FINAL
Environmental Assessment

Loop 88
Segments 1 and 2
From US 84 to US 62/82
Lubbock County, Texas

CSJ: 1502-02-002

September 2020

Texas Department of Transportation, Lubbock District

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 9, 2019 and executed by FHWA and TxDOT.

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List of Acronyms

AADT	Annual Average Daily Traffic
ACS	American Community Survey
AOI	Area of Influence
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BMP	Best Management Practice
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CALF	Close and Abandoned Landfill
CFR	Code of Federal Regulations
CGP	Construction General Permit
CMP	Congestion Management Process
CO	Carbon Monoxide
CR	County Road
CRP	Conservation Reserve Program
CSJ	control-section-job
CWA	Clean Water Act
DHHS	Department of Health and Human Services
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMST	Ecological Mapping System of Texas
ENV	Environmental Affairs Division
EO	Executive Order
EPA	Environmental Protection Agency
EPIC	Environmental Permits, Issues, and Commitments
ETC	estimated time of completion
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Farm-to-Market
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FR	Federal Register
FWCA	Fish and Wildlife Coordination Act
GIS	Geographic Information Systems
HEI	Health Effects Institute
HRSR	Historic Resources Survey Report
IBWC	International Boundary Water Commission
IHWCA	Industrial and Hazardous Waste Corrective Action Sites
IRIS	Integrated Risk Information System
ISA	Initial Site Assessment
LWCF	Land and Water Conservation Fund
LEP	Limited English Proficiency
LPST	Leaking Petroleum Storage Tank
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding

MOVES	Motor Vehicle Emissions Simulator
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
OTHM	Official Texas Historical Marker
PA	Programmatic Agreement
PCR	Project Coordination Request
PFCs	Perfluorinated Compounds
PM	Particulate Matter
PS&E	Plans, Specifications, and Estimates
PSLs	Project Specific Locations
PST	Petroleum Storage Tank
PWC	Parks and Wildlife Code
RCRAC	Resource Conservation & Recovery Act Corrective Action Facilities
RCRAT	Resource Conservation & Recovery Act – Non-CORRACTS Treatment, Storage & Disposal Facilities
ROW	right-of-way
RRC	Railroad Commission of Texas
SAL	State Antiquities Landmark
SGCN	Species of Greatest Conservation Need
SH	State Highway
SHPO	State Historic Preservation Officer
STIP	Statewide Transportation Improvement Program
SW3P	Storm Water Pollution Prevention Plan
TAQA	Traffic Air Quality Analysis
TCE	Trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TCMP	Texas Coastal Management Plan
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TNM	Traffic Noise Model
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
US	United States Highway
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMT	vehicle miles travelled
vpd	vehicles per day
WHAB	Wildlife Habitat Assessment Program

1.0 INTRODUCTION

The Texas Department of Transportation (TxDOT) Lubbock District proposes to construct Segments 1 and 2 of Loop 88 in Lubbock County, Texas. The proposed project would construct a controlled access facility consisting of a six-lane divided freeway (three lanes in each direction) with two-lane frontage roads, associated ramps and grade separated diamond intersections. Segment 1 of Loop 88 begins at the United States Highway (US) 84 and Farm-to-Market (FM) 2641 intersection and generally follows FM 2641, then curves southward to follow County Road (CR) 1300 (Research Boulevard), where it then connects with Segment 2 at State Highway (SH) 114. Segment 2 of Loop 88 begins at the CR 1300/SH 114 intersection and generally follows CR 1300 to the south, before curving towards the southwest then back to the southeast to connect with the US 62/82 intersection and the beginning of Segment 3. The two segment designations are for construction phasing purposes. The logical termini for this project are US 84 to the north to US 62/82 to the south (**Figures 1** and **2** in **Appendix A**). Construction limits for the project are at US 84 and 0.5 mile northwest of US 62/82. The project length is approximately 16.05 miles.

The purpose of this Environmental Assessment (EA) is to study the potential environmental consequences of the proposed project and determine whether such consequences warrant preparation of an Environmental Impact Statement (EIS). The EA has been prepared to comply with TxDOT's environmental review rules and the National Environmental Policy Act (NEPA). This EA was made available for public review, and TxDOT considered all comments submitted from the public hearing comment period. If TxDOT determines there are no significant adverse effects, a finding of no significant impact (FONSI) will be issued and made available to the public. Project location maps are provided as **Figures 1** and **2** in **Appendix A**. Representative photographs of the project area are included in **Appendix B**. The current engineering schematic and layout of the proposed project are included in **Appendix C**. **Figure 3** in **Appendix D** provides the proposed typical sections. Plan and Program Excerpts are included in **Appendix E**. Resource specific maps are provided in **Appendix F**. Documentation of Agency Coordination is provided in **Appendix G**.

2.0 PROJECT DESCRIPTION

2.1 Existing Facility

Portions of the proposed project follow existing transportation facilities. From the northern construction limit, the project intermittently follows FM 2641 for approximately 4.26 miles. The existing FM 2641 is a two-lane undivided roadway with one lane in each direction. The project then intermittently follows CR 1300 south for approximately 8.33 miles. The existing CR 1300 is an unimproved dirt road approximately 20 feet wide. The remainder of the proposed project is on new location.

2.2 Proposed Project

TxDOT Lubbock District is proposing to construct Loop 88 from US 84 to US 62/82 in Lubbock County, Texas. For Segment 1, the frontage roads would start at US 84 while the mainlanes would begin approximately 0.97 mile west of US 84. Segment 2 would end approximately 0.48 mile northwest of US 62/82. The proposed improvements would include constructing a six-lane divided freeway, three lanes in each direction, with two-lane frontage roads in each direction. The proposed mainlanes would

consist of six 12-foot-wide travel lanes with 10-foot-wide outside shoulders and 11-foot-wide inside shoulders. The proposed frontage roads consist of two 12-foot-wide travel lanes with 8-foot-wide outside shoulders and 4-foot-wide inside shoulders. The proposed right-of-way (ROW) width is 400 feet.

The proposed project would require approximately 850.08 acres of proposed ROW, and approximately 96.22 acres for drainage purposes.

The control-section-job (CSJ) number associated with the proposed project (Loop 88 Segments 1&2) is 1502-02-002; the parent CSJ for the Loop 88 project from US 84 (Shallowater) to US 84 (Slaton) is 1502-01-033. Federal regulations require that federally funded transportation projects have logical termini [23 Code of Federal Regulations (CFR) §771.111(f)(1)]. Simply stated, this means that a project must have rational beginning and end points. Those end points may not be created simply to avoid proper analysis of environmental impacts. In accordance with 23 CFR §771.111(f)(1), the logical termini of the project have been defined as the major crossroads of US 84 to the north and US 62/82 to the south.

Federal regulations require that a project has independent utility and be a reasonable expenditure even if no other transportation improvements are made in the area [23 CFR §771.111(f)(2)]. This means a project must be able to provide benefit by itself, and that the project not compel further expenditures to make the project useful. Stated another way, a project must be able to satisfy its purpose and need with no other projects being built. Because the proposed project stands alone, it does not irretrievably commit federal funds for other future transportation projects and provides improved mobility between US 84 and US 62/82 in anticipation of increased population and traffic volume by providing a north-south corridor; therefore, it has been determined that the project has independent utility.

Federal law prohibits a project from restricting consideration of alternatives for other reasonably foreseeable transportation improvements [23 CFR §771.111(f)(3)]. This means that a project must not dictate or restrict any future roadway alternatives. The proposed project would not predetermine or preclude future work on the proposed Loop 88 and would not restrict the consideration of future transportation improvements. The proposed project would provide a north-south corridor to accommodate for increased population and traffic volume and would maintain access to cross streets. The current engineering schematic of the proposed project is included in **Appendix C**, and proposed typical sections are provided on **Figure 3** in **Appendix D**.

The proposed project is included in the 2019-2022 Statewide Transportation Improvement Program (STIP) and Lubbock Metropolitan Planning Organization (MPO)'s 2012-2040 Metropolitan Transportation Plan (MTP). The proposed project would be funded with state and federal estimated at $13.6 million, for preliminary engineering only (**Appendix E**).

3.0 PURPOSE AND NEED

3.1 Need

The proposed project is needed because the current infrastructure does not meet current design standards and lacks sufficient capacity to adequately support the projected increased traffic and population growth.

3.2 Supporting Facts and/or Data

In 2010, TxDOT conducted a feasibility study of southern and western Lubbock County in response to increased development and projected traffic growth in these areas (TxDOT 2010). The study determined growth projections indicated this trend would continue in the foreseeable future. According to the U.S. Census Bureau and the Texas Water Development Board (TWDB), the populations in Lubbock County and local cities are anticipated to increase from approximately 15 and up to almost 200 percent from 2000 to 2050, as shown in **Table 1** below.

Table 1. Population Growth

	2000*	2010*	2020**	2030**	2040**	2050**
Lubbock County	**242,628**	**278,831**	**309,769**	**343,977**	**378,320**	**414,938**
Percent increase from 2000	-	*14.92%*	*27.26%*	*41.77%*	*55.93%*	*71.02%*
City of Lubbock	**199,564**	**229,573**	**255,257**	**283,597**	**312,043**	**342,371**
Percent increase from 2000	-	*15.04%*	*27.91%*	*42.11%*	*56.36%*	*71.56%*
City of Shallowater	**2,086**	**2,484**	**2,817**	**3,188**	**3,558**	**3,951**
Percent increase from 2000	-	*19.08%*	*35.04%*	*52.83%*	*70.57%*	*89.41%*
City of Wolfforth	**2,554**	**3,670**	**4,577**	**5,577**	**6,569**	**7,614**
Percent increase from 2000	-	*43.70%*	*79.21%*	*118.36%*	*157.20%*	*198.12%*

*Data from US Census Bureau (2010)
**Data from TWDB (2019)

The TxDOT feasibility study used a Lubbock MPO travel demand model that concluded vehicle miles of travel (VMT) in the area would also increase from approximately 4.5 million miles per day in 2000 to approximately 6.4 million miles per day in 2030, an approximately 42 percent increase due to population growth and development (TxDOT 2010).

3.3 Purpose

The purpose of the proposed project (the Build Alternative) is to improve transportation infrastructure to current design standards and improve mobility in western and southern Lubbock County.

4.0 ALTERNATIVES

4.1 Build Alternative

The Build Alternative, as described in **Section 2.2**, would provide a six-lane north-south corridor in the western Lubbock area with two-lane frontage roads. The Build Alternative would meet the need and purpose of the project by upgrading the facility to meet current design standards and improving mobility in the western Lubbock area.

4.2 No-Build Alternative

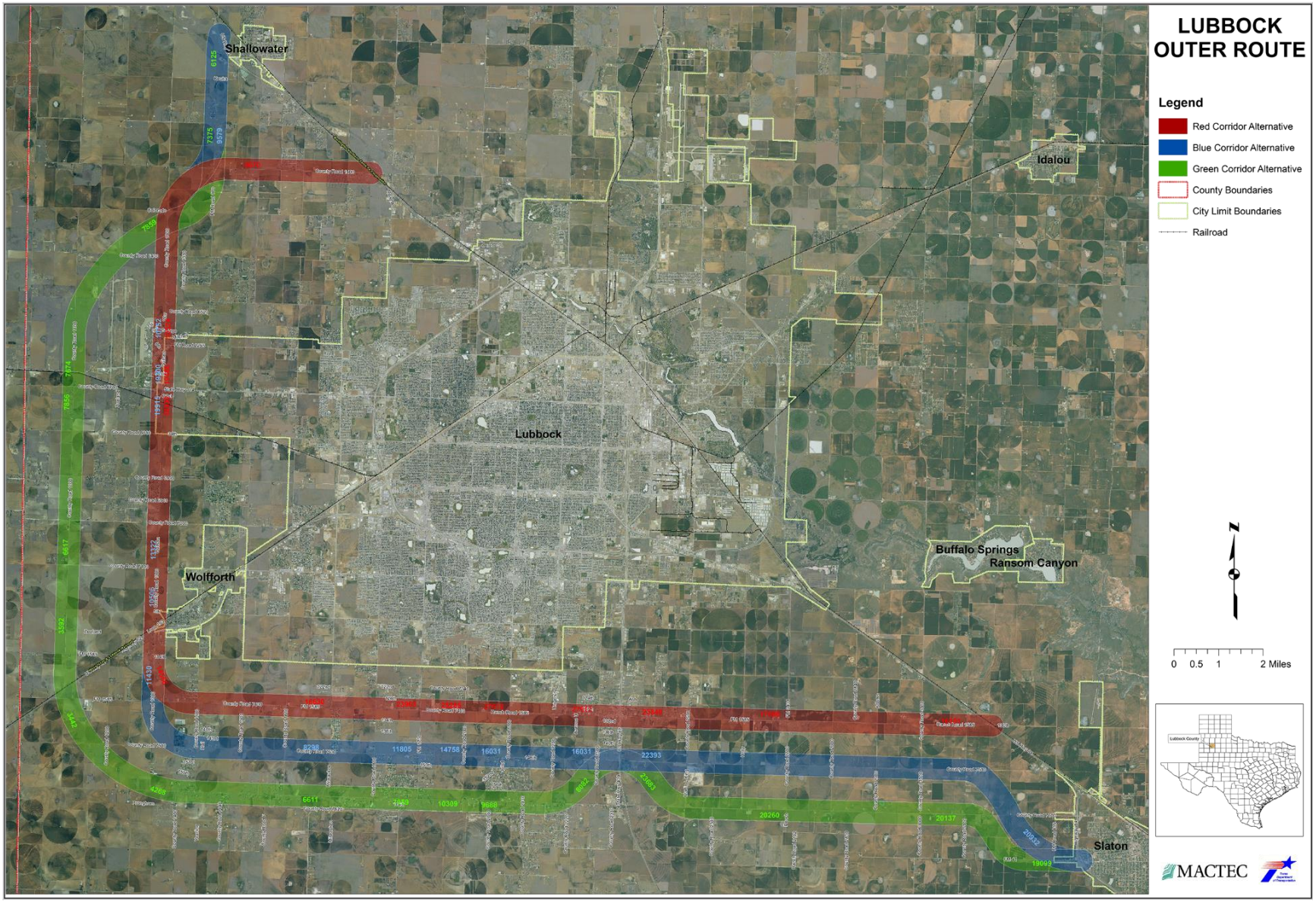
Under the No-Build Alternative, the existing facilities would operate as they currently do and normal maintenance activities would continue. There would be no substantial adverse environmental impacts associated with this alternative. However, the No-Build Alternative would not meet current design standards and would not improve mobility; therefore, it would not address the need and purpose of the proposed project. The Build Alternative is the preferred alternative; however, the No-Build Alternative is carried forward in this EA to provide a baseline for comparison to the Build Alternative.

4.3 Preliminary Alternatives Analysis

A feasibility study was conducted to determine if an outer route around the city of Lubbock would be feasible and, if so, to develop alternative corridors. Three alternative corridors were developed and a preferred viable alternative corridor was identified. See **Insert 1** for a map of the alternative corridors that were developed. An outer route was determined feasible and needed to address future transportation needs. The three alternative corridors were evaluated, and two alternative corridors (the red and blue alternatives in **Insert 1**) were recommended for further study in a route study (TxDOT 2010).

The route study was conducted to identify a preferred alternative alignment using the alternative corridors identified in the feasibility study, and to determine the building prioritization of the outer route segments (TxDOT 2014c). The outer route alignments were evaluated using engineering and environmental criteria and public input. After receiving public input, a preferred route was developed and presented to the public. See **Figures 1** and **2** in **Appendix A** for the final route alignment. This alternative will be evaluated in the remainder of the document and will be referred to as the proposed "Build Alternative." The potential impacts to the environment for this alternative are described in the next section.

Insert 1. Lubbock Outer Route Alternative Corridors



Source: TxDOT 2010

5.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In support of this EA, the following technical reports and forms were prepared:

- Scope Development Tool
- Project Description Memorandum
- Community Impacts Assessment Technical Report Form
- Archeological Background Study Form
- Archeological Survey Report (will be prepared once surveys are completed)
- Project Coordination Request (PCR) for Historical Studies Project Form
- Historical Studies Research Design Reconnaissance Survey
- Historic Resources Survey Report (HRSR)
- Water Resources Technical Report
- Biological Evaluation Form
- Tier 1 Site Assessment Form
- Hazardous Materials Initial Site Assessment (ISA) Form
- Traffic Noise Analysis Technical Report
- Indirect and Cumulative Impacts Technical Report
- Documentation of Public Meetings

These technical reports and forms, maps showing the project location and design, and other information regarding the project are on file and available for inspection and may be copied upon request at the TxDOT Lubbock District Office. A Public Hearing Summary Report has been prepared is on file at the TxDOT Lubbock District Office.

5.1 Right-of-Way/Displacements

The Build Alternative would require approximately 850.08 acres of proposed ROW and approximately 96.22 acres for drainage. See **Appendix C** for the project schematic to see where ROW would be required. The proposed project would result in potential displacements, subject to final design considerations. See **Figures 4.1** and **4.2** in **Appendix F** for the location of potential displacements. The proposed project would potentially impact 12 residential properties; however, it was determined that comparable residential properties are available within the study area (see **Figure 4.1** in **Appendix F**). ROW acquisition and relocation would be conducted in accordance with the Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970 (Uniform Act).

The No-Build Alternative would not require the acquisition of ROW, nor would it result in relocations.

5.2 Land Use

The proposed project is located in western Lubbock County, Texas. The city of Shallowater is located north of the northern terminus, the city of Lubbock is located west of the overall project area, and the city of Wolfforth is located southeast of the southern terminus. The surrounding land use is primarily agricultural, with scattered residential and commercial developments, along with undeveloped areas. Development is concentrated near the center of the alignment near SH 114 and near the southern terminus, near US 62/82. Converting undeveloped or agricultural land to be used for transportation

uses could result in development adjacent to the proposed roadway, especially near major intersections. Induced growth impacts are addressed more in **Section 5.15**, Induced Growth.

The No-Build Alternative would not result in changes to land use.

5.3 Farmlands

The proposed project would convert farmland subject to the Farmland Protection Policy Act (FPPA) to a nonagricultural, transportation use. However, the combined scores of the relative value of the farmland on the FPPA Form NRCS-CPA 106 were 142. The FPPA law states a rating of less than 160 would not require further consideration for protection nor additional evaluation (**Appendix G**). The National Resource Conservation Service (NRCS) encouraged the use of accepted erosion control methods during the construction of the project. Therefore, coordination with the NRCS for the FPPA is considered complete for the Build Alternative.

The No-Build Alternative would not require coordination with the NRCS.

5.4 Utilities/Emergency Services

Several utilities (including water, telephone, and overhead and underground electrical) may require adjustments or relocations as a result of the proposed project. Adjustment or relocation of these and other utilities would be addressed in the ROW acquisition process and would be conducted so that no substantial interruption in service would occur. When displaced utilities are relocated within TxDOT ROW, the relocation of those utilities is included as part of the transportation project for purposes of environmental review. However, when displaced utilities are relocated outside of TxDOT ROW, the relocation of those utilities is not included as part of the transportation project for purposes of environmental review.

The Build Alternative would result in the loss of east/west emergency access at some intersections; however, access would be provided by way of frontage roads and U-turns at specified intersections with grade separations. These changes would result in increased travel times; however, the proposed project is anticipated to improve overall mobility and north/south access throughout the study area. Temporary detours and changes in emergency access could occur during construction; however, access to all adjacent properties would be maintained throughout construction of the project. Emergency responders may be required to travel farther to access an intersection east/west with through access across Loop 88; however, the proposed improvements are anticipated to enhance mobility, operational efficiency, and provide more direct north/south access throughout the project area, allowing for improved north/south travel times for emergency responders. The proposed project is not anticipated to substantially affect travel times for emergency responders. TxDOT will coordinate with the West Carlisle Volunteer Fire Department and other emergency responders throughout construction of the proposed project.

The No-Build Alternative would not impact existing utilities. Traffic volume is expected to increase under the No-Build Alternative due to projected traffic and population increases; therefore, emergency response time could increase under this alternative.

5.5 Bicycle and Pedestrian Facilities

There are currently no sidewalks or bike lanes provided along the existing roadways. The proposed project would provide pedestrian and bicycle facilities throughout the project area by constructing new sidewalks and providing an outside shoulder along the frontage roads that could be used as a bike lane. The proposed improvements will comply with TxDOT's policy for bicycle and pedestrian accommodation and with the US Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation (March 11, 2010).

The No-Build Alternative would not result in impacts or benefits to bicycle or pedestrian facilities.

5.6 Community Impacts

The Loop 88 Segments 1 & 2 *Community Impacts Assessment Technical Report Form*, dated October 2019, concluded that the Build Alternative would result in 12 residential displacements, access and travel pattern changes, and impacts to community cohesion. Residents from the 12 displaced residential properties are anticipated to be able to relocate within the community (see **Figures 4.1** and **4.2** in **Appendix F**). The proposed project is anticipated to result in changes to vehicular access and travel patterns within the adjacent communities. The proposed project would result in the loss of east/west access at some intersections; however, access would be provided by way of frontage roads and U-turns at specified intersections with grade separations. These changes would result in increased travel times; however, the proposed project is anticipated to improve overall mobility and north/south access throughout the study area. The project would also include construction of sidewalks and shoulders along the frontage roads, which would improve pedestrian and bicyclist mobility. Access to adjacent properties would be maintained throughout the duration of the proposed project. Community cohesion would be impacted due to the proposed improvements eliminating through movements at certain intersections along the proposed Loop 88 alignment, which would require drivers to travel farther to intersections with grade separations in order to make a U-turn to continue on the intersecting road. This would result in increased east/west travel times. However, north/south access would be improved throughout the project area. The proposed project would also traverse a grouping of houses northeast of the CR 1300 and CR 6520 intersection, which is located within a census block with a predominantly minority population. This grouping of houses is not connected by side streets, and there were no signs indicating these houses were part of a distinct neighborhood. Since residential displacements would occur in census blocks with predominantly non-minority populations, potential impacts to minority populations are not anticipated to be disproportionately high or adverse. Potential residential displacements could result in community members moving to existing housing some distance away from their present location or potentially relocating to nearby parcels. No neighborhoods would be separated and no businesses would be displaced.

The No-Build Alternative would not result in direct adverse impacts to the adjacent communities; however, the projected population and traffic growth associated with the No-Build Alternative would be expected to impact adjacent communities and motorists.

5.6.1 Environmental Justice (EJ)

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

The U.S. Census Bureau classifies minority populations as Black; Hispanic or Latino; Asian or Pacific Islander; American Indian, Eskimo, or Aleut; or other non-white persons. Population, race, and ethnicity data from the 2010 U.S. Census were obtained for the state of Texas, Lubbock County, census tracts, block groups, and census blocks within the project area (U.S. Census 2010). These data are provided in the *Community Impacts Assessment Technical Report Form*. Of the 303 census blocks identified within the study area, only 177 are populated, 40 of which include a predominantly minority population, which range from 50.66 to 100.00 percent (see **Figures 5.1** through **5.3** in **Appendix F**).

The *Community Impacts Assessment Technical Report Form* also includes data from the 2013-2017 U.S. Census American Community Survey (ACS) regarding median household income within the project area. A low-income person is defined as a person whose median household income is at or below the U.S. Department of Health and Human Services (DHHS) poverty guidelines for a family of four for the current year. The poverty level at the time of analysis (2019) in the 48 contiguous states and the District of Columbia is $25,750 for a household of four (U.S. DHHS 2019). Per the ACS, none of the block groups in the project area contain a low-income population.

Although EJ populations are present in the project area, the proposed project would not result in disproportionately high or adverse impacts to these populations. Changes in east/west access and residential displacements would occur in areas with both predominantly minority populations and predominantly non-minority populations; therefore, changes in east/west access and displacements would not result in disproportionately high or adverse impacts to EJ populations.

5.6.2 Limited English Proficiency (LEP)

EO 13166, "Improving Access to Service for Persons with Limited English Proficiency," requires federal agencies to examine the services they provide, identify any need for services to those with LEP, and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. The EO also requires federal agencies to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

To determine if LEP populations may be affected by the proposed project, census data were collected from the 2013-2017 U.S. Census ACS regarding LEP populations, defined as populations who speak a language other than English and who speak English "less than very well." These data are provided in the *Community Impacts Assessment Technical Report Form*. Spanish-speaking LEP populations were identified throughout the study area, with the percentage of Spanish-speaking LEP persons ranging from a low of 0.51 percent (in Block Group 2 of Census Tract 103.01) to a high of (7.43 percent in Block Group 2 of Census Tract 104.05). Within the study area, Asian and Pacific Island Language-speaking LEP populations consisted of 0.55 percent in Block Group 1 of Census Tract 104.06. There

were no LEP populations speaking "other Indo-European languages" or any "other languages" identified within the project area (**Figures 5.1** through **5.3** in **Appendix F**).

Two public meetings were held on February 20 and July 24, 2018, and a public hearing was held on June 9, 2020. Public involvement has been conducted in a manner such that all interested parties have been given an opportunity to provide both verbal and written comments concerning the proposed project. TxDOT has complied with EO 13166 by offering to meet the needs of persons requiring special communication or accommodations in all future public involvement activities and notices. Therefore, the requirements of EO 1316 have been met.

5.7 Visual/Aesthetic Impacts

Using the Federal Highway Administration's (FHWA's) *Visual Impact Assessment for Highway Projects* guidance (FHWA-HI-88-054), an analysis of the potential visual impact of the proposed project was conducted. Visual impacts are defined as a change in the aesthetic value resulting from the introduction of modifications to the landscape. The project vicinity has been evaluated in terms of project impacts on visual character and scenic (visual) quality.

In an effort to determine the visual resource effects of the proposed project, an analysis of the landscape components affected by the proposed project was conducted. The regional landscape in the project area is relatively rural. No substantial changes to the vegetation surrounding the roadway corridor are anticipated as a direct result of the proposed project.

In order to determine the scale and dominance of the proposed project, the schematic was used to evaluate changes in elevation and potential impacts to the current viewshed in the project vicinity. The scale and dominance of the proposed structures were determined to be compatible with the project surroundings due in large part to the fact that the surrounding land is used for agriculture and there are few residential properties near the intersections that would have new grade separations.

Due to the aesthetic compatibility of the proposed improvements to the surrounding land use, the construction of a visual barrier was determined to not be necessary.

The No-Build Alternative would not result in visual impacts.

5.8 Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, NEPA and the National Historic Preservation Act (NHPA) of 1966, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas also apply. Compliance with these laws often requires consultation with the Texas Historical Commission (THC)/Texas State Historic Preservation Officer (SHPO) and/or federally-recognized tribes to determine the project's effects on cultural resources. Review and coordination of this project followed approved procedures for compliance with federal and state laws.

5.8.1 Archeology

A background review was conducted of area topographic, soils, and geology maps. Also, previous archeological surveys and locations of recorded archeological sites within 1 kilometer (km) (0.6 mile) of the project area of potential effects (APE) were sought by consulting the THC's Online restricted-access Archeological Sites Atlas (Atlas). In addition to identifying recorded archeological sites, the review included the following types of information on the Atlas: National Register of Historic Places (NRHP) properties, State Antiquities Landmarks (SALs), Official Texas Historical Markers (OTHM), Recorded Texas Historic Landmarks, and cemeteries. The 1958 U.S. Geological Survey (USGS) 7.5-minute topographical quadrangle maps of the APE were consulted to identify historic structures, which may or may not be extant, that may represent high probability areas for the presence of historic-era archeological sites (see **Figures 6.1** and **6.2** in **Appendix F**). Based on this information, the likelihood of finding prehistoric and historic archeological deposits in this area is high. The *Archeological Background Study,* dated September 2019, recommended an archeological survey for the entire APE due to the potential for intact archeological deposits in the project area. Intensive archeological surveys will be completed once TxDOT acquires ROW for the proposed project.

Consultation requests were sent to the Kiowa, Mescalero, Wichita and Affiliated Tribes, Apache, Tonkawa, and Jicarilla Apache Nation were sent. All correspondence will be on file at the TxDOT Lubbock District office. No responses were received as of July 11, 2019 (see ECOS screenshot in **Appendix G**).

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the Programmatic Agreement (PA) and the Memorandum of Understanding (MOU) between TxDOT and the THC.

The No-Build Alternative would not impact archeological resources.

5.8.2 Historic Properties

As detailed in the Loop 88 Segments 1 & 2 *HRSR*, dated June 14, 2019, a reconnaissance-level historic survey was conducted to identify historic-age resources in the project's APE. The project included field investigations for pre-1985- resources in the APE. If a parcel included historic-age buildings, all buildings regardless of age were documented. The survey identified 225 historic-age resources, and 71 non-historic-age resources on 70 properties. None of the historic-age resources within the project's APE were eligible for individual listing in the NRHP. There is no NRHP historic district potential within the APE. TxDOT historians determined individual project coordination with the SHPO is not required. See **Appendix G** for coordination with the Lubbock County Historical Commission. Historic resources analysis reports and figures are on file at the TxDOT Lubbock District Office.

The No-Build Alternative would not result in impacts to historic resources.

5.9 DOT Act Section 4(f), Land and Water Conservation Fund (LWCF) Act Section 6(f), and Parks and Wildlife Code (PWC) Chapter 26

There are no Section 4(f) or Section 6(f) properties present in the project area; therefore, coordination regarding Section 4(f), Section 6(f) or Chapter 26 resources is not required for this project.

The No-Build Alternative would not impact 4(f), 6(f), or Chapter 26 resources.

5.10 Water Resources

It was determined that no waters of the U.S., including wetlands, would be impacted by the proposed project (see **Figures 7.1** and **7.2** in **Appendix F**). It was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.10.1 Clean Water Act Section 404

The project area does not contain any waters of the U.S. subject to regulation under Section 404 of the Clean Water Act (CWA). Therefore, no impacts to waters of the U.S. are anticipated, and no Section 404 permit would be required.

5.10.2 Clean Water Act Section 401

Section 401 of the CWA requires any applicant who seeks a permit from a federal agency for an activity that will involve a discharge into waters of the U.S. to first obtain a certification from the State that the discharge will not violate state water quality standards. The proposed project would not require authorization under Section 404, Section 10, or Section 9/General Bridge Act. Therefore, Section 401 of the CWA does not apply.

5.10.3 Executive Order 11990 Wetlands

No wetlands were identified within the existing or proposed ROW; therefore, EO 11990 on wetlands does not apply.

5.10.4 Rivers and Harbors Act

No water features within the project area are classified as navigable waters; therefore, Sections 9 and 10 of the Rivers and Harbors Act are not applicable to the project.

5.10.5 Clean Water Act Section 303(d)

Runoff from the project area would not directly discharge into a Section 303(d) listed threatened or impaired water, or into a stream within 5 miles upstream of a Section 303(d) listed threatened or impaired water. The most recent *2018 Texas Integrated Report Index of Water Quality Impairments* was utilized in the assessment (TCEQ 2019).

5.10.6 Clean Water Act Section 402

Since Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) and compliance (and the associated documentation) occur outside the environmental clearance process,

compliance is ensured by the policies and procedures that govern the design and construction phases of a project. TxDOT's Project Development Process Manual and the Plans, Specifications, and Estimates (PS&E) Preparation Manual require a Storm Water Pollution Prevention Plan (SW3P) be included in the plans of all projects that disturb 1 or more acres. The Construction Contract Administration Manual requires that the appropriate CGP authorization documents (Notice of Intent [NOI] or Site Notice) be completed, posted, and submitted, when required by the CGP, to the Texas Commission on Environmental Quality (TCEQ). It also requires that projects be inspected to ensure compliance with the CGP.

The PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the "Required Specifications Checklists" require Special Provision 506-003 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SW3P and to complete the appropriate authorization documents.

5.10.7 Floodplains

Portions of the project limits are located within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain associated with playas. This project is subject to and will comply with federal EO 11988 on Floodplain Management. TxDOT implements this EO on a programmatic basis through its Hydraulic Design Manual. Design of this project will be conducted in accordance with this manual. Adherence to the TxDOT Hydraulic design Manual ensures that this project would not result in a "significant encroachment" as defined by FHWA's rules implementing EO 11988 at 23 CFR 650.105(q).

5.10.8 Wild and Scenic Rivers

No designated wild and scenic rivers occur in Lubbock County; therefore, the Wild and Scenic Rivers Act does not apply.

5.10.9 Coastal Barrier Resources

There are no Coastal Barrier Resources System units mapped in Lubbock County; therefore, the Coastal Barrier Resources Act does not apply to the project.

5.10.10 Coastal Zone Management

The project is not located within a Texas Coastal Management Plan (TCMP) boundary. Therefore, the Coastal Zone Management Act and the TCMP are not applicable to the project.

5.10.11 Edwards Aquifer

The Edwards Aquifer Recharge Zone, Contributing Zone, and Transition Zone do not occur in Lubbock County; therefore, the Edwards Aquifer Rules do not apply to the project.

5.10.12 International Boundary and Water Commission

No International Boundary Water Commission (IBWC) flood control projects or IBWC ROW occur in or adjacent to the project area; therefore, the project does not require an IBWC license.

5.10.13 Drinking Water Systems

In accordance with TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges (Item 103, Disposal of Wells), any drinking water wells would need to be properly removed and disposed of during construction of the project.

5.11 Biological Resources

The Loop 88 Segments 1&2 *Tier 1 Site Assessment Form* and associated attachments, dated September 2019, describe the Texas Parks and Wildlife Department (TPWD) Ecological Mapping System of Texas (EMST) data (**Figures 8.1** through **8.11** in **Appendix F**) and observed, or field-verified, vegetation (**Figures 9.1** through **9.11** in **Appendix F**). This form and the Biological Evaluation Form also list the federal and state-listed threatened, endangered, and candidate species, as well as those considered species of greatest conservation need (SGCN) by the state and provides an assessment of their habitat requirements and the potential impacts of the proposed project. A summary of these findings is provided below.

5.11.1 Texas Parks and Wildlife Coordination

According to the Threshold Table PA for the MOU between TxDOT and TPWD, the proposed project would exceed the impact coordination threshold for Agriculture, Disturbed Prairie, Mixed, Arid, Sand Grassland, and Western Wetlands, Riparian MOU Vegetation (TxDOT 2017a). The proposed project also provides suitable habitat for one state-listed threatened species, Texas horned lizard (*Phrynosoma cornutum*), and 14 SGCN species: Woodhouse's toad (*Anaxyrus woodhousii*), mountain plover (*Charadrius montanus*), western burrowing owl (*Athene cunicularia hypugaea*), American badger (*Taxidea taxus*), black-tailed prairie dog (*Cynomys ludovicianus*), eastern spotted skunk (*Spilogale putorius*), plains spotted skunk (*Spilogale putorius interrupta*), prairie vole (*Microtus ochrogaster taylori*), swift fox (*Vulpes velox*), western hog-nosed skunk (*Conepatus leuconotus*), western box turtle (*Terrapene ornata*), western hognose snake (*Heterodon nasicus*), western rattlesnake (*Crotalus viridis*), and Cory's ephedra (*Ephedra coryi*). Of these 14 SGCN species, eight species do not have specified Best Management Practices (BMPs) in the current BMP PA (revised 2017) (TxDOT 2017b). These include Woodhouse's toad, American badger, prairie vole, western hog-nosed skunk, western box turtle, western hognose snake, western rattle snake, and Cory's ephedra. Therefore, coordination with TPWD was required for potential impacts to these species.

5.11.2 Impacts to Vegetation

The project area is located within the High Plains Ecoregion. The project area consists primarily of cropland and areas of existing transportation ROW with maintained vegetation.

Table 2 and **Figures 9.1** through **9.11** provide the field-verified EMST vegetation types identified in the proposed project area and the Ecological System Type according to TPWD's *Draft Descriptions of Systems, Mapping Subsystems, and Vegetation Types for Phase V*. Based on the Threshold Table PA

for the MOU between TxDOT and TPWD (effective September 1, 2013 and revised in 2017 [TxDOT 2017a]), **Table 2** also provides the TxDOT TPWD MOU vegetation type that corresponds with each EMST vegetation type identified in the project area.

Table 2. Potential Impacts* to Field-verified MOU Vegetation

EMST Vegetation Type	Ecological System Type	TxDOT/TPWD MOU Vegetation Type	MOU Threshold (acres)	Acres within Project Area
Row Crops	Agricultural	Agriculture	10	631.51
Total Potential Impacts to Agricultural MOU Vegetation				**631.51**
Rolling Plains: Mixedgrass Prairie	Central Mixedgrass Prairie	Mixed, Arid, Sand Grassland	2	39.06
Total Potential Impacts to Mix, Arid, San, Grassland MOU				**39.06**
Conservation Reserve Program (CRP)/Other Improved Grassland	Disturbance Grassland	Disturbed Prairie	3	45.09
Exotic Invasive: Elm/Olive Woodland	Invasive Shrub and Woodland			1.91
Total Potential Impacts to Disturbed Prairie MOU				**47.0**
High Plains: Floodplain Herbaceous Vegetation	Western Great Plains Floodplain	Western Wetlands, Riparian	0.1	122.15
High Plains: Playa Grassland	Western Great Plains Closed Depression Wetland			39.14
Total Potential Impacts to Western Wetlands, Riparian MOU				**161.29**
Urban Low Intensity	Urban	Urban	N/A	97.54
Total Potential Impacts to Urban MOU				**97.54**

*Based on ROW to ROW impacts

According to the Threshold PA between TxDOT and TPWD, there is no threshold for Urban vegetation. The coordination threshold for Agriculture is 10 acres, and potential impact to this vegetation type is 631.51 acres. The coordination threshold for Mixed, Arid, Sand Grassland is 2 acres, and potential impact to this vegetation type is 39.06 acres. The coordination threshold for Disturbed Prairie vegetation is 3 acres, and potential impact to this vegetation type is 47.0 acres. The coordination threshold for Western Wetlands, Riparian vegetation is 0.1 acre, and potential impact to this vegetation type is 161.29 acres. Therefore, the project would exceed impact thresholds defined by TPWD/TxDOT. The proposed project is not anticipated to result in indirect encroachment impacts to vegetation.

Under the No-Build Alternative, the proposed project would have no effect on existing vegetation habitat in the project area.

5.11.3 Executive Order 13112 on Invasive Species

This project is subject to and will comply with federal EO 13112 on Invasive Species. TxDOT implements this EO on a programmatic basis through its Roadside Vegetation Management Manual and Landscape and Aesthetics Design Manual.

5.11.4 Executive Memorandum on Environmentally and Economically Beneficial Landscaping

This project is subject to and will comply with the federal Executive Memorandum on Environmentally and Economically Beneficial Landscaping, effective April 26, 1994. TxDOT implements this Executive Memorandum on a programmatic basis through its Roadside Vegetation Management Manual and Landscape and Aesthetics Design Manual.

5.11.5 Impacts to Wildlife

The High Plains ecoregion is located in the Kansan Biotic Province, which is a transition zone containing a mixture of eastern forest species and western grassland species (Blair 1950). According to Blair (1950) and Dixon (2000), there are 15 species of amphibians in the Kansan Biotic Province, including one species of salamander, the tiger salamander (*Ambystoma tigrinum*), and 14 anuran species (frogs and toads). Anuran species characteristic of the region include Couch's spadefoot toad (*Scaphiopus couchii*), western spadefoot toad (*Scaphiopus hammondii*), Great Plains toad (*Anaxyrus cognatus*), green toad (*Anaxyrus debilis*), plateau toad (*Anaxyrus compactilis*), red-spotted toad (*Anaxyrus punctatus*), Woodhouse's toad, northern leopard frog (*Lithobates pipiens*), and southern cricket frog (*Acris gryllus*). One turtle species, the ornate box turtle (*Terrapene ornata ornata*), occurs in the study area.

According to Blair (1950) and Dixon (2000), at least 14 lizard and 31 snake species occur in the Kansan Biotic Province in Texas. Common lizards in the area include eastern collared lizard (*Crotaphytus collaris*), eastern fence lizard (*Sceloperus undulatus*), Great Plains skink (*Plestiodon obsoletus*), lesser earless lizard (*Holbrookia maculata*), greater earless lizard (*Holbrookia texana*), roundtail horned lizard (*Phrynosoma modestum*), Texas horned lizard (*Phrynosoma cornutum*), six-lined racerunner (*Aspidoscelis sexlineatus*), and Texas spotted whiptail (*Aspidocelis gularis*). Common snakes in the area include bullsnake (*Pituophis catenifer sayi*), checkered garter snake (*Thamnophis marcianus*), common garter snake (*Thamnophis sirtalis*), diamondback rattlesnake (*Crotalus atrox*), gopher snake (*Pituophis catenifer*), Great Plains rat snake (*Pantherophis emoryi*), glossy snake (*Arizona elegans*), long-nosed snake (*Rhinocheilus lecontei*), plain-bellied water snake (*Nerodia erythrogaster*), prairie rattlesnake (*Crotalus viridis*), ribbon snake (*Thamnophis sauritus*), Texas blind snake (*Leptotyphlops dulcis*), and western coachwhip (*Masticophis flagellum*).

The study area contains abundant and diverse avifauna, and over 400 avian species have been recorded in the region. Common year-round resident bird species in the study area include barn swallow (*Hirundo rustica*), eastern meadowlark (*Sturnella magna*), great-tailed grackle (*Quiscalus mexicanus*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), red-winged blackbird (*Agelaius phoeniceus*), scaled quail (*Callipepla squamata*), western meadowlark

(*Sturnella neglecta*), and white-winged dove (*Zenaida asiatica*). Common migrant/summer resident bird species in the study area include ash-throated flycatcher (*Myiarchus cinerascens*), cliff swallow (*Petrochelidon pyrrhonota*), common nighthawk (*Chordeiles minor*), dickcissel (*Spiza americana*), eastern phoebe (*Sayornis phoebe*), lark bunting (*Calamospiza melanocorys*), scissor-tailed flycatcher (*Tyrannus forficatus*), Swainson's hawk (*Buteo swainsoni*), and western kingbird (*Tyrannus verticalis*). Common migrant or winter resident bird species in the region include Franklin's gull (*Leucophaeus pipixcan*), longspurs (*Calcarius* spp.), Mississippi kite (*Ictinia mississippiensis*), orange-crowned warbler (*Oreothlypis celata*), savannah sparrow (*Passerculus sandwichensis*), Wilson's phalarope (*Phalaropus tricolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), yellow-rumped warbler (*Setophaga coronata*), and various species of ducks.

According to Blair (1950), at least 59 of the 143 mammal species in Texas historically occurred in the Kansan Biotic Province. The most common mammals that potentially occur in the study area include species more tolerant of human activity such as black-tailed jackrabbit (*Lepus californicus*), black-tailed prairie dog (*Cynomys ludovicianus*), plains spotted skunk, coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), striped skunk (*Mephitis mephitis*), yellow-faced pocket gopher (*Cratogeomys castanops*), striped skunk (*Mephitis mephitis*), American badger, and Virginia opossum (*Didelphis virginiana*). Common rodent species in the study area include Merriam's pocket mouse (*Perognathus merriami*), northern grasshopper mouse (*Onychomys leucogaster*), white-footed mouse (*Peromyscus leucopus*), plains pocket mouse (*Perognathus flavescens*), southern Plains woodrat (*Neotoma micropus*), white-throated woodrat (*Neotoma albigula*), and spotted ground squirrel (*Xerospermophilus spilosoma*). These species may occur within undeveloped portions of the proposed ROW, and therefore may be impacted by the proposed project.

The following sections provide a summary of potential impacts to wildlife associated with the Build Alternative.

Under the No-Build Alternative, the proposed project would have no effect on existing wildlife and habitat in the project area.

5.11.6 Migratory Bird Protections

This project will comply with applicable provisions of the Migratory Bird Treaty Act (MBTA) and Texas Parks and Wildlife Code Title 5, Subtitle B, Chapter 64, Birds. It is TxDOT's policy to avoid removal and destruction of active bird nests except through federal or state approved options. In addition, it is TxDOT's policy to, where appropriate and practicable:

- use measures to prevent or discourage birds from building nests on man-made structures within portions of the project area planned for construction, and
- schedule construction activities outside of typical nesting season.

A site survey did not identify migratory birds or active nests within the project action area. While no impact to migratory birds is expected, TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young should they be discovered on the project site.

Direction to contractors is provided on the standard Environmental Permits, Issues, and Commitments (EPIC) sheet.

5.11.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) of 1958 requires that federal agencies obtain comments from the US Fish and Wildlife Service (USFWS) and TPWD. This coordination is required whenever a project involves impounding, diverting, or deepening a stream channel or other body of water. The proposed project would have no impact to waters of the U.S. or wetlands and no Section 404 permit is required; therefore, no coordination under FWCA is required.

5.11.8 Bald and Golden Eagle Protection Act of 2007

Within the U.S. or anywhere within its jurisdiction, bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected by the Bald and Golden Eagle Protection Act of 2007. No eagles or potential eagle nests were observed in or adjacent to the project area during field visits. Based on the information available and observations made in the project area, the project does not have the potential to impact bald or golden eagles.

5.11.9 Magnuson-Stevens Fishery Conservation Management Act

The proposed project is not located in a coastal county; therefore, coordination with the National Marine Fisheries Service is not required.

5.11.10 Marine Mammal Protection Act

The project does not contain suitable habitat for marine mammals. Coordination with the National Marine Fisheries Service is not required.

5.11.11 Threatened, Endangered, and Candidate Species

A review of the threatened and endangered species lists for Lubbock County, Texas, maintained by the USFWS and the TPWD, identified federal and state-listed threatened, endangered, as well as those considered SGCN by the state.

No suitable habitat for federally listed threatened, endangered, or proposed threatened or endangered species was identified in or adjacent to the project area. Therefore, the project does not have the potential to affect any federally listed species.

There is potential habitat for one state-listed threatened species located within or directly adjacent to the proposed project area: Texas horned lizard, and 14 SGCN: Woodhouse's toad, mountain plover, western burrowing owl, American badger, black-tailed prairie dog, eastern spotted skunk, plains spotted skunk, prairie vole, swift fox, western hog-nosed skunk, western box turtle, western hognose snake, western rattlesnake, and Cory's ephedra.

BMPs will be implemented to avoid impacts, where possible, including TPWD's Bird BMPs and Terrestrial Reptile BMPs. For the black-tailed prairie dog, if burrows are to be excavated/directly

impacted, TxDOT will coordinate with TPWD Wildlife Habitat Assessment Program (WHAB); when a construction zone is adjacent to a black-tailed prairie dog colony, TxDOT will erect barriers to discourage black-tailed prairie dogs from moving through or into the construction area; and when seeding or revegetation is planned by TxDOT in an area adjacent to a black-tailed prairie dog colony, vegetative barriers will be considered in the planting to discourage dispersal into TxDOT's ROW. For the eastern/plains spotted skunk and the swift fox, contractors will be advised of their potential occurrence in the project area, to avoid harming the species if encountered, to avoid unnecessary impacts to dens (TxDOT 2017b). Terrestrial Reptile BMPs will be implemented for the Texas horned lizard, and contractors would be advised of the potential occurrence in the project area, and to avoid harming the species if encountered. This should include avoiding harvester ant mounds in the selection of project specific locations (PSLs), where feasible. The current BMP PA (revised 2017) does not specify BMPs for Woodhouse's toad, American badger, prairie vole, western hog-nosed skunk, western box turtle, western hognose snake, western rattle snake, and Cory's ephedra. Therefore, coordination with TPWD was required. Based on suggestions from TPWD during coordination, the following additional measures will be implemented (**Appendix G**). Contractors will be advised at the pre-construction meeting and during construction of the project to avoid handling or harming the Texas horned lizard. Terrestrial Reptile BMPs will also be implemented for the western box turtle, western hognose snake, and western rattlesnake. Contractors will be advised of the potential occurrence of the swift fox, western hog-nosed skunk, American badger, and prairie vole within the project area and to avoid handling or harming these species if encountered and to avoid unnecessary impacts to dens. Should SGCN plants be found within the project footprint they will be protected with temporary fencing and the contractor will be alerted to avoid disturbing the plants. TPWD will be contacted should this occur. Contactors will be advised to avoid the placement of PSLs on the margin or drainage areas of playas.

Migratory bird BMPs will be incorporated into the EPIC and general notes of the plan sheets and contractors will be advised at the pre-construction meeting to avoid handling or harming all wildlife. Revegetation of disturbed areas will be implemented into the project plans according to TxDOT rural seed specifications.

BMPs and direction to contractors are provided on the standard EPIC sheet.

The No-Build Alternative would not result in impacts to existing vegetation and wildlife habitat in the project area.

5.12 Air Quality

An air quality analysis was conducted for the proposed project in accordance with TxDOT's standard operating procedures for air quality compliance (TxDOT 2017c, 2019a).

5.12.1 Transportation Conformity

This project is located within an area in attainment or unclassifiable for all national ambient air quality standards (NAAQS); therefore, the transportation conformity rules do not apply.

5.12.2 Project-level Hot-spot Analysis Requirements

The proposed project is not located within a carbon monoxide (CO) or particulate matter (PM) nonattainment or maintenance area; therefore, a project level hot-spot analysis is not required.

5.12.3 Carbon Monoxide Traffic Air Quality Analysis (TAQA)

Traffic data for the estimated time of completion (ETC) year (2030) and design year (2050) are 6,200 vehicles per day (vpd) and 10,050 vpd, respectively. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that the CO standard would ever be exceeded as a result of any project with an annual average daily traffic (AADT) below 140,000 vpd. The AADT projections for the proposed project do not exceed 140,000 vpd; therefore, a TAQA is not required.

5.12.4 Mobile Source Air Toxics (MSAT)

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register [FR], Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/iris/). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA) (https://www.epa.gov/national-air-toxics-assessment). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel PM, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According the to the EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010.

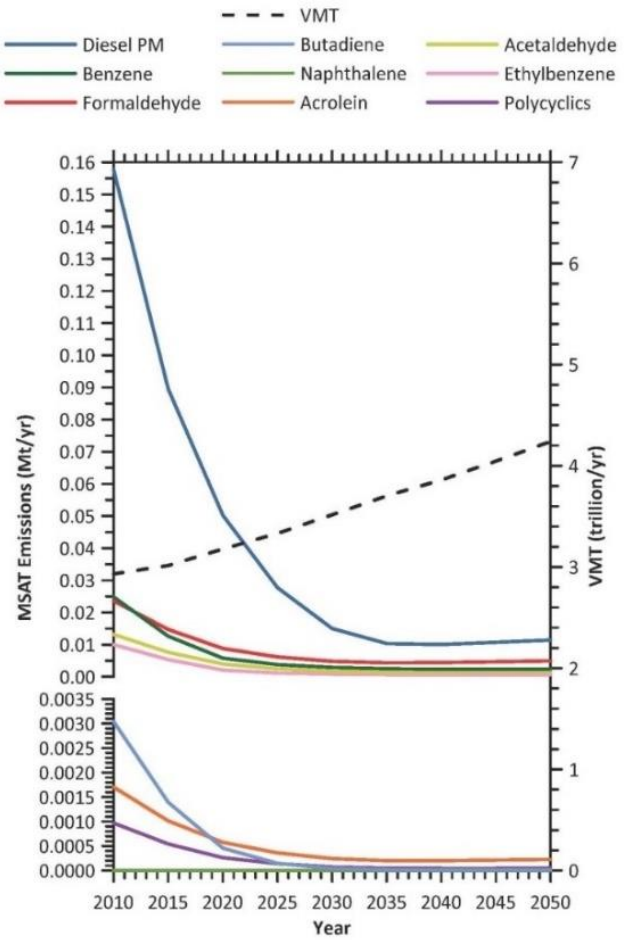
These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and VMT data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010.

These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344).

Since the release of MOVES2014, the EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide (https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100NNR0.txt), the EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in **Insert 2**, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Insert 2.
FHWA PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOVES2014a Model



Source: EPA MOVES2014a model runs conducted by FHWA, September 2016.
Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorological, and other factors.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA. The FHWA, the EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

Project Specific MSAT Information

A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled, *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm.

The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. The additional travel lanes contemplated as part of the project Build Alternative would have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under the Build Alternative there may be localized areas where ambient concentrations of MSAT could be higher than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at the US 84 and SH 114 intersections. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. Consistent with 40 CFR 1502.22 (regarding incomplete and unavailable information) FHWA does not conduct MSAT heath impacts for the reasons described below.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act (CAA) and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm) . Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the

estimation of inhalation carcinogenic risk (EPA IRIS database, Diesel Engine Exhaust, Section II.C. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642_summary.pdf)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld the EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf).

5.12.5 Congestion Management Process (CMP)

This project is within an attainment or unclassifiable area for ozone and CO; therefore, a project level CMP analysis is not required.

5.12.6 Construction-related Emissions Reduction Strategies

During the construction phase of this project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel PM from diesel powered construction equipment and vehicles.

The potential impacts of PM emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program can be found on TCEQ's TERP website (https://www.tceq.texas.gov/airquality/terp).

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements; it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

5.13 Hazardous Materials

In the Loop 88 Segments 1 & 2 *Hazardous Materials ISA Form*, dated June 2019, an ISA was conducted to identify potential hazardous materials within the proposed project study area. The components of the ISA included reviewing project design and ROW requirements, existing and previous land use, and federal and state regulatory databases and files. A database search for potential hazardous materials was conducted in May 2019 in general accordance with the American Society of Testing and Materials (ASTM) E1527 standards and TxDOT guidelines. An analysis of the ISA data indicates that further research may be needed to determine if the proposed project would be impacted by hazardous materials. A copy of the GeoSearch Database Radius Report is included as an appendix to the June 2019 *Hazardous Materials ISA Form*.

Before ISA was conducted, TxDOT received notification from a local property owner and the local news of potential contamination near the former Reese Air Force Base (Francis Email 2018a, see **Appendix G**). TxDOT Environmental Affairs Division (ENV) and LCA Environmental requested information from TCEQ about the groundwater plume associated with the former Reece Air Force Base. TCEQ provided maps showing where impacted private and public water supply wells were, stated groundwater in the area is approximately 100 to 150 feet below ground surface, and explained the extent of the plume had not been fully delineated, but that they could provide updated information as the investigation progresses (Hatfield Email 2018, see **Appendix G**). LCA Environmental performed limited investigations near the former Reese Air Force Base to determine if potentially hazardous conditions were known to existing within the proposed Loop 88 project alignment. As a result of the investigation, LCA recommended a limited surface and shallow subsurface soil sampling investigation be conducted within the proposed the proposed ROW that was within the former base housing area (Foss 2018, see **Appendix G**). Findings showed there is potential groundwater contamination that has not been fully delineated within the current proposed project alignment. Depth to groundwater in the area is at least approximately 100 feet, and the project depth of impacts for bridge pilings is anticipated to only be approximately 60 feet deep. It was determined construction would most likely not be an issue in the area due to the depth of groundwater; however, the project engineers shifted the project alignment farther east to avoid groundwater and soil contamination associated with the former Reese Air Force Base (Francis Email 2018b, see **Appendix G**). This revised alignment is being analyzed in this EA.

During preliminary investigations for the ISA, USGS topographic maps, current and past aerial imagery, the project schematic, and a notification of contamination to TxDOT were reviewed. The Railroad Commission of Texas (RRC) Public Geographic Information System (GIS) viewer identified seven pipelines that cross the project area and multiple wells within or adjacent to the project ROW (see **Figures 10.1** and **10.2** in **Appendix F**). TxDOT will coordinate with property owners as needed; no hazardous materials concerns are anticipated.

During the site survey, transformers, electrical transmission lines, and residential propane tanks were observed. TxDOT will coordinate with owners of the transformers, electrical transmission lines, and residential propane tanks as needed. Also, numerous houses and businesses with automotive-related materials as well as other debris and scrap metal were observed. Additional investigations will be needed during the acquisition process for these sites.

The 2019 GeoSearch Database Radius Report identified 15 hazardous materials sites, one Resource Conservation & Recovery Act Corrective Action facilities (RCRAC) site, one Resource Conservation & Recovery Act = non-CORRACTS treatment, storage & disposal facilities (RCRAT) site, one industrial and hazardous waste corrective action (IHWCA) site, one closed and abandoned landfill (CALF) site, 10 leaking petroleum storage tank (LPST) sites, and one petroleum storage tank (PST) site. The PST and CALF sites, as well as the two LPST sites at MAP ID #2 in the 2019 radius report, are located outside the project footprint and no proposed ROW would be needed from these sites. Therefore, no hazardous materials concerns are anticipated. The RCRAC, RCRAT, and IHWCA sites, as well as the multiple LPST sites, are associated with the former Reese Air Force Base and former Reese Air Force Base Housing. Groundwater and soil were impacted by a trichloroethylene (TCE) plume and potentially a perfluorinated compounds (PFCs) plume (Foss 2018); therefore, further research is needed to determine the risk of contamination to the proposed project.

Hazardous materials may be encountered on the site during preconstruction and construction activities. Any unanticipated hazardous material and/or petroleum contamination encountered during construction of the proposed project would be handled according to applicable federal and state regulations per TxDOT Standard Specifications.

The No-Build Alternative would not result in hazardous materials impacts.

5.14 Traffic Noise

A traffic noise analysis was conducted in accordance with TxDOT's (FHWA-approved) Guidelines for Analysis and Abatement of Roadway Traffic Noise (2011). Traffic Noise Model version 2.5 (TNM 2.5) was utilized in the assessment. The Loop 88 Segments 1 & 2 *Traffic Noise Analysis Technical Report* dated March 2020, which includes details about the analysis, is available for public review at the TxDOT Lubbock District office.

Existing traffic noise levels were determined by measuring ambient noise at representative locations along the proposed project alignment or by modeling. Predicted traffic noise levels were modeled at representative actual land use activity areas (receptors) adjacent to the project that might be impacted by traffic noise and would potentially benefit from feasible and reasonable noise abatement.

The analysis identified 17 representative receivers along the project length (**Table 3** and **Figures 11.1** through **11.13** in **Appendix F**).

Table 3. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	2019 Field Measurement	Predicted 2050	Change (+/-)	Noise Impact
R1 Residence	B	67	68	70*	**+2**	**Yes**
R2 Residence	B	67	57	60*	+3	No
R3 Residence	B	67	57	60*	+3	No
R4 Residence	B	67	57	60*	+3	No
R5 Residence	B	67	57	60*	+3	No
R6 Residence	B	67	57	60*	+3	No
R7 Residence	B	67	64	65*	+1	No
R8 Residence	B	67	64	65*	+1	No

Table 3. Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	2019 Field Measurement	Predicted 2050	Change (+/-)	Noise Impact
R9 Residence	B	67	32	59	**+27**	**Yes**
R10 Residence	B	67	32	59	**+27**	**Yes**
R11 Residence	B	67	32	58	**+26**	**Yes**
R12 Residence	B	67	32	57	**+25**	**Yes**
R13 Residence	B	67	51	55*	+4	No
R14 Residence	B	67	51	56*	+5	No
R15 Residence	B	67	51	56*	+5	No
R17 Residence	B	67	54	60*	+6	No
Representative Receiver	**NAC Category**	**NAC Level**	**2030 Existing Model**	**Predicted 2050**	**Change (+/-)**	**Noise Impact**
R16 Residence	B	67	62	64	+2	No

*Predicted 2050 results were determined by adding the predicted modelled result to the ambient noise measurement, through decibel addition.
Source: Blanton & Associates, 2020

Modeled noise-sensitive locations were solely residential properties. As indicated in **Table 3**, the traffic noise analysis determined that out of 17 representative receptors, five were predicted to have noise levels that approached or exceeded the FHWA noise abatement criteria or that substantially exceed the existing noise levels; therefore, the proposed project would result in traffic noise impacts

Noise abatement measures were considered and analyzed for each impacted receptor location. Abatement measures, typically noise barriers, must provide a minimum noise reduction, or benefit, at or above the threshold of 5 dB(A). A barrier is not acoustically feasible unless it reduces noise levels by at least 5 dB(A) at greater than 50 percent of first-row impacted receptors and benefits a minimum of two impacted receptors. To be reasonable, the barrier must not exceed the cost reasonableness allowance of 1,500 square feet per benefited receptor and must meet the noise reduction design goal of 7 dB(A) for at least one receptor.

Noise walls were evaluated for each of the impacted receiver locations, the results of which are described in detail in the 2020 *Traffic Noise Analysis Technical Report*. None of the noise abatement measures would be both feasible and reasonable; therefore, no abatement measures are proposed for this project.

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the predicted (2050) noise impact contours (**Table 4**).

Table 4. Predicted Noise Impact Contours

Land Use	Impact Contour	Distance from ROW
NAC category B & C	66 dB(A)	Within the ROW
NAC category E	71 dB(A)	Within the ROW

Source: Blanton & Associates, 2020

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

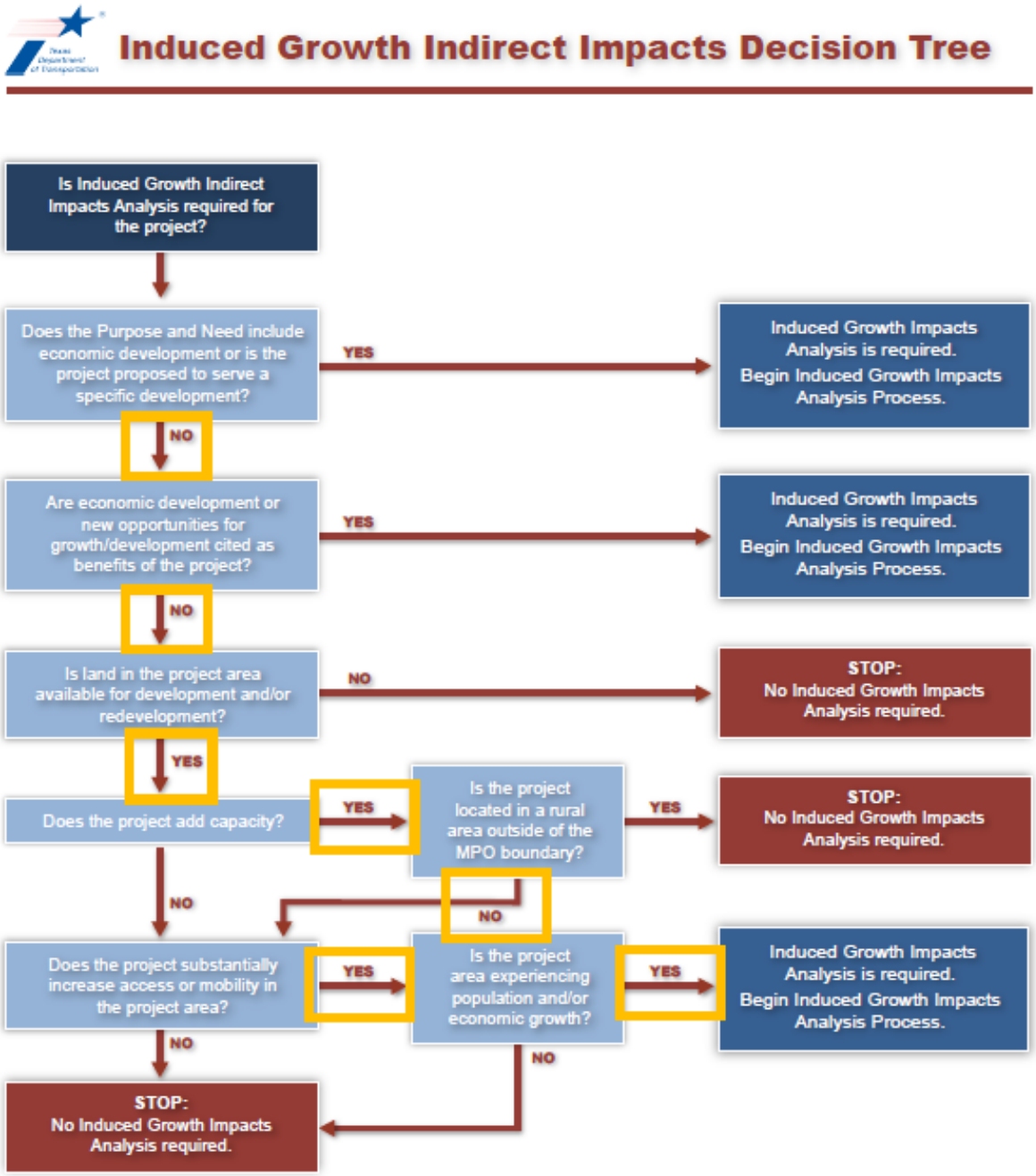
A copy of the traffic noise analysis will be made available to local officials to assist in future land use planning. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

The No-Build Alternative may maintain existing traffic noise levels or noise levels may change as traffic volumes increase with time.

5.15 Induced Growth

Indirect impacts are defined as those caused by an action and are later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts are not directly associated with the construction or operation of the roadway and are often caused by related development and induced growth. This, in turn, can result in a variety of related impacts such as changes in land use, population density or growth rate, economic vitality, and impacts on air and water and other natural resources. During project scoping, it was determined that the proposed project required an analysis of indirect effects since the project would increase accessibility to areas that previously were inaccessible or had limited accessibility. According to TxDOT's *Induced Growth Indirect Impacts Decision Tree* (TxDOT 2014b), an Induced Growth Impacts Analysis is required because there is land available in the project area for development or redevelopment, the project adds capacity, the project is located within an MPO boundary, the project increases access and mobility in the project area, and the project area is experiencing population growth (**Insert 3**).

Insert 3.



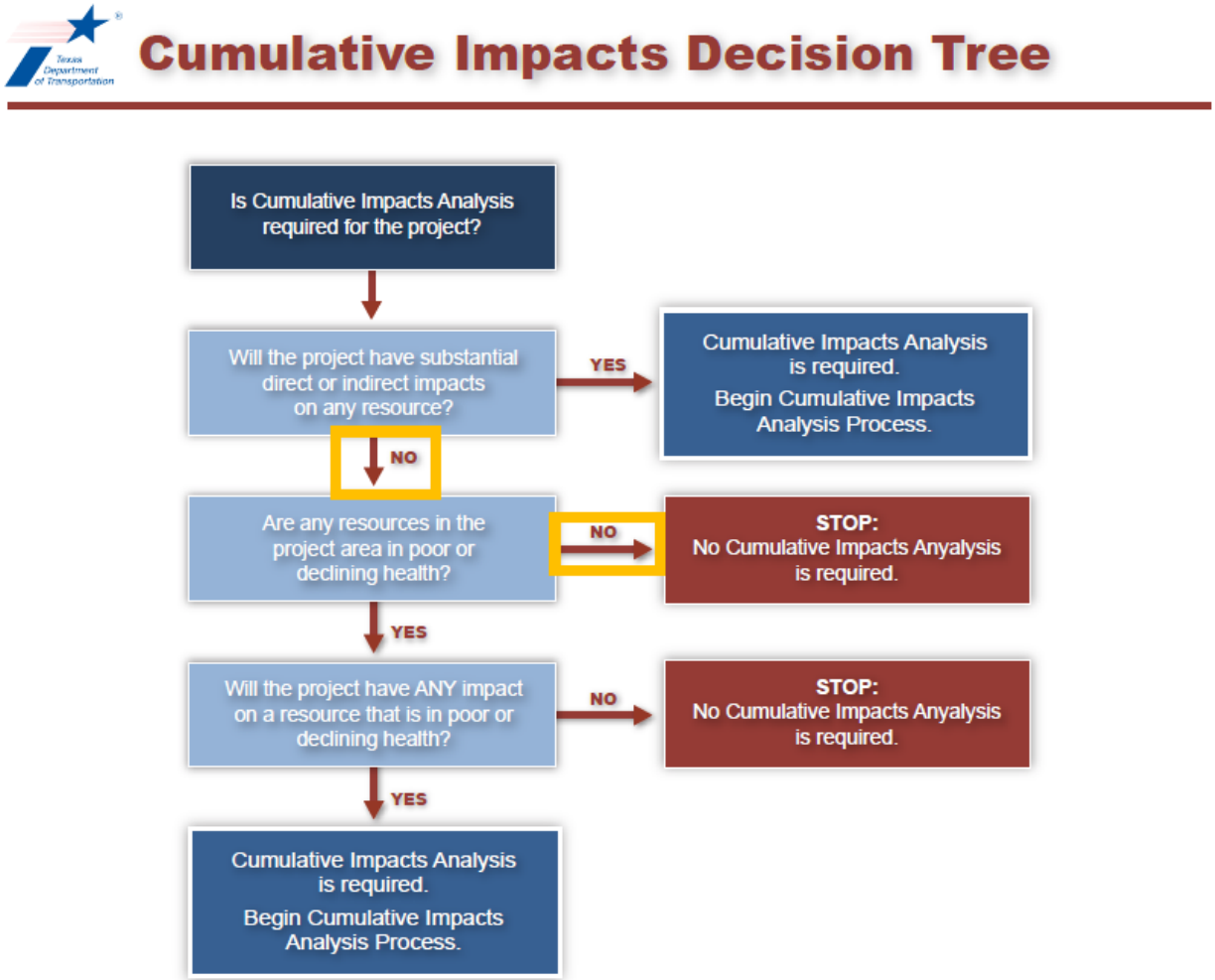
An *Indirect and Cumulative Impacts Technical Report*, dated November 2019, was prepared based on TxDOT's Indirect Impacts Analysis Guidance (TxDOT 2019b) and is on file at the TxDOT Lubbock District Office. Based on reviews of land use maps, aerial imagery, and analysis of population data, the overall existing growth trend is expected to continue, including future growth within the AOI. The proposed project would increase accessibility to undeveloped properties and improve north-south mobility in the western Lubbock area, which could enable development of properties adjacent to the proposed project corridor, especially near the northern and southern termini and near the Reese Technology Center.

However, undeveloped areas with limited access points or connections to adjacent roadways that would become more accessible due to the proposed project may not experience induced growth due to lack of utility connections. Utility services would need to be installed to allow for future development in these areas. Overall, there is potential for land use changes and growth areas identified in **Figure 13**.

5.16 Cumulative Impacts

Cumulative impacts result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR §1508.7). They are defined as impacts on the environment that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Utilizing TxDOT's Cumulative Impacts Decision Tree (TxDOT 2014b), it was determined that a cumulative impacts analysis was not required because the proposed project would not have substantial direct or indirect impacts on any resource, and resources in the project area are not in poor or declining health (**Insert 4**). Therefore, no resources will be carried forward for a cumulative impact analysis.

Insert 4.



5.17 Construction Phase Impacts

Construction of the proposed project may require temporary closures and detours; however, these are expected to be of short duration with no major traffic flow disruptions on the existing roadways. TxDOT will work with community members to notify them of closures and limited access. **Section 5.12.6** further discusses the construction-related air emissions, and **Section 5.14** further discusses the construction-related noise impacts.

Under the No-Build Alternative, no construction would occur, therefore, no construction impacts would be anticipated.

6.0 AGENCY COORDINATION

Over the course of project development, TxDOT has coordinated and will continue to coordinate with local, state, and federal agencies regarding the proposed project as necessary. Copies of agency coordination documents are available in **Appendix G.**

- TxDOT coordinated with the NRCS for the FPPA and coordination was determined complete due to the score on the FPPA Form NRCS-CPA 106.
- TxDOT sent consultation requests to the Kiowa, Mescalero, Wichita and Affiliated Tribes, Apache, Tonkawa, and Jicarilla Apache Nation were sent. All correspondence will be on file at the TxDOT Lubbock District office. No responses were received.
- TxDOT coordinated with the Lubbock County Historical Commission for historic-age resources to meet the requirements of Section 106; the Lubbock County Historic Preservation Officer concluded the project "will not affect any historic properties." TxDOT historians determined individual project coordination with the SHPO would not be required.
- TxDOT coordinated with TPWD WHAB for species without BMPs and impacts to vegetation.
- TxDOT will coordinate with owners of transformers, electrical transmission lines, and residential propane tanks as needed if relocation is required.
- TxDOT will coordinate with TCEQ in regards to potential groundwater and soil contamination associated with a contamination plume from the former Reese Air Force Base, if needed.
- According to TxDOT's MOU with TCEQ, TxDOT coordinated with TCEQ by providing TCEQ with a combined notice of availability of the Draft EA and a notice of a public hearing.

Coordination with these agencies will be included in the project record on file at the TxDOT Lubbock District Office when coordination is complete.

7.0 PUBLIC INVOLVEMENT

On February 20, 2018, TxDOT held a public meeting at the Lubbock–Cooper Performing Arts Center, located at 16302 Loop 493, Lubbock, TX 79423. Notices of the meeting were provided in English and in Spanish, were posted on TxDOT's website, and were sent to local media. A total of 116 members of the public signed in at the meeting, and four comments were received during the public comment period. All four comments supported the project, and two comments recommended shifting part of the

alignment farther east to reduce cost and to benefit the public. The Public Meeting Summary is available for review at the TxDOT Lubbock District Office.

On July 24, 2018, TxDOT held a second public meeting at the Lubbock-Cooper Performing Arts Center, located at 16302 Loop 493, Lubbock, TX 79423. Notices of the meeting were provided in English, was posted on TxDOT's website, and were sent to local media. A total of 185 members of the public signed in at the meeting, and 44 comments were received during the public comment period concerning Segments 1, 2, and 4 of the Loop 88 project. Comments concerning Segments 1 and 2 of the Loop 88 project primarily discussed concerns about impacts to properties and farmland and the project alignment, as well as project design suggestions, requesting the engineers consider farming equipment when designing overpasses, questions about TxDOT purchasing ROW, TxDOT communication throughout the project, approval/disapproval of the public meeting, and safety. The Public Meeting Summary is available for review at the TxDOT Lubbock District Office.

A virtual public hearing was held on June 9, 2020 at 4:00 P.M on the TxDOT and Lubbock County websites that included a pre-recorded presentation and written transcript. Notices of the virtual public hearing and a notice of availability for the Draft EA were mailed to adjacent property owners, other interested parties, and public officials. Notice of the virtual public hearing and a notice of availability for the Draft EA were published in the *Lubbock Avalanche Journal* newspaper on May 24, 2020. Notices were also posted on the TxDOT and Lubbock County websites, on TxDOT social media accounts, and sent to the local media. The draft EA, environmental technical reports, and project schematics were available for download and review on the websites. Comments were requested and received. Comments received consisted of support for the project and concern about displacing properties in a developing neighborhood. The public hearing summary is available for review at the TxDOT Lubbock District Office.

A notice of availability of the final EA will be issued, and a FONSI will not be signed until 30 days after the notice of availability of the final EA. A notice of impending construction will also be provided to owners of adjoining property and affected local governments and public officials. The notice may be provided via signs or signs posted within the TxDOT ROW, mailed notice, printed notice distributed by hand, or notice via the TxDOT website. The notice will be provided after an environmental decision is made, but before earthmoving or other activities requiring use of heavy equipment begin.

8.0 POST-ENVIRONMENTAL CLEARANCE ACTIVITIES AND CONTRACTOR COMMITMENTS

8.1 Post-Environmental Clearance Activities

After issuance of a FONSI, there are unresolved environmental activities that will need to be performed and finalized. These activities are detailed below.

1. Intensive archeological surveys will be completed once TxDOT acquires ROW for the proposed project.

2. The Build Alternative would include 5 or more acres of earth disturbance. TxDOT would comply with TCEQ's TPDES CGP. An SW3P would be prepared and implemented, and a construction site notice would be posted on the construction site. An NOI would be required.

3. Construction of the proposed project may require temporary lane closures in some areas. However, these are expected to be of short duration with no major traffic flow disruptions on the existing roadways. TxDOT will work with community members to notify them of closures and limited access.

4. A notice of impending construction will also be provided to owners of adjoining property and affected local governments and public officials.

5. A copy of the traffic noise analysis will be made available to local officials to assist in future land use planning.

8.2 Contractor Communications

Project-specific avoidance measures and special instructions, including BMPs are provided on the standard EPIC sheet, and detailed below.

1. If unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures.

2. In the event that migratory birds are encountered on-site during project construction, every effort would be made to avoid protected birds, active nests, eggs, and/or young. Contractors would not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

3. The proposed project contains potential habitat for the black-tailed prairie dog. Fossorial Mammal BMPs will be implemented and contractors would be advised of the potential occurrence in the project area, and to avoid harming the species if encountered.

4. The proposed project contains potential habitat for the eastern/plains spotted skunk, swift fox, western hog-nosed skunk, American badger, and prairie vole. Contractors will be advised of the potential occurrence within the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

5. The proposed project contains potential habitat for the Texas horned lizard. Terrestrial Reptile BMPs will be implemented and contractors would be advised of the potential occurrence in the project area, and to avoid harming the species if encountered. This should include avoiding harvester ant mounds in the selection of PSLs, where feasible.

6. The proposed project contains potential habitat for the western box turtle, western hognose snake, and western rattlesnake. Terrestrial Reptile BMPs will be implemented.

7. The proposed project contains potential habitat for mountain plover and western burrowing owl; therefore, Bird BMPs will be implemented.

8. Should SGCN plants be found within the project footprint they will be protected with temporary fencing and the contractor will be alerted to avoid disturbing the plants. TPWD will be contacted should this occur.

9. Contractors will be advised to avoid the placement of PSLs on the margin or in drainage areas of playas.

10. In accordance with the EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits. Therefore, seeding and replanting with TxDOT approved seeding specifications would be performed where possible.

11. The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. TxDOT encourages construction contractors to use TERP and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions.

12. Any unanticipated hazardous material and/or petroleum contamination encountered during construction of the proposed project would be handled according to applicable federal and state regulations per TxDOT Standard Specification.

13. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

9.0 CONCLUSION

The analysis of alternatives for the proposed project determined that improvements proposed under the Build Alternative would meet the need and purpose of the project. The engineering, social, economic, and environmental studies conducted on the improvements as proposed by the Build Alternative indicate that the project would result in no significant adverse impacts on the human or natural environment at a level that would warrant an EIS; therefore, a FONSI is recommended.

10.0 REFERENCES

Blair, W. F. 1950. The biotic provinces of Texas. Texas Journal of Science 2:93-117.

Dixon, J. R. 2000. Amphibians and reptiles of Texas. Second Edition. Texas A&M University Press, College Station, Texas.

Foss, Laura. 2018. Memorandum to Douglass Mack. June 25, 2018. LCA Environmental, "WA 18 – Loop 88 Lubbock, Texas, Records Review, Contract Reference: 57-718SG003". Memorandum. (See **Appendix G**).

Francis, Kylan. 2018a. Email from Kylan Francis (TxDOT Project Manager) to Karen Bradshaw (TxDOT Environmental representative), April 17, 2018. (See **Appendix G**).

_____. 2018b. Email from Kylan Francis (TxDOT Project Manager) to Michael Ponce (consulting engineer), November 14, 2018. (See **Appendix G**).

Hatfield, Maureen. 2018. Email from Maureen Hatfield (TCEQ) to Douglass Mack (TxDOT ENV), April 25, 2018. (See **Appendix G**).

Texas Commission on Environmental Quality (TCEQ). 2019. Draft 2018 Texas Integrated Report for the Clean Water Act Sections 305(b) and 303(d). Adopted on September 27, 2019. https://www.tceq.texas.gov/waterquality/assessment/18twqi/18txir. Accessed April 2020.

Texas Department of Transportation (TxDOT). 2010. Lubbock Outer Route Feasibility Study Report.

_____. 2011. Guidelines for Analysis and Abatement of Roadway Traffic Noise.

_____. 2014a. Induced Growth Indirect Impacts Decision Tree.

_____. 2014b. Cumulative Impacts Decision Tree.

_____. 2014c. Lubbock Outer Route Study Final Report.

_____. 2017a. Threshold Table Programmatic Agreement Between Texas Department of Transportation and Texas Parks and Wildlife Department Under the 2013 MOU, 2017 Revision.

_____. 2017b. Best Management Practices Programmatic Agreement Between Texas Department of Transportation and Texas Parks and Wildlife Department Under the 2013 MOU, 2017 Revision.

_____. 2017c. Environmental Handbook - Air Quality. TxDOT Environmental Affairs Division. Version 5. Effective Date: May 2017. 210.01.GUI.

_____. 2019a. Guidance for Preparing Air Quality Statements. TxDOT Environmental Affairs Division. Version 1. Effective Date: August 2019. 200.03.GUI.

_____. 2019b. Indirect Impacts Analysis Guidance.

Texas Water Development Board (TWDB). 2019. 2016 Regional Water Plan County Population Projections for 2020-2070. January 2015. Accessed September 2019.

United States Census Bureau. 2010. Total Population 2010 Census Summary File. Website. https://factfinder.census.gov. Accessed July 2019.

United States Department of Health and Human Services (DHHS). 2019. U.S. Federal Poverty Guidelines. https://aspe.hhs.gov/poverty-guidelines. Accessed July 2019.

Appendix A

Project Location Maps

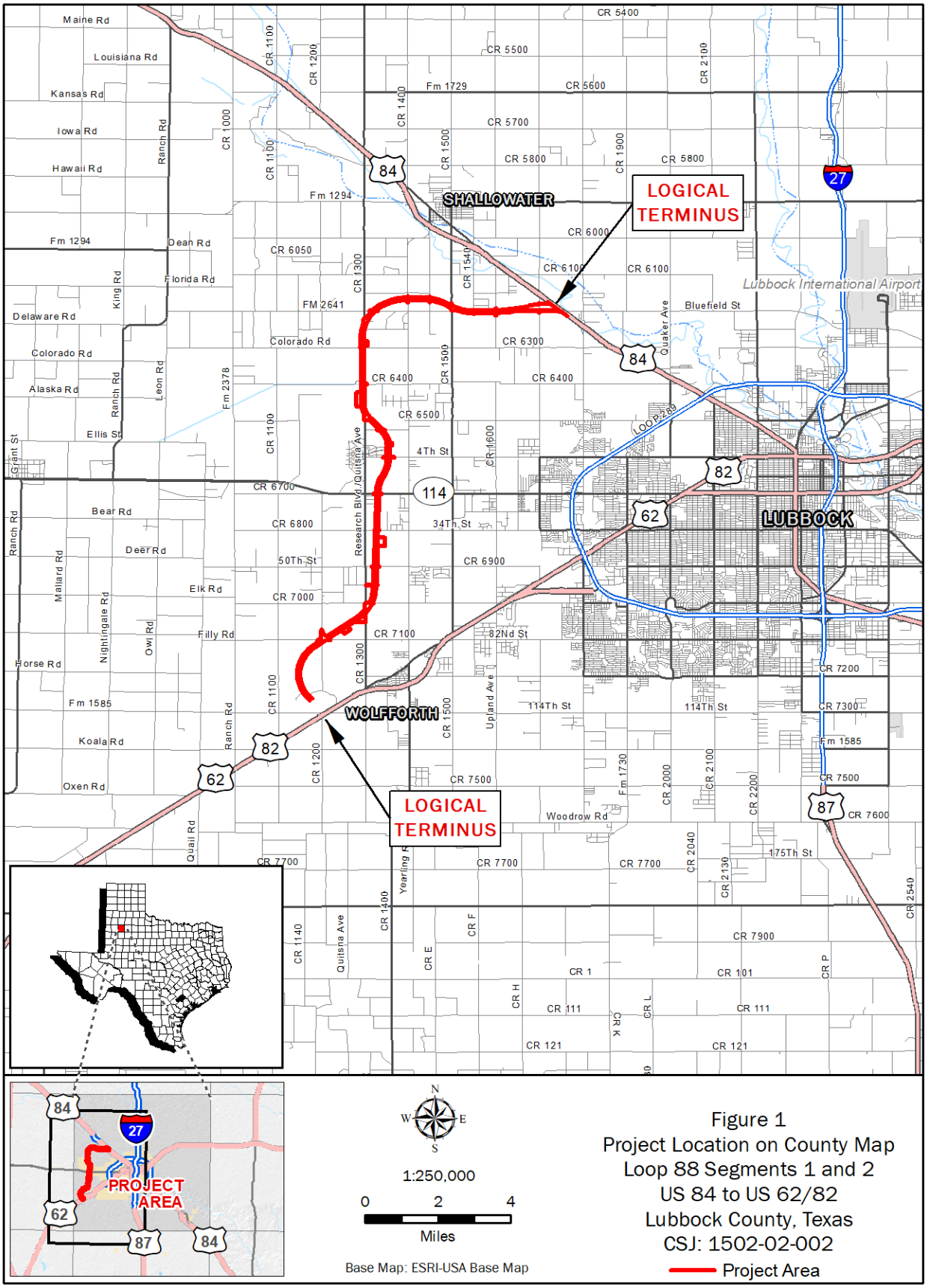
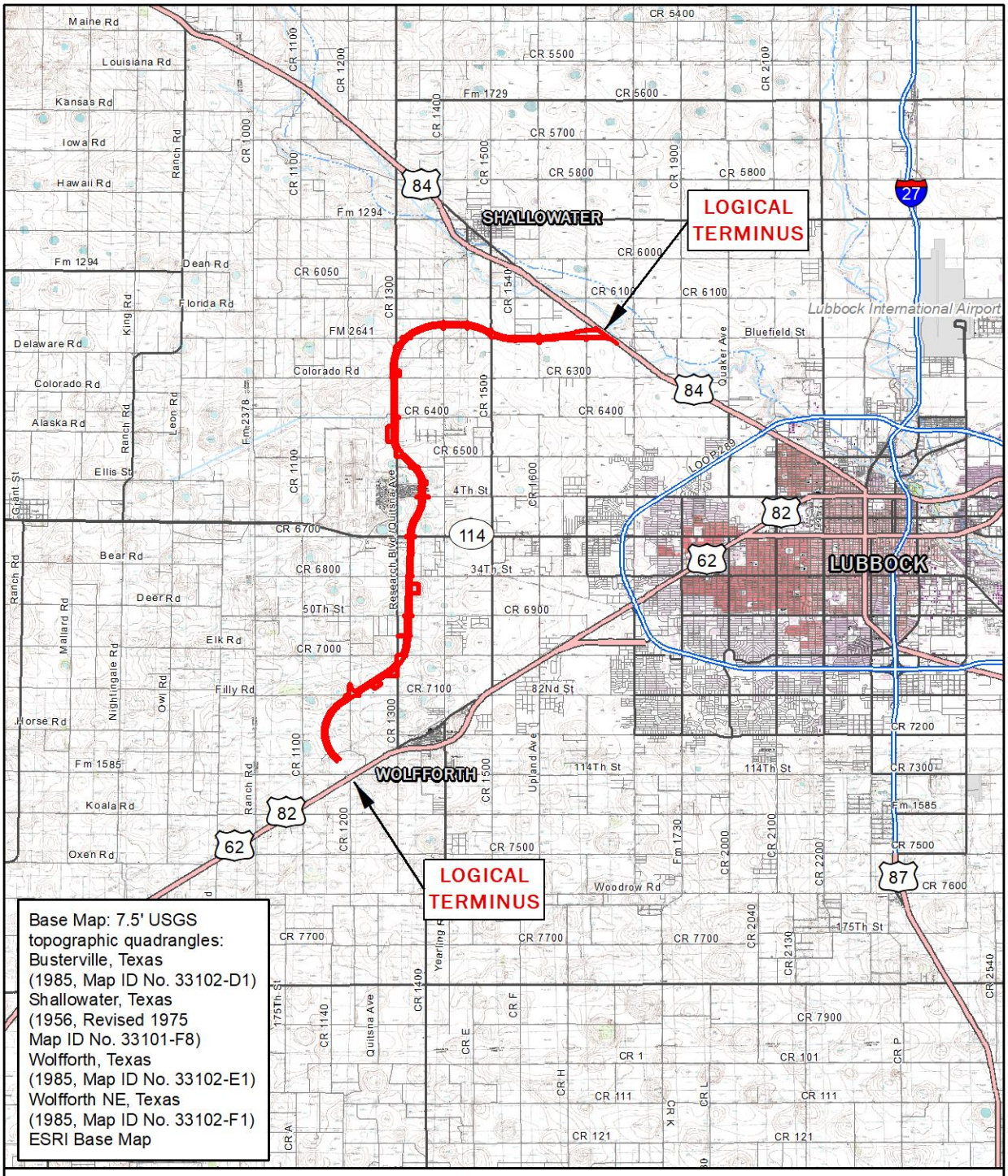


Figure 1
Project Location on County Map
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002
Project Area



Project Area

N
W E
S

1:250,000

0 2 4
Miles

Figure 2
Project Location on Topographic Base
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Appendix B

Project Photos

Photo 1. Northern project limit US 84, facing east.

Photo 2. Southern limit 0.5 mile northwest of US 62/82, facing north.

Photo 3. Reese Technology Center, facing southwest.

Photo 4. Representative photo of dirt roads/existing infrastructure within project area.

Photo 5. Representative photo of existing roadway within project area.

Photo 6. Representative photo of houses in the project area.

Photo 7. Representative photo of houses in the project area.

Photo 8. Representative photo of mobile homes in the project area.

Photo 9. Representative photo of agricultural land use throughout most of the project area.

Photo 10. Representative photo of agricultural land use throughout most of the project area.

Photo 11. Representative photo of agricultural land use throughout most of the project area.

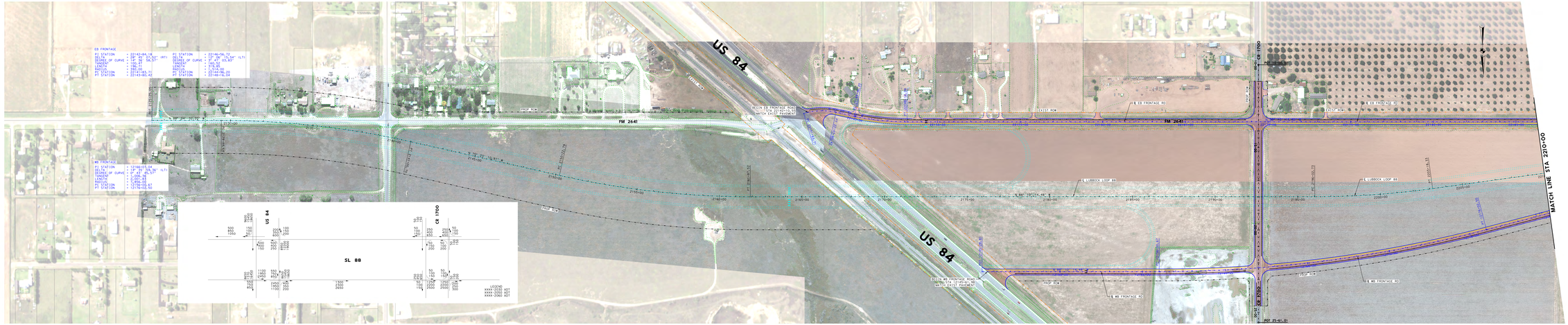
Appendix C

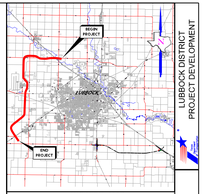
Schematics

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE





VICINITY MAP
(N.T.S.)

LEGEND

- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING FLAMMTEC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 55 MPH
RAMP DESIGN SPEED: 55 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
18932
Texas Reg. Firm#
Texas Reg. Firm# 7759
TBPE Firm# 18932
TBPLS Firm# 10017
TBPELS Firm# 10017

PRELIMINARY

Document incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Serial No. 87916
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: BEGIN PROJECT
TO: 1FM 2641/IH 1700

LUBBOCK DISTRICT

DATE:
SCALE: AS SHOWN
DESIGNED: TP-ENTECH
REVIEWED: TP-TXDOT
SUPERVISED: TP-TXDOT
DATE:

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE

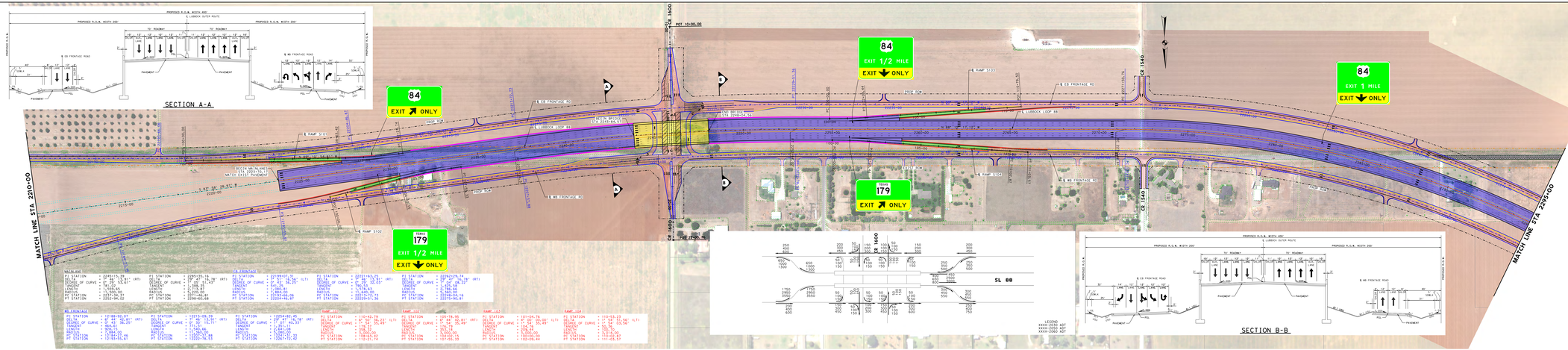
19

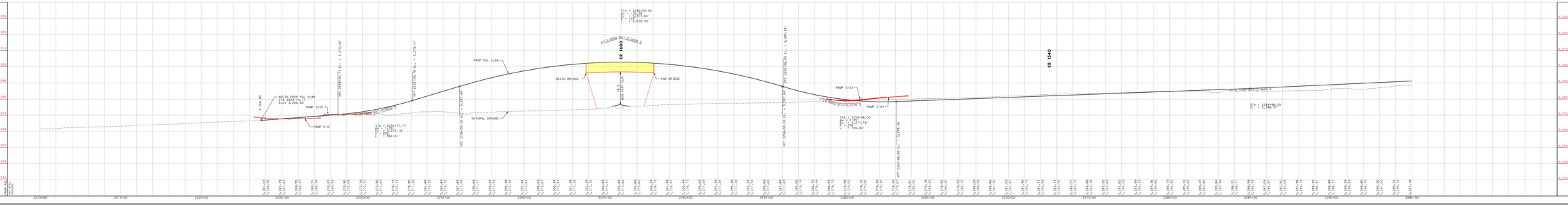
N:\PS313-0005-18-TTCADD\2200\41_SCHEM\SL88_1_SCHEM_PP_15_00_01.dgn

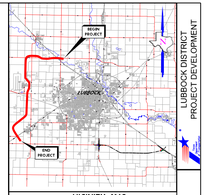
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE







VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- EXISTING RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
F-8932
TBPE Firm No. F-8932
TBPLS Firm No. 10194
TBPE REG. NO. 22
TBPLS REG. NO. 10

PRELIMINARY

Document incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2019

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2210+00
TO: STA 2295+00

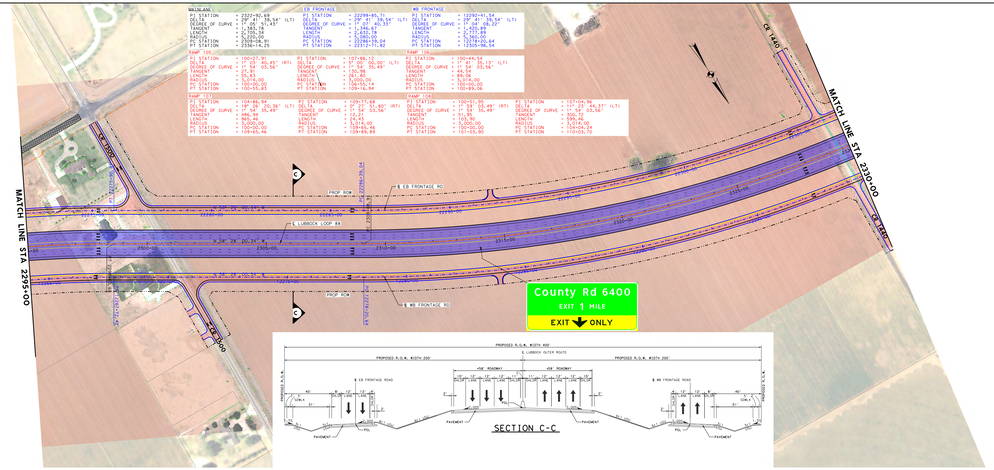
LUBBOCK DISTRICT
DATE:
DISTRICT ENGINEER
DATE:
DISTRICT ATTORNEY
DATE:

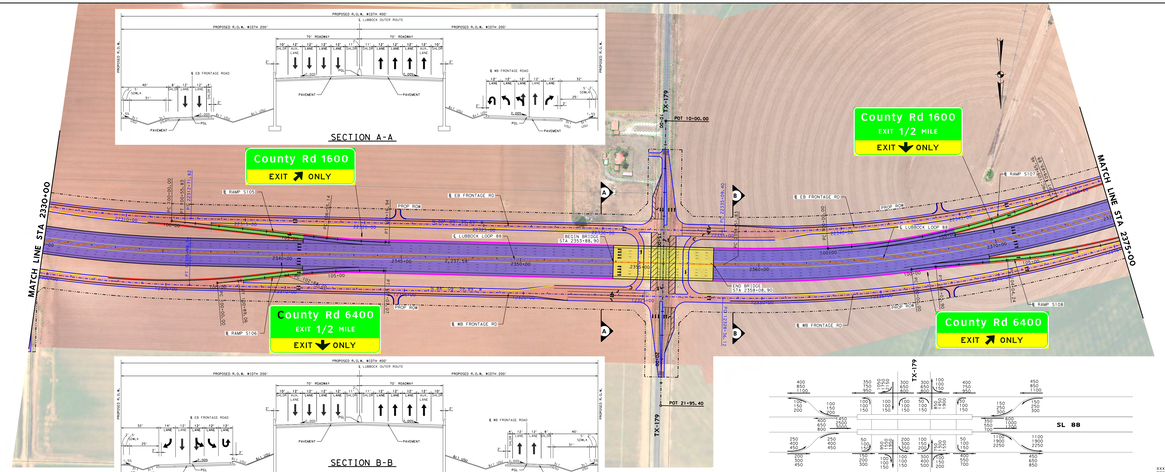
N:\PS313-0005-18-TI\CADD\200\A1_SCHEM\SL88_1_SCHEM_PP_1_05_02.dgn

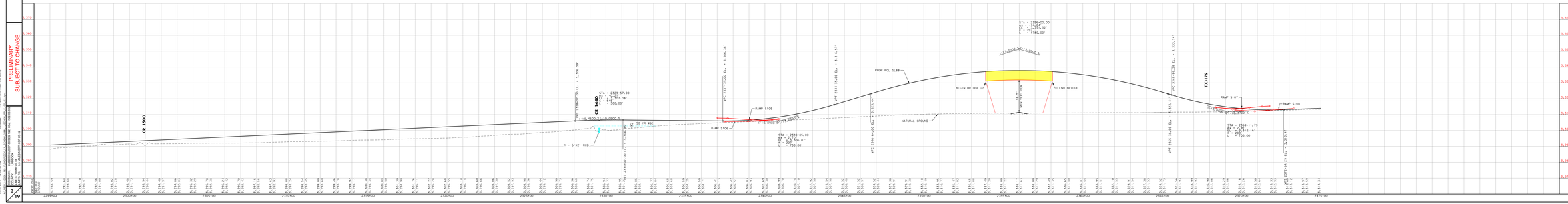
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

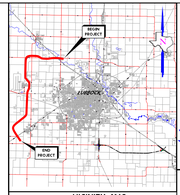
SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE









VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING FLAMENTIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

LEGEND
XXXX.XXX AGE
XXXX.XXXX AGE
XXXX.XXXX AGE

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE Reg. No.
TBPLS Reg. No. F-10993
1701 Avenue Q
Post Office Box 1234
Ph. (806) 762-5991
Fax (806) 762-2822
Lubbock, Texas 79408

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87916
Date: 5/10/2015

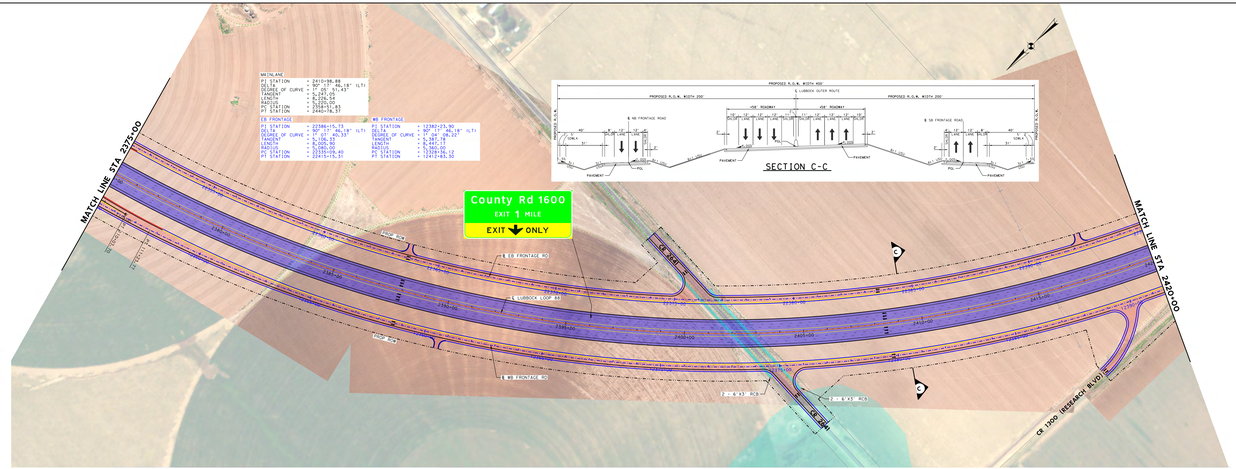
SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2292+00
TO: STA 2375+00
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
DISTRICT ENGINEER:

N:\25313-0005-18-11\CADD\200\A1_SCHEM\SL88_1_SCHEM_PP_15_00_03.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

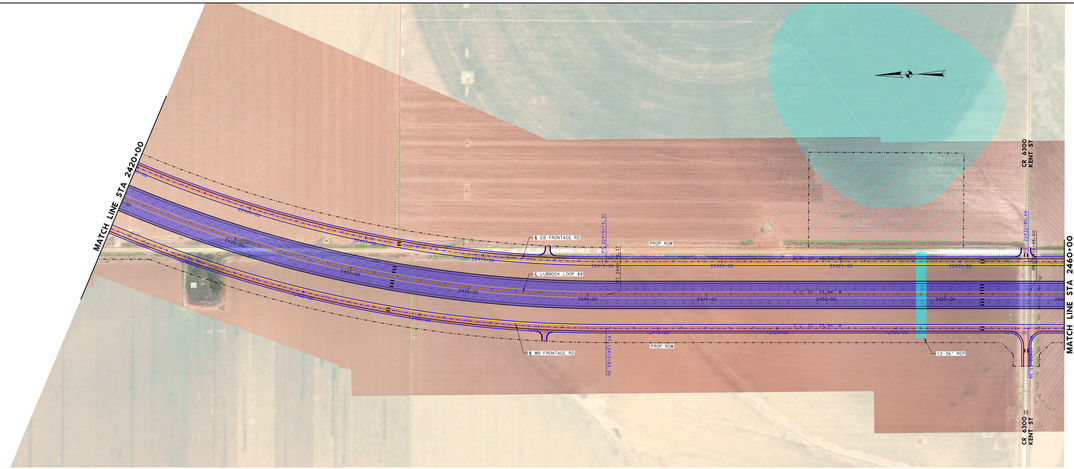
PRELIMINARY
SUBJECT TO CHANGE

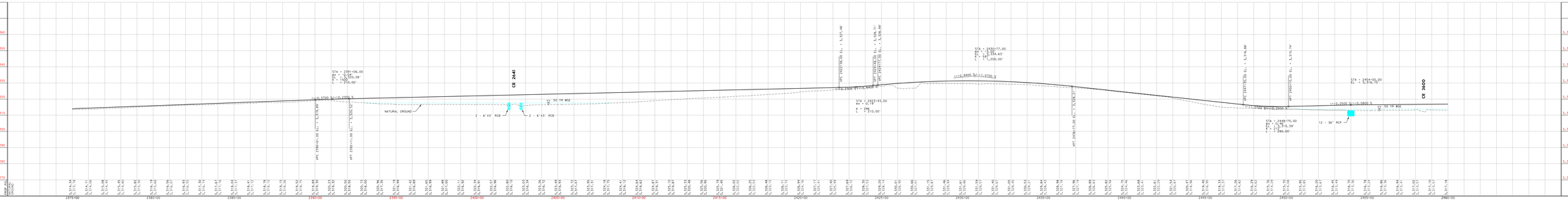


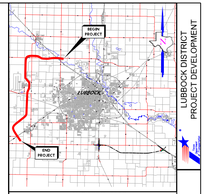
MAINLANE
PI STATION = 2410+98.88
DELTA = 0° 00' 00.18" (LT)
DEGREE OF CURVE = 0° 00' 51.43"
TANGENT = 5,241.05
LENGTH = 10,000.00
RADIUS = 6,559.00
PT STATION = 2560+41.93
PI STATION = 2468+01.53

EB FRONTAGE
BL STATION = 2368+15.72
DELTA = 90° 01' 46.18" (LT)
DEGREE OF CURVE = 1° 01' 40.37"
TANGENT = 5,000.00
LENGTH = 8,000.00
RADIUS = 5,570.00
PT STATION = 2373+15.72
PI STATION = 2371+15.72

WB FRONTAGE
BL STATION = 2382+23.90
DELTA = 90° 01' 46.18" (LT)
DEGREE OF CURVE = 1° 03' 06.22"
TANGENT = 5,000.00
LENGTH = 8,000.00
RADIUS = 5,450.00
PT STATION = 2387+23.90
PI STATION = 2385+23.90







VICINITY MAP
(N.T.S.)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
F-8932
1302 CROSS PARK TWWY.
SUITE 100
BRYAN, TEXAS 77802
979 823-7274
979 823-7275

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Serial No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1502-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2375+00
TO: STA 2460+00

LUBBOCK DISTRICT

DATE:
SCALE:
DESIGNED:
DRAWN:
REVIEWED:
SHEET 19 OF 19 SHEETS

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

MATCH LINE STA 2460+00

MATCH LINE STA 2550+00

MAINLANE
PI STATION = 2551+89.93
DELTA = 0° 20' 32.4" (LT)
DEGREE OF CURVE = 1° 30' 00.87"
TANGENT = 271.15
LENGTH = 542.00
RADIUS = 3,820.00
PC STATION = 2548+18.78
PT STATION = 2553+60.78

EB FRONTAGE
PI STATION = 2529+85.39
DELTA = 90° 20' 40.53" (LT)
DEGREE OF CURVE = 1° 30' 00.87"
TANGENT = 1,152.85
LENGTH = 2,122.82
RADIUS = 1,910.00
PC STATION = 2527+45.67
PT STATION = 2549+68.49

EB FRONTAGE
PI STATION = 2529+56.33
DELTA = 90° 20' 40.53" (RT)
DEGREE OF CURVE = 1° 30' 00.87"
TANGENT = 1,152.56
LENGTH = 2,120.96
RADIUS = 1,910.00
PC STATION = 2527+15.75
PT STATION = 2549+68.71

RAMP 5101
PI STATION = 10+05.66
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.78
PT STATION = 12+65.66

RAMP 5102
PI STATION = 10+05.66
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.78
PT STATION = 12+65.66

RAMP 5103
PI STATION = 10+06.88
DELTA = 90° 00' 00.00" (LT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+87.94
PT STATION = 12+66.82

RAMP 5104
PI STATION = 10+06.88
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+87.94
PT STATION = 12+66.82

RAMP 5105
PI STATION = 10+06.76
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+87.88
PT STATION = 12+66.76

RAMP 5106
PI STATION = 10+06.23
DELTA = 90° 00' 00.00" (LT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+87.35
PT STATION = 12+66.23

RAMP 5107
PI STATION = 10+05.66
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.78
PT STATION = 12+65.66

RAMP 5108
PI STATION = 10+05.66
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.78
PT STATION = 12+65.66

RAMP 5109
PI STATION = 10+05.66
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.78
PT STATION = 12+65.66

RAMP 5110
PI STATION = 10+06.23
DELTA = 90° 00' 00.00" (LT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+87.35
PT STATION = 12+66.23

RAMP 5111
PI STATION = 10+53.52
DELTA = 90° 00' 00.00" (LT)
DEGREE OF CURVE = 1° 54' 35.49"
TANGENT = 318.88
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.64
PT STATION = 12+65.52

RAMP 5112
PI STATION = 10+53.52
DELTA = 90° 00' 00.00" (RT)
DEGREE OF CURVE = 1° 54' 35.49"
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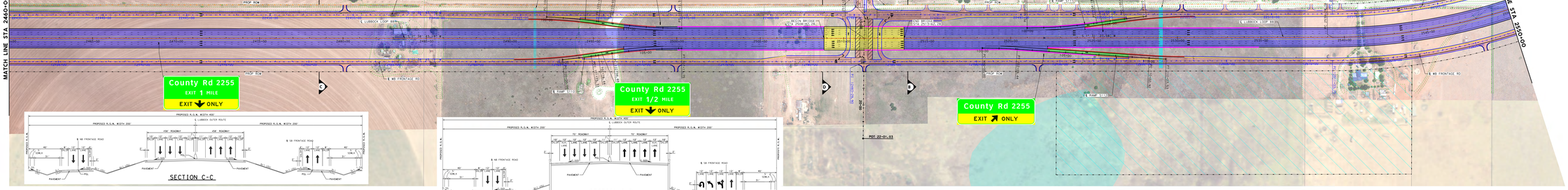
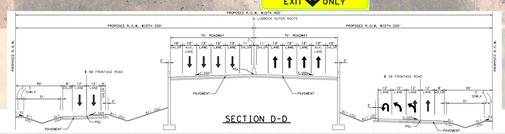
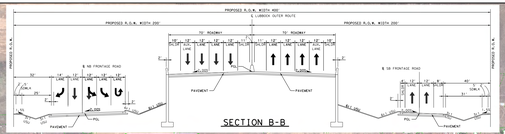
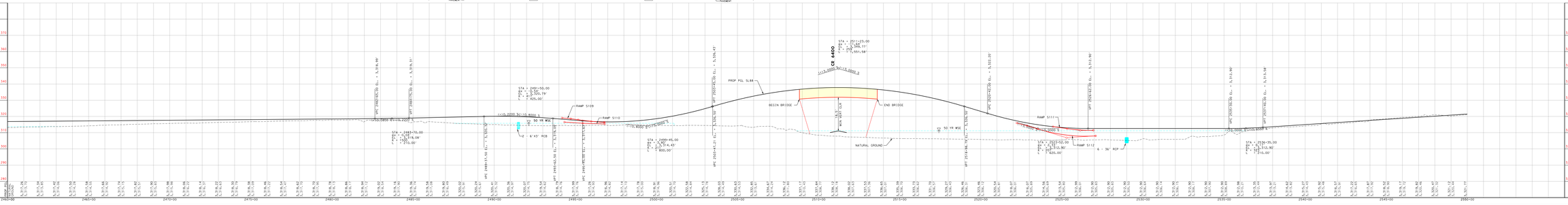
LENGTH = 478.88
RADIUS = 3,000.00
PC STATION = 7+86.64
PT STATION = 12+65.52

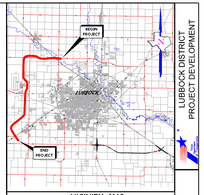








PRELIMINARY
SUBJECT TO CHANGE



VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
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- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE FIRM # F-6932
TBPLS FIRM # 10194
1701 N. GRANT
SUITE 100
AMARILLO, TX 79107
PH. (806) 355-9474
FAX (806) 355-9476

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 127936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2460+00
TO: STA 2550+00

LUBBOCK DISTRICT

DATE:
SUBMITTED:
RECOMMENDED:
APPROVED: DISTRICT ENGINEER DATE:

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE

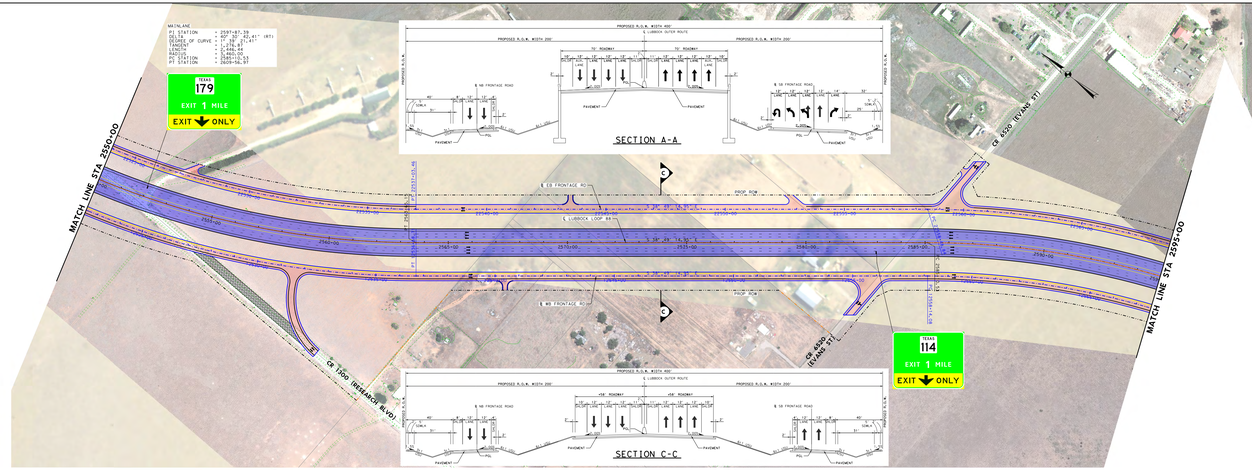
5 / 19

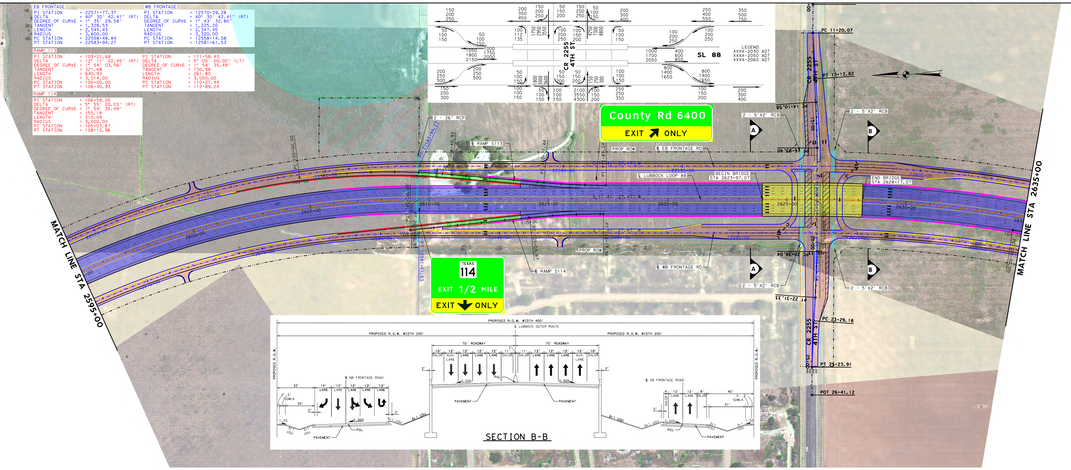
N:\1513-0005-18-1\TCADD\2200\A1_SCHEM\SL88_1_SCHEM_PIP_15_00_05.dgn

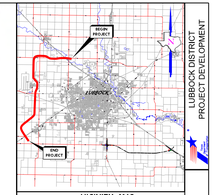
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE







VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

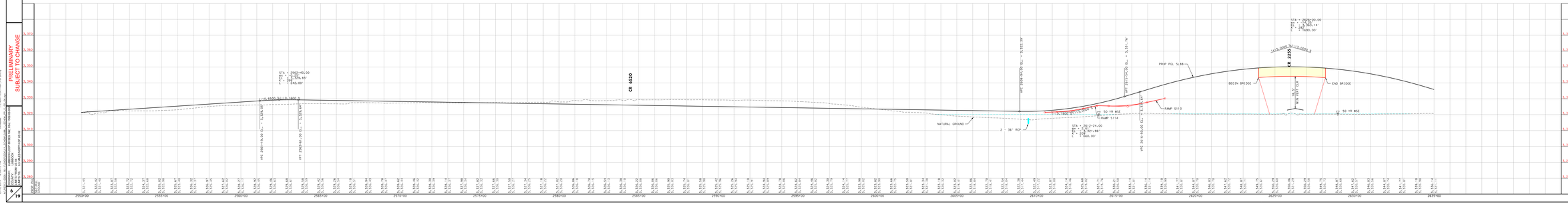
ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE Firm No. F-1966
TBPLS Firm No. 10194
TBPE Firm No. F-3199
TBPLS Firm No. 10194
TBPE Firm No. F-3199
TBPLS Firm No. 10194

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Serial No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2550+00
TO: STA 2635+00

LUBBOCK DISTRICT
DATE: 05/15/2015
SCHEMATIC LAYOUT
SL88 SCH 01.DGN



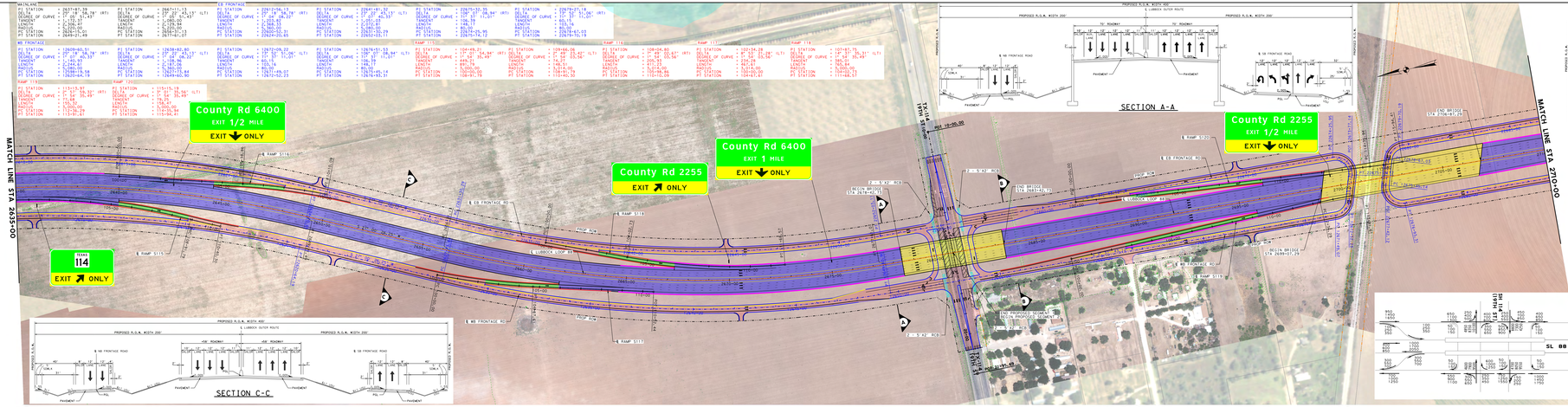
LUBBOCK DISTRICT
PROJECT DEVELOPMENT
SL 88 SCHEMATIC
PRELIMINARY
SUBJECT TO CHANGE

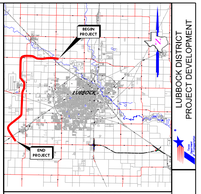
N:\PS313-0005-18-TI\CADD\200\A1_SCHEM\SL88_1_SCHEM_PP_15_00_08.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE





VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 35 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
F-8802
Texas Reg. No. F-8802
Texas Reg. Surveying Firm
TBPELS Firm No. 10018800
TBPELS Firm No. 10018804
TBPELS Firm No. 10018804

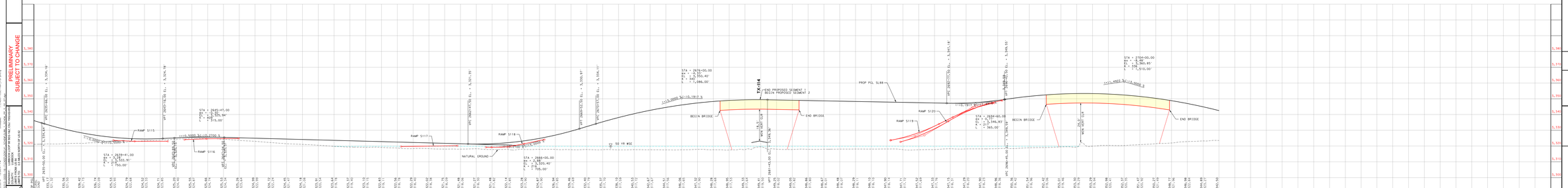
PRELIMINARY

Document Incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87916
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1532-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2635+00
TO: STA 2710+00

LUBBOCK DISTRICT

DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
DATE(S) REVISED:



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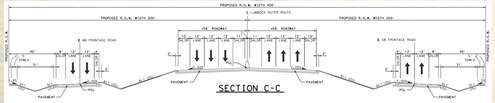
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

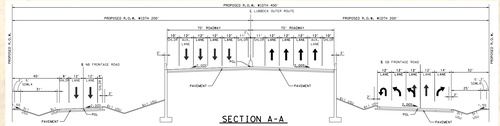
PRELIMINARY
SUBJECT TO CHANGE

RAMP 121	
PI STATION	= 121+55.65
DELTA	= 9° 54' 35.21" (RT)
DEGREE OF CURVE	= 0° 55' 00"
TANGENT	= 156.85
LENGTH	= 311.42
RADIUS	= 6,249.00
PT STATION	= 125+12.07
PI STATION	= 104+53.24
DELTA	= 8° 05' 55.00" (LT)
DEGREE OF CURVE	= 0° 55' 00"
TANGENT	= 208.28
LENGTH	= 414.04
RADIUS	= 6,249.00
PT STATION	= 108+61.28
PI STATION	= 104+73.95

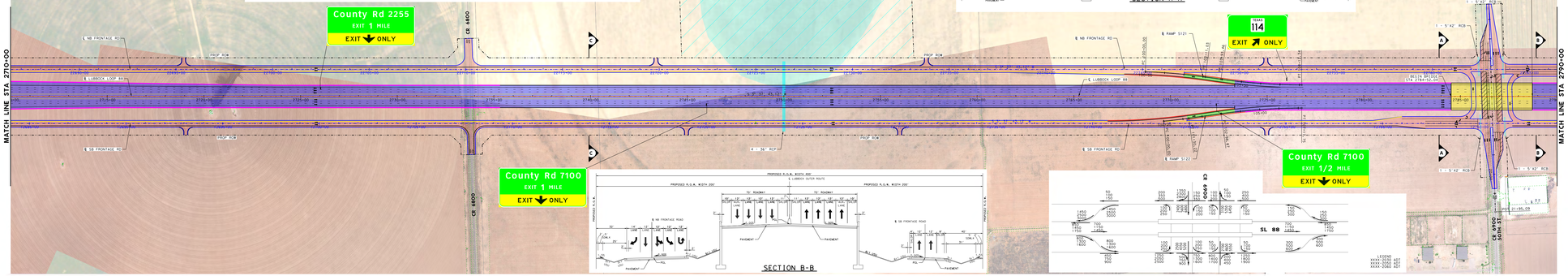
RAMP 122	
PI STATION	= 101+08.02
DELTA	= 9° 54' 35.00" (RT)
DEGREE OF CURVE	= 0° 55' 00"
TANGENT	= 156.84
LENGTH	= 311.41
RADIUS	= 6,250.00
PT STATION	= 104+19.43
PI STATION	= 101+50.22
DELTA	= 8° 05' 55.00" (LT)
DEGREE OF CURVE	= 0° 55' 00"
TANGENT	= 208.27
LENGTH	= 414.08
RADIUS	= 6,250.00
PT STATION	= 105+58.50

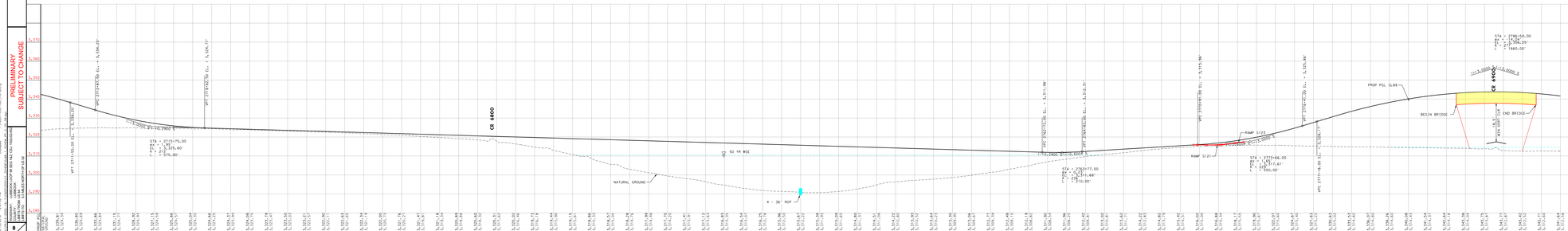


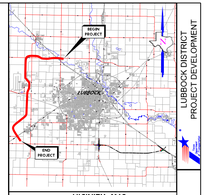
SECTION C-C



SECTION A-A







VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. Firm
Texas Reg. Firm
TBPE Firm
TBPLS Firm
TBPELS Firm

PRELIMINARY

Document Incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2710+00
TO: STA 2790+00

LUBBOCK DISTRICT

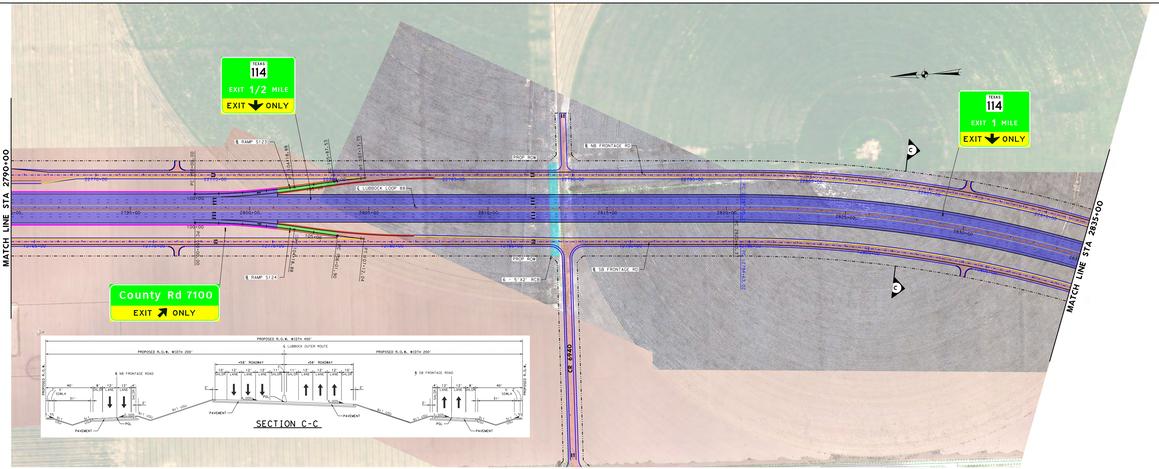
DATE
DESIGNED
CHECKED
REVIEWED
DISTRICT ENGINEER DATE

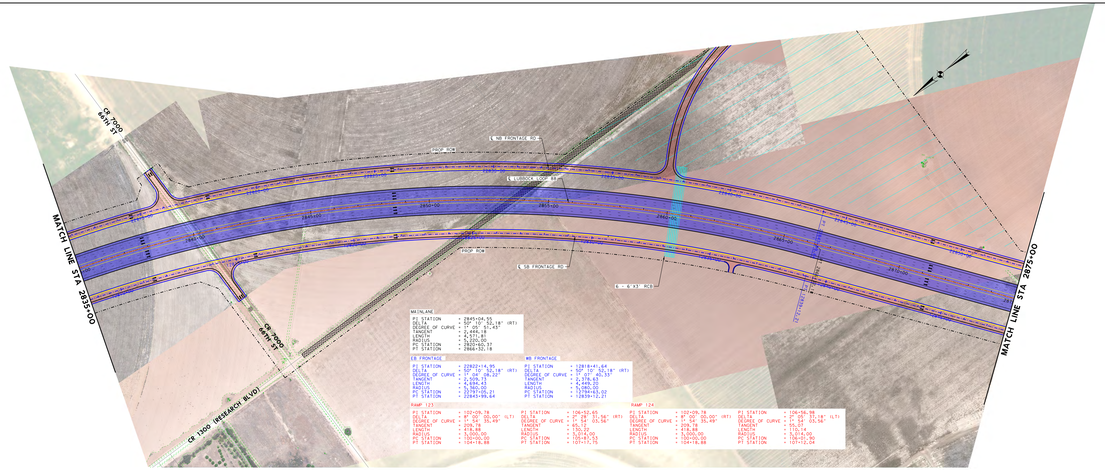
N:\PS313-0005-18-11\CADD\2D\K41_SCHEM\SL88_1_SCHEM_PP_1_0_0B.dgn

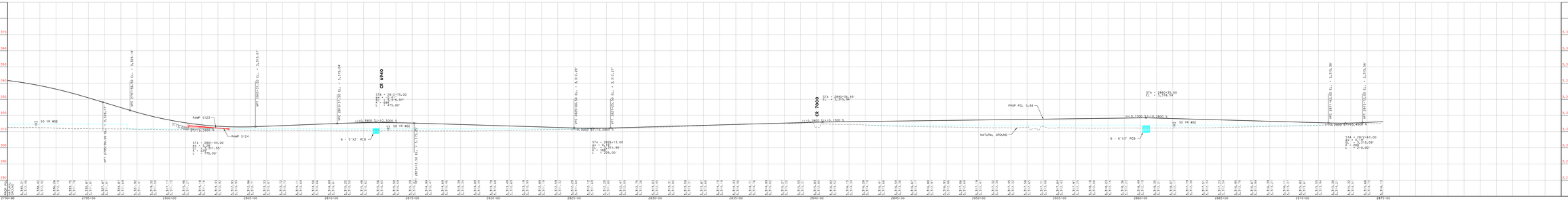
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

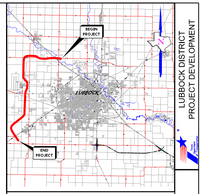
SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE









VICINITY MAP
(N.T.S.)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE FIRM
TBPLS FIRM
TBPE REGISTRATION
TBPLS REGISTRATION
TEXAS FIRM
TEXAS FIRM

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 9/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2790+00
TO: STA 2875+00
LUBBOCK DISTRICT
DATE: 09/10/2015
SCALE: 1:50 (H) 1:5 (V)
SHEET 9 OF 19

LUBBOCK DISTRICT
PROJECT DEVELOPMENT
SL 88 SCHEMATIC
PRELIMINARY
SUBJECT TO CHANGE

N:\25313-0005-18-11\CADD\200KV\01_SCHEM\SL88_1_SCHEM_PP_1_0C_09.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

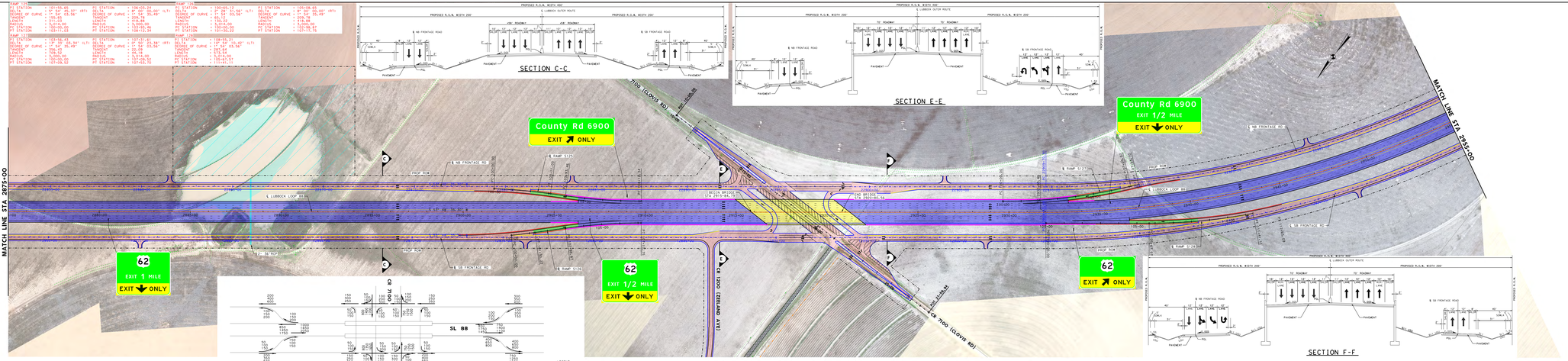
PRELIMINARY
SUBJECT TO CHANGE

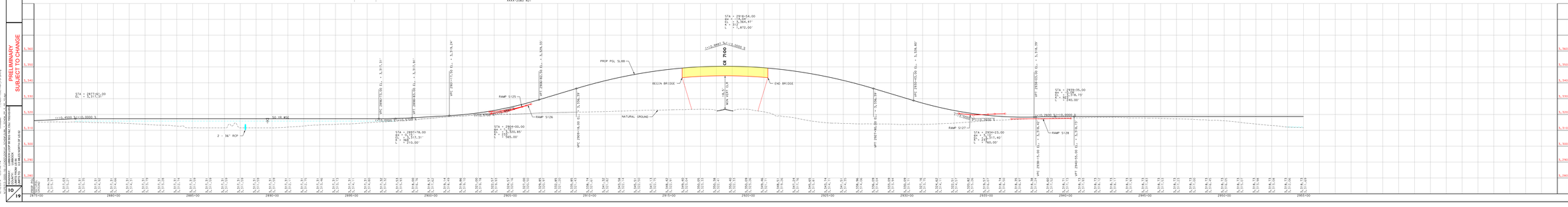
RAMP 125			
PI STATION	= 120+05.65	PI STATION	= 126+03.54
DELTA OF CURVE	= 7° 54' 35.30" (RT)	DELTA OF CURVE	= 7° 54' 35.30" (LT)
TANGENT	= 354.55	TANGENT	= 354.78
LENGTH	= 708.91	LENGTH	= 709.56
RADIUS	= 5,000.00	RADIUS	= 5,000.00
PT STATION	= 127+14.20	PT STATION	= 132+13.10

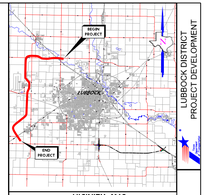
RAMP 126			
PI STATION	= 120+05.12	PI STATION	= 126+05.02
DELTA OF CURVE	= 7° 54' 35.30" (LT)	DELTA OF CURVE	= 7° 54' 35.30" (RT)
TANGENT	= 354.55	TANGENT	= 354.78
LENGTH	= 708.91	LENGTH	= 709.56
RADIUS	= 5,000.00	RADIUS	= 5,000.00
PT STATION	= 127+13.67	PT STATION	= 132+12.58

RAMP 127			
PI STATION	= 126+66.43	PI STATION	= 132+73.81
DELTA OF CURVE	= 7° 47' 35.54" (LT)	DELTA OF CURVE	= 7° 47' 35.54" (RT)
TANGENT	= 344.73	TANGENT	= 344.73	
LENGTH	= 688.91	LENGTH	= 688.91	
RADIUS	= 5,000.00	RADIUS	= 5,000.00	
PT STATION	= 133+55.34	PT STATION	= 139+62.72	

RAMP 128			
PI STATION	= 126+65.12	PI STATION	= 132+72.50
DELTA OF CURVE	= 7° 47' 35.54" (RT)	DELTA OF CURVE	= 7° 47' 35.54" (LT)
TANGENT	= 344.73	TANGENT	= 344.73	
LENGTH	= 688.91	LENGTH	= 688.91	
RADIUS	= 5,000.00	RADIUS	= 5,000.00	
PT STATION	= 133+54.03	PT STATION	= 139+61.41	







VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY - URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. Firm#
Texas Reg. Firm# 7166
TBPE Firm# 6932
TBPLS Firm# 10017701

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002

STATE LOOP 88 SEGMENTS 1 AND 2 GEOMETRIC DESIGN

FROM: STA 2875+00
TO: STA 3000+00

LUBBOCK DISTRICT

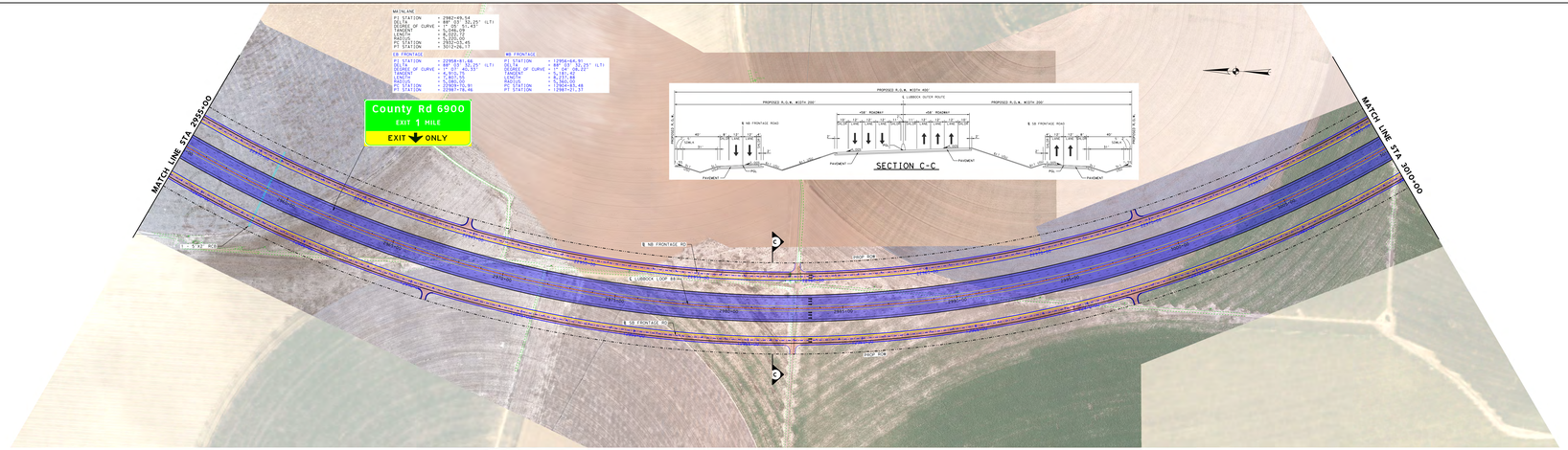
DATE: 05/10/2015
SCALE: 1"=100'
DESIGNED: MP
CHECKED: MP
DRAWN: JETTICK, DATTA

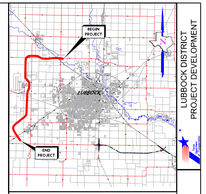
N:\25313-0005-18-TTC\ROD\DGN\01_SCHEM\SL88_1_SCHEM_PP_15_05_10.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE





VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
5700 W. 34th St. Frontage,
Suite 300
Amarillo, Texas 79106
Ph: 806.355.9672
Fax: 806.355.9674

PRELIMINARY

Document Incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Serial No. 87916
Date: 5/15/2015

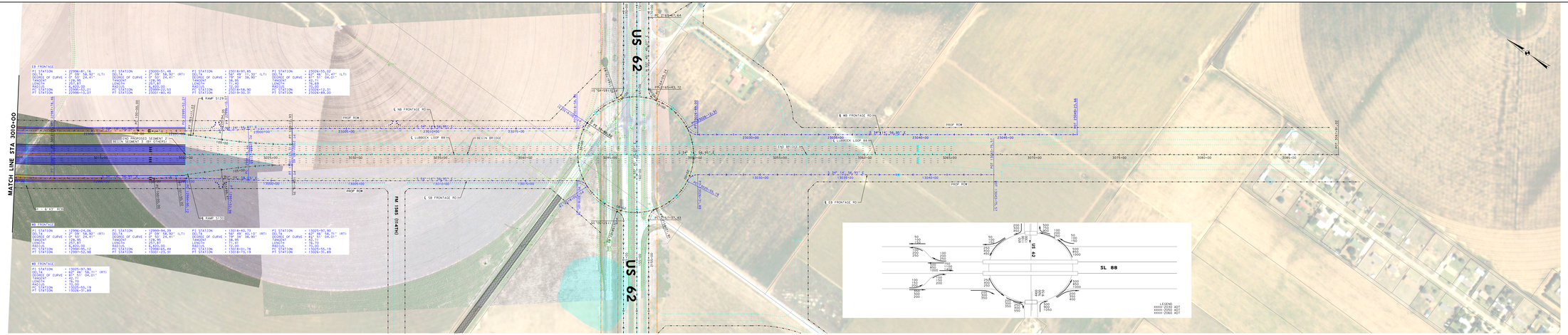
SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 2910+00
TO: STA 3010+00
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
DATE OF PLOT: 5/15/2015

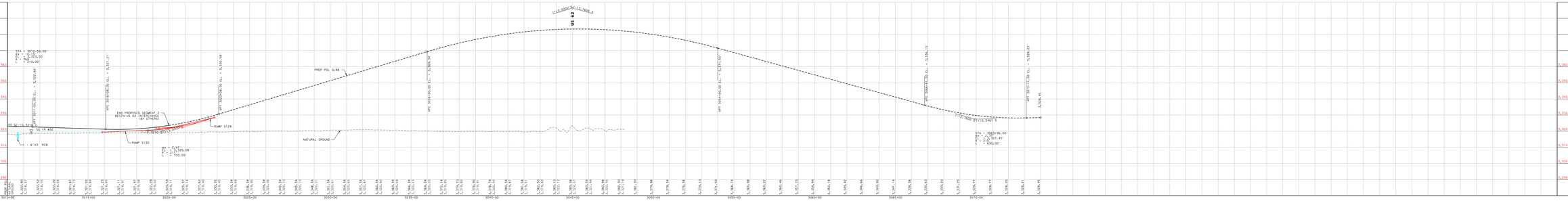
N:\P5313-0005-18-11\CADD\200\AT1_SCHEM\SL88_1_SCHEM_PP_15_00_T1.dgn

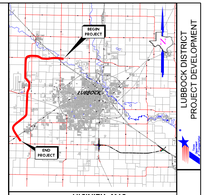
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE







VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
F-8932
Texas Reg. Firm#
Texas Reg. Firm#
TBPE Firm #
TBPLS Firm #

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1502-02-002
STATE LOOP 88 SEGMENTS 1 AND 2
GEOMETRIC DESIGN
FROM: STA 3010+00
TO: END PROJECT

LUBBOCK DISTRICT

DATE
DESIGNED
CHECKED
DRAWN
REVISED
SUPERVISOR
DISTRICT ENGINEER

19 / 17

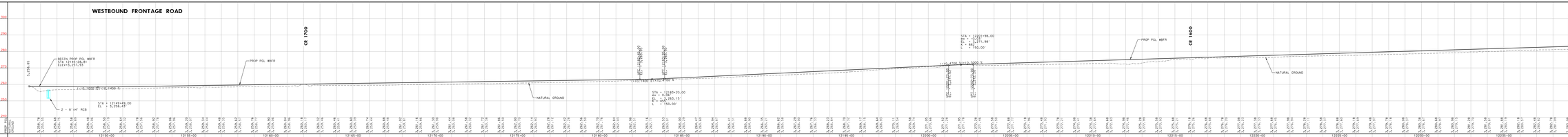
N:\PS313-0005-18-TI\CADD\200\A1_SCHEM\SL88_T1_SCHEM_PP_1_20_72.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

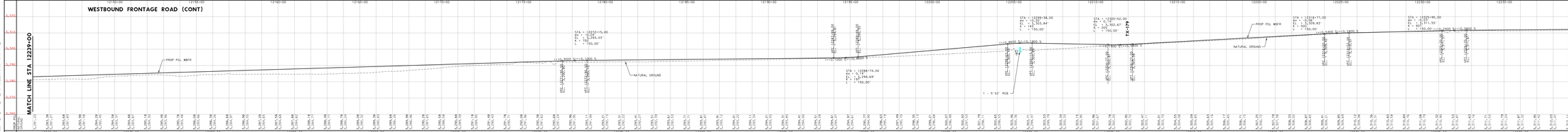
SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE

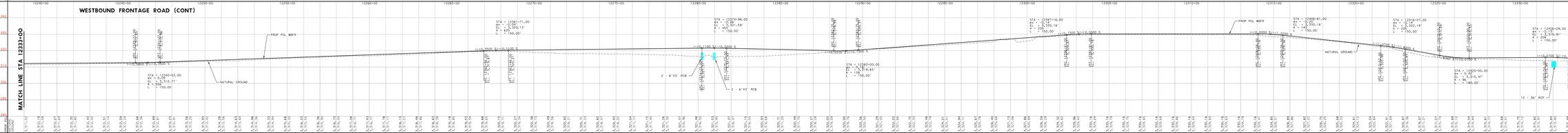
WESTBOUND FRONTAGE ROAD



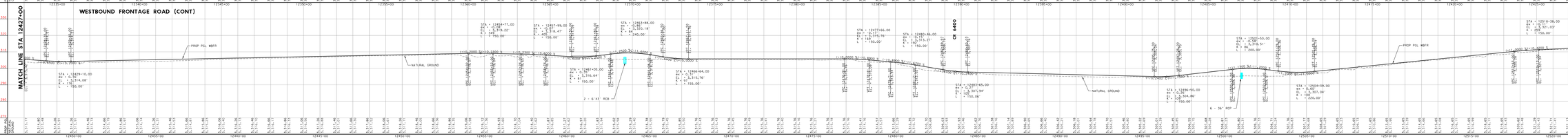
WESTBOUND FRONTAGE ROAD (CONT)

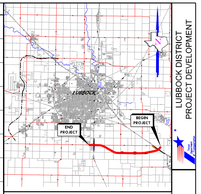


WESTBOUND FRONTAGE ROAD (CONT)



WESTBOUND FRONTAGE ROAD (CONT)





VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY-URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. Firm#
Texas Reg. Firm#
TBPE Firm #F-3199
TBPLS Firm #10194
Phone: 806-687-1174
Fax: 806-687-1176

PRELIMINARY

Document incomplete not intended for permit, bidding or construction
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-01-006
STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN
FROM:
TO:
DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
(E) DISTRICT ENGINEER DATE:

LUBBOCK DISTRICT

N:\FS13-0005-16-1\CADD\DGN\V11_SCHEM\SL88_T_SCHEM_PP_S_001_T24.dgn

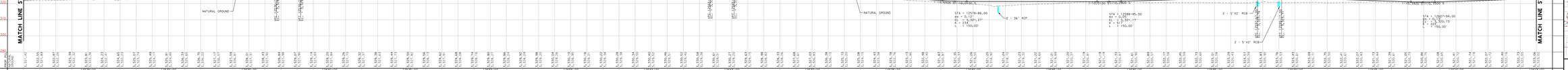
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE

WESTBOUND FRONTAGE ROAD (CONT)

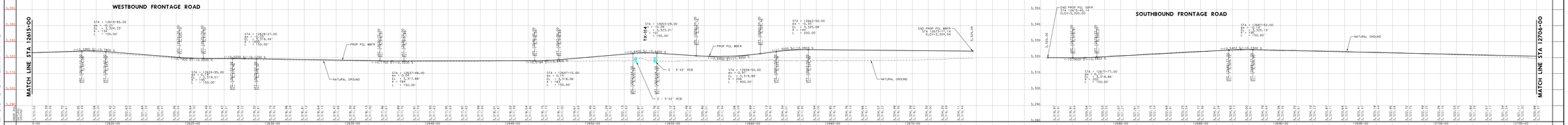
MATCH LINE STA 12521+00



MATCH LINE STA 12615+00

WESTBOUND FRONTAGE ROAD

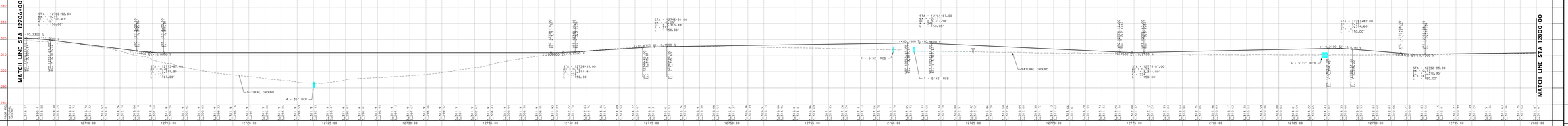
MATCH LINE STA 12615+00



SOUTHBOUND FRONTAGE ROAD

MATCH LINE STA 12705+00

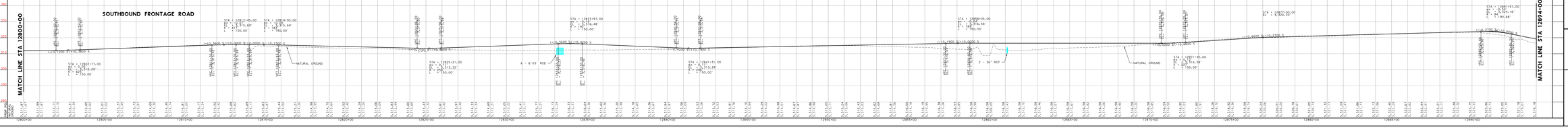
MATCH LINE STA 12706+00



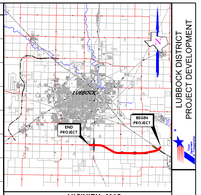
MATCH LINE STA 12800+00

SOUTHBOUND FRONTAGE ROAD

MATCH LINE STA 12800+00



MATCH LINE STA 12894+00



VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY-URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE FIRM
TBPLS FIRM
TEXAS REGISTERED ENGINEERS
TEXAS REGISTERED PLANNERS
TEXAS REGISTERED SURVEYORS

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Lic# No. 87916
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-026
STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN
FROM:
TO:
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
DISTRICT ENGINEER:

14 / 19

N:\P5313-0005-16-11\CADD\DGN\01_SCHEM\SL88_11_SCHEM_PP_5_DC_128.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE

SOUTHBOUND FRONTAGE ROAD (CONT)

MATCH LINE STA 12894+00 — MATCH LINE STA 13988+00

CR 7100

SOUTHBOUND FRONTAGE ROAD

MATCH LINE STA 13988+00

SOUTHBOUND FRONTAGE ROAD

EASTBOUND FRONTAGE ROAD SEG 1

MATCH LINE STA 22171+00

CR 1700

EASTBOUND FRONTAGE ROAD

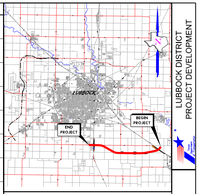
MATCH LINE STA 22171+00 — MATCH LINE STA 22266+00

CR 1600

EASTBOUND FRONTAGE ROAD

MATCH LINE STA 22266+00 — MATCH LINE STA 22360+00

TX-179



VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LINE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LINE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. No. F-1966
Texas Reg. No. TBPLS Firm # 10194
9701 Boat Club Road
Fort Worth, Texas 76179
(817) 560-7711

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Lic#: 97936
Date: 5/10/2015

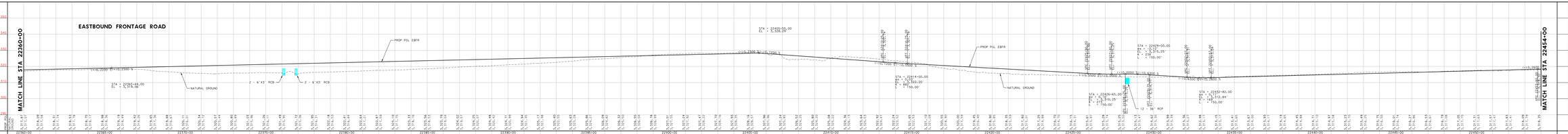
SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-03-006
STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN
FROM:
TO:
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
DRAWN:
REVIEWED:
SUPERVISOR:
DIRECTOR OF STRUCTURE DIV.

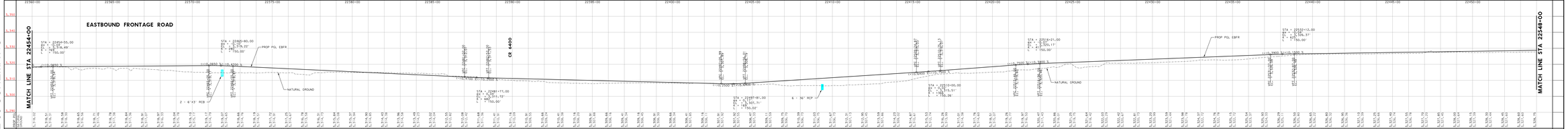
N:\P5313-0005-16-1\CADD\DGN\V11_SCHEM\SL88_T_SCHEM_PP_S_001_T20.dgn

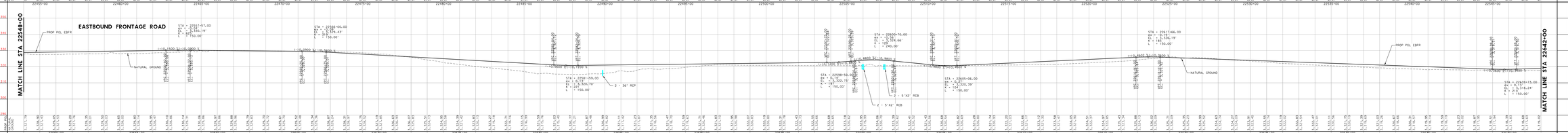
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

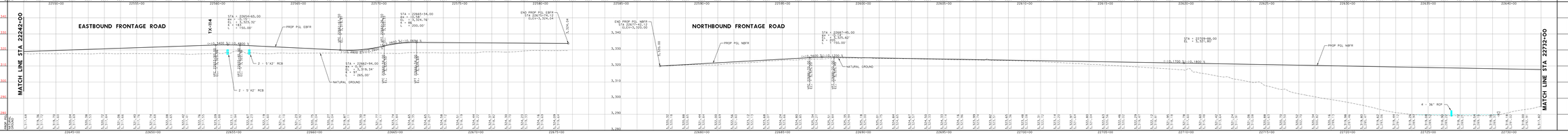
SL 88 SCHEMATIC

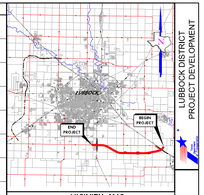
PRELIMINARY
SUBJECT TO CHANGE











VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 75 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
1701 N. Market Blvd. Frawley
Suite 300 Phone: (806) 773-1777
Dallas, TX 75202 Fax: (806) 773-1778
TBPE FIRM F-2580
TBPLS FIRM 10194076

PRELIMINARY

Document Incomplete not intended for permit, bidding or construction
Engineer: MIGUEL PONCE III, P.E.
P.E. Lic#: 97936
Date: 5/10/2019

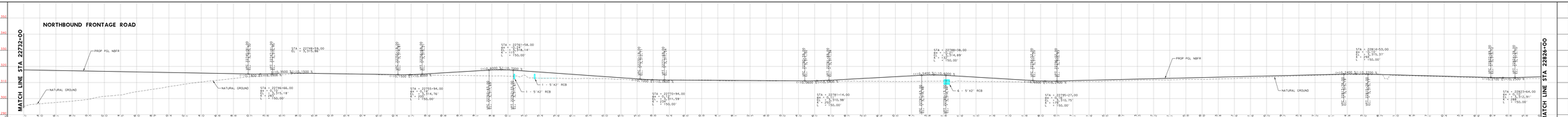
SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-02-006
STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN
FROM: TO:
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
(DISTRICT DESIGN ENGINEER DATE)

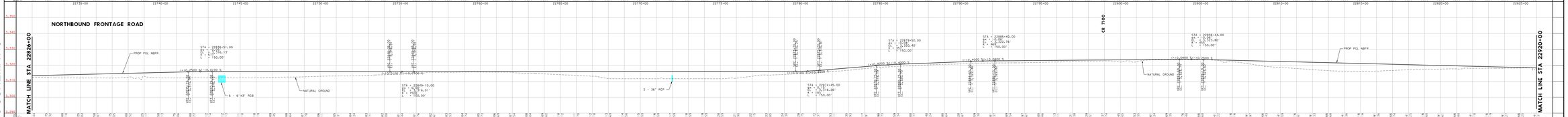
N:\P1571-0005-16-1\CADD\DGN\V11_SCHEM\SL88_T_SCHEM_PP_S_DC_120.dgn

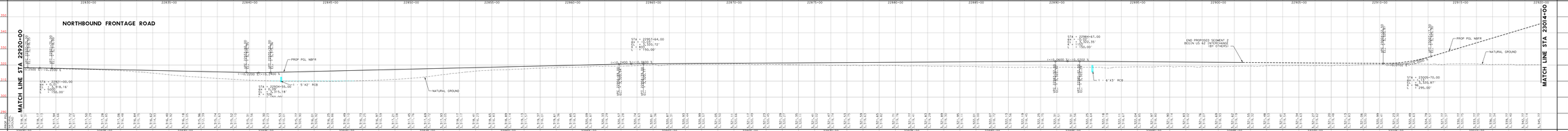
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

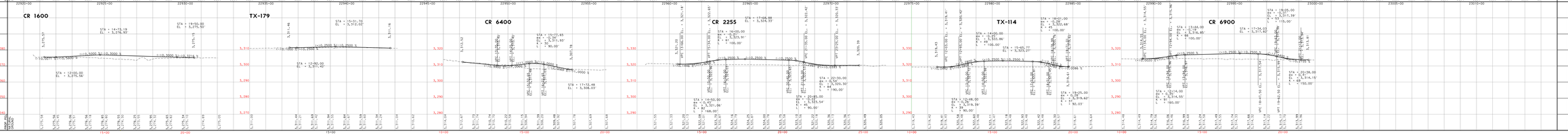
SL 88 SCHEMATIC

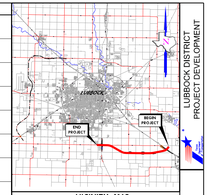
PRELIMINARY
SUBJECT TO CHANGE











VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY / URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
TBPE Firm No. F-6932
TBPLS Firm No. 10194074
9701 Boulevard 26
North Richland Hills, Texas 76180
(817) 581-2779

PRELIMINARY

Document incomplete not intended for permit, bidding or construction.
Engineer: MICHAEL PONCE III, P.E.
P.E. Serial No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-01-006
STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN
FROM:
TO:
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
SUPERVISED:
DISTRICT ENGINEER:

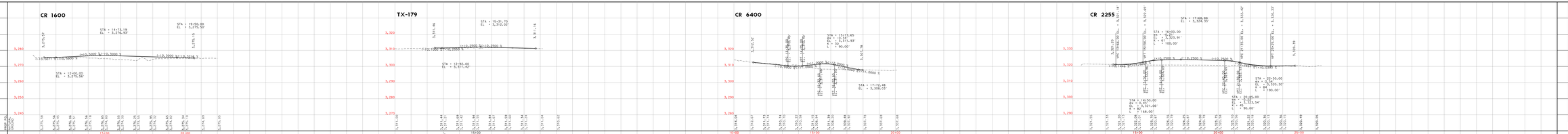
17 / 19

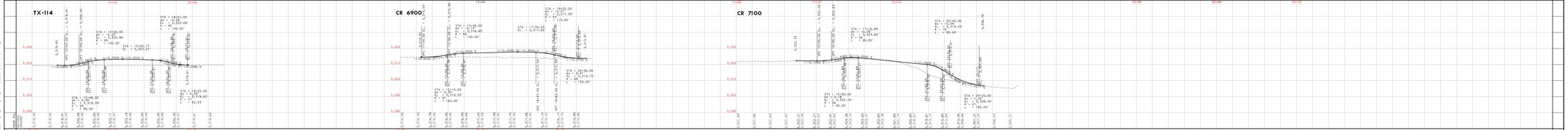
N:\1513-1-0005-16-1\CADD\DGN\V11_SCHEM\SL88_1_SCHEM_PP_5_00_120.dgn

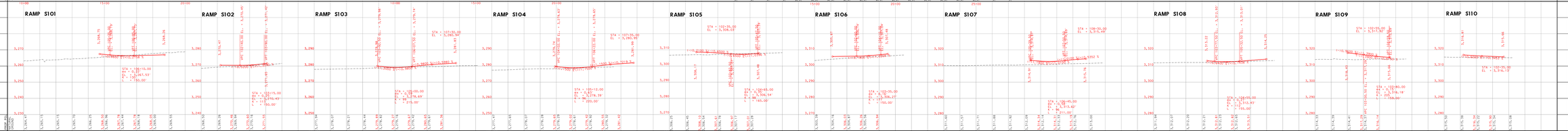
LUBBOCK DISTRICT
PROJECT DEVELOPMENT

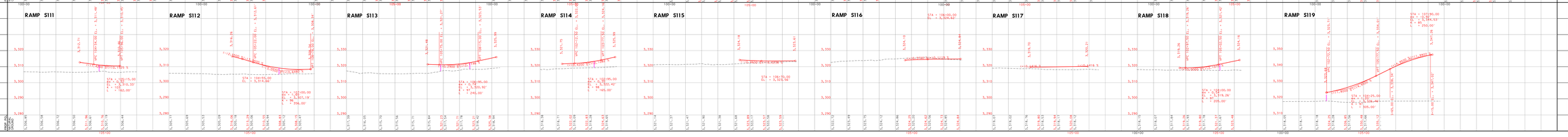
SL 88 SCHEMATIC

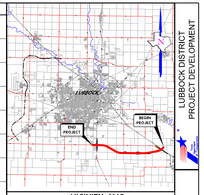
PRELIMINARY
SUBJECT TO CHANGE











VICINITY MAP

(NTS)

LEGEND

- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
- PROPOSED CONNECTORS
- PROPOSED EMBANKMENT
- PROPOSED RETAINING WALL
- PROPOSED STRIPING
- PROPOSED LANE INDICATOR
- PROPOSED RIGHT-OF-WAY
- PROPOSED CONTROL OF ACCESS (COA)
- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
- EXISTING PARCEL MAP
- FUTURE ROADWAY (BY OTHERS)
- FUTURE DRIVEWAYS
- EXISTING ROADWAY TO BE REMOVED
- EXISTING LANE INDICATOR

DESIGN CRITERIA

FUNCTIONAL CLASSIFICATION: FREEWAY-URBAN
MAINLANE DESIGN SPEED: 70 MPH
FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. Firm#
Corpus Christi, Texas 78408
(361) 993-0722
FAX (361) 993-0723

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. License No. 87936
Date: 5/10/2015

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-03-006

STATE LOOP 88 SEGMENT 4
GEOMETRIC DESIGN

FROM: TO:

LUBBOCK DISTRICT

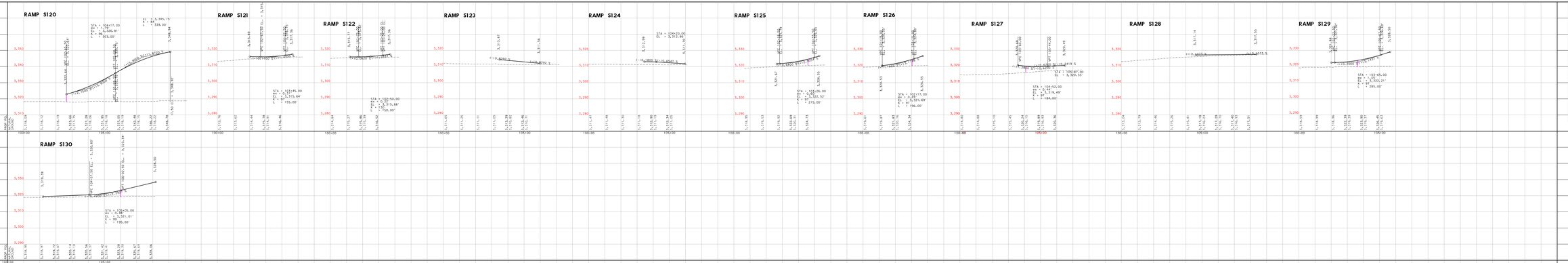
DATE:
SCALE: AS SHOWN
DESIGNED: MPIII
CHECKED: JETTRUCK, DATE:

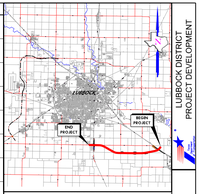
N:\1513-1-0005-16-11\CADD\DGN\V11_SCHEM\SL88_T_SCHEM_PP_S_001_TOP.dgn

LUBBOCK DISTRICT
PROJECT DEVELOPMENT

SL 88 SCHEMATIC

PRELIMINARY
SUBJECT TO CHANGE





VICINITY MAP
(NTS)

LEGEND

- PROPOSED MAINLANES
- FRONTAGE ROADS
- DIRECT CONNECTORS
- RAMPS
- EXISTING STRUCTURES
- EXISTING PLAYA
- PROPOSED BRIDGE STRUCTURES
- PROPOSED MAINLANES
- PROPOSED FRONTAGE ROADS
- PROPOSED RAMPS
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- PROPOSED EMBANKMENT
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- PROPOSED DRAINAGE EASEMENT
- EXISTING PLANIMETRIC
- EXISTING RIGHT-OF-WAY
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- FUTURE ROADWAY (BY OTHERS)
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- EXISTING ROADWAY TO BE REMOVED
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FRONTAGE RD DESIGN SPEED: 50 MPH
RAMP DESIGN SPEED: 50 MPH
DIR. CONN. DESIGN SPEED: 50 MPH

0 50 100 200 (H)
0 5 10 20 (V)

ENTECH
CIVIL ENGINEERS, INC.
6932
Texas Reg. Firm
Texas Reg. Firm
Texas Reg. Firm
Texas Reg. Firm

PRELIMINARY

Document Incomplete- not intended for permit, bidding or construction.
Engineer: MIGUEL PONCE III, P.E.
P.E. Lic. No.: 97916
Date: 5/10/2019

SCHEMATIC LAYOUT
LUBBOCK COUNTY
CSJ: 1552-03-006
STATE LOOP 88 SEGMENT 4 GEOMETRIC DESIGN
FROM:
TO:
LUBBOCK DISTRICT
DATE:
SCALE:
DESIGNED:
REVIEWED:
DRAWN:
REVIEWED:
SUPERVISED:

N:\FS131-0005-16-1\CADD\DGN\V1_SCHEM\SL88_T_SCHEM_PP_S_SC_120.dgn

19

Appendix D

Typical Sections

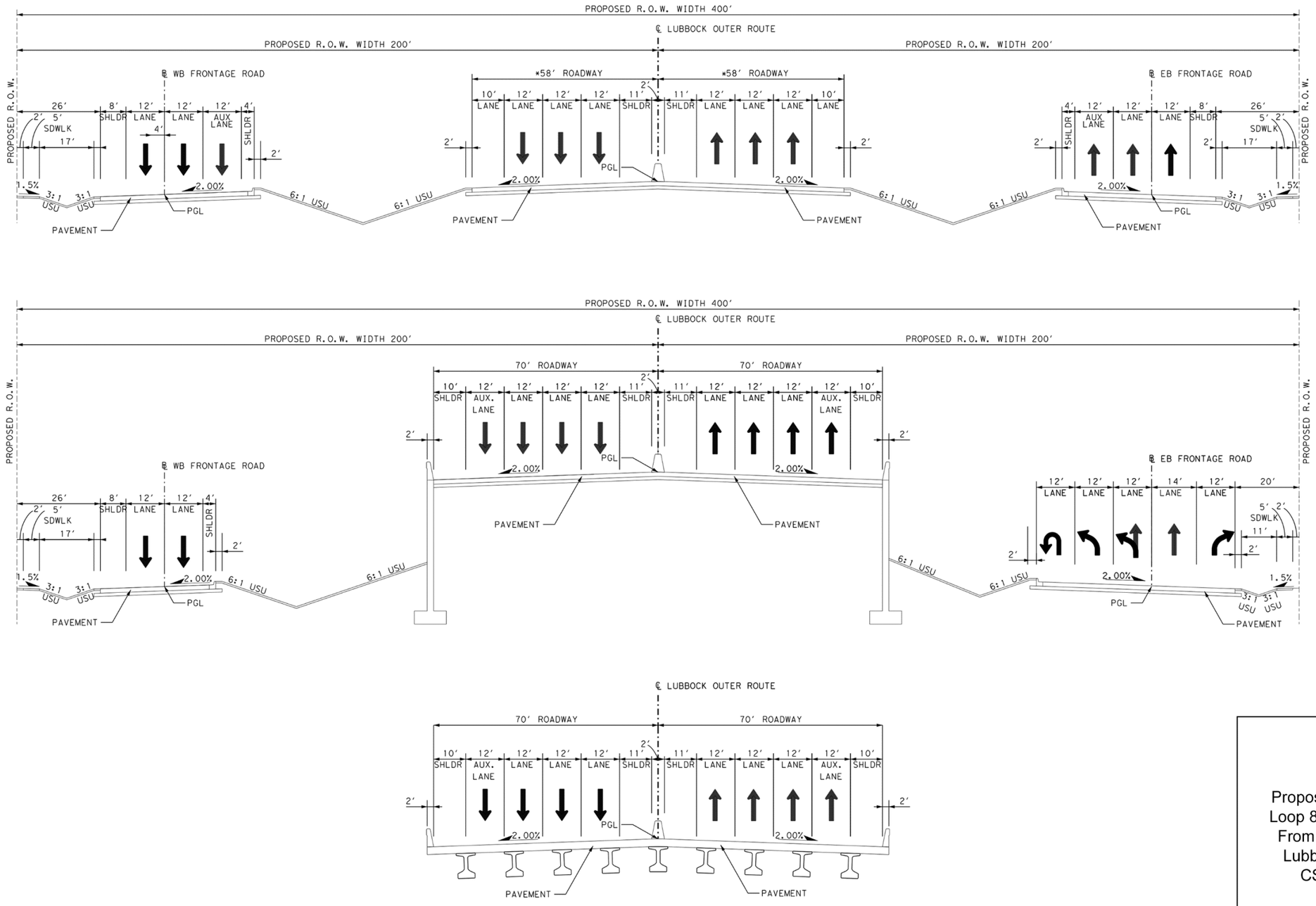


Figure 3
Proposed Typical Sections
Loop 88 Segments 1 and 2
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Appendix E

Plan and Program Excerpts

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM

GROUPED PROJECTS
LUBBOCK METROPOLITAN PLANNING ORGANIZATION
FY 2020

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
5 - LUBBOCK	LUBBOCK	1502-02-002	SL 88	E,R	LUBBOCK		$ 112,959

LIMITS FROM US 84
LIMITS TO: US 62
PROJECT DESCR: PRELIMINARY ENGINEERING

REVISION DATE: 07/2018
MPO PROJ NUM: 4019
FUNDING CAT(S): #Type!

REMARKS P7:

PROJECT HISTORY:

TOTAL PROJECT COST INFORMATION

PRELIM ENG:	$	56,537
ROW PURCHASE:	$	0
CONST COST:	$	1,153,825
CONST ENG:	$	56,422
CONTING:	$	13,038
IND COSTS:	$	0
BND FINANCING:	$	0
TOTAL PRJ COST:	$	1,327,822

COST OF APPROVED PHASES:

$ 112,959

AUTHORIZED FUNDING BY CATEGORY/SHARE

	FEDERAL	STATE	LOCAL	LC	TOTAL
TOTAL:	$ 0	$ 0	$ 0	$ 0	$ 0

PHASE: C = CONSTRUCTION, E = ENGINEERING, R = ROW, T = TRANSFER

* FUNDING NOT FIXED

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM

GROUPED PROJECTS
LUBBOCK METROPOLITAN PLANNING ORGANIZATION
FY 2020

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
5 - LUBBOCK	LUBBOCK	1502-01-033	SL 88	E,R	LUBBOCK		$ 112,959

LIMITS FROM US 84 (SHALLOWATER)
LIMITS TO: US 84 (SLATON)
PROJECT DESCR: PREMILINARY ENGINEERING

REVISION DATE: 07/2018
MPO PROJ NUM: 4019
FUNDING CAT(S): #Type!

REMARKS P7:

PROJECT HISTORY:

TOTAL PROJECT COST INFORMATION

PRELIM ENG:	$	56,537
ROW PURCHASE:	$	0
CONST COST:	$	1,153,825
CONST ENG:	$	56,422
CONTING:	$	13,038
IND COSTS:	$	0
BND FINANCING:	$	0
TOTAL PRJ COST:	$	1,327,822

COST OF APPROVED PHASES:

$ 112,959

AUTHORIZED FUNDING BY CATEGORY/SHARE

	FEDERAL	STATE	LOCAL	LC	TOTAL
TOTAL:	$ 0	$ 0	$ 0	$ 0	$ 0

PHASE: C = CONSTRUCTION, E = ENGINEERING, R = ROW, T = TRANSFER

* FUNDING NOT FIXED

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM

GROUPED PROJECTS
LUBBOCK METROPOLITAN PLANNING ORGANIZATION
FY 2020

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
5 - LUBBOCK	LUBBOCK	1502-03-006	SL 88	E,R	LUBBOCK		$ 155,278

LIMITS FROM US 87
LIMITS TO: US 84 (SLATON)
PROJECT DESCR: PRELIMINARY ENGINEERING

REVISION DATE: 07/2018
MPO PROJ NUM: 4019
FUNDING CAT(S): #Type!

REMARKS P7:

PROJECT HISTORY:

TOTAL PROJECT COST INFORMATION

PRELIM ENG:	$	77,719
ROW PURCHASE:	$	0
CONST COST:	$	1,586,092
CONST ENG:	$	77,560
CONTING:	$	17,923
IND COSTS:	$	0
BND FINANCING:	$	0
TOTAL PRJ COST:	$	1,825,275

COST OF APPROVED PHASES:

$ 155,278

AUTHORIZED FUNDING BY CATEGORY/SHARE

	FEDERAL	STATE	LOCAL	LC	TOTAL
TOTAL:	$ 0	$ 0	$ 0	$ 0	$ 0

PHASE: C = CONSTRUCTION, E = ENGINEERING, R = ROW, T = TRANSFER

* FUNDING NOT FIXED

Lubbock Metropolitan Planning Organization

Working Together

Resolution 2018-10

WHEREAS, 23 U.S. C. 134 (c) (1) requires Metropolitan Planning Organizations (MPOs) designated under subsection (d) in cooperation with the State and public transportation operators, to develop a long range Metropolitan Transportation Plan (MTP) through a performance-driven, outcome-based approach to planning for metropolitan areas of the State in order to accomplish the objectives set out in this sub-section; and

WHEREAS, 23 U.S.C.134(c)(2) stipulates that the MTP for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities including accessible pedestrian walkways, bicycle transportation facilities, and intermodal facilities that support intercity transportation, including intercity buses and intercity bus facilities and commuter vanpool providers that function as an intermodal transportation system for the metropolitan planning area and as an integral part of an intermodal transportation system for the State and the United States; and

WHEREAS, 23 U.S.C.(c)(3) stipulates that the process for developing the long range plan shall provide for consideration of all modes of transportation and shall be continuing, cooperative and comprehensive to the degree appropriate, based on the complexity of the transportation problems to be addressed; and

WHEREAS, 23 U.S.C.134(i) stipulates a 20 year forecast period updated every four (4) years including performance measures, targets, system reports, financial plans, and consultation with federal, state, tribal, and other land management and regulatory agencies; and

WHEREAS, the development of the fiscal 2019-2022 Transportation Improvement Program contemplates an amendment to the current 2012-2040 Metropolitan Transportation Plan pursuant the rules and regulations promulgated at 23 U.S.C.134, 49 U.S.C.5303, 43 TAC 16.51, and Section 201.9911 of the Texas Transportation Code.

NOW THEREFORE, BE IT RESOLVED BY THE TRANSPORTAITON POLICY COMMITTEE OF THE LUBBOCK METROPOLITAN PLANNING ORGANIZATION:

Section 1: That; the Transportation Policy Committee of the LMPO approves Amendment No. 7 to the 2012-2040 MTP by adding the following projects to the constrained plan and declaring fiscal constraint.

- MPO 4074-Consultant Study/Wolfforth-Loop 88 Analysis
- MPO 4075-50th St., RR intx @ Milwaukee Ave
- MPO 4076-Ave P, 146th St. to Woodrow Rd.
- MPO 4054-Indiana, F.M. 1585 to Woodrow Rd.

Section 2: That; the Transportation Policy Committee of the LMPO approves the additional change of advancing MPO 4015 (34th St, Ave Q to Southeast Dr.) from the illustrative-unconstrained plan to the constrained plan and declaring fiscal constraint; and

Section 3: That; the Transportation Policy Committee of the LMPO approves the additional change of removing MPO 4058 (Loop 289, Slide (FM 1730) to IH 27) and MPO 4012 (82nd St, Quaker Ave to Elgin Ave) from the constrained plan and placing them back into the illustrative unconstrained plan for purposes of achieving fiscal constraint for the 2019-2022 TIP and FY 18 10 year plan; and

Section 4: That; the Transportation Policy Committee of the LMPO approves a change in limits to MPO 40-7 (Woodrow Rd, Slide (FM 1730) to U.S. 87) by segmenting it into MPO 40-7.A (Woodrow Rd, Loop 493 to Indiana) and MPO 40-7.B (Woodrow Rd, Indiana to Slide) and declaring fiscal constraint; and

Section 5: That; the Transportation Policy Committee of the LMPO approves a change in limits to MPO 4021 (Loop 88) by segmenting it into two additional links MPO 4021.3E (Loop 88 (Ph 3E), 0.5 Miles East of Quincy Ave to FM 179) and MPO 4021.3F ((Loop 88, Quintsna Ave to 0.5 Miles East of FM 179) and companion segment U.S. 62 to Quintsna Ave)) and declaring fiscal constraint; and

Section 6: That; the Transportation Policy Committee of the LMPO approves a change in the limits to MPO 4019 (Loop 88 U.S. 84 (Shallowater) to U.S. 84 (Slaton) by segmenting it into three additional links MPO 4019.1D & MPO 4019.2D (Loop 88 U.S. 84 to U.S. 62) and MPO 4019.4E (Loop 88 U.S. 87 to U.S. 84 (Slaton) and advancing it from the illustrative unconstrained plan to the constrained plan and declaring fiscal constraint; and

Section 7: That; the Transportation Policy Committee of the LMPO includes in Amendment No. 7 to the 2012-2040 Metropolitan Transportation Plan that certain Amendment No. 2 to the 2017-2020 TIP for the Transit Program Of Projects in order to maintain eligibility and fiscal constraint including the 2019-2022 Transit Program of Projects; and

Section 8: That, the Transportation Policy Committee of the LMPO includes in Amendment No. 7 to the 2012-2040 Metropolitan Transportation Plan the 2012-2040 constrained financial plan **(Exhibit A)**.

Passed and adopted by the Transportation Policy Committee on this, the 15th **Day of** May**, 2018.**

Jeff Griffith, Chairperson
LMPO Transportation Policy Committee

ATTEST:

Tammy Walker, MPO Secretary

APPROVED AS TO CONTENT:

H. David Jones,
Transportation Planning Director

APPROVED AS TO FORM:

Matthew Wade
Attorney for the MPO

Exhibit A
Resolution 2018-10

LUBBOCK METROPOLITAN PLANNING ORGANIZATION
2012 - 2040 METROPOLITAN TRANSPORTATION PLAN

PLANNED IMPROVEMENTS FOR TRANSPORTATION INFRASTRUCTURE AND PUBLIC TRANSPORTATION DELIVERY - AMENDMENT #7

APPROVED	6/14/2012
Amendment No. 1	5/21/2013
Amendment No. 2	3/18/2014
Amendment No. 3	8/19/2014
Amendment No. 4	3/17/2015
Amendment No. 5	4/19/2016
Adoption of 17/20 TIP	4/19/2016
Amendment No. 6	2/28/2017
Amendment No. 7	

Year of Expenditure Costs (Thousands)

Supporting Amend #1 17/20 TIP- Supporting development of 10 yr plan

Supporting development of the 2019-2022 TIP & FY 2018 - 10 YR plan

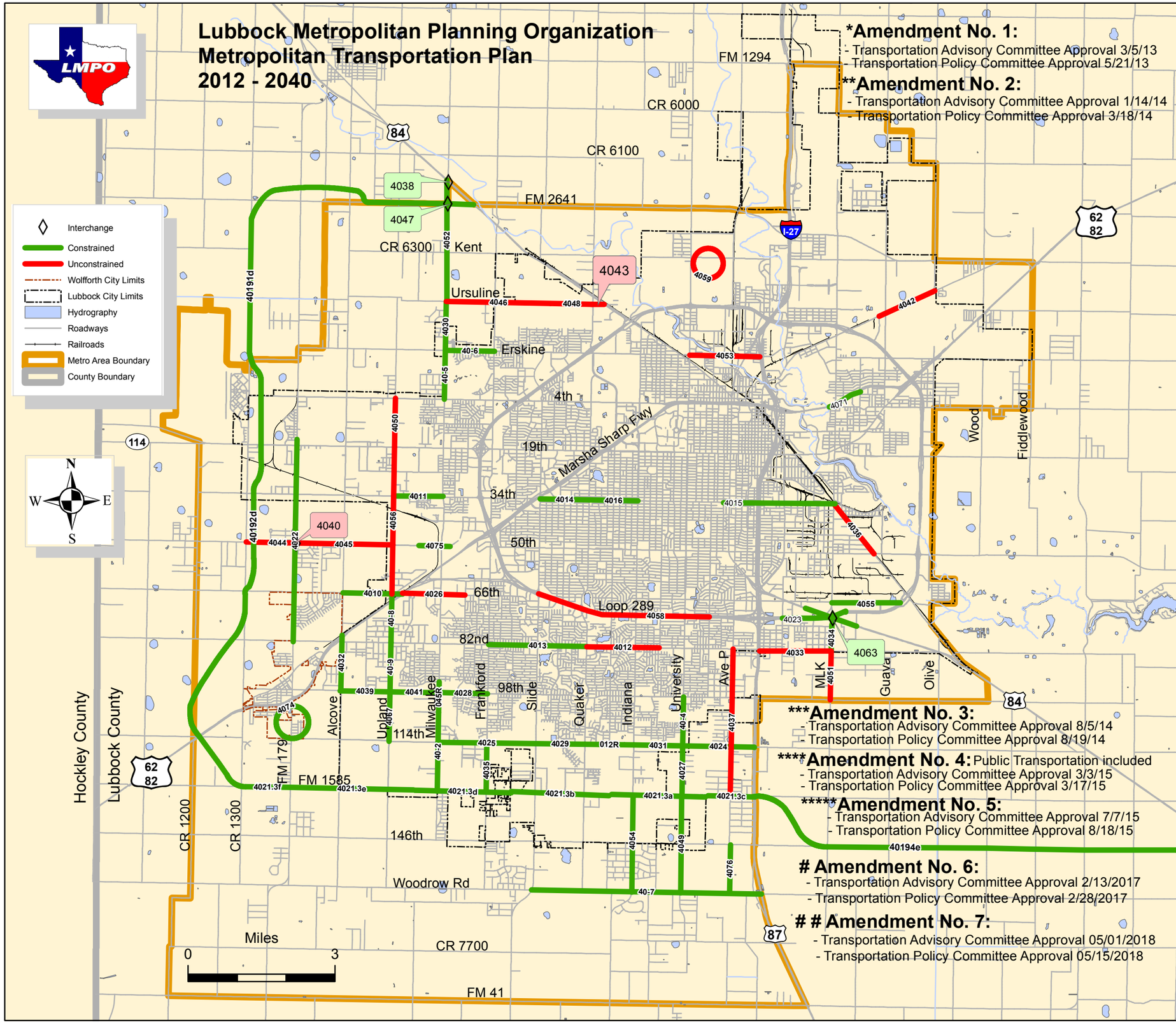
MPO Proj #	Other ID #	Project Name	Project Limits From	Project Limits To	Type	Description	2012 Construction Costs	2012 P.E.& CPS Costs	2012 Utility Costs	2012 ROW Costs	2012 Total Cost	YOE	YOE Cost	Beginning Balance
														641,527,516
012R		114th Street	Quaker Avenue	Indiana Avenue	C	Widen Non-Freeway	450,000	100,000	100,000	0		2013	650,000	641,527,516
														640,877,516
045R		Milwaukee Avenue	94th Street	104th Street	C	Widen Non-Freeway	5,650,000	900,000	100,000	0		2014	6,650,000	640,877,516
														634,227,516
														634,227,516
Placeholder		Various	Various Locations	Various Locations	CI	Placeholder	8,859,995	768,280	100,000	0		2016	9,728,275	634,227,516
														624,499,241
														624,499,241
														624,499,241
40-2	049R	Milwaukee Avenue	104th Street	FM 1585	C	Widen Non-Freeway	12,241,417	2,661,180	100,000	30,000	15,032,597	2019	$19,021,030	624,499,241
														605,478,211
40-4	015R	University Avenue	98th Street	114th Street	C	Widen Non-Freeway	7,763,000	1,687,100	115,500	181,300	9,746,900	2017	$11,858,594	605,478,211
40-5	017R	Milwaukee Avenue	Erskine Avenue	4th Street	C	Widen Non-Freeway	7,311,087	1,589,367	100,000	30,000	9,030,454	2016	$10,564,353	593,619,617
40-6	016R	Erskine Avenue	Milwaukee Avenue	Frankford Avenue	C	Widen Non-Freeway	7,594,216	1,650,916	100,000	30,000	9,375,132	2016	$10,967,578	583,055,264
40-7		Woodrow Road	Slide (FM1730)	U.S. 87	C	Widen Non-Freeway	11,057,894	1,250,023	0	0	$12,307,917	2020	$14,398,522	572,087,686
40-8	018R	Upland Avenue	66th Street	82nd Street	C	Widen Non-Freeway	11,064,690	1,106,469	30,000	1,108,125	$13,309,284	2018	$13,887,184	557,689,164
40-9	020R	Upland Avenue	82nd Street	98th Street	C	Widen Non-Freeway	7,933,467	1,034,800	327,250	720,000	$10,015,517	2019	$7,847,508	543,801,980
40-10		66th Street	Alcove Avenue	U.S. 62/82	C	Widen Non-Freeway	1,748,000	380,000	100,000	360,000	$2,588,000	2023	$3,830,872	535,954,472
40-11	019R	34th Street	Upland Avenue	Milwaukee Avenue	C	Widen Non-Freeway	4,437,390	964,650	200,000	30,000	$5,632,040	2024	$8,670,266	532,123,600
														523,453,334
40-13		82nd Street	Frankford Avenue	Quaker Avenue	RI	Widen Non-Freeway	7,874,780	1,929,300	500,000	0	$10,304,080	2025	$16,497,163	523,453,334
40-14		34th Street	Slide (FM1730)	Quaker Avenue	CI	Reconstruct 5 lanes	10,352,645	1,350,345	0	0	$11,702,990	2020	$17,457,432	506,956,171
40-16		34th Street	Quaker Avenue	Indiana Avenue	CI	Reconstruct 5 lanes	8,874,780	1,929,300	200,000	city	$11,004,080	2015	$0	489,498,739
4021.3A		Phase 3A Loop 88	Memphis	Avenue U	C	Widen Non-Freeway	$0	$0	$0	$0	$0	2020	75,000,000	489,498,739
4021.3B		Phase 3B Loop 88	Chicago	Memphis	C	Widen Non-Freeway	$0	$0	$0	$0	$0	2022	75,000,000	414,498,739
4021.3C		Phase 3C Loop 88	Avenue U	US 87	C	Interchange	$0	$0	$0	$0	$0	2024	75,000,000	339,498,739
4021.3D		Phase 3D Loop 88	Quincy	Chicago	C	Widen Non-Freeway	$0	$0	$0	$0	$0	2026	75,000,000	264,498,739
40-22		FM 179	19th Street	FM 1585	C	Widen Non-Freeway	$22,698,807	$1,500,000	$300,000	$100,000	$24,598,807	2018	$17,000,000	189,498,739
40-23		Loop 289	US 84	US 84	C	Interchange					$19,340,000	2023	$38,700,000	172,498,739
40-24		114th Street	University Avenue	S.H. 87 (new)	C	Widen Non-Freeway	$3,877,704	$1,467,102	$100,000	$250,000	$5,694,806	2018	$8,565,774	133,798,739
40-25	014R	114th Street	Milwaukee Avenue	Slide Road	C	Widen Non-Freeway	$8,013,581	$2,958,867	$100,000	$30,000	$11,102,448	2023	$16,699,614	125,232,965
40-27	026R	University Avenue	114th Street	F.M. 1585	C	Widen Non-Freeway	$4,496,974	$1,687,750	$115,000	$180,000	$6,479,724	2023	$9,746,400	108,533,351
40-28	007R	98th Street	Milwaukee Avenue	Frankford Avenue	C	Widen Non-Freeway	$4,009,290	$1,488,346	$100,000	$30,000	$5,627,636	2023	$8,464,742	98,786,951
40-29	001R	114th Street	Slide (FM1730)	Quaker Avenue	C	Widen Non-Freeway	$4,057,443	$1,530,200	$100,000	$30,000	$5,717,643	2023	$8,600,125	90,322,209
40-30	040R	Milwaukee Avenue	Erskine Avenue	Ursuline Avenue	C	Widen Non-Freeway	$3,713,415	$1,589,366	$100,000	$30,000	$5,432,781	2018	$6,874,201	81,722,084
40-31	013R	114th Street	Indiana Avenue	University Ave.ue	C	Widen Non-Freeway	$3,951,440	$1,467,102	$100,000	$30,000	$5,548,542	2023	$8,345,774	74,847,883
40-32		Alcove Avenue	U.S. 62/82	98th Street	C	Widen Non-Freeway	$2,325,792	$957,500	$100,000	$740,000	$4,123,292	2023	$6,202,000	66,502,109
40-34		MLK	U.S. 84	82nd Street	C	Widen Non-Freeway	$1,428,394	$576,250	$50,000	$370,000	$2,424,644	2023	$3,647,000	60,300,109
40-35	023R	Frankford Avenue	114th Street	FM 1585	C	Widen Non-Freeway	$2,680,845	$1,012,650	$115,500	$180,000	$3,988,995	2023	$6,000,000	56,653,109
40-49		University Avenue	FM 1585	Woodrow Road	CI	Widen Non-Freeway	$1,000,000	$100,000	$100,000	$100,000	$1,300,000	2018	$1,710,711	50,653,109
														48,942,398

														48,942,398
														48,942,398
														48,942,398
														48,942,398
40-63		US 84	INTX	at MLK	C	Safety	750,000	0	0	0	$750,000	2017	$989,683	47,952,715
														47,952,715
														47,952,715
														47,952,715
40-67		Upland Avenue	98th Street	114th Street	C	Widen Non-Freeway	4,404,500	1,000,000	100,000	1,000,000	6,504,500	2020	8,065,580	39,887,135
														39,887,135
														39,887,135
														39,887,135
4071		US 82	West of MLK	Zenith	C	Safety					7,000,000	2024	7,000,000	32,887,135
40-52		Milwaukee Avenue	Ursuline	U.S. 84	C	Widen Non-Freeway	0	166,667	0	0	166,667	2018	166,667	32,720,468
40-47		F.M. 2641		At Milwaukee	C	Intersection	0	166,667	0	0	166,667	2018	166,667	32,553,801
40-38		U.S. 84		At Milwaukee	C	Intersection	0	166,666	0	0	166,666	2018	166,666	32,387,135
														32,387,135
40-39		98th	Alcove	Upland	C	Widen Non-Freeway	7,159,253	1,073,888	127,500	134,400	8,495,041	2020	9,937,996	22,449,139
40-41		98th	Upland	Milwaukee	C	Widen Non-Freeway	9,064,602	1,024,694	227,800	482,400	10,799,494	2020	12,633,884	9,815,255
													$6,200,000.00	16,015,255
4074		Loop 88 Analysis	Consultant Study (Wolfforth	Land Use Analysis		Consultant Study	0	0	0	0	40,000	2019	40,000	15,975,255
4019		Loop 88	US 84 (Shallowater)	US 84 (Slaton)	PE	Preliminary Engineering Only	0	1,153,825	0	0	1,153,825	2019	1,153,825	14,821,430
4019.1D & 2D		Loop 88	US 84	US 62	PE	Preliminary Engineering Only	0	1,153,825	0	0	1,153,825	2019	1,153,825	13,667,605
4019.4E		Loop 88	US 62	US 84 (Slaton)	PE	Preliminary Engineering Only	0	1,153,825	0	0	1,153,825	2019	1,153,825	12,513,780
4076		Avenue P	146th Street	Woodrow Road	C	Widen Non-Freeway	1,000,000	550,000	100,000	350,000	2,000,000	2022	2,080,000	10,433,780
4075		50th Street	RR INTX	Milwaukee	C	RR INTX - Safety	806,000	100,000	100,000	0	1,000,000	2022	1,040,000	9,393,780
4015		34th Street	Avenue Q	Southeast Drive	C	Widen Non-Freeway	6,105,000	1,600,000	115,000	180,000	8,000,000	2022	8,320,000	1,073,780
														1,073,780
4021.3E		Loop 88	0.5 miles E of Quincy	FM 179	C	Widen Non-Freeway	22,400,000	2,600,000	15,000,000	20,000,000	60,000,000	2027	79,200,000	78,126,220
													49,060,000	29,066,220
													39,380,000	10,313,780
													3,461,475	13,775,255
4058 to unconstrained		S Loop 289	Slide Road	IH 27	C	Ramp Reversal								13,775,255
4012 to unconstrained		82nd	Quaker Avenue	Elgin Avenue	RI	Widen Non-Freeway								13,775,255
4054 to constrained		Indiana	FM 1585	Woodrow Road	C	Widen Non-Freeway	5,000,000	500,000	100,000	100,000	5,000,000	2.022	5,700,000	8,075,255
4055 to unconstrained		66th Street	MLK	East Loop 289	C	Widen Non-Freeway								8,075,255

Projects 4058, 4012, 4054, 4055 show separate action by the TAC to achieve fiscal constraint in support of the 19-22 TIP

Add $6.2M from allocations per the 18 UTP showing adjustments from DCIS

Lubbock Metropolitan Planning Organization
Metropolitan Transportation Plan
2012 - 2040



*Amendment No. 1:
- Transportation Advisory Committee Approval 3/5/13
- Transportation Policy Committee Approval 5/21/13

**Amendment No. 2:
- Transportation Advisory Committee Approval 1/14/14
- Transportation Policy Committee Approval 3/18/14

***Amendment No. 3:
- Transportation Advisory Committee Approval 8/5/14
- Transportation Policy Committee Approval 8/19/14

****Amendment No. 4: Public Transportation included
- Transportation Advisory Committee Approval 3/3/15
- Transportation Policy Committee Approval 3/17/15

*****Amendment No. 5:
- Transportation Advisory Committee Approval 7/7/15
- Transportation Policy Committee Approval 8/18/15

Amendment No. 6:
- Transportation Advisory Committee Approval 2/13/2017
- Transportation Policy Committee Approval 2/28/2017

Amendment No. 7:
- Transportation Advisory Committee Approval 05/01/2018
- Transportation Policy Committee Approval 05/15/2018

Surface Transportation Program/Metro Mobility

ID	Fiscally Constrained
012R	114th St, Quaker Ave to Indiana Ave
045R	Milwaukee Ave, 94th St to 104th St
40-2	Milwaukee, 104th to FM 1585 (049R)
40-4	University, 98th to 114th (015R)
40-5	Milwaukee, Erskine to 4th (017R)
40-6	Erskine, Milwaukee to Frankford (016R)
40-7	Woodrow Rd, Slide (FM 1730) to US 87 (Ph A & B)
40-8	Upland, 66th to 82nd (018R)
40-9	Upland, 82nd to 98th (020R)
4010	66th, Alcove to US 62/82
4011	34th, Upland to Milwaukee (019R)
4013	82nd, Frankford to Quaker
4014	34th, Slide to Quaker
4016	34th, Quaker to Indiana
4024	114th, University to US 87
4025	114th, Milwaukee to Slide (014R)
4027	University, 114th to FM 1585 (026R)
4028	98th, Milwaukee to Frankford (007R)
4029	114th, Slide to Quaker (001R)
4030	Milwaukee, Erskine to Ursuline (040R)
4031	114th, Indiana to University (013R)
4032	Alcove, US 62/82 to 98th
4034	MLK, US 84 to 82nd
4035	Frankford, 114th to FM 1585 (023R)
****4038	US 84 and Milwaukee Intersection
****4047	Bluefield (FM 2641) and Milwaukee Intersection
****4049	University, FM 1585 to Woodrow Rd (015R part.)
****4052	Milwaukee (NCR 1700), Ursuline to US 84
****4067	Upland, 98th to 114th
*****4015	34th, Ave Q to Southeast Dr
*****4039	98th, Alcove to Upland (039R)
*****4041	98th, Upland to Milwaukee
#4021.3A	Loop 88 Ph 3a, Memphis to Ave U (limits revised)
#4021.3B	Loop 88 Ph 3b, Chicago to Memphis (limits revised)
#4021.3C	Loop 88 Ph 3c, Ave U to US 87 and interchange (limits revised)
#4021.3D	Loop 88 Ph 3d, Quincy Ave to Chicago (limits revised)
##4021.3E	Loop 88 Ph 3e Quincy to FM 179
##4021.3F	Loop 88 Ph 3f (1&2), FM 179 to Quitsna, Quitsna to US 62
#4022	FM 179, 800' N SH 114 to Donald Preston Dr (limits revised)
#4023	US 84 & SE Loop 289 interchange improvements (limits revised)
#4063	US 84 and MLK interchange (2017 revision)
#4071	US 82 (Parkway Dr) W of MLK to Zenith (limits revised)
##4054	Indiana, FM 1585 to Woodrow Rd (027R part.)
##4055	66th, MLK to E Loop 289 (029R)
##4019	Loop 88, Shallowater to Slaton (options 1D, 2D, 4E) Engr only
##4074	Loop 88, Wolfforth Engr study
##4075	50th, RR @ Milwaukee intx
##4076	Ave P, 146th to Woodrow Rd
	Unconstrained Projects (Illustrative)
**4058	Loop 289, Slide (FM 1730) to IH 27 (042R) – Ramp Reversal (safety)
*****4036	SE Dr, 34th to 50th
#4033	82nd, IH 27 to MLK (038R)
##4012	82nd, Quaker to Elgin
4037	Ave P, 82nd to FM 1585 (021R)
4040	W 50th and FM 179 intersection
4042	Municipal Dr, Elder to Olive
4043	Ursuline, N Quaker to Clovis Rd (US 84) (032R part.)
4044	W 50th, FM 179 to CR 1300
4045	W 50th, FM 179 to Upland
4046	Ursuline, N Milwaukee to N Slide
4048	Ursuline, N Slide to N Quaker (031R)
4050	Upland, 4th to 19th
4051	MLK, 82nd to 98th
4053	Erskine, University to IH 27 (034R)
4056	Upland, 19th to 66th (US 62/82)
4059	ITS various locations (IH27 portion – 048R)

Appendix F

Resource-specific Maps

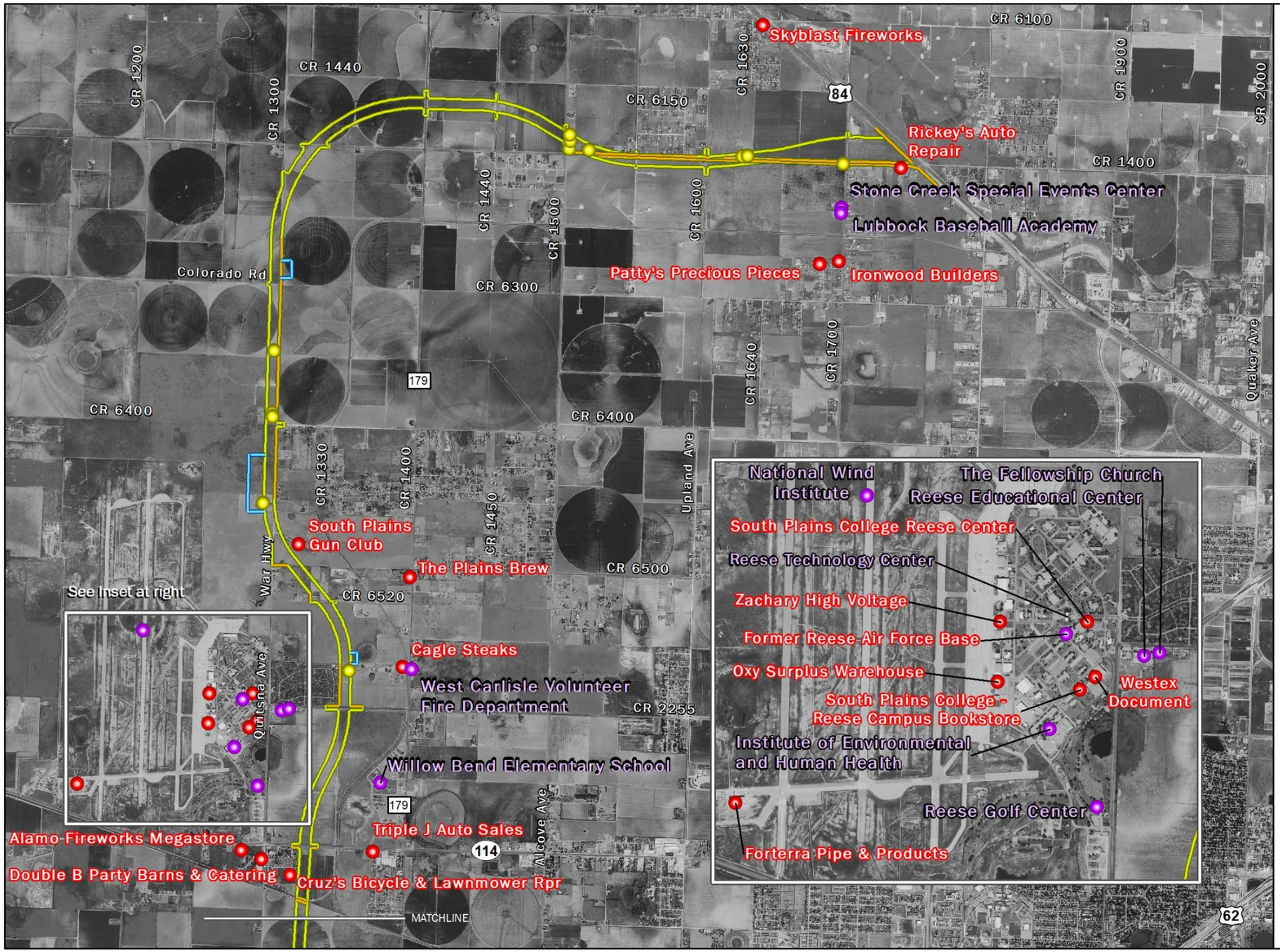
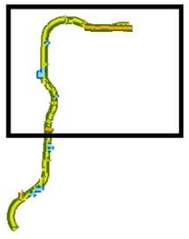


Figure 4.1
Community Features
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Existing Right-of-way
Proposed Right-of-way
Drainage Easement
Community Features
Commercial
Potential Resiential Displacement



N
W E
S

1:48,000

0 2,000 4,000
Feet

Base Map: 2016 NAIP Imagery Lubbock County, Texas

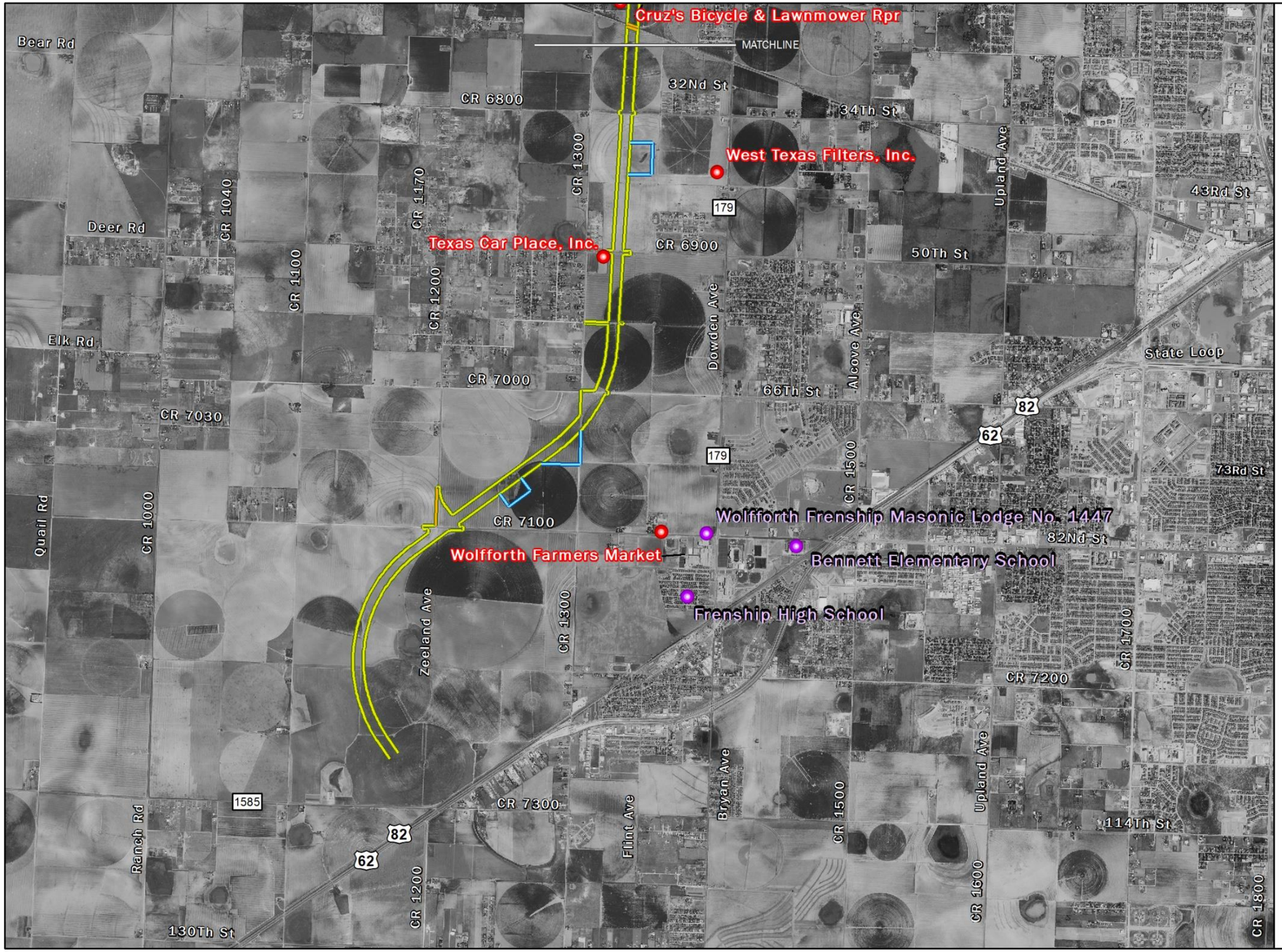
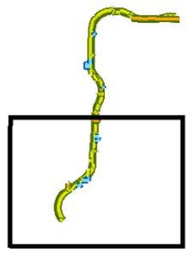


Figure 4.2
Community Features
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Existing Right-of-way
Proposed Right-of-way
Drainage Easement
Community Features
Commercial
Potential Resiential Displacement



N
W E
S

1:48,000

0 2,000 4,000
Feet

Base Map: 2016 NAIP Imagery Lubbock County, Texas

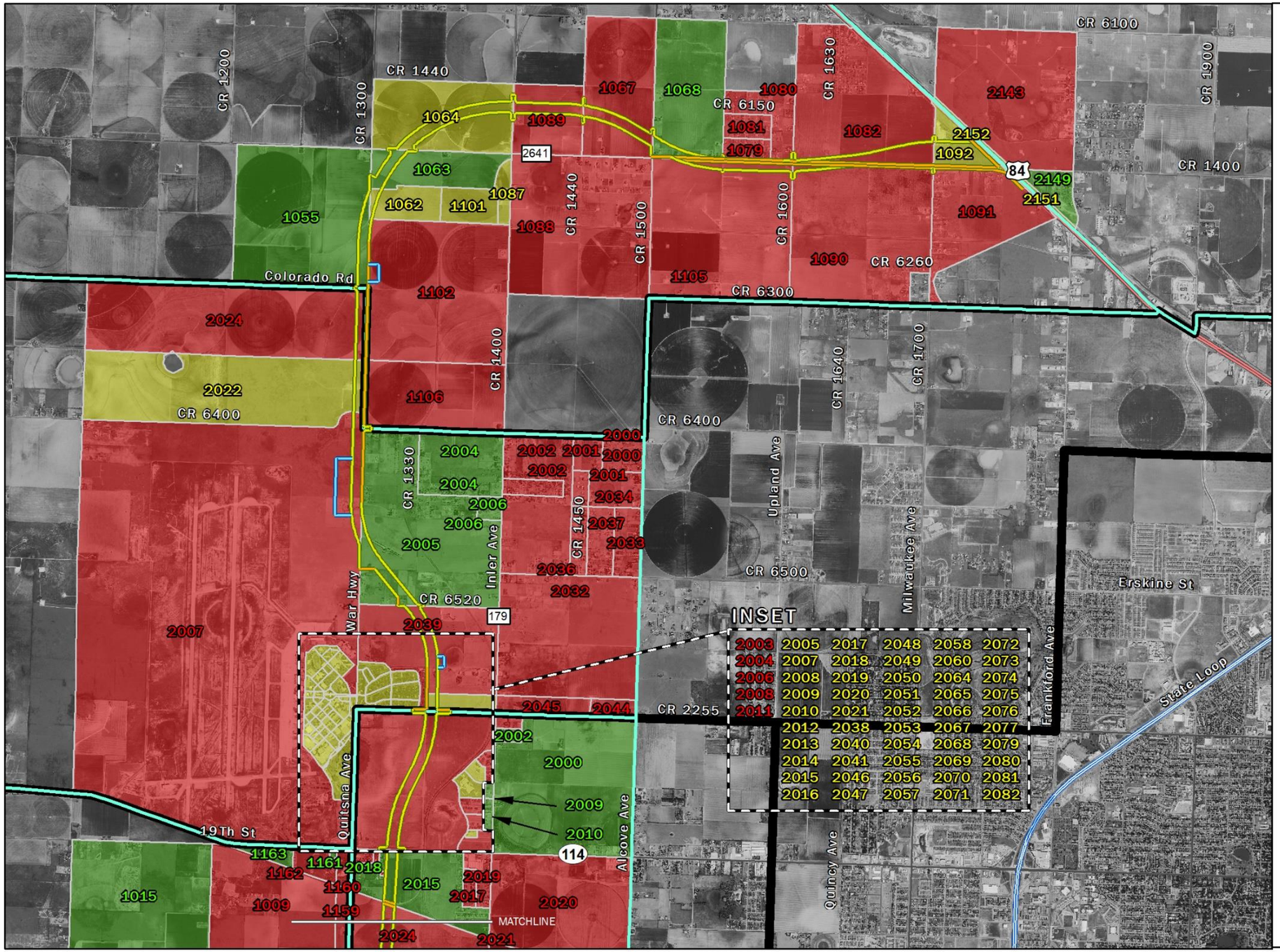


Figure 5.1
Census Study Area
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Existing Right-of-way
Proposed Right-of-way
Drainage Easement
Block Group
Census Tract
Inhabited
Inhabited, Minority
Uninhabited

1:48,000

0 2,000 4,000
Feet

Base Map: 2016 NAIP Imagery Lubbock County, Texas

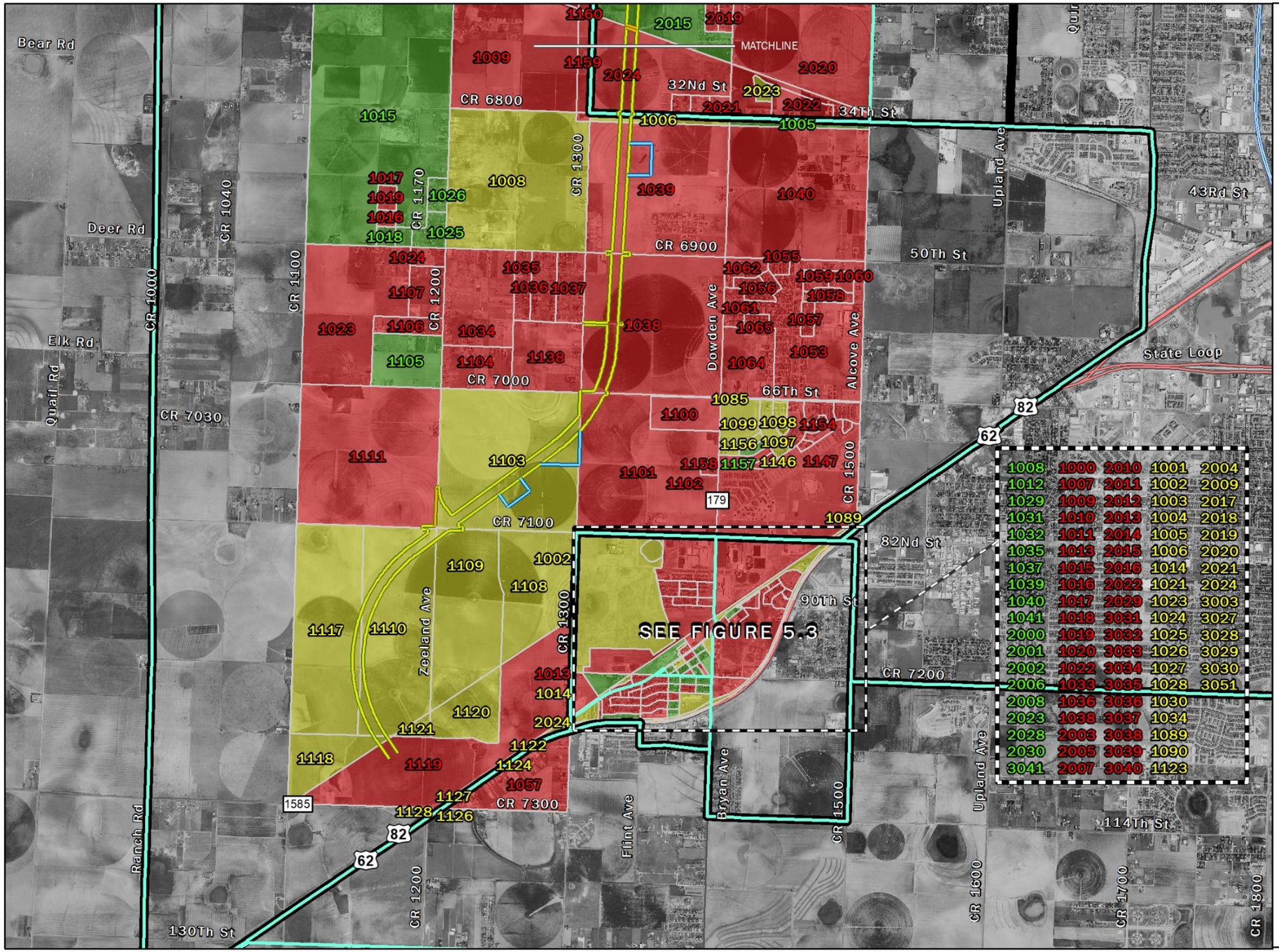


Figure 5.2
Census Study Area
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

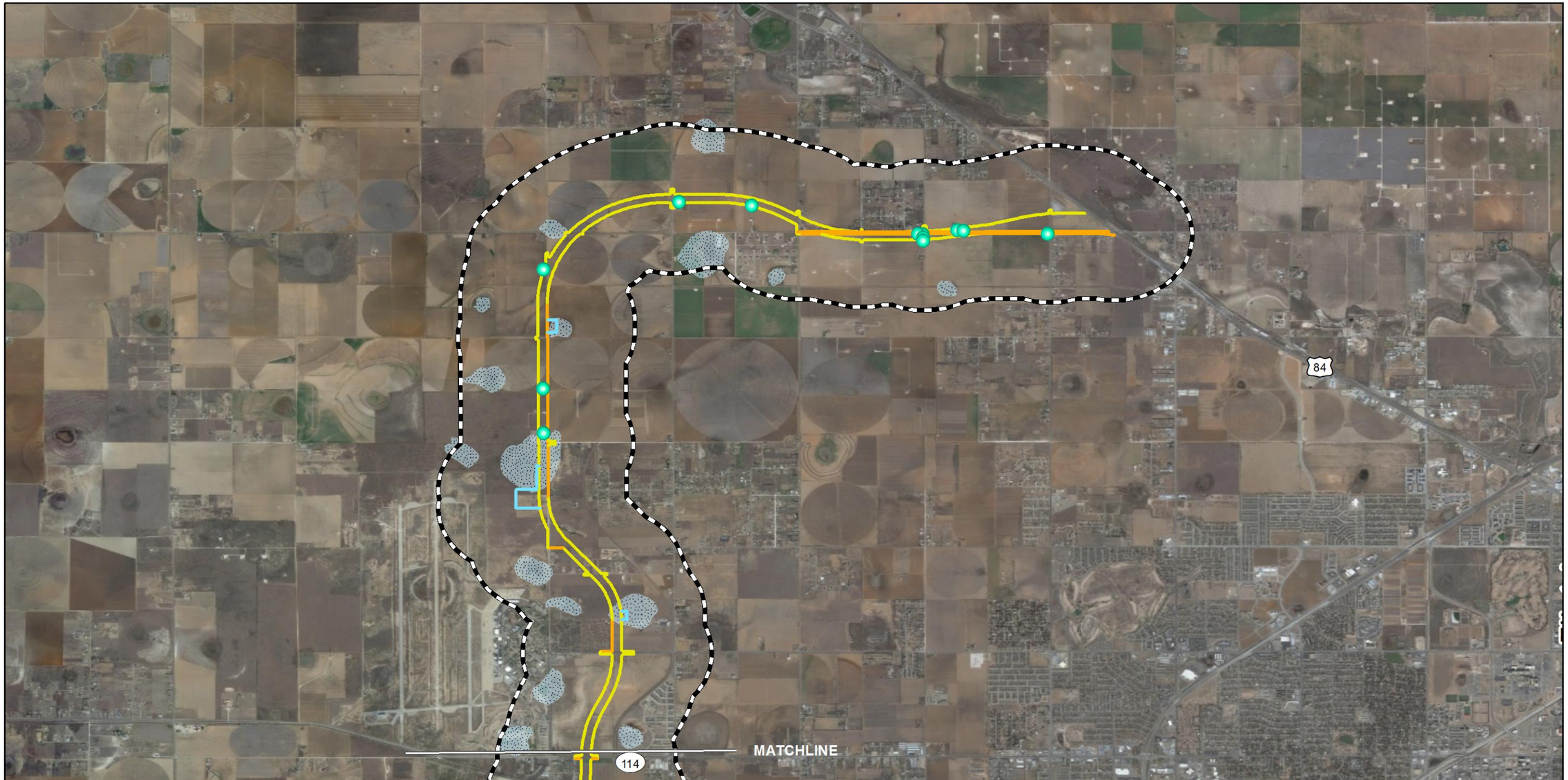
Existing Right-of-way
Proposed Right-of-way
Drainage Easement
Block Group
Census Tract
Inhabited
Inhabited, Minority
Uninhabited

1:48,000

0 2,000 4,000
Feet

Base Map: 2016 NAIP Imagery Lubbock County, Texas

Figure 5.3
Census Study Area
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Base Map: 2018 Texas Imagery Service, Lubbock, County, Texas

Drainage Easement
Existing Right-of-way
Proposed Right-of-way
Historic High Probabilty Area
Study area (1Km buffer)
Playa

Note: Previously Recorded Archeological SItes and Previous Investigations have been removed from this figure to protect the location of this information.

N
W E
S

1:63,360

0 0.5 1
Miles

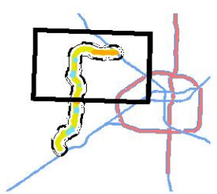
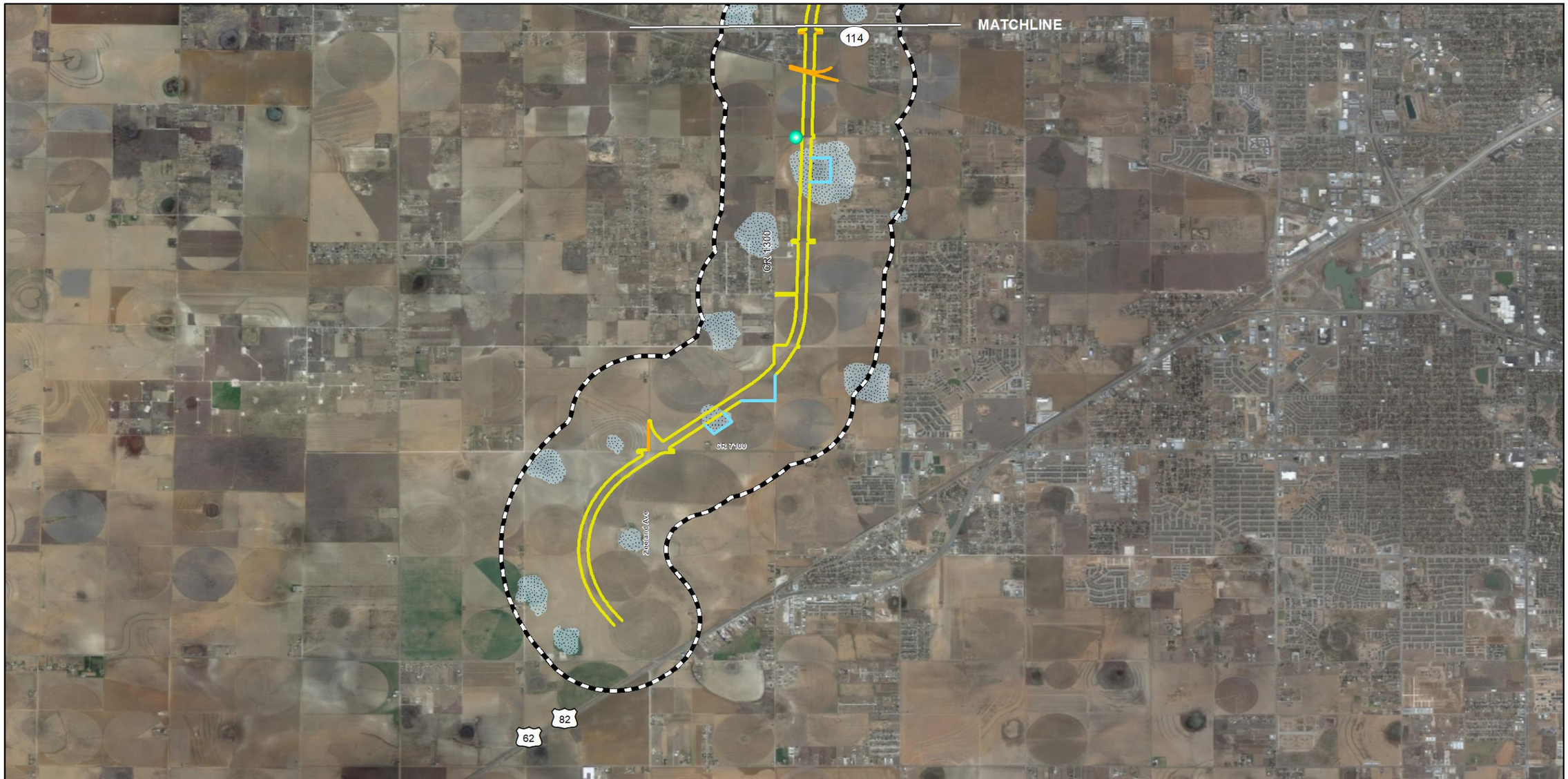


Figure 6.1
Archeological APE and
Historic High Probability Areas
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Base Map: 2018 Texas Imagery Service, Lubbock, County, Texas

- Drainage Easement
- Existing Right-of-way
- Proposed Right-of-way
- Historic High Probabilty Area
- Study area (1Km buffer)
- Playa

Note: Previously Recorded Archeological SItes and Previous Investigations have been removed from this figure to protect the location of this information.

N W E S

1:63,360

0 0.5 1
Miles

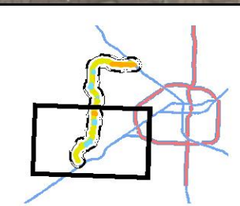


Figure 6.2
Archeological APE and
Historic High Probability Areas
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

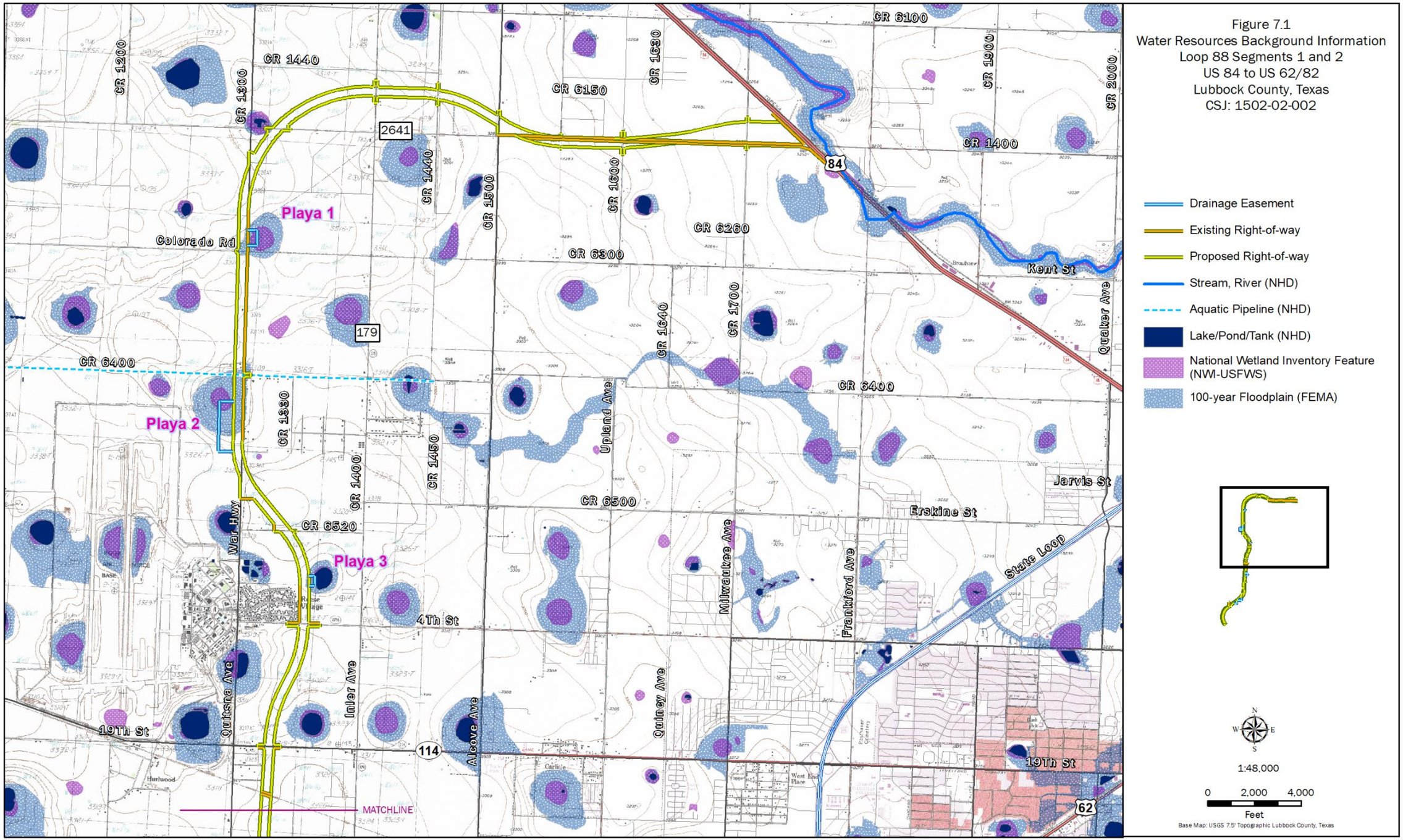


Figure 7.1
Water Resources Background Information
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002
Drainage Easement
Existing Right-of-way
Proposed Right-of-way
Stream, River (NHD)
Aquatic Pipeline (NHD)
Lake/Pond/Tank (NHD)
National Wetland Inventory Feature (NWI-USFWS)
100-year Floodplain (FEMA)
1:48,000
0 2,000 4,000
Feet
Base Map: USGS 7.5' Topographic Lubbock County, Texas
Playa 1
Playa 2
Playa 3
MATCHLINE
CR 1200
CR 1300
CR 1440
CR 1500
CR 1600
CR 1630
CR 1640
CR 1700
CR 1900
CR 2000
CR 6100
CR 6150
CR 6260
CR 6300
CR 6400
CR 6500
CR 6520
CR 1400
CR 1450
Colorado Rd
Kent St
Quaker Ave
Upland Ave
Jarvis St
Erskine St
Milwaukee Ave
Frankford Ave
State Loop
War Hwy
4Th St
19Th St
Quitsna Ave
Iner Ave
Alcove Ave
Quincy Ave
84
114
62
2641
179

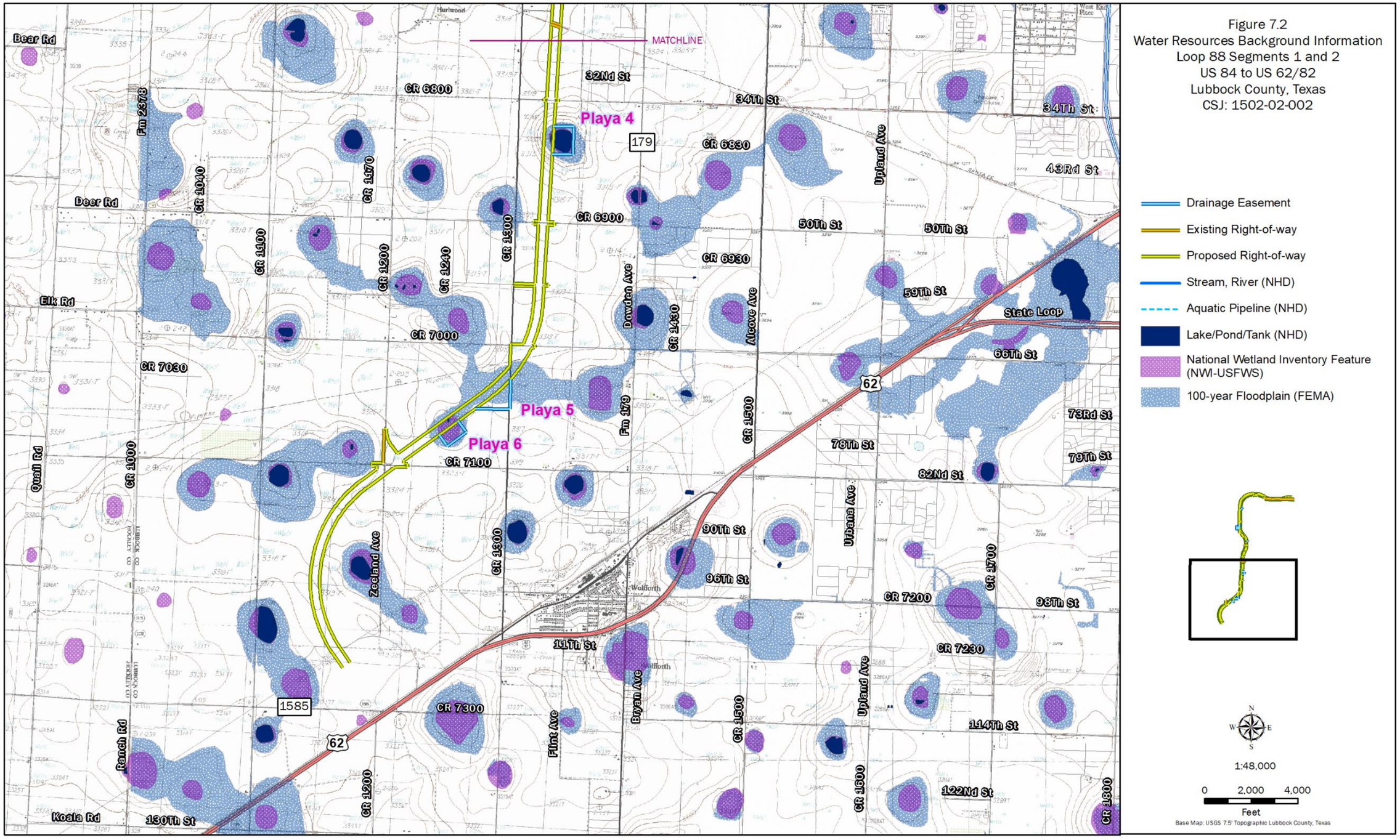


Figure 7.2
Water Resources Background Information
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002
Drainage Easement
Existing Right-of-way
Proposed Right-of-way
Stream, River (NHD)
Aquatic Pipeline (NHD)
Lake/Pond/Tank (NHD)
National Wetland Inventory Feature (NWI-USFWS)
100-year Floodplain (FEMA)
1:48,000
0 2,000 4,000
Feet
Base Map: USGS 7.5' Topographic Lubbock County, Texas
MATCHLINE
Playa 4
Playa 5
Playa 6
Bear Rd
Deer Rd
Elk Rd
Quail Rd
Ranch Rd
Koala Rd
Fm 2378
CR 1040
CR 1170
CR 1100
CR 1200
CR 1240
CR 1300
CR 6300
CR 6830
CR 6900
CR 6930
CR 7000
CR 7030
CR 7100
CR 7200
CR 7230
CR 7300
CR 1000
CR 1400
CR 1430
CR 1500
CR 1600
CR 1700
CR 1800
Fm 179
Zeeland Ave
Dowden Ave
Alcove Ave
Upland Ave
Urbana Ave
Bryan Ave
Flint Ave
32Nd St
34Th St
43Rd St
50Th St
59Th St
66Th St
73Rd St
78Th St
79Th St
82Nd St
90Th St
93Th St
96Th St
11Th St
114Th St
122Nd St
130Th St
State Loop
179
62
1585
Wolfforth

Work to be constructed by others

1:7,200

0 300 600

Feet

Figure 8.1
Ecological Mapping System of Texas
(EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Proposed Right-of-way
CRP / Other Improved Grassland
Row Crops
Work to be constructed by others

1:7,200

0 300 600
Feet

Figure 8.2
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

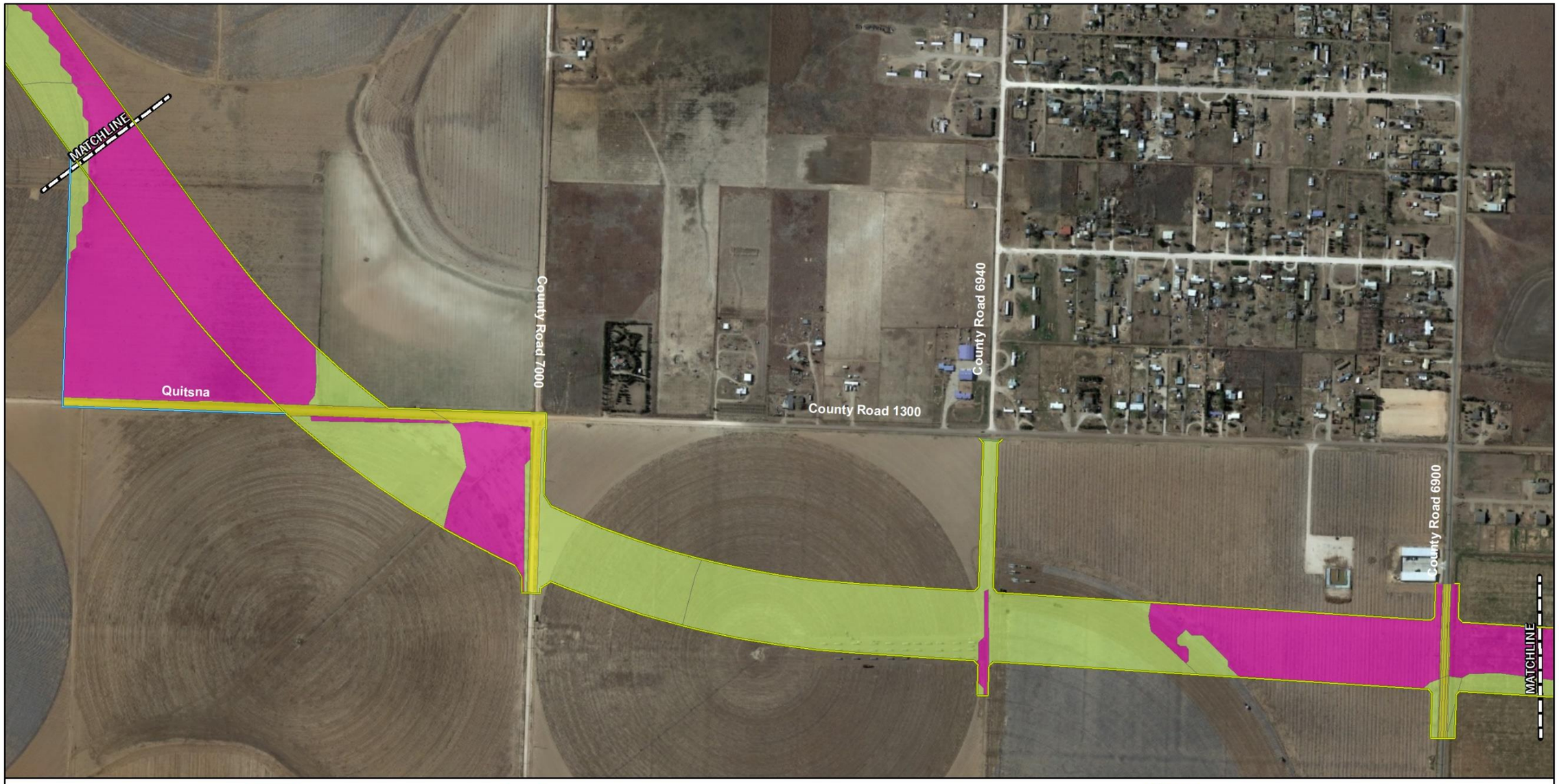
Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
Barren
CRP / Other Improved Grassland
High Plains: Playa Grassland
High Plains: Playa Lake
High Plains: Shortgrass Prairie
Rolling Plains: Mixedgrass Prairie
Row Crops

1:7,200

0 300 600
Feet

Figure 8.3
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



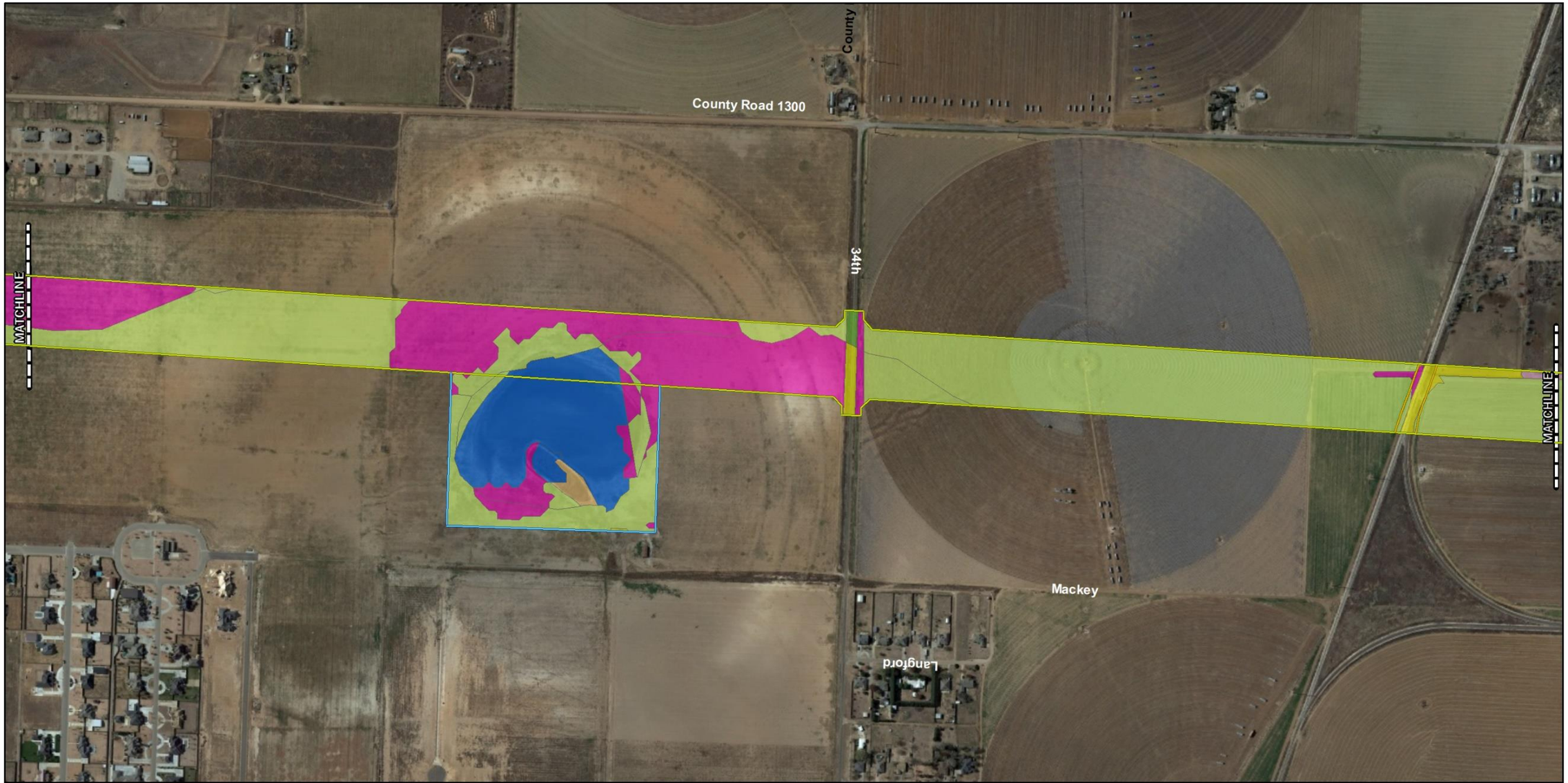
Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Row Crops

1:7,200

0 300 600
Feet

Figure 8.4
Ecological Mapping System of Texas
(EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
CRP / Other Improved Grassland
High Plains: Playa Grassland
High Plains: Playa Lake
High Plains: Shortgrass Prairie
Native Invasive: Juniper Shrubland
Native Invasive: Mesquite Shrubland
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.5
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

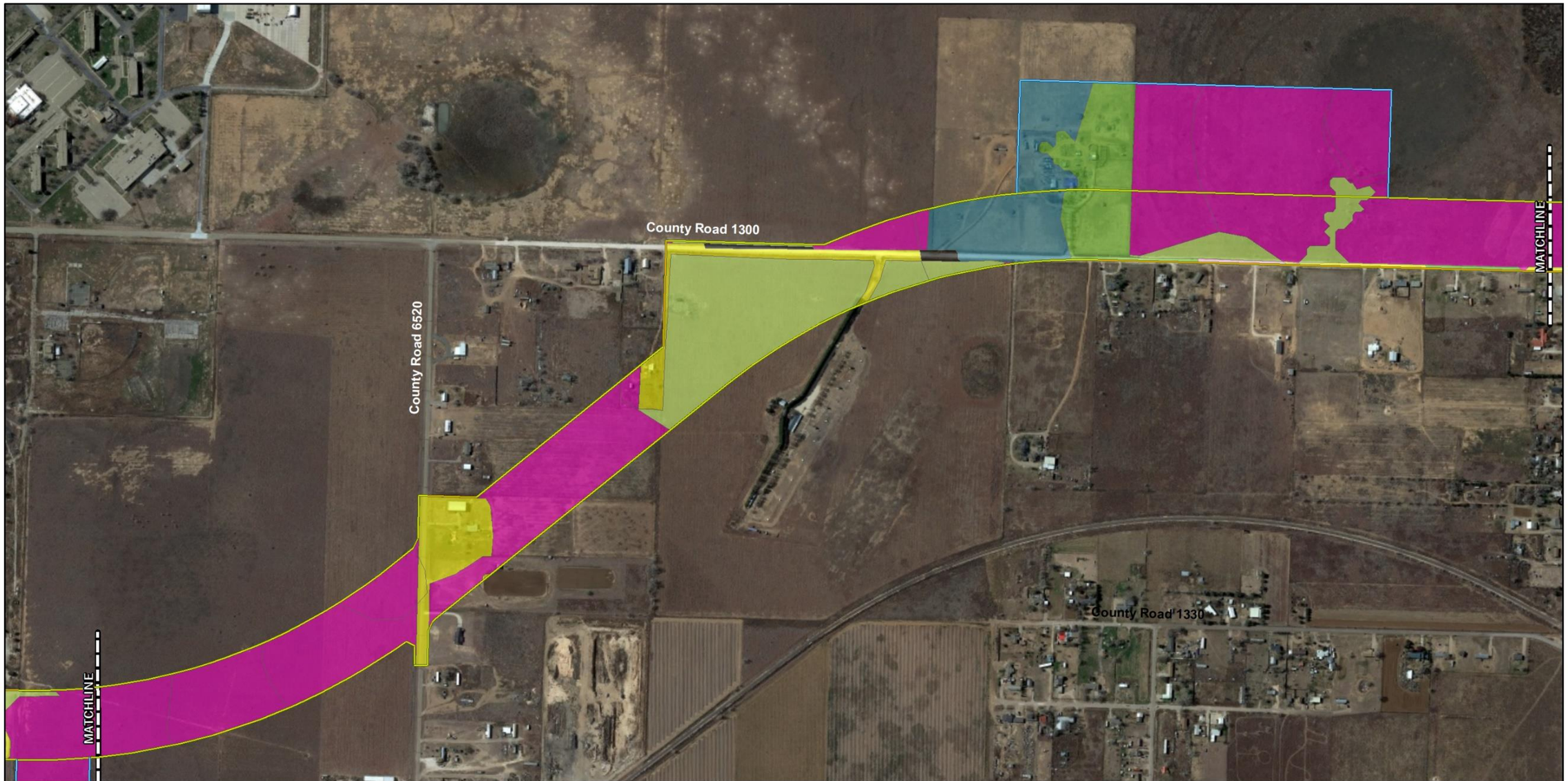
Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
CRP / Other Improved Grassland
High Plains: Playa Lake
High Plains: Shortgrass Prairie
Native Invasive: Juniper Shrubland
Row Crops
Urban High Intensity
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.6
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
Barren
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Rolling Plains: Mixedgrass Prairie
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.7
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Rolling Plains: Mixedgrass Prairie
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.8
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Proposed Right-of-way
Barren
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Row Crops

1:7,200

0 300 600
Feet

Figure 8.9
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

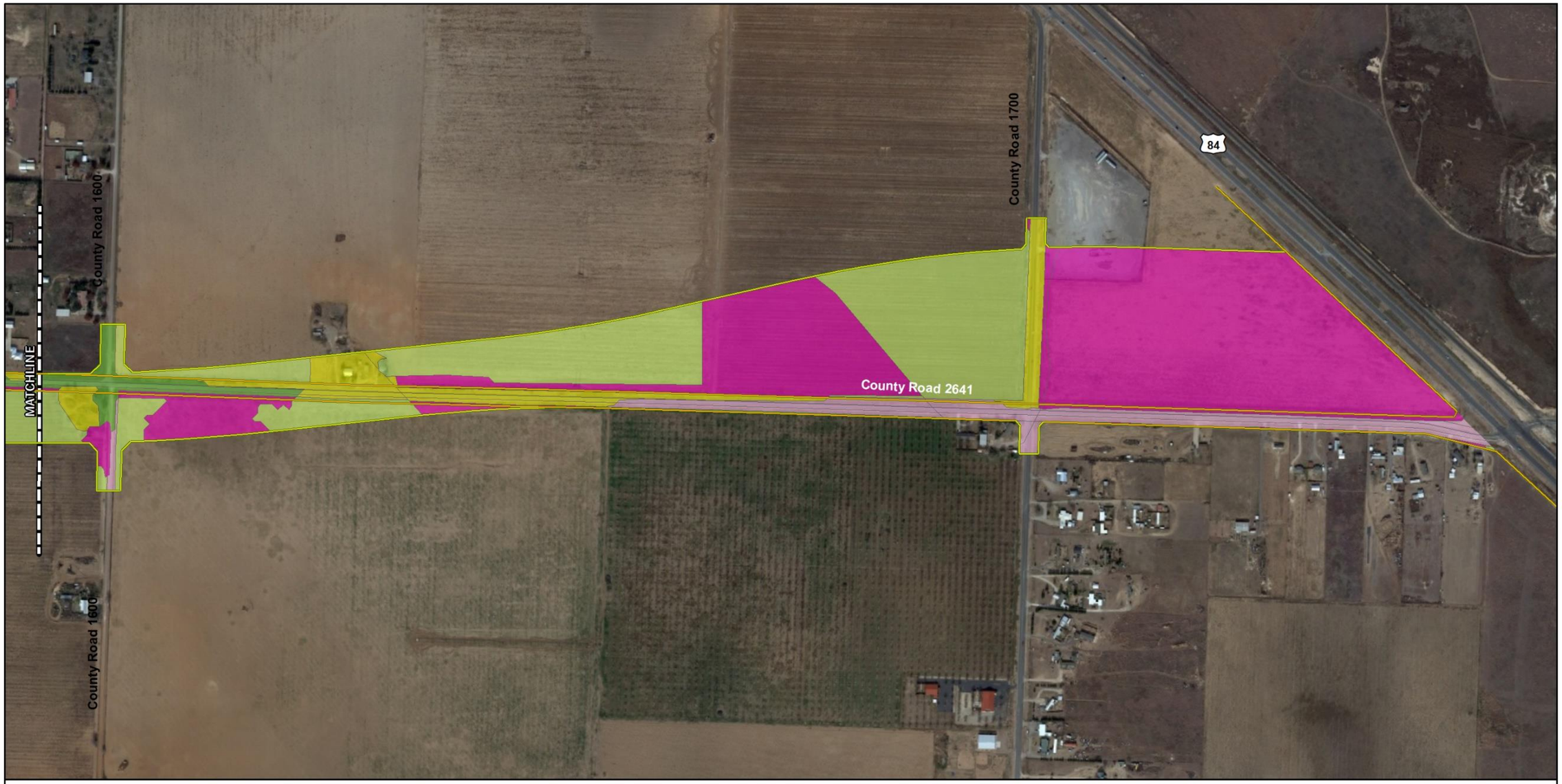
Existing Right-of-way
Proposed Right-of-way
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Rolling Plains: Mixedgrass Prairie
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.10
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way
Proposed Right-of-way
CRP / Other Improved Grassland
High Plains: Shortgrass Prairie
Native Invasive: Mesquite Shrubland
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 8.11
Ecological Mapping System of Texas (EMST) Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Work to be constructed by others

1:7,200

0 300 600

Feet

Figure 9.1
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Proposed Right-of-way

Work to be constructed by others

Vegetation Type

Row Crops

1:7,200

0 300 600

Feet

Figure 9.2
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement

Vegetation Type

High Plains: Floodplain Herbaceous Vegetation
High Plains: Playa Grassland
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 9.3
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement

Vegetation Type

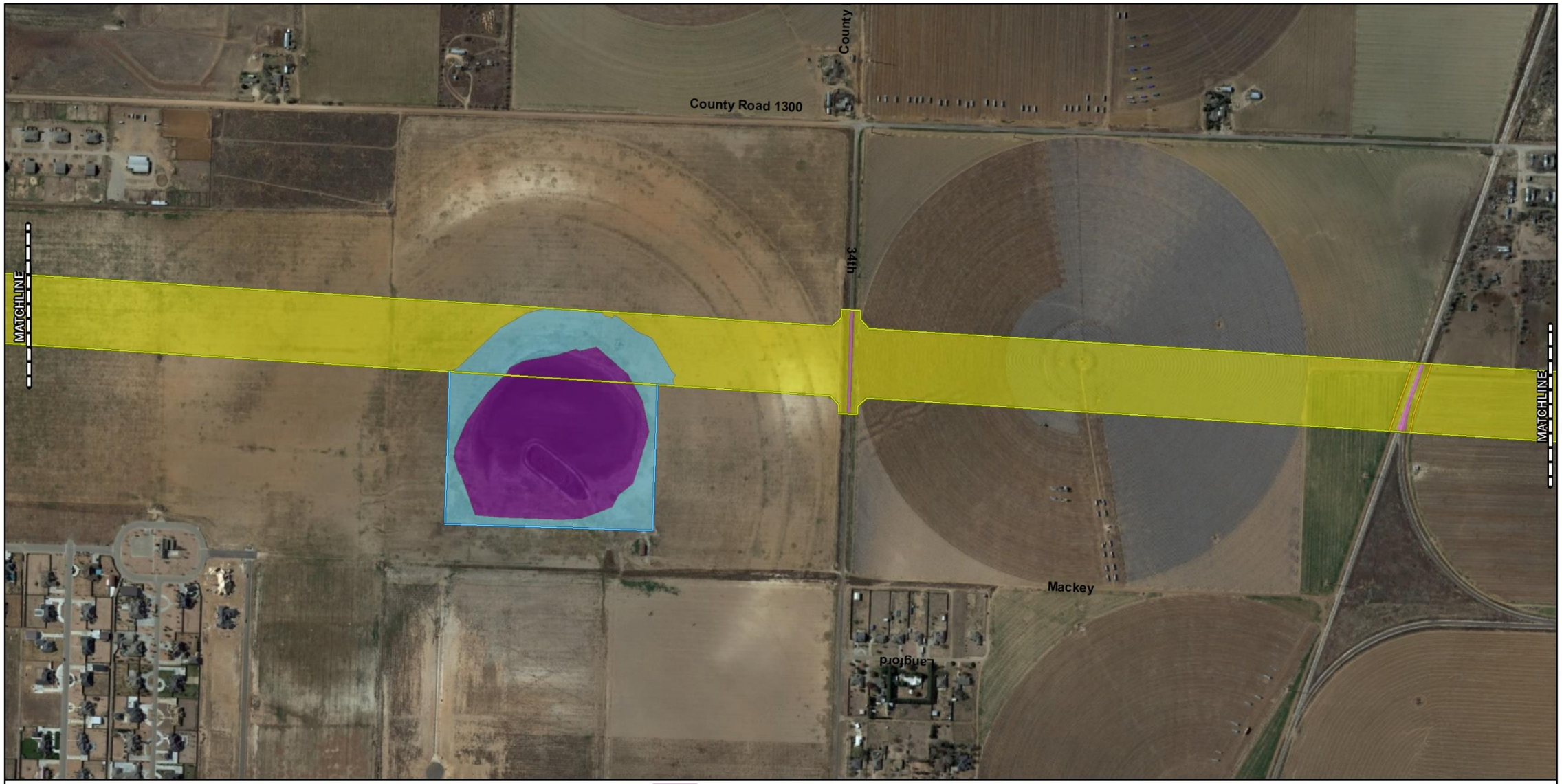
High Plains: Floodplain Herbaceous Vegetation
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 9.4
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way

Proposed Right-of-way

Proposed Drainage Easement

Vegetation Type

High Plains: Floodplain Herbaceous Vegetation

High Plains: Playa Grassland

Row Crops

Urban Low Intensity

1:7,200

0 300 600

Feet

Figure 9.5
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement

Vegetation Type

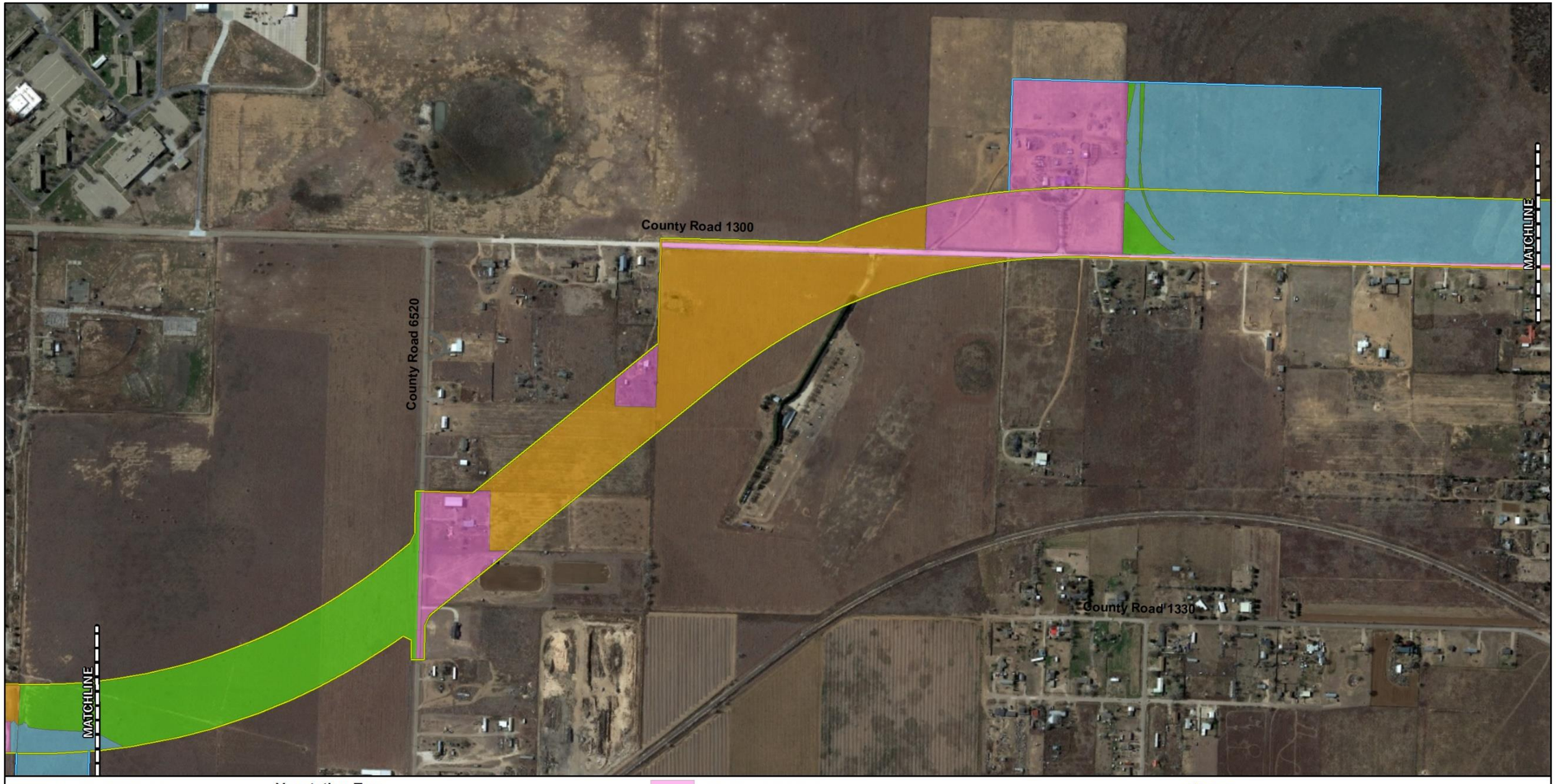
CRP/Other Improved Grassland
High Plains: Floodplain Herbaceous Vegetation
High Plains: Playa Grassland
Rolling Plains: Mixedgrass Prairie
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 9.6
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement

Vegetation Type

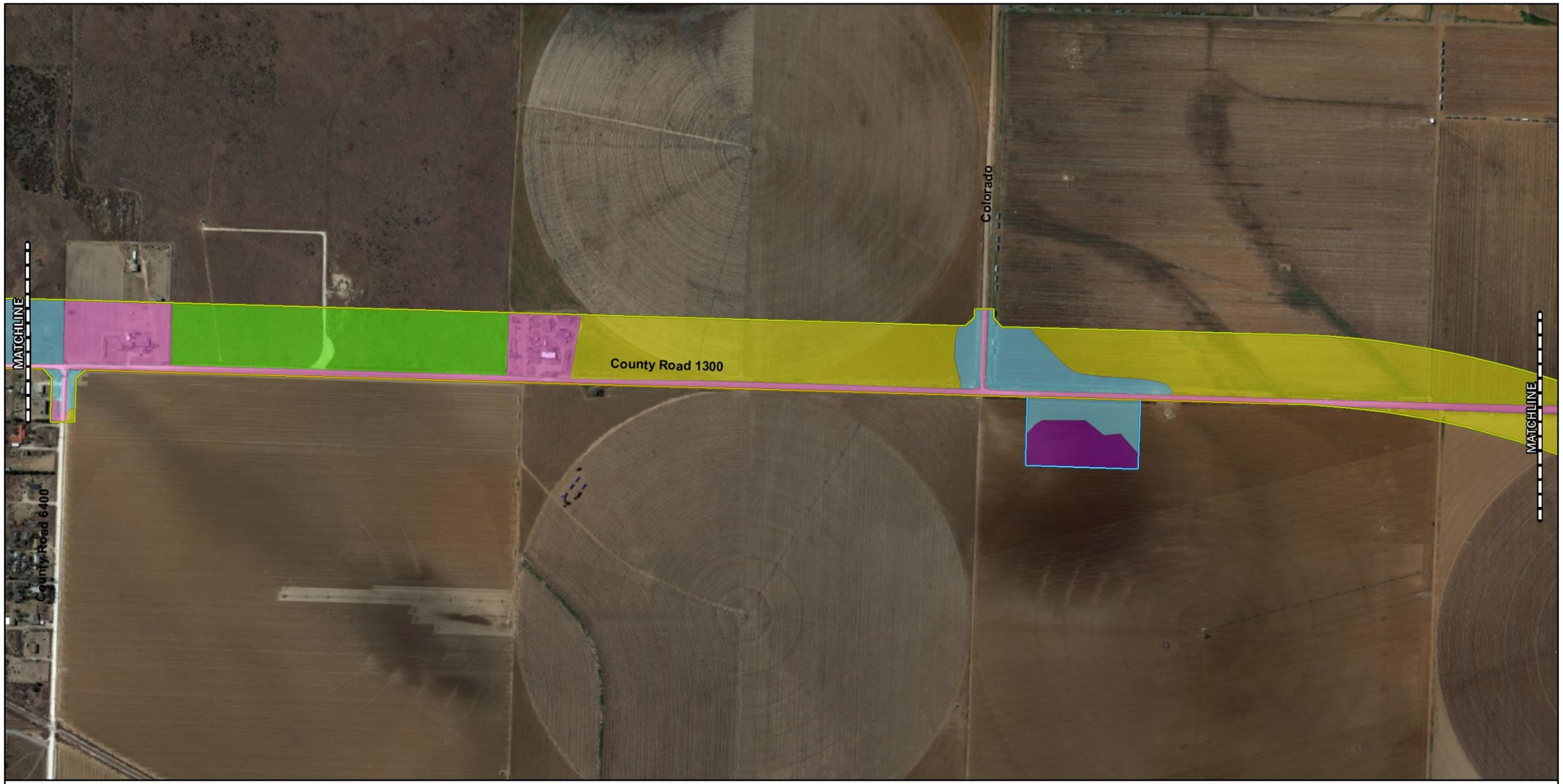
CRP/Other Improved Grassland
High Plains: Floodplain Herbaceous Vegetation
Rolling Plains: Mixedgrass Prairie
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 9.7
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way
Proposed Right-of-way
Proposed Drainage Easement

Vegetation Type

High Plains: Floodplain Herbaceous Vegetation
High Plains: Playa Grassland
Rolling Plains: Mixedgrass Prairie
Row Crops
Urban Low Intensity

1:7,200

0 300 600
Feet

Figure 9.8
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Proposed Right-of-way

Vegetation Type

- High Plains: Floodplain Herbaceous Vegetation
- Row Crops
- Urban Low Intensity

1:7,200

0 300 600

Feet

Figure 9.9
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Existing Right-of-way

Proposed Right-of-way

Vegetation Type

Row Crops

Urban Low Intensity

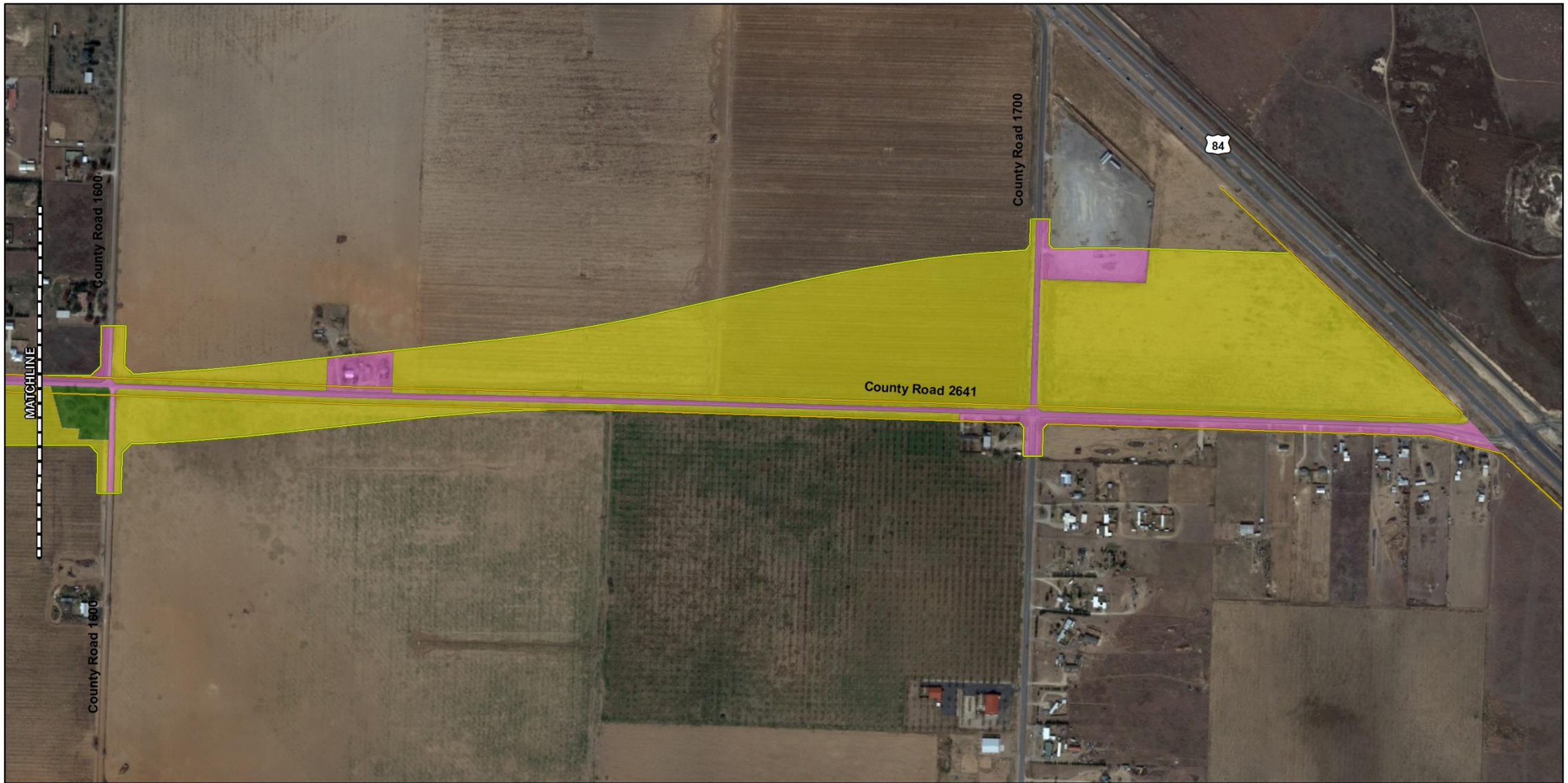
1:7,200

0 300 600

Feet

Figure 9.10
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas



Existing Right-of-way

Proposed Right-of-way

Vegetation Type

Exotic Invasive: Elm/Olive Woodland

Row Crops

Urban Low Intensity

1:7,200

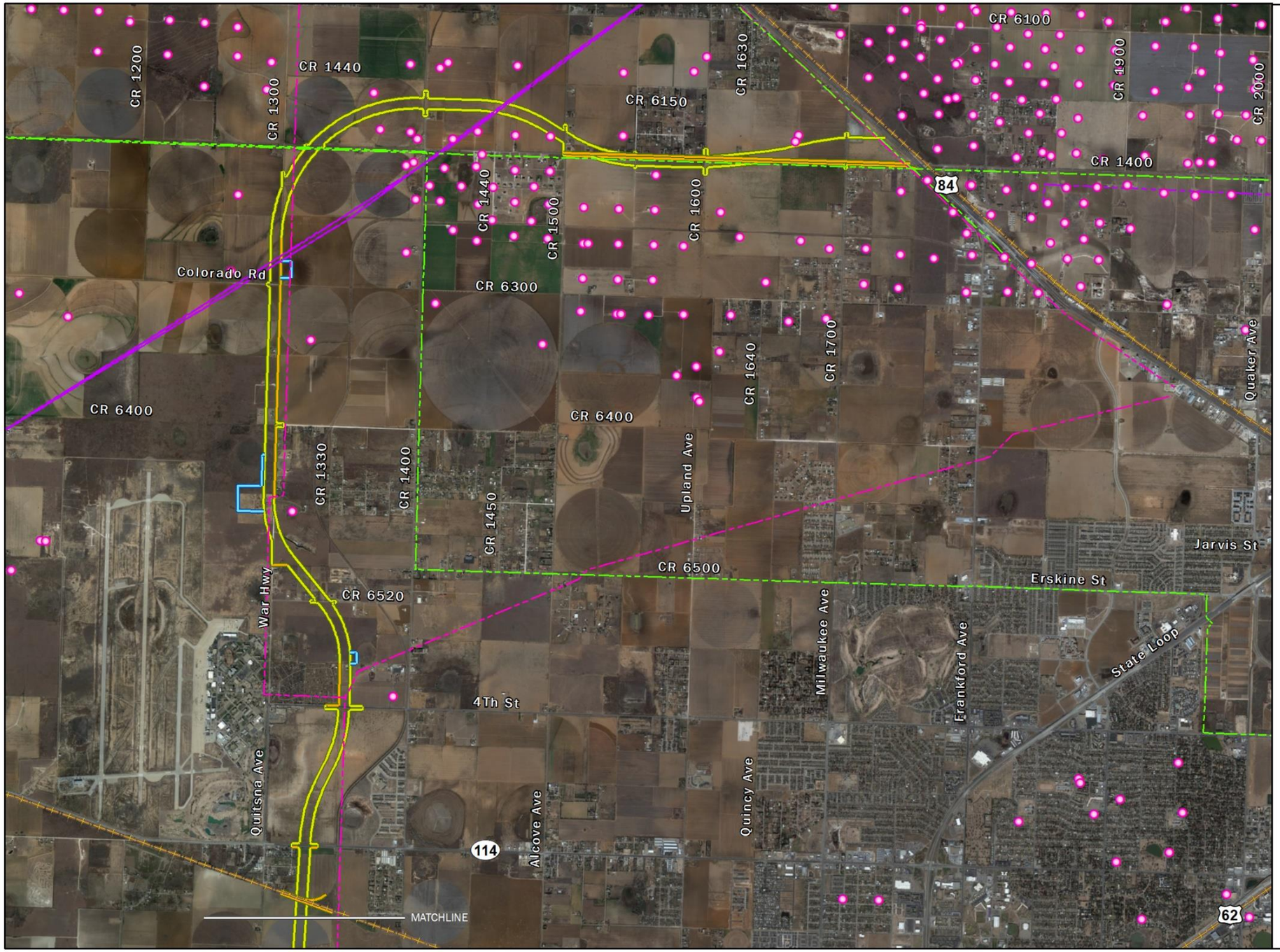
0 300 600

Feet

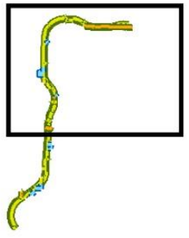
Figure 9.11
Field Verified Vegetation
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Base Map: Texas Imagery Service 2018 Lubbock County, Texas

Figure 10.1
Railroad Commission Data
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Well (oil, plugged, dry, permitted, abandoned, injection)
Railroad
Carbon Dioxide
Crude Oil
Natural Gas
Natural Gas - Distribution
Refined Liquid Product
Drainage Easement
Existing Right-of-way
Proposed Right-of-way



N
W E
S

1:48,000

0 2,000 4,000
Feet

Base Map: Texas Imagery Service, 2018 Lubbock County, Texas

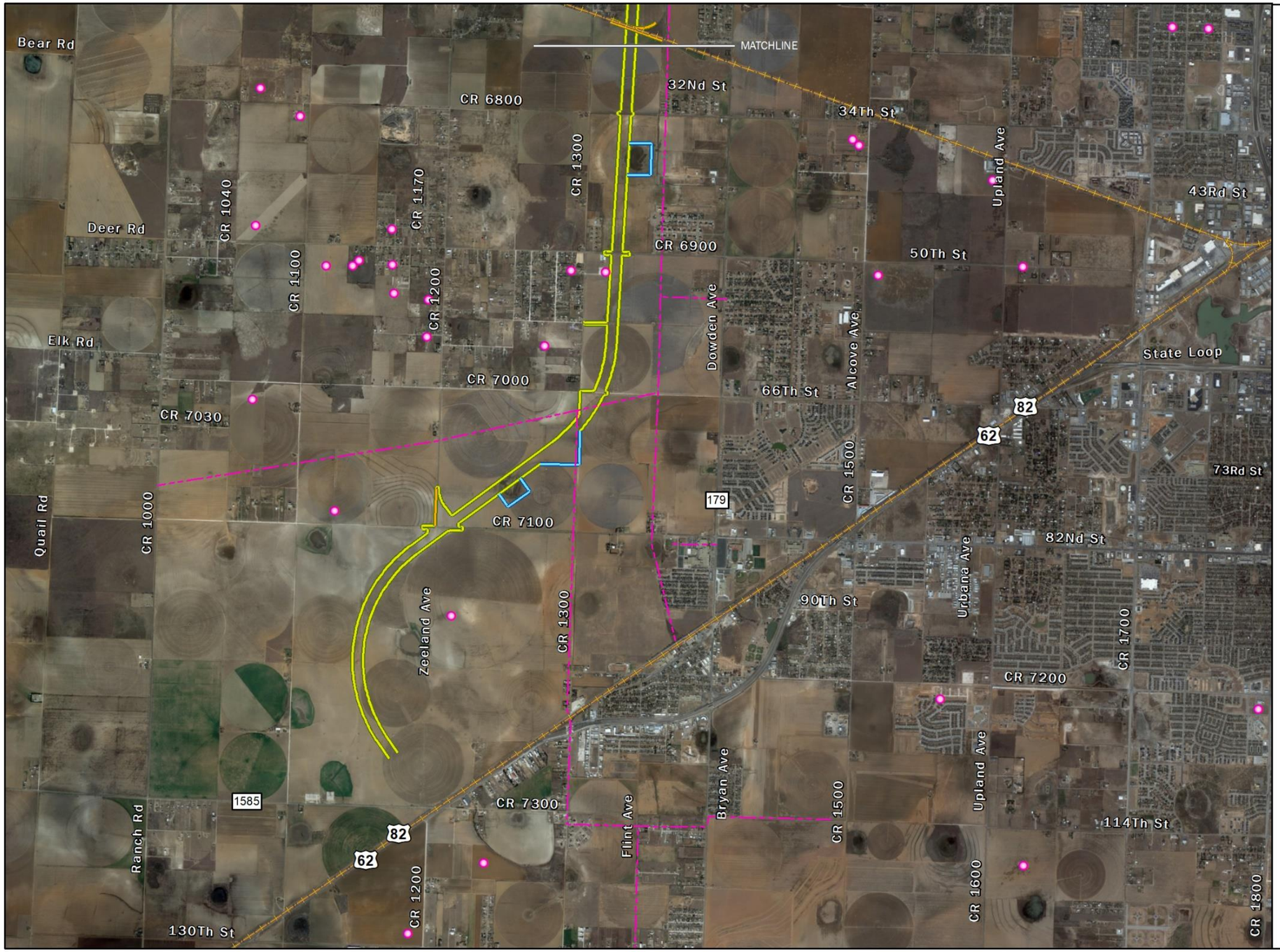
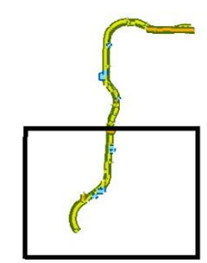


Figure 10.2
Railroad Commission Data
Loop 88 Segments 1 and 2
US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

- Well (oil, plugged, dry, permitted, abandoned, injection)
- Railroad
- Carbon Dioxide
- Crude Oil
- Natural Gas
- Natural Gas - Distribution
- Refined Liquid Product
- Drainage Easement
- Existing Right-of-way
- Proposed Right-of-way

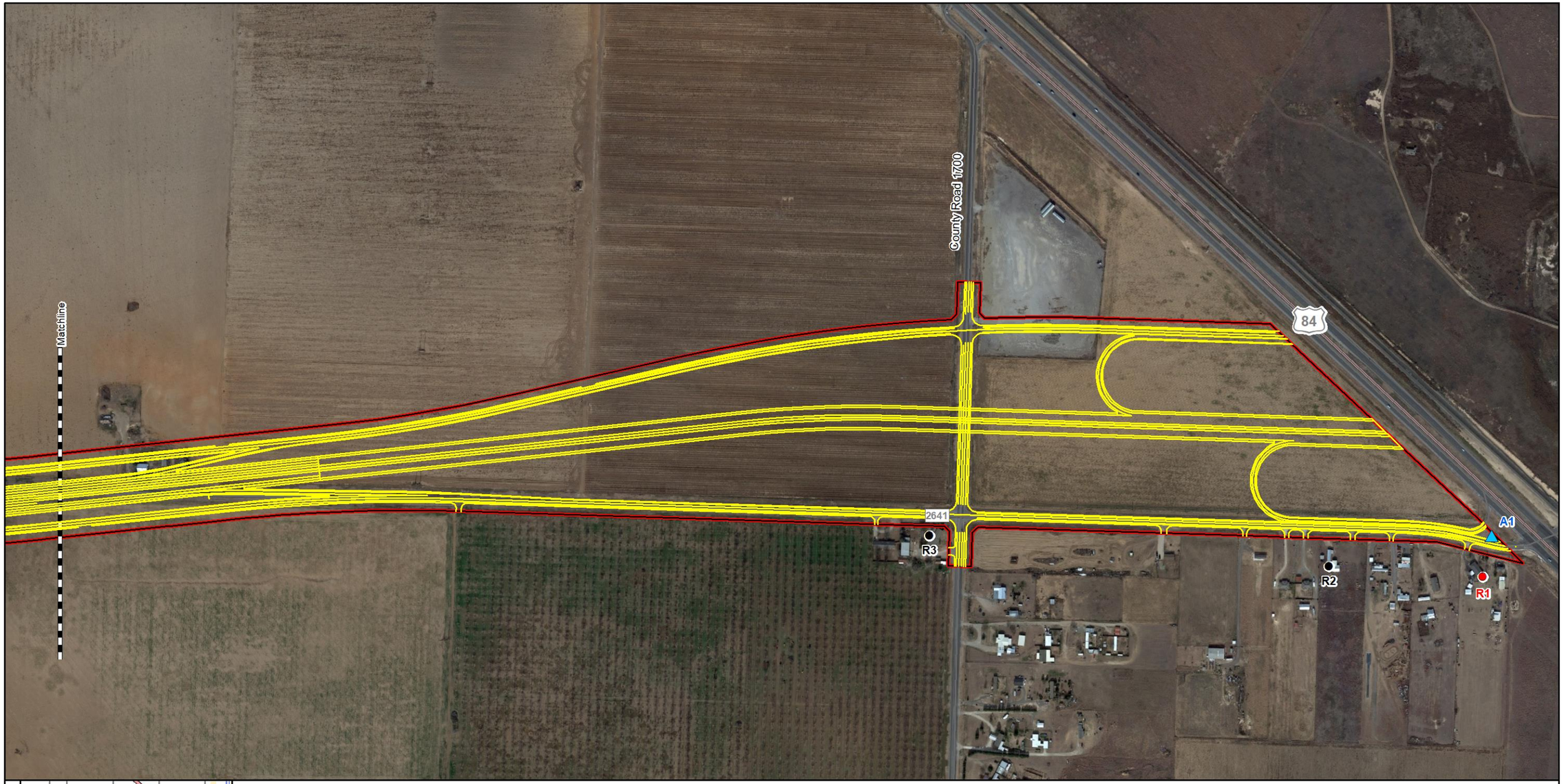


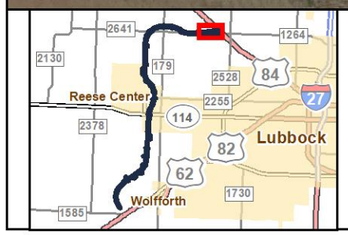
N W E S

1:48,000

0 2,000 4,000
Feet

Base Map: Texas Imagery Service, 2018 Lubbock County, Texas





Non-impacted Receiver (R#)

Impacted Receiver (R#)

Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

N
W E
S

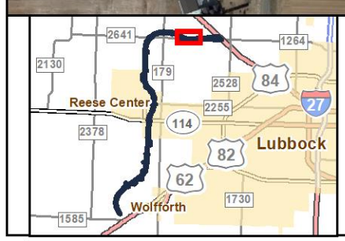
1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.1
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Non-impacted Receiver (R#)

Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

N
W E
S

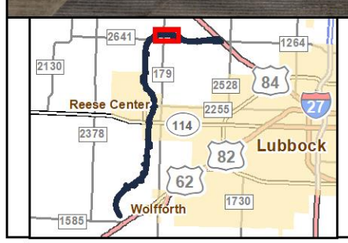
1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.2
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Non-impacted Receiver (R#)

Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

N
W
E
S

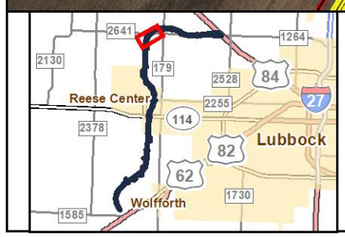
1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.3
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

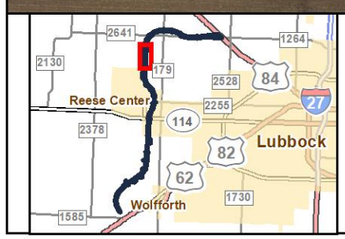
1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.4
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Existing and Proposed Right-of-way

Project Plan

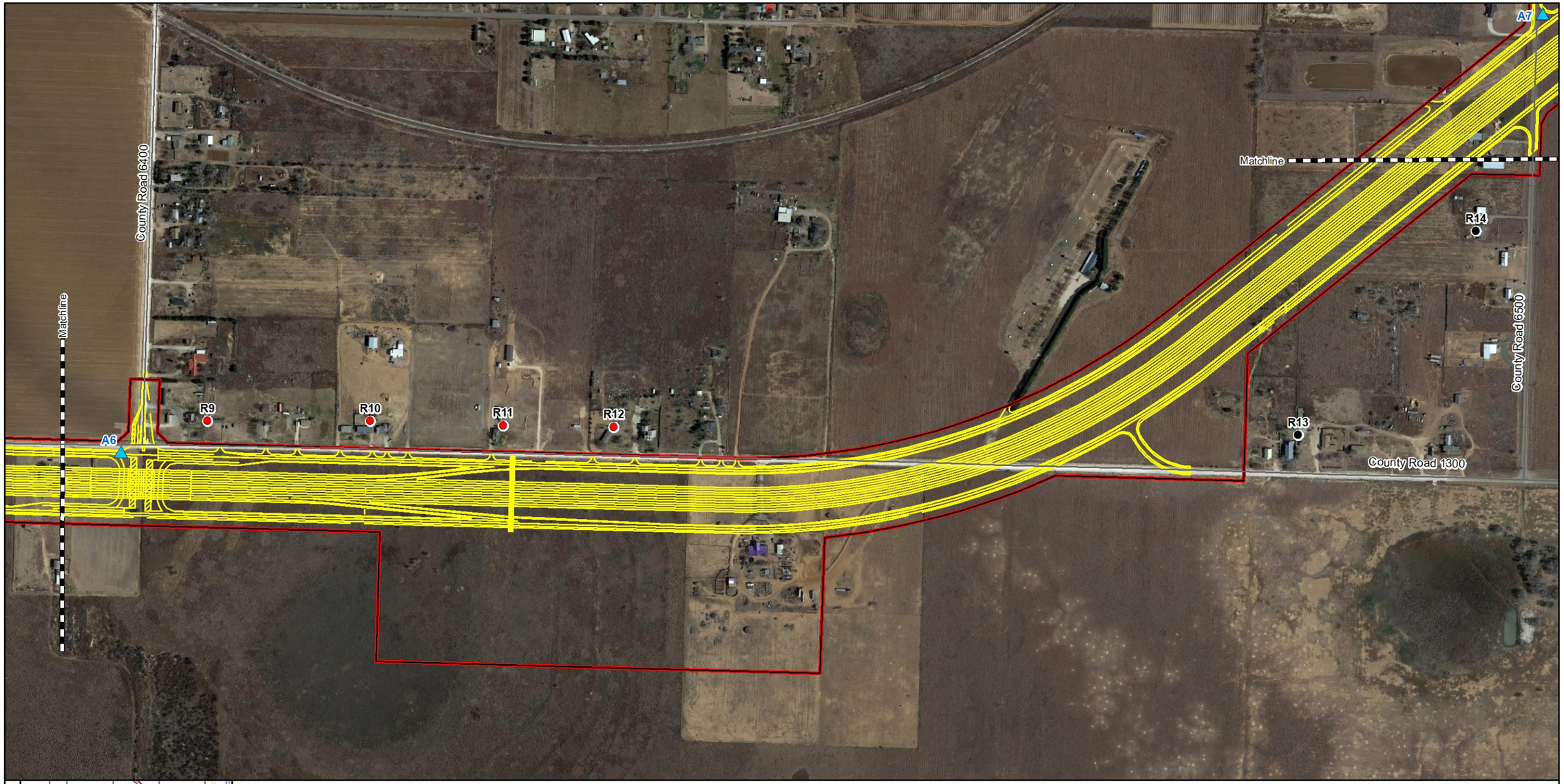
1:6,000

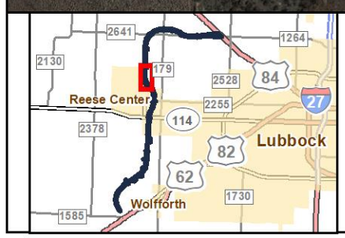
0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.5
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002





- Non-impacted Receiver (R#)
- Impacted Receiver (R#)
- Ambient Noise Measurement (A#)
- Existing and Proposed Right-of-way
- Project Plan

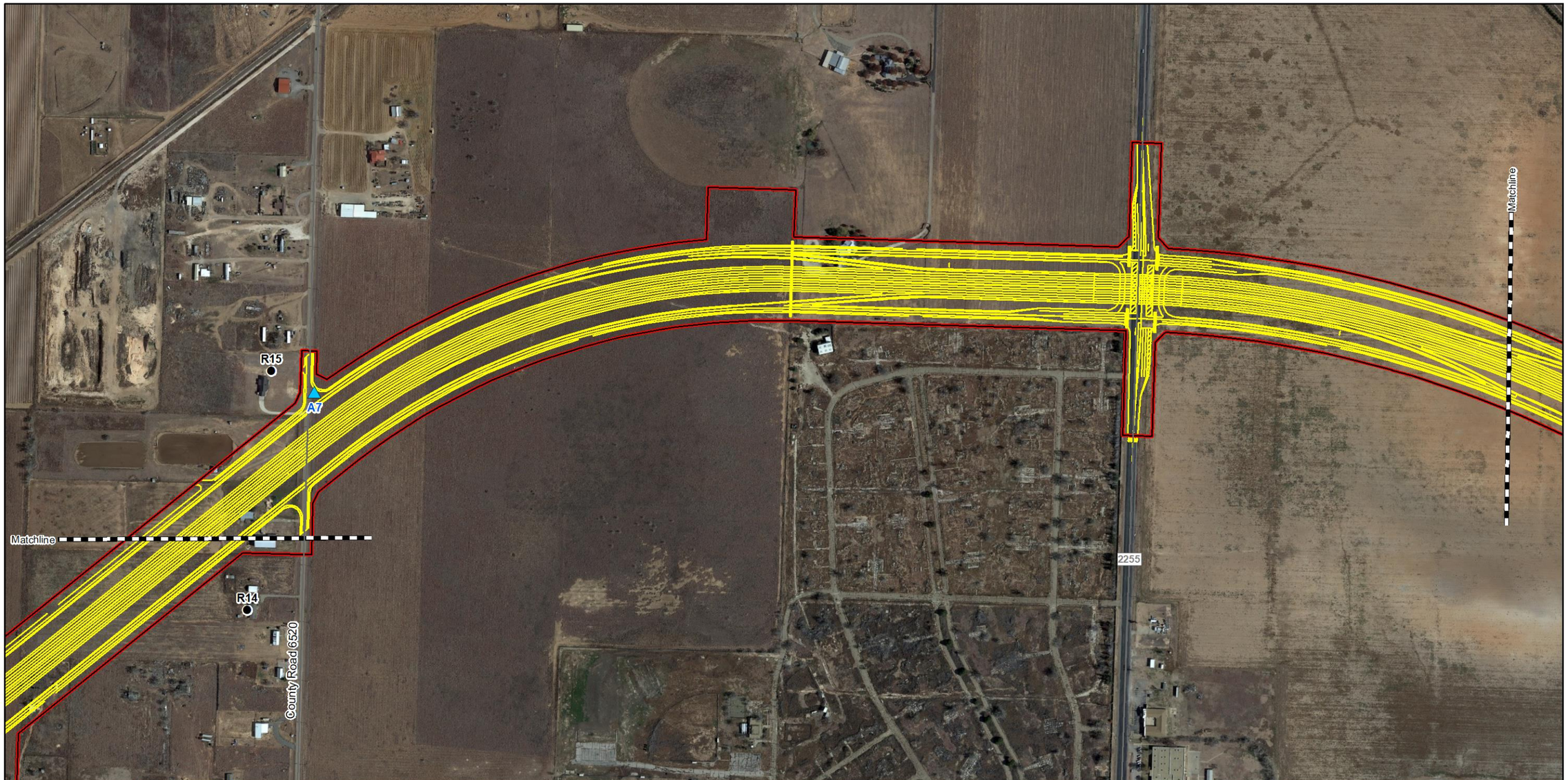
1:6,000

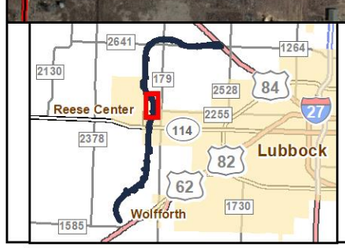
0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.6
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002





Non-impacted Receiver (R#)

Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.7
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

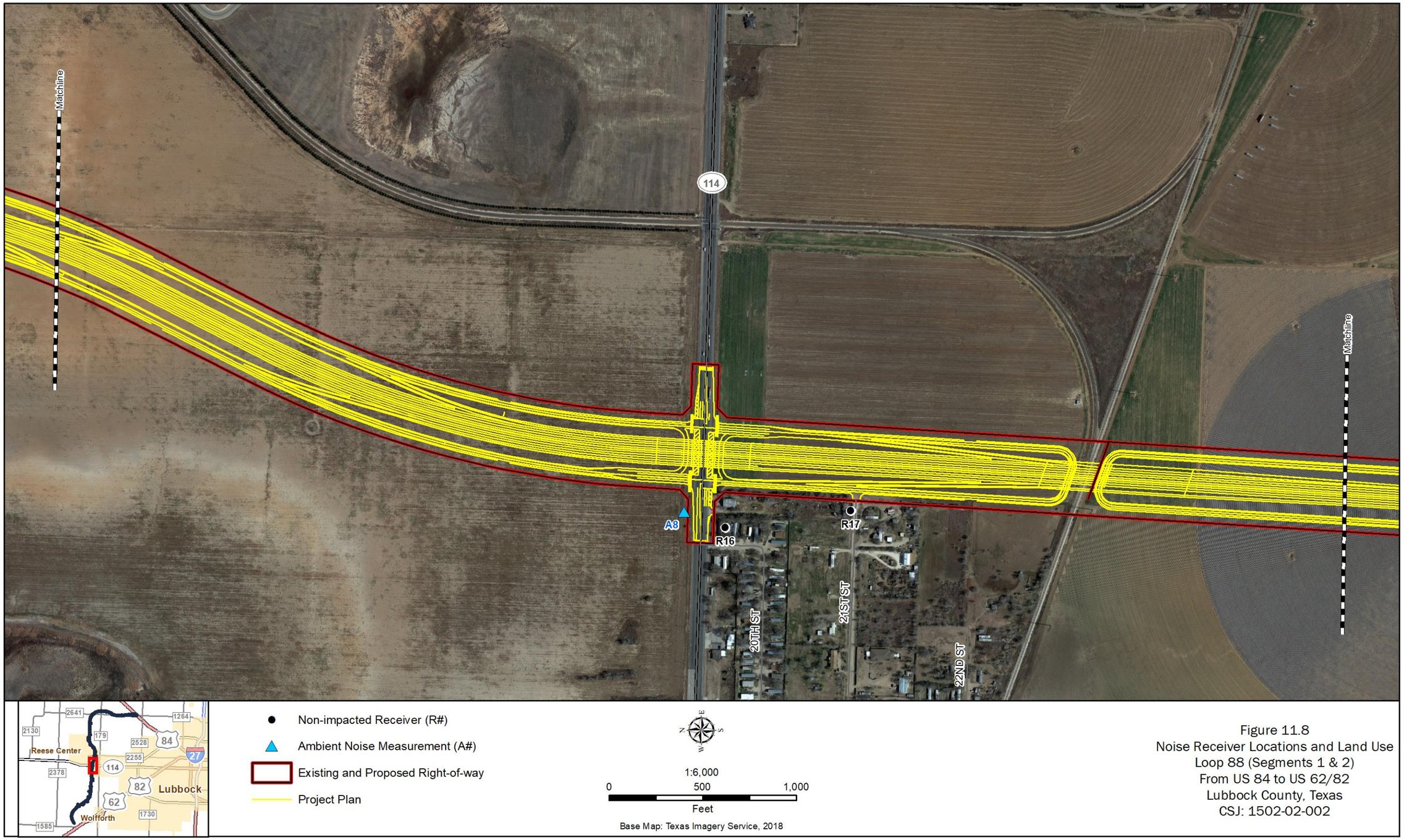
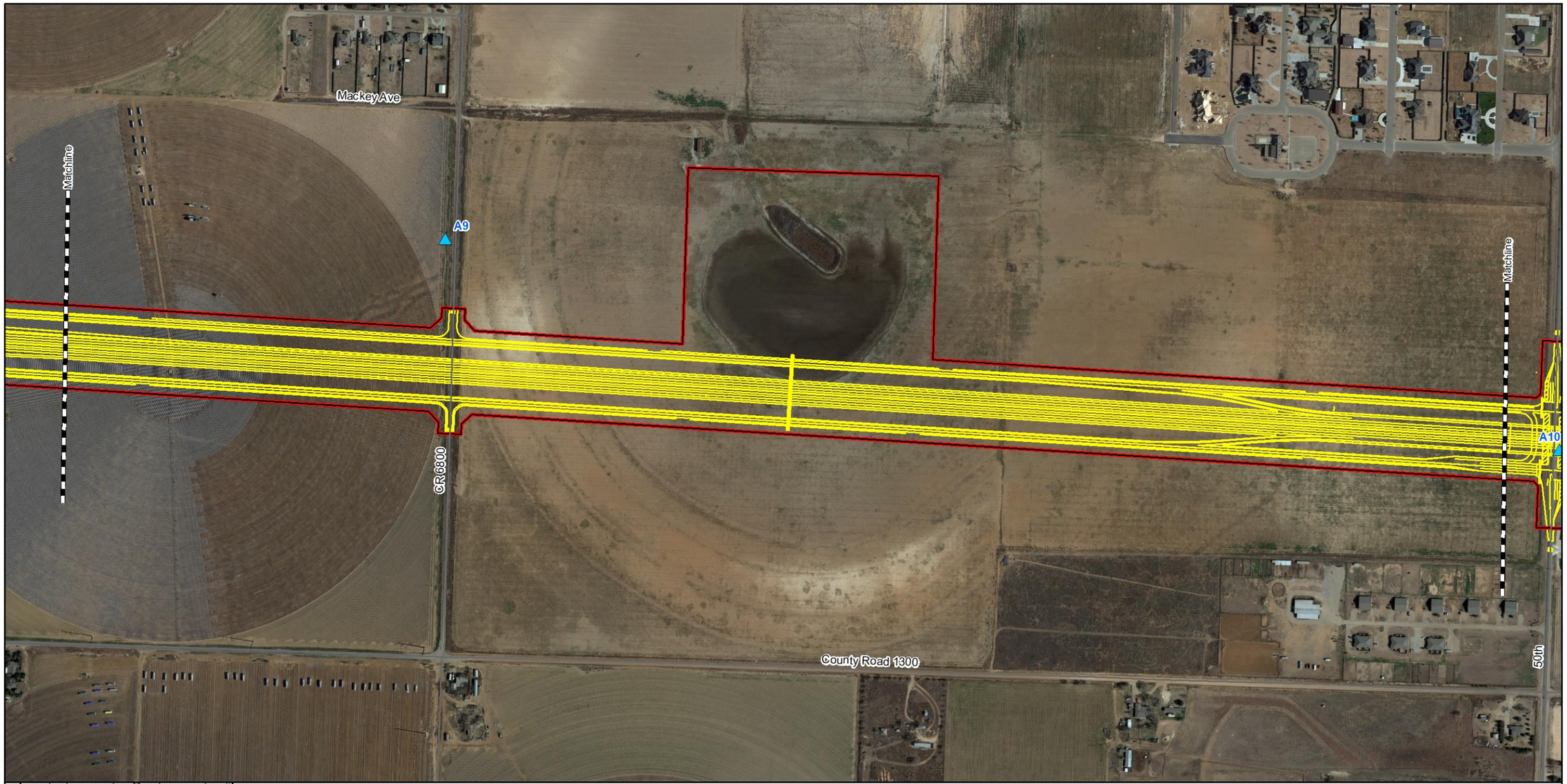
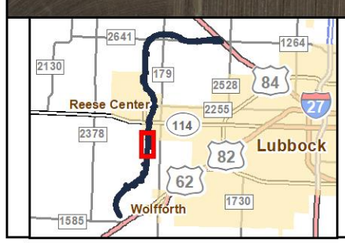


Figure 11.8
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002





Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

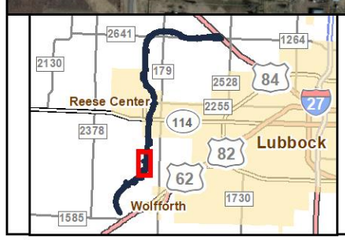
1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.9
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Ambient Noise Measurement (A#)

Existing and Proposed Right-of-way

Project Plan

1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.10
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

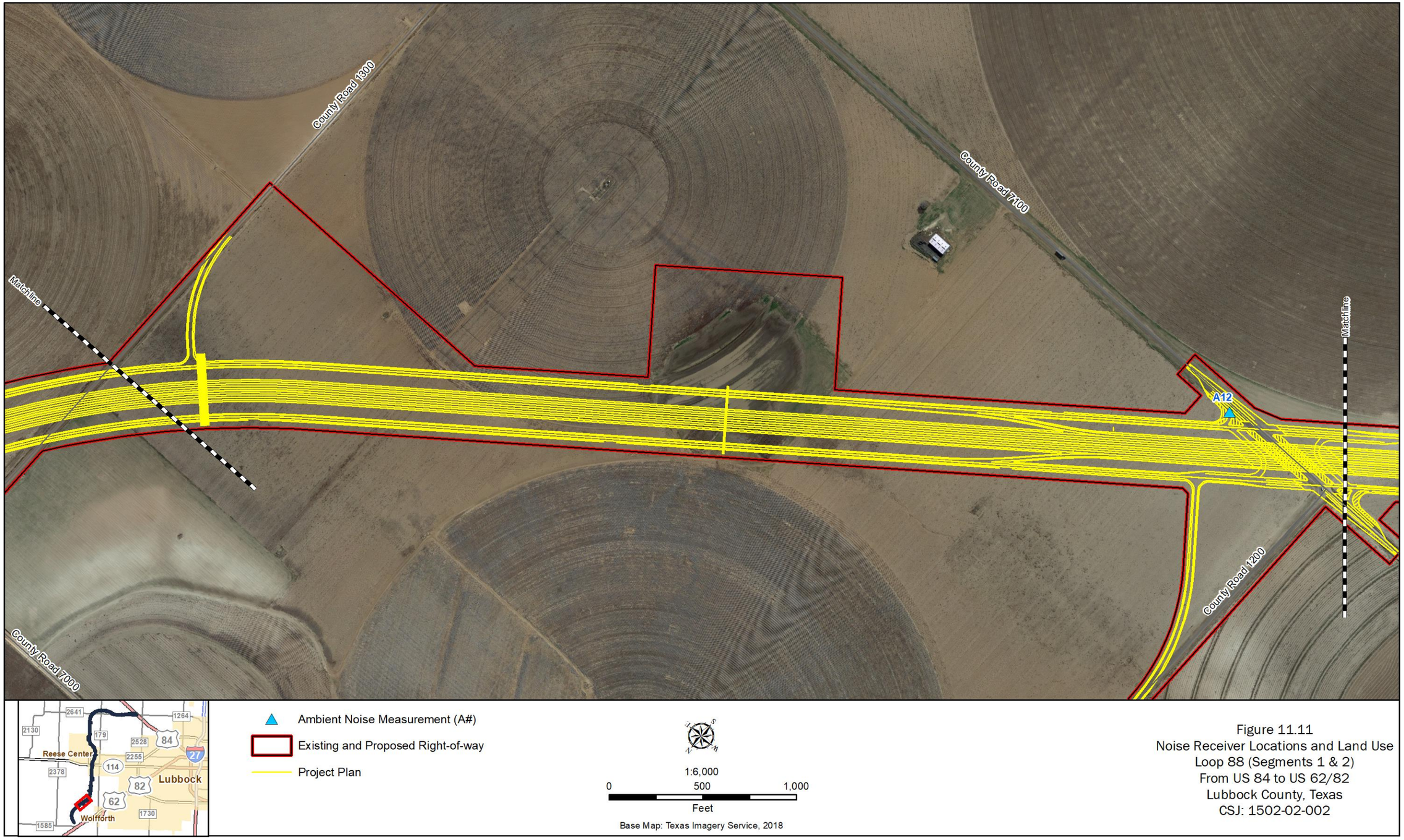


Figure 11.11
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

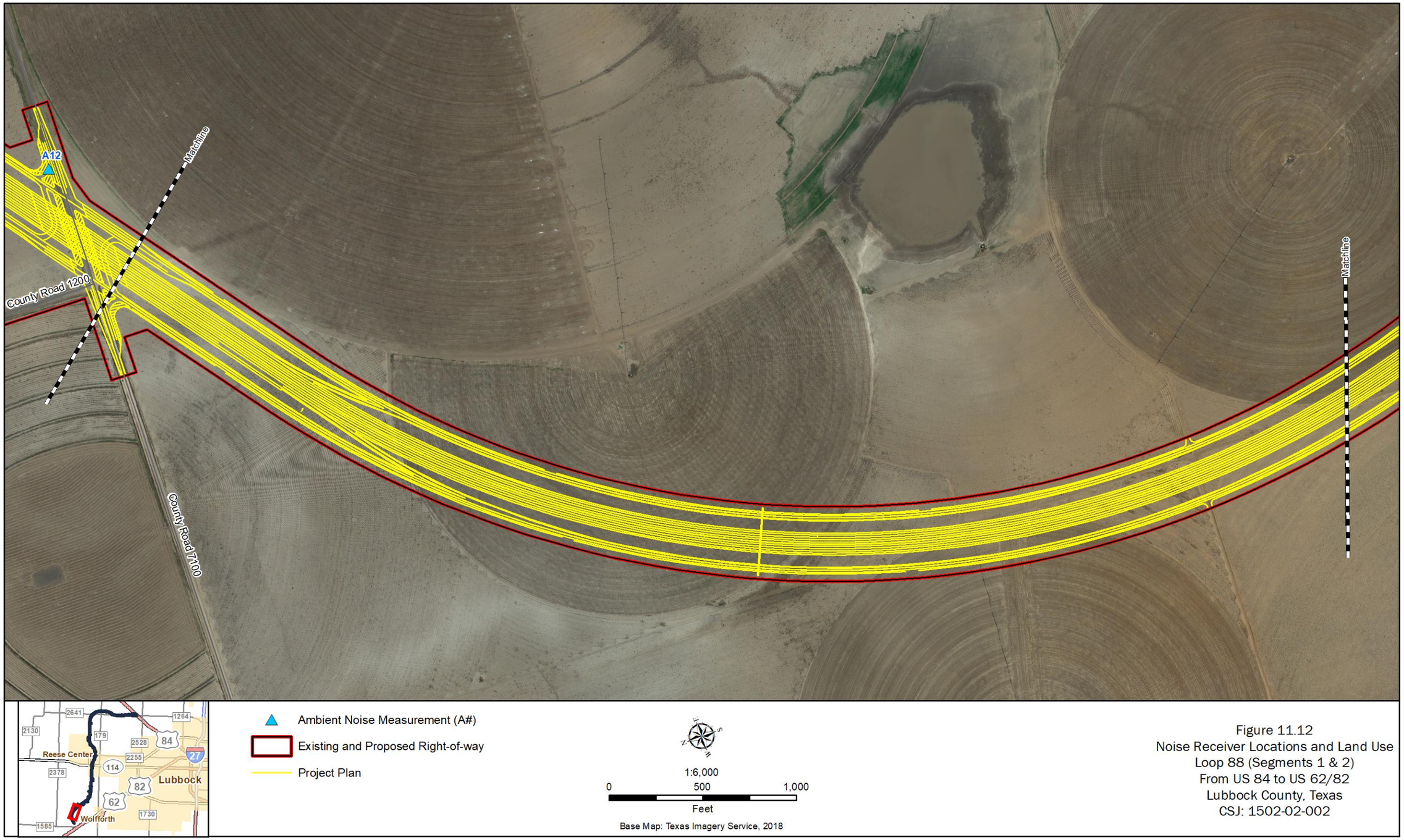
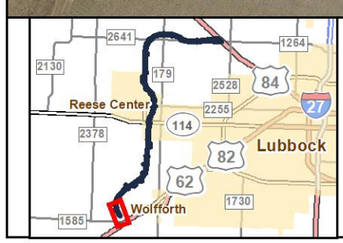


Figure 11.12
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Existing and Proposed Right-of-way

Project Plan

Loop 88 Segment 3

1:6,000

0 500 1,000

Feet

Base Map: Texas Imagery Service, 2018

Figure 11.13
Noise Receiver Locations and Land Use
Loop 88 (Segments 1 & 2)
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

Figure 12
Indirect Impacts Area of Influence
Loop 88 Segments 1 and 2
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002

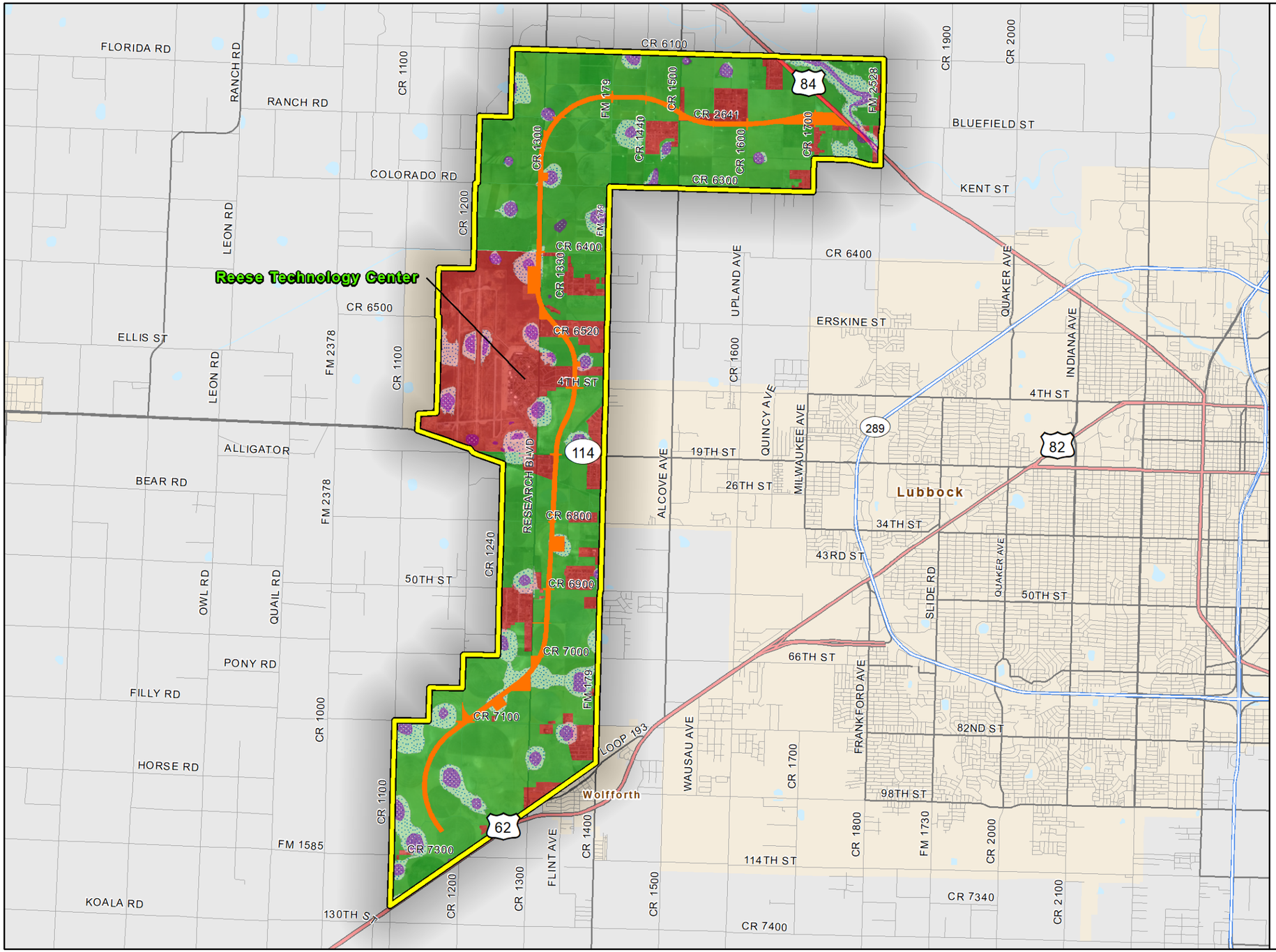
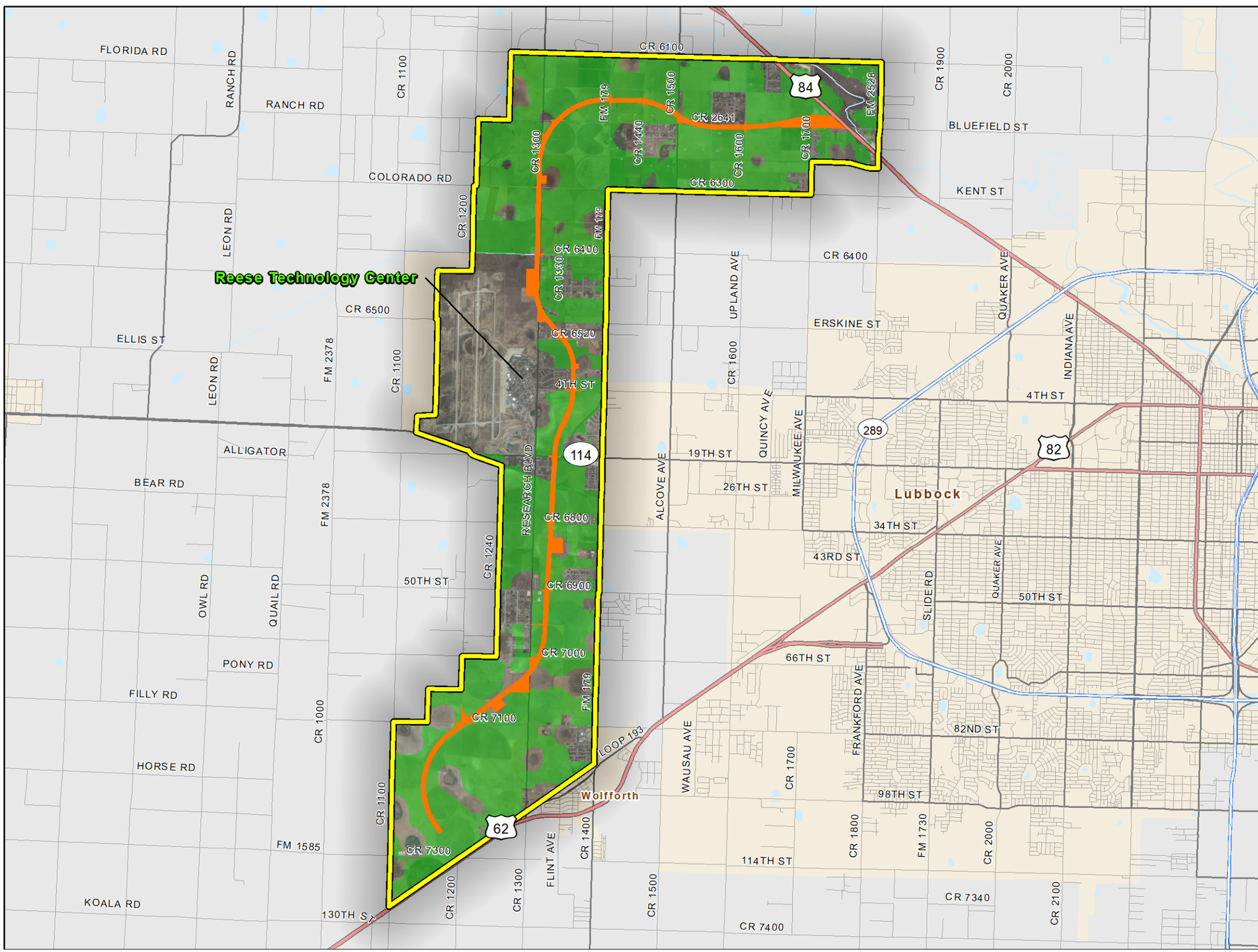


Figure 13
Developable Land
Loop 88 Segments 1 and 2
From US 84 to US 62/82
Lubbock County, Texas
CSJ: 1502-02-002



Proposed Project Footprint
Developable Land
Area of Influence

N
W E
S

1:100,000

0 0.5 1 2
Miles

Appendix G

Resource Agency Coordination

USDA-NRCS Coordination for Prime Farmland

United States Department of Agriculture

Natural Resources
Conservation Service

State Office

101 S. Main Street
Temple, TX 76501
Voice 254.742.9800
Fax 254.742.9819

July 15, 2019

Texas Department of Transportation, Lubbock District
Karen.Bradshaw@txdot.gov

Attention: Karen Bradshaw, Environmental Coordinator, *via email*

Subject: LNU-Farmland Protection
Proposed Loop 88 Project – Segments 1,2,4
NEPA/FPPA Evaluation
Lubbock County, Texas

We have reviewed the information provided in your correspondence dated July 1, 2019 concerning the proposed highway construction project located in Lubbock County, Texas. This review is part of the National Environmental Policy Act (NEPA) evaluation for the Federal Highway Administration (FHA). We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed corridors contain areas of Prime Farmland and Statewide Important Farmlands and we have completed the Farmland Conversion Impact Rating for Corridor Type Projects form (NRCS-CPA-106) for the sites. Any "urban land" or "land committed to urban development," were removed from consideration. The combined rating for each site is **142**. The FPPA law states that sites with a rating less than 160 will need no further consideration for protection and no additional evaluation is necessary. We encourage the use of accepted erosion control methods during the construction of this project.

If you have further questions, please contact me at 254.742.9836 or by email at Carlos.Villarreal@usda.gov (Preferred).

Sincerely,

2019.07.15
16:35:54
-05'00'

Carlos J. Villarreal
NRCS Soil Scientist

Attachment: **Farmland Conversion Impact Rating for Corridor Type Projects form (NRCS-CPA-106)**

USDA is an Equal Opportunity Provider, Employer, and Lender

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 7/1/19	4. Sheet 1 of 1
1. Name of Project **Loop 88 Project**	5. Federal Agency Involved **Federal Highway Administration**	
2. Type of Project **Linear Highway**	6. County and State **Lubbock County, Texas**	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 7/2/19	2. Person Completing Form Carlos J. Villarreal
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated 155,462 / Average Farm Size 450
5. Major Crop(s) Corn, Cotton, Small Grains	6. Farmable Land in Government Jurisdiction Acres: 564,597 % 98	7. Amount of Farmland As Defined in FPPA Acres 482,597 % 84
8. Name Of Land Evaluation System Used NCCPI	9. Name of Local Site Assessment System NONE	10. Date Land Evaluation Returned by NRCS 7/15/19

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment 1,2,4			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	201	138	231	
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0	0	0	
C. Total Acres In Corridor	201	138	231	
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	159	114	160	
B. Total Acres Statewide And Local Important Farmland	42	10	71	
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.04	0.02	0.04	
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	54	42	50	
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	94	94	94	

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
1. Area in Nonurban Use	15	14	14	14	
2. Perimeter in Nonurban Use	10	9	9	9	
3. Percent Of Corridor Being Farmed	20	17	17	17	
4. Protection Provided By State And Local Government	20	0	0	0	
5. Size of Present Farm Unit Compared To Average	10	3	3	3	
6. Creation Of Nonfarmable Farmland	25	0	0	0	
7. Availablility Of Farm Support Services	5	0	0	0	
8. On-Farm Investments	20	0	0	0	
9. Effects Of Conversion On Farm Support Services	25	0	0	0	
10. Compatibility With Existing Agricultural Use	10	5	5	5	
TOTAL CORRIDOR ASSESSMENT POINTS	160	48	48	48	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	94	94	94	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	48	48	48	0
TOTAL POINTS *(Total of above 2 lines)*	260	142	142	142	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☑

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?
More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?
More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with $1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?
Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?
Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

Tribal Coordination

Back To List

Assignment Details ★ Activity

Print this Page

Coordination - Coordinate with Consulting Party

Associated Activity:

Agency Name:

Coordination Status:

Are Correspondence Details Included: Yes

Add Correspondence

Correspondence Status:

Correspondence Method:

Correspondence Date :

Correspondence From:

Correspondence To:

Comments:

Correspondence For	Correspondence Type	Date	Correspondence From	Correspondence To	Comments	Actions

There are currently no Correspondences that have been added.

Comments:

sent consultation request to: Kiowa, Mescalero, Wichita and Affiliated Tribes, Apache, Tonkawa, Jicarilla Apache Nation. All correspondence will be uploaded as one PDF doc at the end of the consultation period.-LC No responses or objections received to date. -SP

Last Updated By: Scott M Pletka **Last Updated Date:** 07/11/2019 01:48:14

Historic Resources Coordination

DocuSign Envelope ID: 1BEDB702-0D3F-4859-AD25-34ABFB9BEC62

MEMO
September 6, 2019.

TO: Administrative Files

From: Mark M. Brown MMB

District: Lubbock
County: Lubbock
CSJ#: 1502-02-002, 1502-01-033
Highway: Loop 88, Segments 1 & 2
Let Date: October 2026

Project Limits: From: US 84 near Shallowater to US 62
Project Description: HIST Stipulation IX, Appendix 6. Construct new freeway on new alignment. 947 acres new ROW. No effects to non-archeological historic properties.

SUBJECT: Internal review under the Section 106 Programmatic Agreement (Section 106 PA) among the Texas Department of Transportation, Texas State Historic Preservation Officer, Advisory Council on Historic Preservation, and Federal Highway Administration; and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation

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.

Introduction

TxDOT's Lubbock District proposes construction of a portion of a new freeway around the City of Lubbock. See project description on page 6 of the attached Historic Resources Survey Report (HRSR). The proposed improvements require approximately 947 acres of new right-of-way (ROW) and no easements. See also the project schematics attached to the end of the HRSR.

Survey and Survey Findings

TxDOT historians reviewed the National Register of Historic Places (NRHP), the list of State Antiquities Landmarks (SAL), the list of Recorded Texas Historic Landmarks (RTHL), and TxDOT files and found no previously documented historically significant property within the project area of potential effects (APE). TxDOT historians determined through consultation with the State Historic Preservation Officer (SHPO) that the APE for the proposed project is 150 feet from the project ROW along existing alignment and 300 feet from the project ROW along new alignment. TxDOT forces conducted a site visit that revealed 225 historic-age resources (built prior to 1986) located within the APE. See attached HRSR. TxDOT historians made the following eligibility determinations (numbers below refer to resource numbers assigned in the attached HRSR):

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Not NRHP Eligible
The following agricultural resources lack sufficient associations with events, persons, architectural distinction, or integrity to be NRHP eligible under any criteria: 13E, 14D-14E, 15, 16A, 23C, 27C, 27E, 28, 31E, 32B-32I, 32K, 33B-33C, 34B-34C, 42E-42H, 42K, 46B, 48B-48D, 49A-49B, 50C, 62B, 62F, 63, 65C, 65G, 66C-66E, 66G, 68D-68H, 69A-69B, and 69E. See pages 30-34 of the attached HRSR for further information.

The following residential resources and residential outbuildings lack sufficient associations with events, persons, architectural distinction, or integrity to be NRHP eligible under any criteria: 1, 2A-2G, 3A, 4A-4B, 5A-5C, 6A-6C, 7A, 8A, 9A, 10A-10B, 11A, 11D, 12A, 13A-13C, 14A-14C, 14F, 16B-16C,17A, 17C, 18A, 19A, 20A, 22A, 23A, 24A, 25A, 27A, 27D, 29A-29B, 29D-29I, 31A-31B, 31D, 32A, 32J, 32L, 33A, 33D-33F, 34A, 35A-35C, 35E, 36, 37A-37E, 37G, 37I, 38A-38C, 39A, 39C-39D, 40A, 40C-F, 41A-41B, 41D, 41F-41H, 42A-42B, 42I-42J, 42L, 43A-43D, 45, 46A, 47A-47C, 48A, 50A-50B, 52, 54D, 55A-F, 56A-56B, 57, 58A-58D, 59, 60A, 61, 62A, 62D, 64A-E, 64G-64L, 65A-B, 65E-65F, 65H, 66A-B, 67A-67C, 67G, 68A-68C, 68I, and 70A. See pages 22-28 of the attached HRSR for further information.

The following commercial resources lack sufficient associations with events, persons, architectural distinction, or integrity to be NRHP eligible under any criteria: 13F, 44A-44B, 53A-53B, 54A, 54C, and 54E-54F. See pages 28-29 of the attached HRSR for further information.

The following industrial resources lack sufficient associations with events, persons, architectural distinction, or integrity to be NRHP eligible under any criteria: 21, 26A-26B, 27F, and 30. See page 30 of the attached HRSR for further information.

The following other resources lack sufficient associations with events, persons, architectural distinction, or integrity to be NRHP eligible under any criteria: 44C, and 51A-51C.

The survey also evaluated the APE for historic districts and agricultural landscapes. Neither the residential tracts, nor the agricultural resources retain sufficient cohesion and integrity to convey historic significance. See pages 35-36 of the attached HRSR for further information.

Consultation with County Historical Commission
TxDOT historians consulted with the Lubbock County Historic Preservation Officer and the Lubbock County Historical Commission. On March 15, 2019, Lubbock County Historical Commission provided TxDOT historians a field review report of the Loop 88 corridor including three resources of interest in Segments 1 and 2. Pages 34-35 of the attached survey report discuss these resources, 14, 31E, and 35A, in detail. On August 9, 2019, the Lubbock County Historic Preservation Officer concluded that the project "will not affect any historic properties." [Emphasis in the original.] See attached copy of the March 2019 report, the August 2019 letter, and associated emails.

Determination of Effects
Staff determined that the proposed project poses **no effects** to non-archeological historic properties because there are no historic properties present.

Conclusion
Therefore, pursuant to Stipulation IX, Appendix 6 "Undertakings with the Potential to Cause Effects per 36 CFR 800.16(i)" of the Section 106 PA, the Antiquities Code of Texas, and the

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MOU, TxDOT historians determined that there are no effects to historic, non-archeological properties in the APE. In compliance with the Antiquities Code of Texas and the MOU, TxDOT historians determined project activities have no potential for adverse effects. Individual project coordination with SHPO is not required.

Lead Reviewer DocuSigned by: Rebekah Dobrasko 0F414A49C0E44B3... for TxDOT 9/9/2019

Rebekah Dobrasko Date

Approved by DocuSigned by: Bruce Jensen 7EBA09BEBA8043B... for TxDOT 9/23/2019

Bruce Jensen Date

CC: ECOS; SHPO; Karen Bradshaw, Lubbock District

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LUBBOCK COUNTY HISTORICAL COMMISSION

TEXAS HISTORICAL COMMISSION
The State Agency for Historic Preservation

August 9, 2019

Mark Brown
TxDOT Environmental Affairs
125 E 11TH ST
AUSTIN TX 78701-2483

*** via e-mail to mark.brown@txdot.gov ***

On behalf of Lubbock County and the Lubbock County Historical Commission, I have reviewed the Section 106 filing prepared by Mead & Hunt for TxDOT entitled Historical Resources Survey Report Reconnaissance Survey for Texas Loop 88 Segments 1 & 2 (CSJ #1502-02-002). It is a very thorough and well-researched document, and for the purposes of the official review, I concur that the proposed project will not affect any historic properties.

I did note two technical errors that do not materially impact the Section 106 assessment. The first appears on page 7 in the list of consulting parties, while a nearly identical error appears on page 9 in the list of stakeholder parties:

- In the second bullet, Sandy Fortenberry is described as the former chair of the Lubbock County Historical Commission. She is in fact the current chair. (Other contact information is correct.)
- In the third bullet, Cameron Saffell is named as the current chair of the Lubbock County Historical Commission. While he is a member of the LCHC, his role as regards this consultation would fall under the title of Lubbock County Historic Preservation Officer. (In that role, Saffell serves as chair of the LCHC's Certified Local Government Committee, which is separately referenced on the following page with our staff representative Lindsey Diaz.) The mailing address for the County Historic Preservation Officer would be identical to that of the Lubbock County CLG.

Aside from these technical errors, I find the document to have addressed all the pertinent issues we raised in the Certified Local Government Committee's Report on Loop 88. The rules and procedures for Lubbock County, the LCHC, and the CLG give me the authority to make a report of "no findings" without need for a formal meeting or recommendation via the Lubbock County Commissioners.

If you have any questions regarding this determination, please contact me at the Museum of Texas Tech University at (806) 742-2442.

Sincerely,

Cameron Saffell

Cameron L. Saffell
Lubbock County Historic Preservation Officer

cc: Lubbock County Historical Commission
Lubbock County Commissioners' Court

DocuSign Envelope ID: 1BEDB702-0D3F-4859-AD25-34ABFB9BEC62

From: Saffell, Cameron
To: Mark Brown
Cc: Justin Kockritz (Justin.Kockritz@thc.texas.gov); Karen Bradshaw; Sandy; Lindsey Diaz
Subject: Re: Loop 88, Segments 1 and 2, Lubbock County | CSJ 1502-02-002
Date: Friday, August 09, 2019 5:37:57 PM
Attachments: 2019 Aug Loop 88 Seg 1 2.pdf

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good evening, Mark.

I am pleased to be able to go ahead and report (via the attached letter) that I have no findings or concerns for anything listed in this report, a conclusion which Sandy Fortenberry, chair of the Lubbock County Historical Commission, concurs. The rules and procedures of Lubbock County, its Certified Local Government Committee, and the County Historical Commission permit to provide this response immediately without need for further public meetings or consultations with the County Commissioners.

As noted in the letter, there is a technical error in identifying my role. I serve for Section 106 Reviews as the Lubbock County Historic Preservation Officer (and chair of the County's Certified Local Government committee). Sandy Fortenberry remains as chair of the Lubbock County Historical Commission. Otherwise, I found the whole report to be very thorough and well considered.

We look forward to hearing from you later this year regarding the Reconnaissance Survey for Segment 4 of Loop 88.

Cameron Saffell
Lubbock County Historic Preservation Officer

From: Mark Brown <Mark.Brown@txdot.gov>
Sent: Friday, July 26, 2019 2:32 PM
To: Saffell, Cameron <Cameron.Saffell@ttu.edu>
Cc: Justin Kockritz (Justin.Kockritz@thc.texas.gov) <Justin.Kockritz@thc.texas.gov>; Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Subject: Loop 88, Segments 1 and 2, Lobbouck County | CSJ 1502-02-002

Cameron Saffell, Chair
Lubbock County Historical Commission
Lubbock, TX
(806) 742-2442

DocuSign Envelope ID: 1BEDB702-0D3F-4859-AD25-34ABFB9BEC62

Mr. Saffell,
Thank you for the opportunity to speak with you today about TxDOT's plans to construct two segments of the Loop 88 project.

You should shortly get a link from our DropBox ftp service with a link to a copy of the survey report. Our experience is that the link can be forwarded and remains valid for about 21 days. Please let me know if you experience any technical difficulties.

We are required by regulations to give the Lubbock County Historical Commission the opportunity to comment on projects like this one. Did we miss anything of historic importance? Does the Historical Commission have any concerns about the project or the report's findings?

As you know, under the regulations, the Historical Commission has **30 calendar days** to comment or we are allowed to assume it has no concerns. As you can imagine, the folks in our *Lubbock District Office would appreciate it if you got back to me* sooner. An email is fine.

By copy of this email I reintroduce Justin Kockritz and Karen Bradshaw. Justin is my contact at the Texas Historical Commission. He can answer questions about how TxDOT complies with historic preservation regulations. Karen is my contact at TxDOT's Atlanta District Office. She can help with questions about the project itself.

With Best Wishes and Many Thanks,
Mark Brown, Historian
TxDOT Environmental Affairs
512.416.2600 (work hours: 9-6)

TPWD Coordination

Karen Bradshaw

From: Suzanne Walsh <Suzanne.Walsh@tpwd.texas.gov>
Sent: Wednesday, December 18, 2019 2:38 PM
To: Karen Bradshaw
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

Karen,

Thank you for the response and considering my comments. We continue to encourage the district to avoid and minimize impacts to playa lakes as these areas are important ecological features in the High Plains region.

Thank you for submitting the following project for early coordination: Loop 88 Segment 1 and 2 (CSJ: 1502-02-002). TPWD appreciates TxDOT's commitment to implement the practices listed in the Tier I Site Assessment form submitted on October 14, 2019 and in the emails below. Based on a review of the documentation, the avoidance and mitigation efforts described, and provided that project plans do not change, TPWD considers coordination to be complete. However, please note it is the responsibility of the project proponent to comply with all federal, state, and local laws that protect plants, fish, and wildlife.

According to §2.204(g) of the 2013 TxDOT-TPWD MOU, TxDOT agreed to provide TXNDD reporting forms for observations of tracked SGCN (which includes federal- and state-listed species) occurrences within TxDOT project areas. Please keep this mind when completing project due diligence tasks. For TXNDD submission guidelines, please visit the following link: http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/submit.phtml

I look forward to working with you on other Lubbock District projects. Hope you have a great holiday season!

Sincerely,

Suzanne Walsh
Transportation Conservation Coordinator
(512) 389-4579

From: Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Sent: Wednesday, December 18, 2019 1:30 PM
To: Suzanne Walsh <Suzanne.Walsh@tpwd.texas.gov>
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

Suzanne,

Thank you for your review and recommendations for the Loop 88 Seg. 1 & 2 project in Lubbock.

The avoidance and minimizing harm to the Texas Horned lizard and its habitat will be priority for the proposed project. This will include advising contractors at the pre-construction meeting and during construction of the project to avoid handling or harming this lizard.

Contractors will be advised to avoid and not harm the western box turtle, western hognose skunk, and western rattlesnake should these species be within the project area.

Breeding habitat is not present within the project area so amphibian and aquatic BMPS are not required.

Contractors will be advised of the potential occurrence of the swift fox, western hog-nosed skunk, American badger, and prairie vole within the project area and to avoid handling or harming these species if encountered and to avoid unnecessary impacts to dens.

Should SCGN plants be found within the project footprint they will be protected with temporary fencing and the contractor will be alerted to avoid disturbing the plants. TPWD will be contacted should this occur.

There are dozens of playa lakes within on mile of the proposed project. There are five playa lakes within the 16-mile corridor are adjacent to or will be impacted by the proposed project. During the decision make process for this project, several alternatives were considered to minimize impacts to the playa lakes in the area. No practicable alternative was identified however, TxDOT will take care to minimize impacts where possible for the preferred alternative. The alignment of the proposed project is primarily along the existing County Road 1300 alignment and these playa lakes have been heavily damaged by previous construction, agricultural operations, or commercial/residential development and no longer function as true playa lakes. There are many playa lakes that are in close proximity to the proposed project that are providing and will continue to provide critical stopover habitat for migratory birds (and local wildlife) as well as adding to the recharge of the Ogallala Aquifer. Contactors will be advised to avoid the placement of PSLs on the margin or drainage areas of playas. No wetlands were observed during the investigative survey. No wetlands were observed during the investigative survey.

Migratory bird BMPs will be incorporated into the EPIC and general notes of the plan sheets and contractors will be advised at the pre-construction meeting to avoid handling or harming all wildlife. Revegetation of disturbed areas will be implemented into the project plans according to TxDOT rural seed specifications.

Thank you and Merry Christmas,
Karen

Karen Bradshaw
Environmental Specialist
Lubbock District
806-748-4377
Texas Department of Transportation

From: Suzanne Walsh [mailto:Suzanne.Walsh@tpwd.texas.gov]
Sent: Monday, December 9, 2019 4:38 PM
To: Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Karen,

Thank you for your patience as I finalized my review of the Loop 88 projects. TPWD makes the following recommendations regarding this proposed project:

- Texas horned lizard - The last two bullets of the Terrestrial Reptile BMPs: Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible and Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

- Western Box turtle, western hognose skunk, and western rattlesnake – Terrestrial Reptile BMPs

- Woodhouse toad - Amphibian and Aquatic Reptile BMPs

- Swift fox, Western hog-nosed skunk, American badger, and prairie vole - Contractors will be advised of their potential occurrence in the project area, to avoid harming the species if encountered, to avoid unnecessary impacts to dens.

- Cory's ephedra – Vegetation BMPs. Additionally, if SCGN plants are found within the project area, but outside the project footprint, please protect them with temporary barrier fencing and alert contractors to avoid disturbing the plants. If SCGN plants are found with the project footprint, please contact us at WHAB_TXDOT@tpwd.texas.gov to discuss options to seed bank or otherwise conserve populations prior to construction. Please submit records to the TXNDD for any SCGN plants found and copy our email address.

- TPWD appreciates any efforts that TxDOT implements to avoid and minimize impacts to the playas within the proposed project area, particularly as playa lakes provide critical stopover habitat for thousands of migratory birds during migration. TPWD recommends that roads should be routed to avoid disruption to the water flow into the playa basin, contractors should avoid the placement of PSLs on the margin of the playa or within the drainage areas of the playas within existing and proposed ROW, and that re-vegetation of disturbed areas should include site-specific native species. Unavoidable adverse impacts to playa lakes should be mitigated by compensating for the loss of wetland habitat.

If you have any questions, please let me know.

Thanks,
Suzanne

From: Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Sent: Monday, December 2, 2019 7:54 AM
To: Suzanne Walsh <Suzanne.Walsh@tpwd.texas.gov>
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

Just checking on the status of the review for Lp 88 Seg. 1 & 2.
Thanks,
Karen

Karen Bradshaw
Environmental Specialist
Lubbock District
806-748-4377
Texas Department of Transportation

From: Suzanne Walsh [mailto:Suzanne.Walsh@tpwd.texas.gov]
Sent: Wednesday, November 6, 2019 2:49 PM
To: Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

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Hi Karen,

I will be conducting the review of your early coordination request for Loop 88 Segment 1 and 2. Could you send a project schematic for me to review?

Thank you,
Suzanne

Suzanne Walsh, Ph.D.
Transportation Conservation Coordinator
Wildlife Division – Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744
Phone: (512) 389-4579

From: WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
Sent: Tuesday, October 15, 2019 2:29 PM
To: Karen Bradshaw <Karen.Bradshaw@txdot.gov>; WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
Subject: RE: Loop 88 Seg. 1 & 2 Coordination - Lubbock

The TPWD Wildlife Habitat Assessment Program has received your request and has assigned it project ID # 42630. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,

John Ney
Administrative Assistant
Texas Parks & Wildlife Department
Wildlife Diversity Program – Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744
Office: (512) 389-4571

From: Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Sent: Monday, October 14, 2019 2:42 PM
To: WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
Subject: Loop 88 Seg. 1 & 2 Coordination - Lubbock

The Loop 88 Seg. 1 & 2 BIO reports (BIO Eval and Tier 1) for TPWD coordination are being sent via TxDOT dropbox due to the large file sizes.

Karen Bradshaw
Environmental Specialist
Lubbock District
806-748-4377
Texas Department of Transportation

A Texas Department of Transportation (TxDOT) message

#EndTheStreakTX

A Texas Department of Transportation (TxDOT) message

#EndTheStreakTX

Hazmat Coordination and Background Information

Subject: RE: LP 88 segment 1

From: Kylan Francis
Sent: Tuesday, April 17, 2018 11:29 AM
To: Karen Bradshaw
Cc: Crystal Damron; Shelley Harris
Subject: LP 88 segment 1

Karen,

I had a call from a property owner close to Reese Airforce base and apparently more contamination has been found with the ground water in the area. It is apparently centered around the old housing area that we are planning on acquiring for LP 88. Do we need to avoid that area with the alignment or not? What would be our responsibility if we purchase the land where the contamination originated? Would we have to clean up the ground water?

Trying to decide if it would be better to move the alignment now instead of waiting till later. Thanks.

http://www.everythinglubbock.com/news/local-news/air-force-tackles-contamination-at-former-reese-afb/926247498

Kylan Francis, P.E.
Director of TP&D
Lubbock District | 135 Slaton Hwy | Lubbock, TX 79404
Phone 806/748-4490 | Email Kylan.Francis@txdot.gov | Cell 806/470-4412

From: Kylan Francis <Kylan.Francis@txdot.gov>
Sent: Thursday, April 26, 2018 7:33 AM
To: Shelley Harris
Subject: FW: Reese AFB - Contamination Plume
Attachments: 62005.ROUND_2_Reese_Water_Well_Sampling_Results_Package2.pdf; 62005.ROUND_1_Reese_Water_Well_Sampling_Results_Package14 (003).pdf; 62005.ROUND_2_Reese_Water_Well_Sampling_Results_Package1.pdf

Here is what ENV says about Reese so far.

Kylan Francis, P.E.
Director of TP&D
Lubbock District | 135 Slaton Hwy | Lubbock, TX 79404
Phone 806/748-4490 | Email Kylan.Francis@txdot.gov | Cell 806/470-4412
Texas Department of Transportation

From: Douglass Mack
Sent: Thursday, April 26, 2018 7:21 AM
To: Karen Bradshaw; Kylan Francis
Subject: FW: Reese AFB - Contamination Plume

Hello Kylan and Karen, I contacted the TCEQ coordinator about the Reese AFB issue and did receive back some good information. The good news is that the plume is down in the groundwater system and groundwater starts in this area around 100' bgs. I don't think we can design our project around the issue (schematically), but even though we might construct over the plume, the issue will be down 100' bgs. Looks like were ok for alignment and possible for construction as well.

Doug

From: Maureen Hatfield [mailto:maureen.hatfield@tceq.texas.gov]
Sent: Wednesday, April 25, 2018 9:48 AM
To: Douglass Mack
Subject: RE: Reese AFB - Contamination Plume

Good Morning Mac: Attached are current maps of the Reese plume sampling for PFOS/PFA compounds. Round 1Reese Water Well sampling shows extent of impacts to private/public water supply wells to one mile. Maps for Round 2 are out to two miles. The extent of the plume has not been fully delineated, and the Air Force is still conducting their step-out assessment to two miles from the former Reese AFB boundary to the east-and southeast in the direction of groundwater flow. The depth to groundwater is approximately 100 to 150 feet bgs.

We can provide you updated maps as the assessment progresses.

I have also provided you with the Air Force BRAC project manager Paul Carroll and contact info. If you have specific questions.

Paul F. Carroll, GS-13, DAF
Program Manager

BRAC Execution Branch
Air Force Civil Engineer Center
Office: 806/885-5010
Cell: 210/834-2353
email address: paul.carroll.1@us.af.mil
AFCEC/CIBE
9801 Reese Blvd. North, Ste 210
Lubbock, TX 79416-2107

Sincerely,

Maureen Hatfield, P.G., Project Manger
Team 1, VCP-CA Section MC127
TCEQ Remediation Division
512-239-2034

From: Douglass Mack [mailto:Douglass.Mack@txdot.gov]
Sent: Tuesday, April 17, 2018 2:08 PM
To: Maureen Hatfield <maureen.hatfield@tceq.texas.gov>
Subject: Reese AFB - Contamination Plume

Hello Maureen, TxDOT is in the process of building the outer loop for Lubbock (Loop 88) and our current alignment shows that we will pass by the Old Reese AFB. Since the news articles have come out about the groundwater plume associated with the AFB, the Lubbock District has become concerned about the project. I was wondering if you might be able to share a map with us showing the source area locations along with the plume size and depth to groundwater? Let me know if this might be a large task and I can get someone down to pull the needed information.

Thanks!

Doug

Douglass Mack, PMP
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25 June 2018

Douglass Mack, PMP
TxDOT Environmental Affairs
125 East 11th Street
Austin, Texas 78701

RE: WA 18 – Loop 88 Lubbock, Texas
Records Review
Contract Reference: 57-718SG003

Dear Mr. Mack:

This letter report summarizes the review of records from the TCEQ, the U.S. Air Force Civil Engineer Center Administrative Record database, and phone interviews with information sources associated with the facility. The purpose of this review was to determine whether any known or potentially hazardous conditions are known to exist within the path of the proposed Loop 88 near the former Reese Air Force Base (AFB) in Lubbock, and particularly the former residential area (i.e., on-base housing) attached to the AFB.

Background

The proposed construction of Loop 88 in Lubbock County, Texas will consist of three segments. Segment 1 is of current interested and will progress north-south approximately 0.25 mile east of the former Reese AFB. Reese AFB was originally a pilot training facility opened during WWII. It was closed at the end of the war and reopened in 1949 to continue as a training center. The base has been closed since 1997 in accordance with DOD Base Realignment and Closure (BRAC) schedules. The former AFB has also been the subject of extensive sampling, testing, and remediation for multiple solid waste management units (SWMUs) and groundwater plumes, including a confirmed trichloroethylene (TCE) plume that extended east from the base for approximately 2.5 miles. This plume has reportedly been delineated and remediated, with final closure granted by the TCEQ in 2017. Currently the Air Force is engaged in a new round of multimedia testing and sampling on and around the former AFB due to a recently emerging broad class of contaminants, generally known as perfluorinated compounds (PFCs). These compounds are not limited to military installations, but are commonly found on most military installations.

Potential concerns related to the Segment 1 road construction work are as follows: the TCE plume; the unknown distribution of the PFC contamination; the playa lake located along Highway 309 (Research Boulevard); and the use of the former base residential area as a remediation process and staging area. That former residential area is fenced and vacant, with almost all structures having been removed or demolished. Segment 1 of Loop 88 will pass north/south directly through the middle of this former base residential area.

Records Review

The TCEQ Central File room was contacted to obtain records from compliance permit #50302 and industrial and hazardous waste registration #62005 (CN600919401). Review of these files confirmed the discovery, delineation, and remediation of the TCE plume. The groundwater corrective actions at the former AFB (now Reese Technology Center) were closed by TCEQ specifically through a Class 2 permit modification issued in December, 2014 and through a Class 3 permit modification issued in May, 2017. All former hazardous waste management units at the former AFB are closed. The affected groundwater in the area, the Ogallala aquifer, is reported at approximate depths of 110-120 feet below ground surface. Therefore, although the proposed construction will pass over the heart of the TCE plume, groundwater is substantially deeper than practical excavations necessary for road construction.

The TCEQ was contacted for information regarding ongoing investigations for perfluorinated compounds (PFCs) on and around the base. Additional information was found on the U.S. Air Force Civil Engineer Center Administrative Record (AR) database. According to the literature, a site investigation was proposed in March 2017 (Amec Foster Wheeler, 2017) and preliminary sampling has been conducted through March 2018; currently the investigation is focused on drinking water wells in the surrounding area (TCEQ). A preliminary investigation (Amec Foster Wheeler) conducted in 2015 (in a somewhat limited area noted for use of PFCs) indicated contamination in soil and groundwater. PFCs in soil will normally be limited to the specific area of use, in the case of Reese AFB primarily in fire-fighting training areas. PFCs in groundwater, however, are very mobile, as indicated by the extent of discovery currently being conducted. No conclusions have yet been stated as to the extent of the contamination, although substantial analytical results have been reported for sample points up to 2.0 miles east and northeast of the former AFB.

In the research regarding the TCE plume in both TCEQ records and the AR database, it was noted that a potential issue impacting the general area is the playa lake located along Highway 309. The playa lake is a shallow impoundment that received wastewater discharge, sludge release, and base effluent and runoff from the 1940s to some time in the 1980s. It was originally referred to as Industrial Lake, later as Picnic Lake (Installation Restoration Program Site WP-06) and was subject to extensive remediation for PCBs and pesticides. WP-06 was closed under industrial criteria and Risk Reduction Standard 2 by the TNRCC in 2002. This information is relevant because, although Picnic Lake is located on-base, the naturally occurring playa bed straddles Highway 309. The lake is approximately 0.2 mile in width, east/west and may be considered proximal to the proposed construction work for Segment 1 of Loop 88 as the lake's eastern edge is approximately 500 feet west of the proposed line of construction. A flood prevention system installed in 1977 was modified in 1982 by the installation of a one-way valve under Highway 309 to connect the Picnic Lake with the eastern section of the playa. This valve allows stormwater flow from the playa east of the highway to move west toward Picnic Lake, but not the opposite.

The former AFB expanded during the 1950s with the original construction of the residential area adjoining the east side of the original base perimeter. In 1992, the population of the residential area was reported as 2,600 residents. The narrative text that follows contains information summarized from a phone interview with Ms. Murvat Musa of the Lubbock Reese Redevelopment Authority (LRRA). As part of the base closure, a new entity was created to manage the property, the LRRA. The LRRA now owns the AFB property and most of the buildings on the closed base. After the base was closed in 1997 the LRRA sold the homes from the residential area to small towns and communities in the area for

affordable housing programs. Base housing had been "ready built" and placed on pier and beam structures. When sold, the houses were simply picked up and taken to new locations.
Subsequent to the house removals, an effort was made to clear the property of streets, alleys, sidewalks, etc. The clearing effort was not thorough, as large piles of concrete and asphalt rubble remain. This former on-base housing area became referred to as Area 3 during the multi-year multimedia remediation, and is approximately in the middle between the plume source areas and the likely downgradient extent of the plume further east. Almost 40 remediation wells and over 30 monitoring wells were installed within the residential area, as well as several residential wells. As the TCE plume remediation effort expanded, the former residential area was used as a staging area for supplies, equipment, and systems, e.g., hazardous waste tanks. (See the Arcadia 2011 exhibit *'Hazardous Waste Tank Systems Proposed for Closure'* in Attachment A.)

From 2007 through at least 2011, partial enhanced reductive dechlorination (ERD) systems were installed in the residential area. Some of these systems were later converted to granular activated carbon (GAC) treatment systems. With both of these systems, untreated (TCE) impacted groundwater was pumped from the aquifer and through extraction wells to an equalization tank. These tanks were considered hazardous waste tanks. When the primary sites achieved closure, the remediation staging was cleared and removed. The property is now vacant and overgrown with dense vegetation. It is currently private property, but has always been fenced and gated from its original time as on-base housing.

Conclusions

The various, (possibly) co-mingled groundwater contaminant plumes beneath the proposed roadway footprint do not pose a credible risk for the project. An extensive soil vapor survey (~1,700,000 sf) was conducted in the early stages of facility investigation. Target VOCs were detected at low concentrations in the 3-5' bgs soil interval, but these VOCs were generally centered about the base buildings, not in the residential area. The contaminant plume(s) that generated the soil vapors have been largely remediated during ensuing years. Some amount of VOC soil vapors will likely still be associated with the plume, but the depth to groundwater is many tens of feet deeper than whatever underground utilities may be constructed with the roadway. It is unlikely that VOC soil vapors would be present at problematic concentrations in the shallow subsurface construction depths associated with the roadway.

The playa lake along Hwy 309 appears to be far enough from the proposed Loop 88 construction to not pose a significant concern.

The former residential area likely represents a low risk to construction activities. However, active groundwater corrective actions on the largest plume, which included the residential area, were only concluded within the past few years, and pump & treat systems were removed and extraction/injection/monitoring wells were plugged & abandoned at that time. LCA has only seen general information regarding the nature and extent of post-closure activities. Post-closure might reasonably have included at least limited soil sampling to document that the extended use of the residential area as a staging/treatment area did not impact the surface and shallow subsurface (i.e., spills, tanks leaks, improper waste disposal or discharges, etc.). LCA has not identified such soil sampling data, if it exists.

Recommendations

LCA recommends a limited surface and shallow subsurface soil sampling investigation be performed within the projected ROW and construction footprint inside the former base housing area.

Please contact the undersigned with any questions. Thank you for allowing LCA to perform this service. We welcome the opportunity to continue this project as needed.

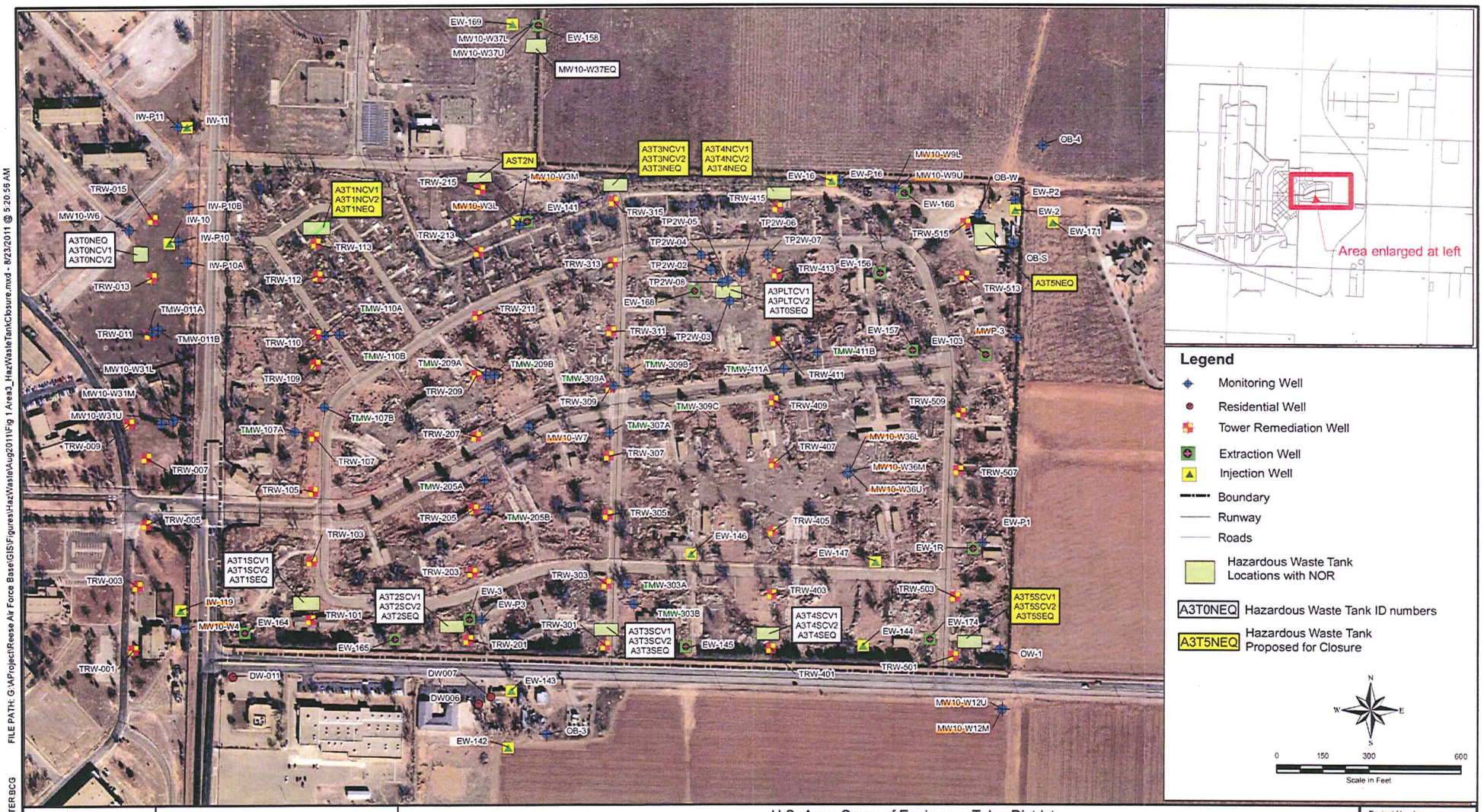
LCA Environmental, Inc.

Principal Author:	QC Review
Laura Foss, PG	Y. Lynn Clark, PG
Task Manager	Project Manager

Attach. A: Selected archived report exhibits
Enc: File Review Documents on CD (not included with draft)

SS-02

W3 m/L
W36 u/m/L
W7



FILE PATH: G:\XProject\Reese Air Force Base\GIS\Figures\HazWaste\Aug2011\Fig 1 Area3_HazWasteTankClosure.mxd - 8/23/2011 @ 5:20:58 AM

DRAFTER BCG

Program Manager	Avram Frankel
Project Manager	Lynden Peters
Task Manager	Jay Erickson
Technical Review	David Gomes

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U.S. Army Corps of Engineers, Tulsa District
Reese Center

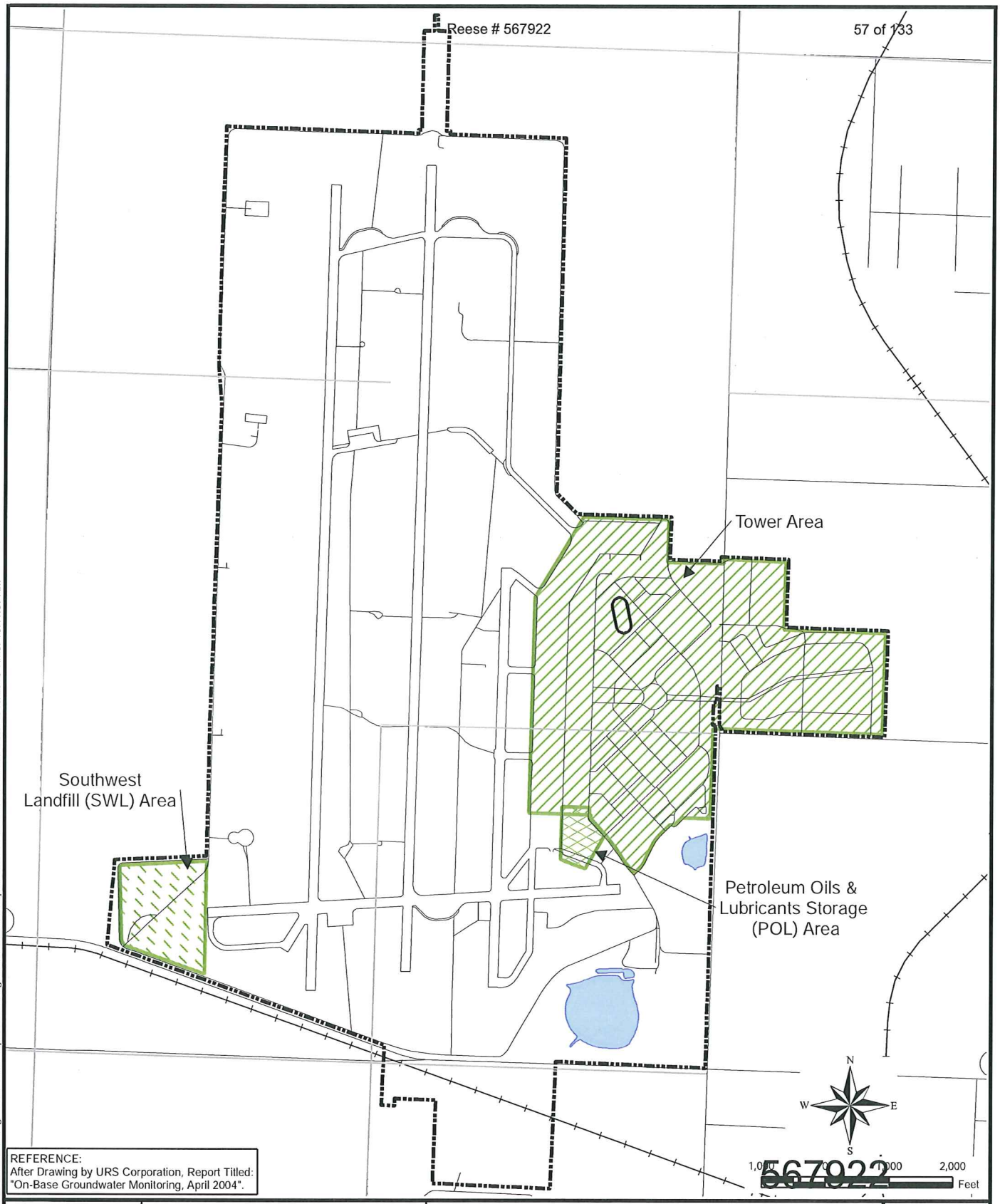
Hazardous Waste Tank Systems Proposed for Closure

Lubbock, Texas

Project Number: GP1REESE

Drawing Date: 08/23/2011

Figure: 1

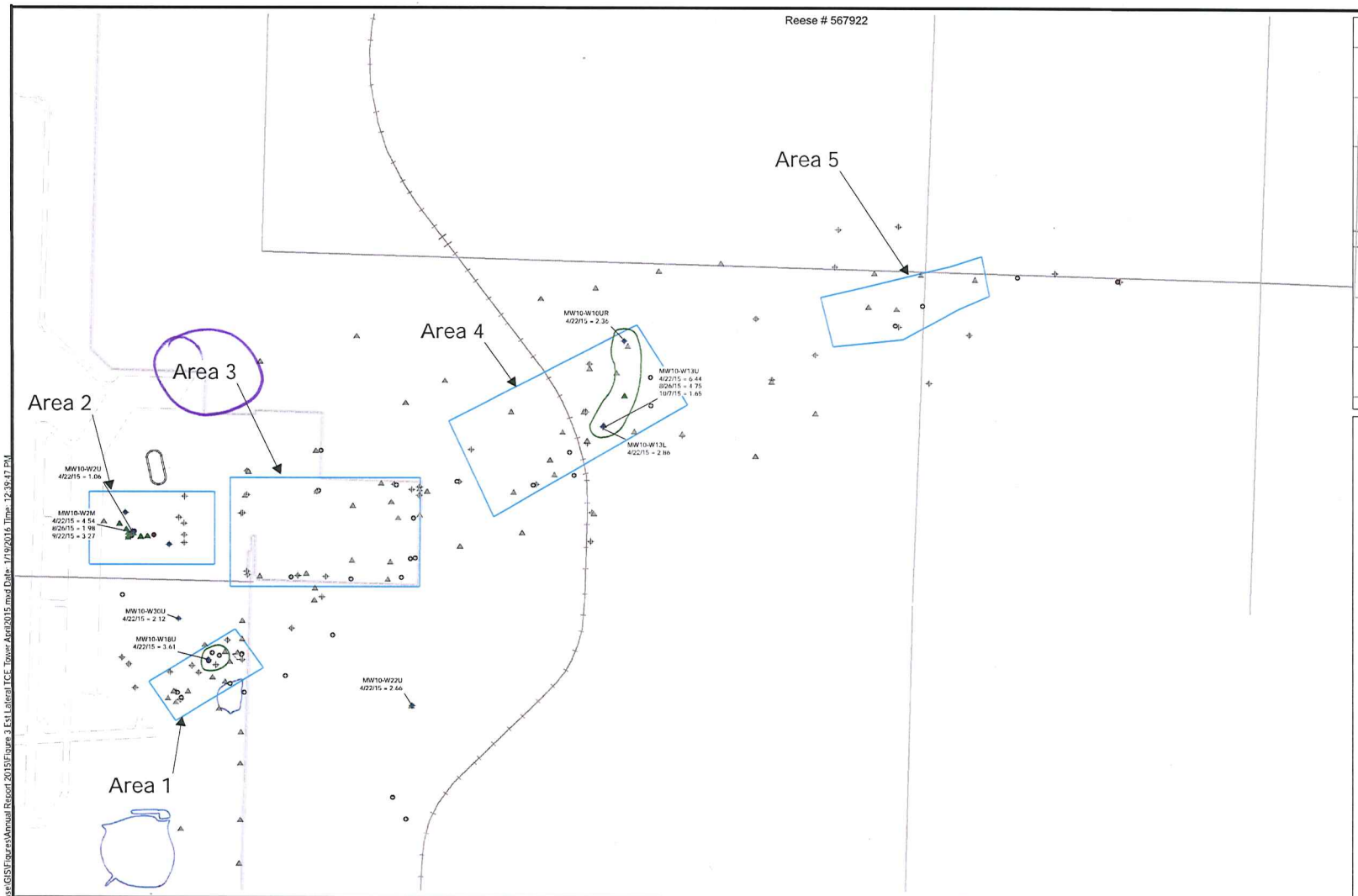


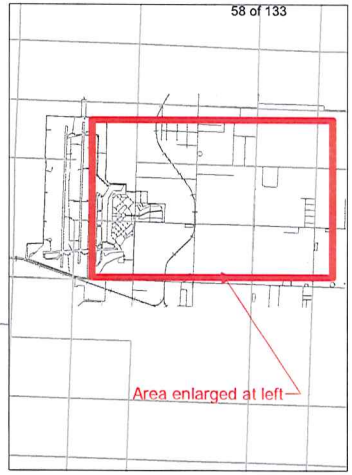
REFERENCE:
After Drawing by URS Corporation, Report Titled:
"On-Base Groundwater Monitoring, April 2004".

567922

Program Manager Avram Frankel	ARCADIS 630 Plaza Drive, Suite 100 Highlands Ranch, CO 80129-2379 Tel: 720-344-3500 Fax: 720-344-3535 www.arcadis-us.com	U.S. Army Corps of Engineers, Tulsa District Annual Report 2015 - Reese Center Location of the Tower, POL, and SWL Area Solid Waste Management Units Lubbock, Texas	Project Number GP1REESE.CM10
Project Manager Lynden Peters			Drawing Date 1/18/2016
Task Manager Sharon Hall			Figure 2
Technical Review David Gomes			

Path: G:\Aproject\Reese Air Force Base\GIS\Figures\Annual Report 2015\Figure 2 Location Map of Tower POL and SWL.mxd Date: 1/18/2016 Time: 10:11:07 AM





Legend

- Site Boundary
- Extraction Well
- Abandoned Extraction Well
- Injection Well
- Abandoned Injection Well
- Monitoring Well
- Abandoned Monitoring Well
- Area Boundary

MW10-18U Well ID (April 2015)
3.61 TCE Concentration (µg/L)/Month sampled

April 2015 TCE
1 µg/L

Note: µg/L - micrograms per liter

N W E S

0 800 1,600 3,200
Scale in Feet

Path: G:\Aproject\Reese Air Force Base\GIS\Figures\Annual Report 2015\Figure 3 Est Lateral TCE Tower April2015.mxd Date: 1/19/2016 Time: 12:39:47 PM

Program Manager	Avram Frankel
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Task Manager	Elena Moreno-Barbero
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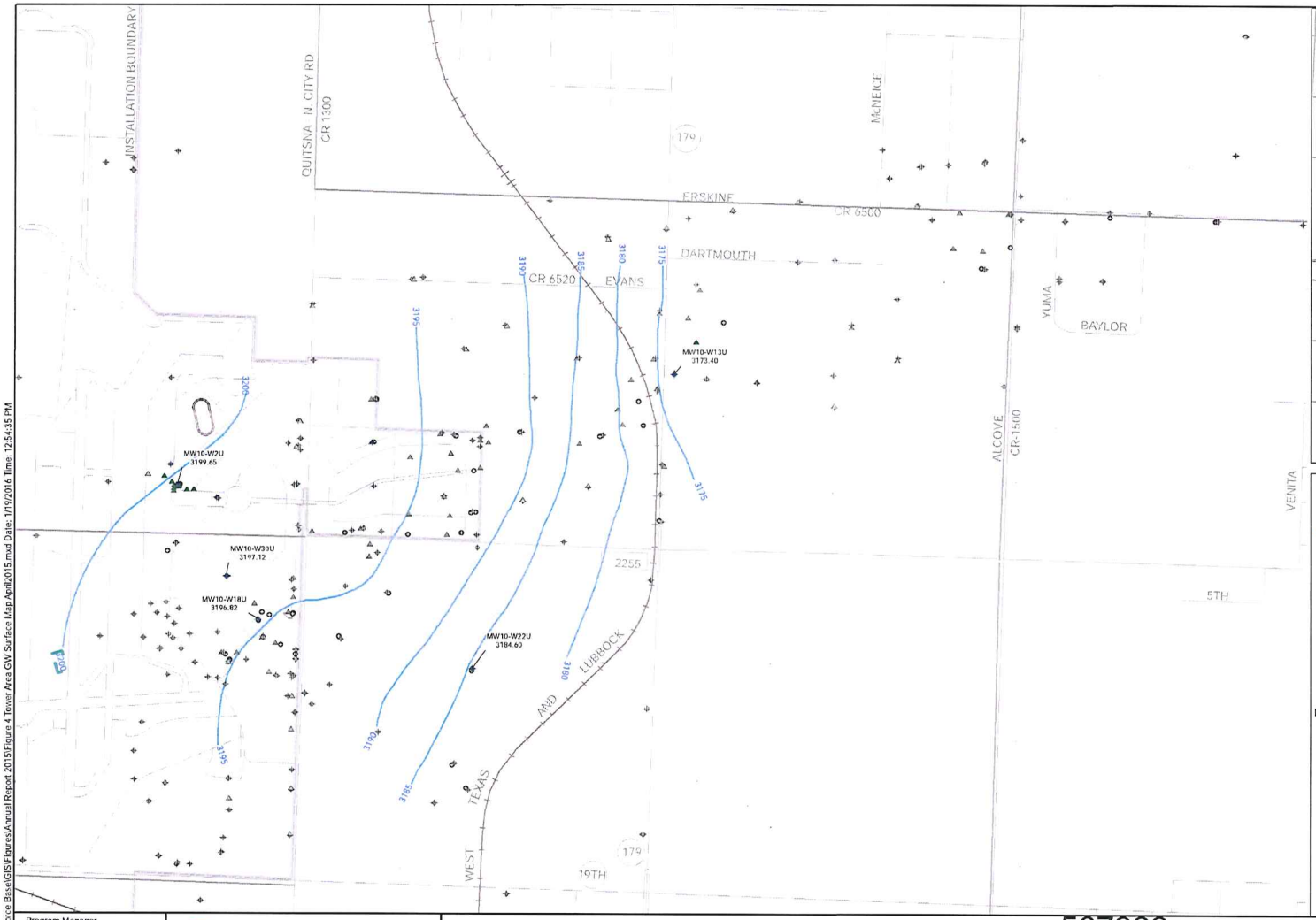
U.S. Army Corps of Engineers, Tulsa District
Annual Report 2015 - Reese Center

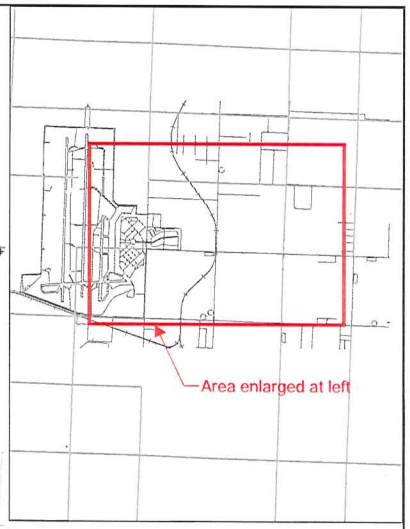
567922

Estimated Lateral Distribution of TCE in Groundwater at the Tower Area (April 2015)

Lubbock, Texas

Project Number	GP1REESE.2012
Drawing Date	1/19/2016
Figure	3





Legend

- April 2015 Water Levels: 5 foot
- Site Boundary
- Extraction Well
- Abandoned Extraction Well
- Injection Well
- Abandoned Injection Well
- Monitoring Well
- Abandoned Monitoring Well

MW10-W2U Well ID
3199.65 Water Elevation (ft)

Note:
Wells without water elevation values were not measured during this event.

N W E S

0 800 1,600 3,200
Scale in Feet

Path: G:\Aproject\Reese Air Force Base\GIS\Figures\Annual Report 2015\Figure 4 Tower Area GW Surface Map April2015.mxd Date: 1/19/2016 Time: 12:54:35 PM

Program Manager	Avram Frankel
Project Manager	Lynden Peters
Task Manager	Sharon Hall
Technical Review	David Gomes

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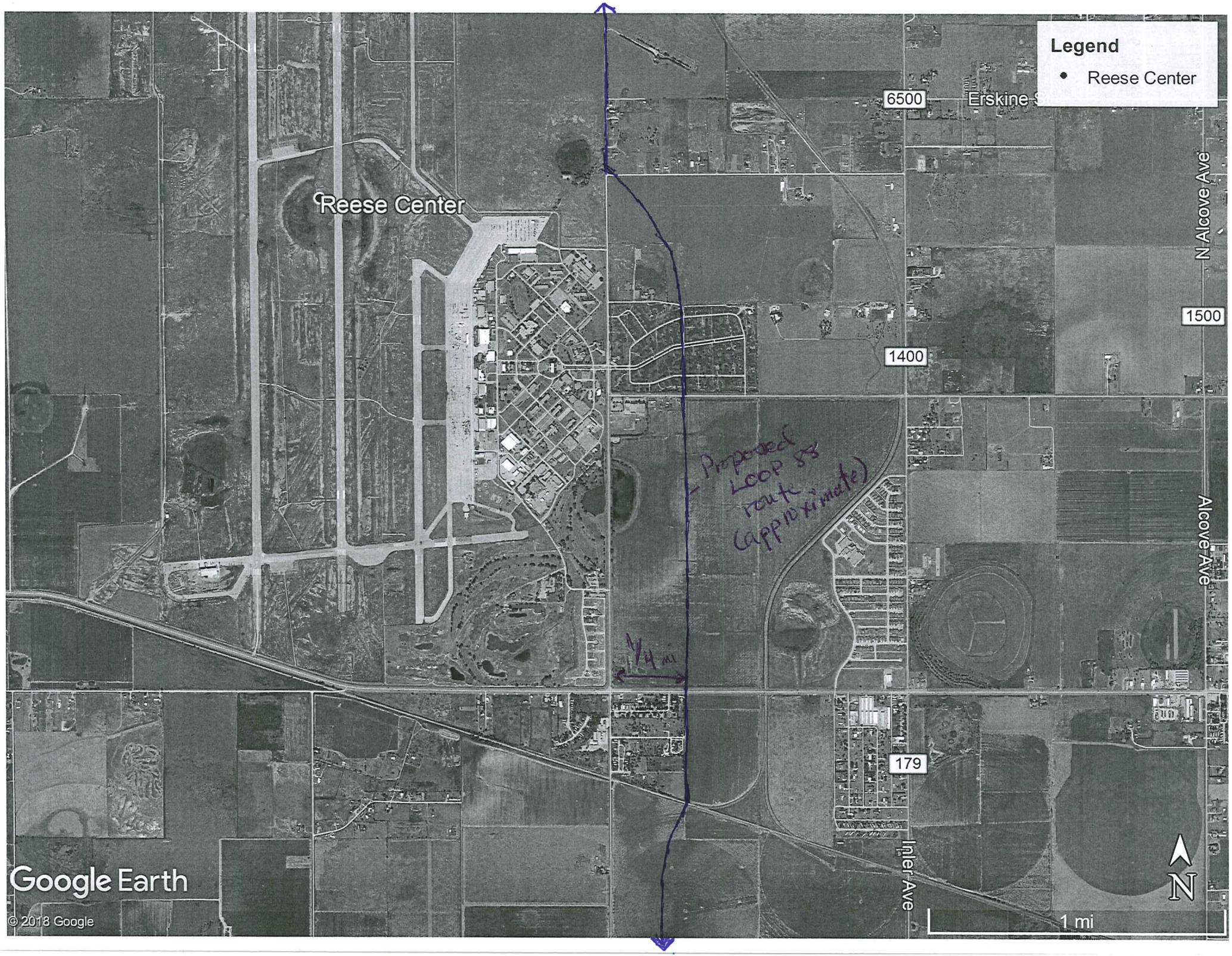
U.S. Army Corps of Engineers ~~Tulsa District~~ 567922
Annual Report 2015- Reese Center

Tower Area Groundwater Surface Map (April 2015)

Lubbock, Texas

Project Number	GP1REESE.CM10
Drawing Date	1/19/2016
Figure	4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Reese Center
Reese Center
6500
Erskine
1400
1500
N Alcove Ave
Alcove Ave
Proposed LOOP 88 route (approximate)
1/4 mi
179
Inler Ave
N
1 mi
Google Earth
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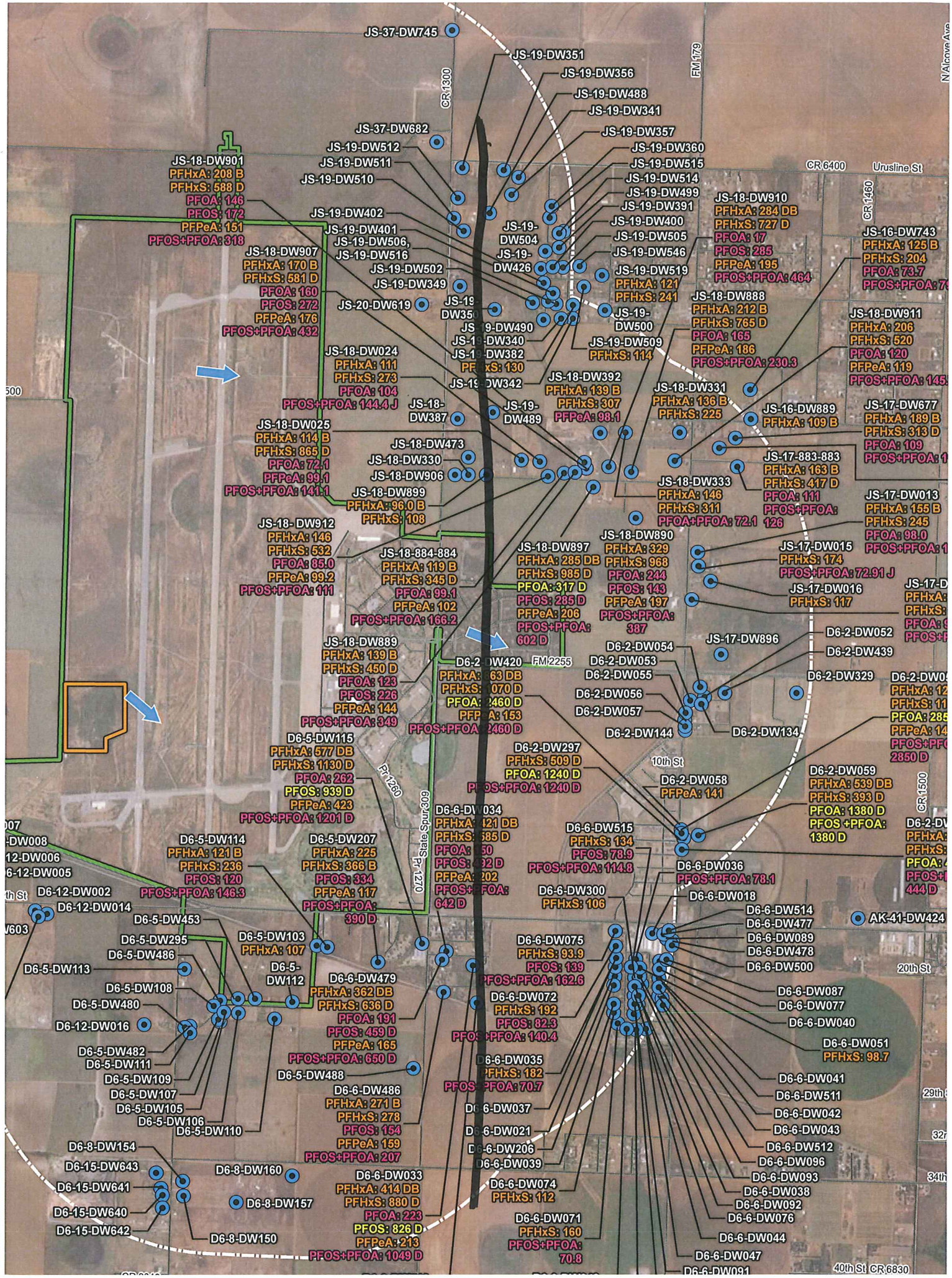
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CR 1300
FM 2255
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State Spur 309
FM 1270
10th St
20th St
29th St
34th St
40th St CR 6830
CR 1500

Subject: RE: Reese AFB

Begin forwarded message:

From: Michael Ponce <MPonce@entechhou.com>
Date: November 14, 2018 at 4:52:13 PM CST
To: Jorge Villalta <JVillalta@entechhou.com>, Joel Hiller <jhiller@rods.cc>, Michael Rollin <MRollin@cobbfendley.com>, Kerry Winkler <kerry.winkler@blantonassociates.com>, Thomas Duncan <TDuncan@walterpmoore.com>
Subject: FW: Reese AFB

All, we have a status update on Loop 88 schematic development. Entech is currently working on the geometrics for the following updates:

1. Shift alignment to the east to avoid the Reese Housing Development
2. Intersection at US 62 will be an elevated rotary between Segment 3 and Segment 2
3. Intersection at US 84 is a revised trumpet design on Segment 4
4. Eliminated several grade separated overpasses and ramps based on VE study
5. ROW width is a consistent 400' in lieu of 320' at-grade and 400' at grade-separations

We will be providing updates to the schematic plan files as soon as we are complete with the above revise geometrics. We are schedule to complete the revisions by mid December. Avoid any work in these areas for now but continue in all other areas. Thanks for your continued support, Let me know if you have any questions.

Michael Ponce, P.E.
Principal

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From: Kylan Francis <Kylan.Francis@txdot.gov>
Sent: Wednesday, November 14, 2018 11:54 AM
To: Michael Ponce <MPonce@entechhou.com>
Cc: Shelley Harris <Shelley.Harris@txdot.gov>; Julia Perschnick <Julia.Perschnick@txdot.gov>; Karen Bradshaw <Karen.Bradshaw@txdot.gov>
Subject: Reese AFB

Michael,

I would like you to go around the old Reese housing development with segment 1 of LP 88. It doesn't look like we will be able to clear the environmental covenants from the deed anytime in the future. Please hold the east property line of the Reese housing development and move 400' to the east for the other ROW line. Thanks.

Kylan Francis, P.E.
Director of TP&D
Lubbock District | 135 Slaton Hwy | Lubbock, TX 79404
Phone 806/748-4490 | Email Kylan.Francis@txdot.gov | Cell 806/470-4412