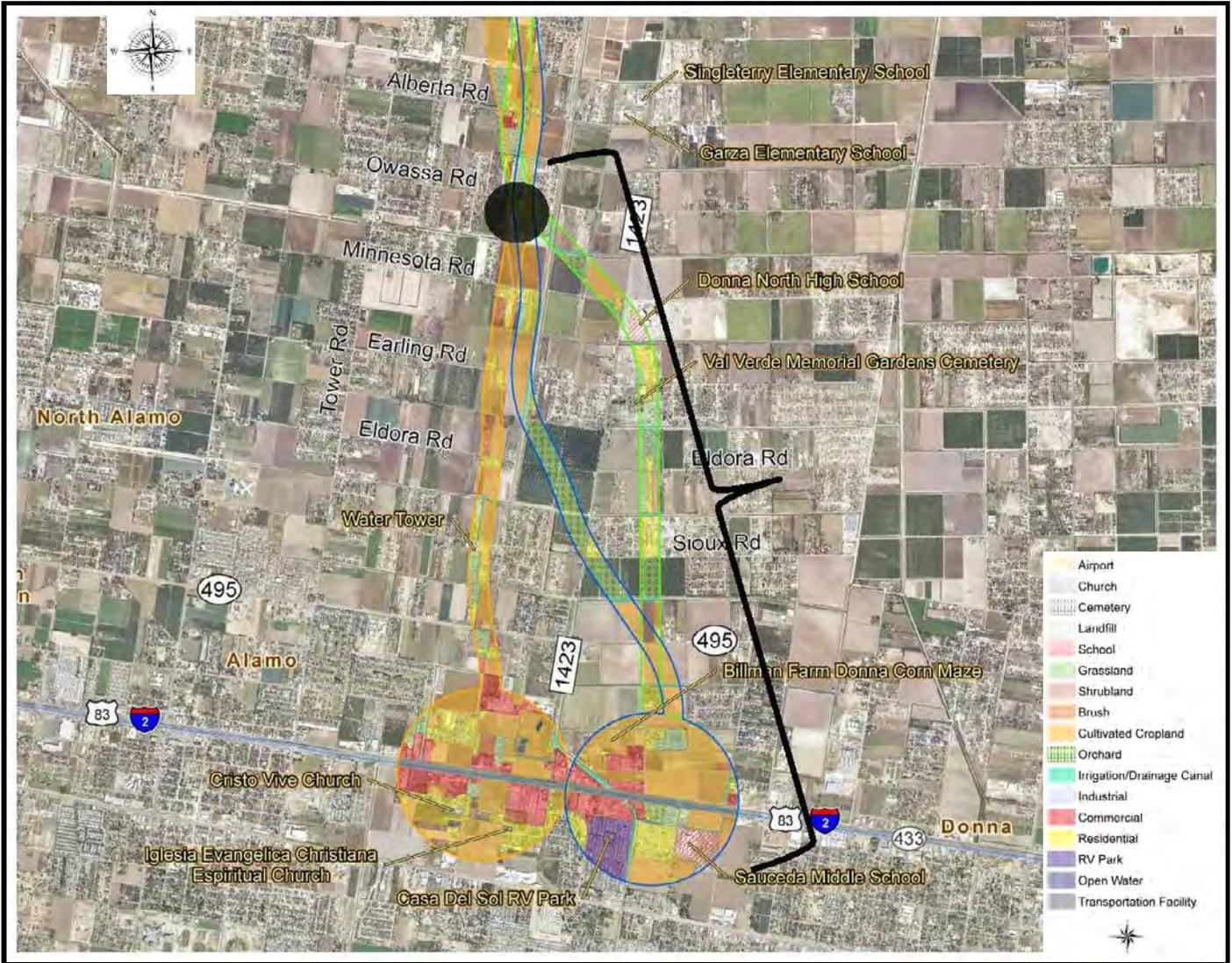


Exhibit 5: Land Use – South Section

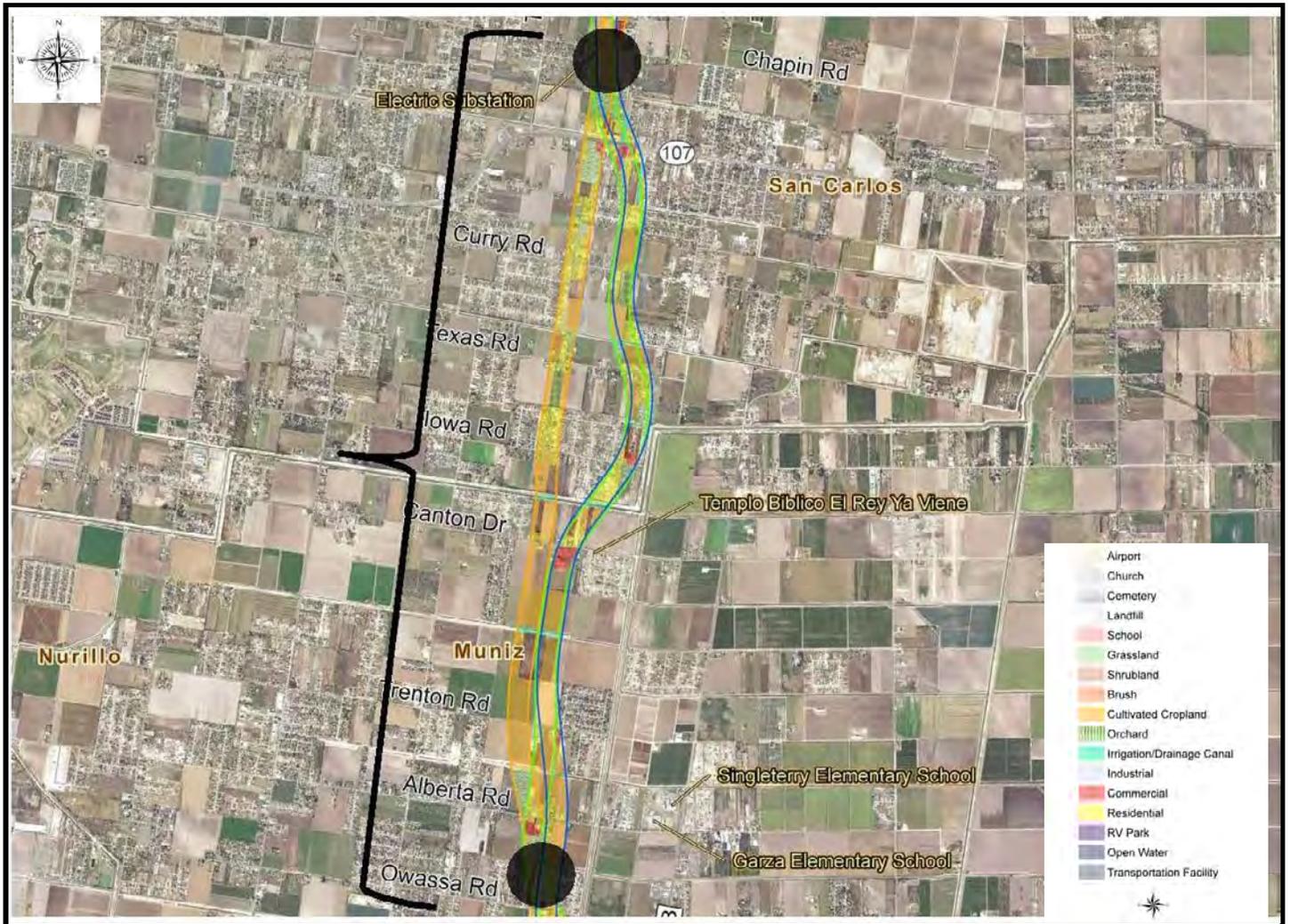


Exhibit 6: Land Use – Transition Section

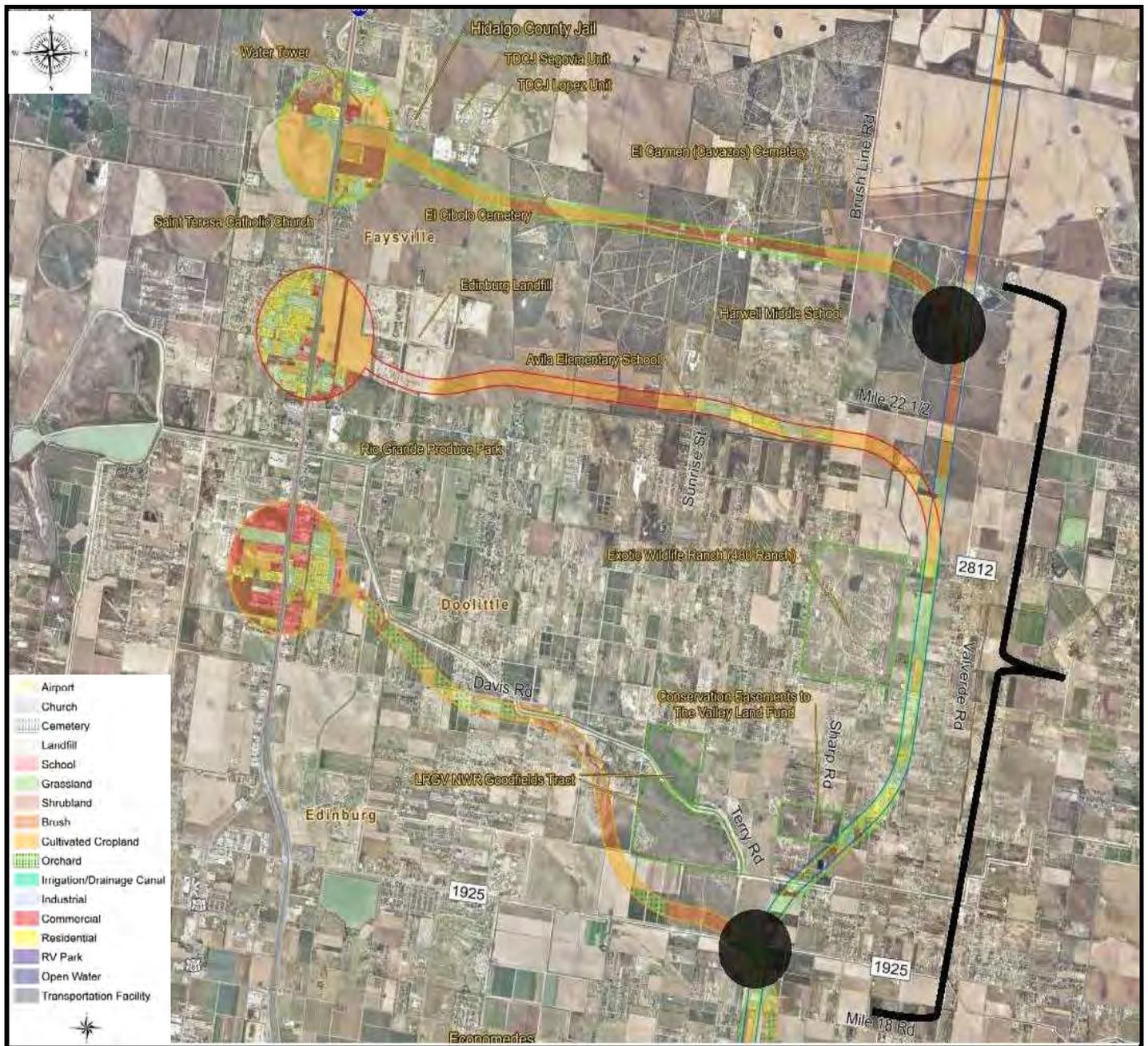


Exhibit 7: Land Use – North Section

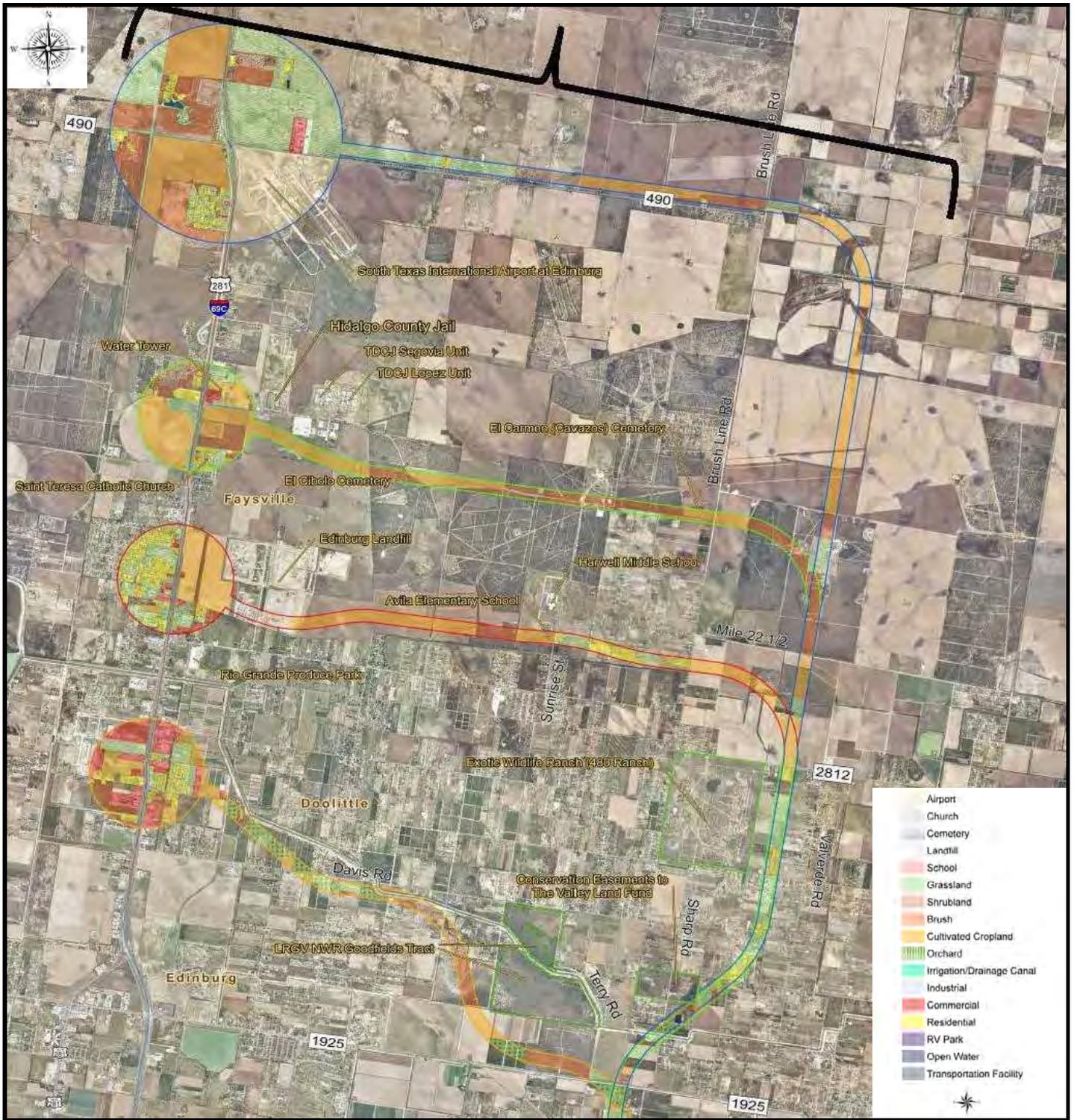


Exhibit 8: Land Use – 281-Connector Section

This report was written on behalf of the Texas Department of Transportation by

Blanton & Associates, Inc.

ENVIRONMENTAL CONSULTING • PLANNING • PROJECT MANAGEMENT

5 Lakeway Centre Court, Suite 200

Austin, Texas 78734

www.blantonassociates.com

With contributions from



8140 N. Mopac Expressway, Suite 210

Austin, Texas 78759

www.rjrivers.com