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3.0 DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES

This chapter describes the Longhorn Pipeline System (System) and alternatives to the proposed project. This description of the proposed project is drawn from the Longhorn Partners Pipeline, L.P. (Longhorn) Project Description document provided on March 1, 1999, and therefore does not include the System changes underway in response to the Longhorn Mitigation Plan described in Chapter 9. Figure 3-1 shows the Longhorn pipeline, pump stations (existing, new, and future), and alternative routes considered in this Environmental Assessment (EA). Figure 3-2 identifies principal segments of the System. In addition to these figures, there are several appendices. Appendix 3A contains a variety of correspondence related to the No-Action Alternative, including an affidavit describing the maintenance activities between the time the Exxon Pipeline Company (EPC) pipeline was closed in late 1995 through 1998. Appendix 3B describes the route. Appendix 3C describes construction techniques that were used on the new segments and would be used for future construction. Appendix 3D provides more details on the current and future pump stations and the El Paso Terminal.

3.1 DESCRIPTION OF THE PROPOSED PROJECT

3.1.1 Overview

The proposed project includes operation of:

- Existing pipeline from Valve J1 in Houston to Crane;
- Recently constructed pipeline segments in Harris County (Galena Park Station to Valve J1) and in west Texas from Crane to the El Paso Terminal;
- Recently constructed lateral connecting Crane to Odessa;
- Yet-to-be-constructed laterals connecting the El Paso Terminal and three interstate pipelines;
- Yet-to-be constructed 2,500-foot (ft) lateral to connect the end of the Odessa Lateral with the Equilon Terminal;
- Existing and future pump stations[1]; and
- Valves, tanks, and other aboveground infrastructure.

[1] Future pump stations have not yet been sited. Therefore, a future site-specific supplemental environmental assessment of new and refurbished pump stations will be required as described in Chapter 9 of this EA.

Some of the refined product would be transported to retail outlets in El Paso, Texas and across the border to Juarez, Mexico. Most of the product would be shipped via other interstate product pipelines to consumers in New Mexico and Arizona.

The majority of the System consists of the 18-inch pipeline formerly owned by EPC (henceforth referred to as the former EPC pipeline or the Valve J1-to-Crane segment). This pipeline was constructed in 1949 for purposes of transporting crude oil east from west Texas to Houston. This crude oil pipeline ceased operation in 1995 as part of the testing and transfer of the pipeline to Longhorn.

As shown in Figure 3-2, the System begins with a recently constructed 9-mile-long, 20-inch diameter pipeline that connects to the Galena Park Station in Houston, Texas, where the project originates. This pipeline (Segment 1 on Figure 3-2) connects to the former EPC refurbished 20-inch pipeline north of the Galena Park Station (Segment 2). From this point (called Valve J1 or simply J1), the pipeline goes west 25 miles to the Satsuma Station on the northwest side of Houston where it connects with the 18-inch portion of the EPC pipeline. The pipeline continues to the Crane Station, 458 miles from the Galena Park Station. From Crane, the System consists of the recently constructed 18-inch pipeline segment that goes approximately 237 miles west to the El Paso Terminal, located east of the City of El Paso. Three 8.3-mile lateral pipelines (plus a return line) would run parallel in a common right-of-way (ROW) to connect the El Paso Terminal with Kinder Morgan and Chevron pipelines in the El Paso area. The connection to Kinder Morgan would consist of one 8-inch diameter pipeline and one 12-inch diameter pipeline. The Chevron connection would consist of an 8-inch diameter pipeline. When completed, the 731-mile system would also include (1) a recently constructed 27.7-mile, 8-inch lateral pipeline that would transport refined product from Crane to Odessa and (2) a yet-to-be constructed 2,500-ft lateral connecting Odessa Lateral to the Equilon Terminal in Odessa.

The proposed Longhorn pipeline would eventually transport 225,000 barrels per day (bpd) of refined product to the El Paso Terminal and to the Odessa Equilon Terminal for distribution in the El Paso and Odessa markets. In Odessa, the Longhorn pipeline may eventually connect to other pipelines. In El Paso, some of the product would be delivered by tanker trucks for distribution to retail outlets in El Paso and Juarez, Mexico. (Juarez is almost totally dependent upon El Paso for its fuel needs.) Most of the product would be stored in tanks at the El Paso Terminal for subsequent delivery to three interstate product pipelines. These pipelines transport product to major market areas in New Mexico and Arizona. The Kinder Morgan and Chevron pipeline connections would enable product distribution to Phoenix, Tucson, Albuquerque, and other southwestern markets.

Approximately 99 percent of the System is complete. Before the System can begin operation, the 8-mile-long lateral pipelines in El Paso and the final 2,500 feet (ft)of the Odessa Lateral must be constructed.

The initial planned throughput for the System is 72,000 bpd using the existing pipeline and six pump stations. The initial phase would use the new origin pump station in Houston (Galena Park Station), new pump stations at Cedar Valley, El Paso, and Satsuma, and refurbished pump stations at Satsuma, Kimble County, and Crane.

The System is designed to be expanded in two future construction phases. The first phase would be the construction of two additional pump stations and incorporation of two bypassed stations that would allow for 125,000 bpd throughput. The second phase would be the construction of another eight pump stations and incorporation of one bypassed station (for a total of 19 pump stations), thereby increasing throughput capacity to 206,000 bpd. The addition of a flow-improving agent would further increase the capacity to 225,000 bpd.

The expansion to 225,000 bpd would be expected to occur approximately 10 years after operation of the pipeline begins. In the future (following this EA process), Longhorn would build ten new pump stations and reactivate three existing pump stations to increase the carrying capacity to 225,000 bpd. (This EA is generally based upon the complete build-out phase, 225,000 bpd, so as to take into account "reasonable worst-case spill" scenarios.) The 19 pump stations are shown in Figure 3-1, in which the pump stations are designated as "existing bypassed/future" (meaning presently existing but not to be used for the 72,000 bpd phase of implementation), "existing" (presently existing and to be used for the 72,000 bpd phase of implementation), and "proposed new future" (pump stations that will have to be built to support flow rates in excess of 72,000 bpd).

Appendix 3A, which includes the December 17, 1998 affidavit of William Lumpkin, presents a chronology of EPC and Longhorn activities that occurred from the shutdown of crude oil service on the EPC pipeline in 1994 to late 1998. Table 3-1 is a chronology of overall pipeline construction actions leading up to the present.

3.1.2 System Description

The System is designed for service in excess of 50 years and is made up of four main pipeline segments, the pump stations, and the El Paso Terminal. The former EPC pipeline has been modified to transport refined petroleum products, with flow going from east to west. Williams Energy Services (WES) would be the contract operator of the System. Longhorn's original proposal was to transport multiple grades of gasoline and distillates, which would include special reformulated grades of gasoline needed to control air emissions in certain areas of the southwest.

The System would function as an interstate common carrier pipeline because Longhorn is a common carrier pipeline for those volumes that would be transported across state lines and would connect into the Kinder Morgan and Chevron pipelines that extend across the Texas border into New Mexico and Arizona. Volumes moved from Galena Park Station to El Paso Terminal for local delivery are intrastate movements. Also, the Crane-to-Odessa segment of the Longhorn pipeline is an intrastate common carrier pipeline because it transports products solely within the state of Texas. Subsequent distribution out of state may occur which would change the intrastate designation.

3.1.2.1 New and Refurbished 20-inch Diameter Pipeline from Galena Park Station to Satsuma Station

As shown in Figure 3-2, the new portion of this pipeline segment in Harris County consists of 9.1 miles of new 20-inch diameter pipe. At the end of the new 20-inch diameter pipeline from Galena Park Station, the pipeline is tied into the existing 20-inch diameter pipeline from the Satsuma to Baytown, constructed by Exxon (now EPC) in 1949. The existing section from the tie-in point, Valve J1 east of Satsuma, was refurbished and modified for operation in refined products service.

The existing portion of the 20-inch diameter pipeline (from the J1 to Satsuma) was completely refurbished, including the removal and refurbishment of mainline block valves and removal of unnecessary fittings in 1998. It was also hydrostatically tested, repaired, and hydrotested in 1995 and again in 2000. In addition, a pressure relief/control system has been installed at the Satsuma Station to protect the 20-inch diameter pipeline from any potential back pressure from the higher pressure 18-inch diameter pipeline west of Satsuma.

Four mainline block valves are installed at strategic locations between Galena Park Station and Satsuma Station. Three of these are manually operated valves (at Milepost [MP] 5.34, MP 7.46, and MP 21.30), and there is one remote-controlled valve (at MP 11.99).

3.1.2.2 Refurbished 18-inch Diameter Pipeline from Satsuma Station to Crane Station

Longhorn purchased an existing 18-inch diameter and a 20-inch diameter crude oil pipeline to use as the backbone of the System. Part of the existing 20-inch diameter pipeline from Satsuma to Baytown was used. The acquired 18-inch diameter pipeline between Crane Station and Satsuma Station added approximately 424 miles of pipeline to the System.

For the existing EPC portion of the Galena Park-to-Satsuma pipeline (beyond MP 9.1) the following modifications have been made:

- Two valves were removed from the pipeline, refurbished, and reinstalled in the pipeline;
- One valve was removed and replaced with new pre-tested pipe;
- Seven stopples were removed and replaced with new pre-tested pipe; and
- Three repairs were made using new pre-tested pipe.

3.1.2.3 New 18-inch Diameter Pipeline from Crane Station to El Paso Terminal

This pipeline segment begins at Crane Station and extends approximately 237 miles to the El Paso Terminal. All major road, railroad, and water crossings were directionally drilled to provide adequate cover. Heavy wall pipe, 0.375-inch wall thickness, was used for all directionally drilled crossings and some major road crossings.

Mainline block valves were installed at locations deemed by Longhorn to be strategic (at approximate vicinity of future pump stations, near streams) along the pipeline. A total of nine valves were installed with one of these being a remote-controlled valve at the future pump station site of Cottonwood. The other manual valves were installed near road crossings to make them as accessible as possible. Two manual valves are also located on either side of the Pecos River.

3.1.2.4 New El Paso Lateral Pipeline Connections (Unconstructed)

Fort Bliss Route

From the pump station within the El Paso Terminal, there are three planned laterals and a fourth pipeline to return product mixtures for separation. These four pipelines would extend generally to the northwest to a tie-in point with Chevron and two Kinder Morgan pipelines, which run from central El

Paso in a northerly direction. The tie-in points lie within the Fort Bliss military reservation approximately 8.3 pipeline miles from the El Paso Terminal.

The Chevron Lateral would be constructed of 8-inch diameter pipeline. The Kinder Morgan lateral pipelines would be constructed of 8-inch and 12-inch diameter pipe. These lateral pipelines would be operated by Chevron and Kinder Morgan and maintained by Longhorn. Custody transfer would occur at the El Paso Station. Section 3.5.3 of this chapter provides additional details on the laterals.

El Paso Lateral Alternative Route Description (Montana Avenue)

From the pump station within the El Paso Terminal, the four lateral pipelines would extend generally west to a tie-in point with the Chevron and Kinder Morgan pipelines. The four pipelines would have diameters identical to those in the Fort Bliss Route although the length would be slightly longer (8.5 miles versus 8.3 miles for Fort Bliss Route).

The tie-in point lies within the El Paso International Airport. The four lateral pipelines are designed to lie parallel to US Highway 62/180 (Montana Avenue), then across airport property to the tie-in point with the Chevron and Kinder Morgan pipelines.

3.1.2.5 Odessa Lateral and Meter Station

This newly constructed 8-inch diameter pipeline begins at the scraper trap at Crane Station and extends generally north approximately 28 miles to a location in Odessa where it is currently capped and would be connected via a 2,500-ft currently unconstructed lateral to the Equilon Terminal as shown in Figure 3-1. Longhorn is planning to construct a meter pump station on a site inside the Equilon Terminal in Odessa, Texas. The meter pump station would be located approximately 1.5 miles east of I-20 and south of Odessa. The meter pump station would be constructed in a fenced area near the Equilon Terminal. The meter pump station would be used for custody transfer of refined product.

3.1.2.6 Description of Pump Stations and Capacity Expansions

Longhorn has recently constructed and refurbished six pump stations to transport 72,000 bpd of product from Galena Park Station to El Paso and Odessa. These pump stations, described in Table 3-2 and Appendix 3D, are Galena Park, Satsuma, Cedar Valley, Kimble County, Crane, and El Paso Terminal and pump station.

Longhorn proposes additional phases of throughput increases. The second phase would be 125,000 bpd. This would involve the addition of four pump stations (two previously existing and two new ones). These are Warda, Eckert, Big Lake, and Cottonwood.

The third phase of expansion would increase throughput to 206,000 bpd. It would require the addition of eight new pump stations and the refurbishment of a previously existing pump station. These pump stations are Buckhorn, Bastrop, Orotaga, Llano, Cartman, Olson, Pecos, Utica, and Harris. In addition to the new and refurbished pump stations, there would be increases in pump sizes and other changes at several other pump stations. Tables 3-2 and 3-3 describe these alterations and new pump stations.

The final increase in throughput to 225,000 bpd would be accomplished by the introduction of a drag-reducing agent designed to reduce turbulence and friction allowing for greater throughput without the need for more pumping pressure. The drag-reducing agent, a poly-alphaolefin, carbon chain polymer, would be injected at a rate of 5 to 40 parts per million.

3.1.2.7 Description of El Paso Terminal and Tankage

The recently constructed El Paso Terminal is the terminus of the Houston-to-El Paso pipeline and the current System. The products terminal provides 900,000 barrels of refined products storage, a three-bay (20,000 bpd) truck loading rack for deliveries to El Paso and Juarez, Mexico, and a 50,000 bpd pipeline pump station. The pump station would transport refined products to the three unconstructed laterals connecting with interstate pipelines. The El Paso Terminal is located on a 418-acre site approximately 3 miles east of the El Paso city limits on Montana Avenue (US 62/180). Appendix 3D describes the truck loading rack pipeline pump station, the product tanks, and other health and safety aspects of this facility.

3.2 ROUTE DESCRIPTION OF ENTIRE PIPELINE

Figures 3-1 and 3-2 show the route of the pipeline. The route generally goes west-northwest cutting across parts of 22 counties. A detailed route description is provided in Appendix 3B.

3.3 PIPELINE CONSTRUCTION TECHNIQUES

Appendix 3C describes general construction techniques and specifications including the standards that were used to construct the Longhorn pipeline. Similar construction techniques and specifications would be used for any future construction. A limited amount of new construction is required to complete the proposed EA project. The El Paso laterals are scheduled to be constructed pending the EA decision in 2000. Also, there are plans to extend the Odessa Lateral approximately 2,500 ft to connect to a terminal owned and operated by Equilon.

3.4 OPERATION AND MAINTENANCE

Operation and maintenance of the System would follow the guidelines set forth in Longhorn's System of Operating Manuals. These manuals, adopted from the WES' liquids pipeline manuals, are addressed in Chapter 5. Operation and maintenance personnel would be strategically located along the entire System. The System would be supported through area operating teams consisting of field technicians, corrosion technicians, maintenance coordinators, process safety management specialists, field tech supervisors, field office administrators, and area managers. These teams would be supported by a centralized technical services team that is comprised of engineering, environmental, health and safety, US Department of Transportation (DOT) regulatory compliance, training, corrosion and risk mitigation, operations control, design services, and real estate services.

Activities associated with the operation and maintenance of the pipeline would include the following:

- Maintenance of valves, motors, pumps, flow meters, instrumentation, electrical, supervisory control, and communications;
- Inspection and maintenance of cathodic protection (CP) systems;
- Inspection of block valves to ensure proper operation and site maintenance;
- Calibration of all instrumentation to comply with company standards, manufacturers' recommendations, and applicable state and federal regulations;
- Inspection and maintenance of pipeline mileage and pipeline location markers;
- Surveillance of ROW for encroachments (i.e., construction) and physical condition (i.e., vegetation);
- Observation of all construction activities, by others, on or near the System ROW;
- Inspection of crossings by other pipelines, highways, and utilities; and
- Building relationships with landowners, local communities, and customers.

Longhorn has established and conducts a continual training program to instruct operating and maintenance personnel as well as support personnel in engineering, safety, and environmental protection. Annual training is reviewed to assure its effectiveness. The training program consists of activities such as: new employee orientation, computer-based training, and technical and safety training.

Operation of the pipeline is controlled remotely from a staffed, computerized Operations Control Center in Tulsa, Oklahoma. Communications are achieved via satellite along with land line telephone backup. Staffed, 12-hour shifts provide around-the-clock surveillance. Controllers can initiate and stop flow into the pipeline from the supply point; start and stop pumps; monitor pipeline pressures, flow rates, product densities, and temperatures; and operate valves.

Existing roads and the permanent ROW provide access to the pipeline. The ROW and block valve sites are maintained in a manner to keep clear of all encroachments. If access to the ROW and block valve sites is prevented due to extremely wet conditions, emergency access would be achieved via helicopter or on foot.

Pipeline warning markers are placed along the pipeline route to notify the public that a refined petroleum product pipeline is buried in the vicinity and to not dig before notifying Longhorn. The markers provide a toll-free telephone number to contact Longhorn's Operations Control Center. The center is staffed 24 hours per day and 365 days per year. In addition, Longhorn's public education program informs and educates the public, governmental agencies, and excavators of the existence of the pipeline and precautions to be taken, thereby reducing the risk of damage to the pipeline.

The pipeline ROW is scheduled for weekly aerial and/or ground surveillance. The surveillance is used to evaluate the condition of the ROW and identify potential encroachments or pipeline exposures. If an emergency situation is identified, the aerial patrol has the ability to notify the area operations team so appropriate action, based on the circumstances, can be taken. If the aerial patrol identifies any unauthorized construction activity on or near the pipeline ROW, the pilot would drop a message packet informing the contractor that they are working near a refined products pipeline, to stop work, and to contact Longhorn Operations Control Center.

External corrosion control of the pipeline and associated facilities is controlled through the application of coatings and CP. Coatings prevent water and/or soil from making direct contact with the pipe steel, thus eliminating the electrolytic path necessary for corrosion to occur. Precautions were taken in handling, bending, and backfilling the pipe to maintain the integrity of the coating. Where the coating is damaged, disbonded, or otherwise compromised, the pipeline can experience external corrosion. To mitigate this, CP is installed.

Cathodic protection is the application of direct-current electricity from an external source to oppose the discharge of corrosion current from anodic areas. When a CP system is properly installed, all portions of the protected structure (pipeline) collect current from the surrounding electrolyte (soil), and the entire exposed surface becomes cathodic. A CP system is in place for the refurbished 18-inch and 20-inch diameter pipelines. Temporary CP is applied to the newly constructed segments through bonds to other current sources. Permanent CP systems were installed.

Internal corrosion of the pipeline and associated facilities is controlled through pipeline pigging and the injection of corrosion inhibitors.

The mainline Galena Park-to-El Paso pipeline includes 45 block valves located at pump stations and strategic points along the pipeline. Block valves are placed to minimize drain-up during maintenance activities on the pipeline and to minimize potential spill volumes. These valves are listed and discussed in Chapter 5.

Longhorn plans to sponsor community outreach efforts that focus on the safety aspects of the pipeline. Longhorn employs a safety consultant for the state of Texas who travels throughout the state, concentrating on the communities along the route of their pipeline system and meeting with local emergency preparedness groups to discuss the location of the pipeline, products in the pipeline, and how to deal with any emergency situation involving the pipeline. Longhorn plans to regularly conduct mock drills with these emergency response groups to better plan for any emergency situation. Longhorn will produce and distribute public education brochures on an annual basis.

The Longhorn Pipeline Oil Spill Facility Response Plan (FRP), Oil Pollution Act 1990 Plan (OPA '90), developed to meet the requirements in 49 CFR Part 194, was completed and submitted to DOT's Research and Special Programs Administration on November 2, 1998, for review and ultimate approval. The Emergency Response Plan (ERP), a part of the system of operating manuals, addresses DOT, Occupational Safety and Health Administration (OSHA), and US Environmental Protection Agency (EPA) requirements for emergency operations. The ERP is incorporated as part of the Pipeline Oil Spill FRP. The FRP provides information on spill response planning, training, resources, and procedures.

The spill training program for WES field employees includes spill response training, incident command training, and OSHA's Hazardous Waste Operations and Emergency Response training. Tabletop exercises are included as part of the spill training. Longhorn encourages local response agencies to participate in periodic tabletop and spill response exercises. An Austin Sub-Area Plan was prepared to provide more detailed response information beyond the scope of OPA Plan requirements. This plan includes map locations for known caves and detailed response strategies for the creek crossings in the Austin area. Longhorn plans to meet yearly with Local Emergency Planning Committees to ensure appropriate emergency response awareness.

Longhorn has performed, and has committed to make, additional improvements to the system. These commitments have been taken into account in the EA and in the development of additional mitigation measures recommended by EPA and DOT.

These measures, conducted in 1998 and 1999, were developed by Longhorn to ensure the integrity of the existing segment of the System. These measures include an integrity audit and depth of cover, exposed pipe and close interval surveys. Longhorn has committed to take incremental steps to ensure the on-going safety and integrity of its pipeline. Longhorn's commitments include additional internal inspections and addressing certain areas of exposed pipe.

3.5 DESCRIPTION OF PROPOSED ROUTE ALTERNATIVES

The Settlement Stipulation or Agreement (Settlement) requires that the EA consider several route alternatives. These include: (1) new pipeline construction around the Edwards Aquifer; Edwards-Trinity Plateau Aquifer; Colorado River Alluvium; Carrizo-Wilcox Aquifer; and Gulf Coast Aquifer (Aquifer Avoidance/ Minimization Alternative); (2) new pipeline construction around populated areas "in and around" the City of Austin (Austin Re-route Alternative); and (3) new pipeline construction across Fort Bliss (Longhorn proposed route) versus the alternative route along highway ROW (Montana Avenue Alternative).

These are discussed briefly below. Figure 3-1 shows the general location of these routes. (See Chapter 9 for additional information on these route alternatives, including comparison of impacts.)

3.5.1 Description of Aquifer Avoidance/Minimization Route

The Aquifer Avoidance/Minimization (AA/M) Route is almost identical to the route of the Northern Alternative of the proposed extension of the All American Pipeline, a different project. The

Northern Alternative of the All American Pipeline would have transported West Coast crude oil from its terminus near McCamey, Texas (east of Crane) to two terminals on Galveston Bay. The Northern Alternative was developed in the late 1980s as an alternative to the proposed All American Pipeline route. The Lead Agency for the All American Environmental Impact Statement (EIS), the US Bureau of Land Management, selected the Northern Alternative Route over the proposed route primarily because it avoided impacts to several important aquifers.

The starting and end points for the Northern Alternative Route are different from the starting and ending points for the Longhorn pipeline. Therefore, the AA/M Route is identical to the Northern Alternative for the All American EIS only for the portion that loops north of the Longhorn pipeline as shown in Figure 3-1. The AA/M Route is 370 miles long. Its tie-in to the Longhorn pipeline would be approximately 90 miles west of Galena Park Station. From this point, southwest of Brenham, the route goes northwest approximately 114 miles to a point approximately 15 miles southwest of Waco. At this point, the route turns west for approximately 125 miles and then generally west southwest for 130 miles to the tie-in point near Big Lake at approximately MP 405 on the Longhorn pipeline.

As discussed in more detail in Chapters 7 and 9, this route avoids the Edwards-Aquifer and the Colorado River Alluvium altogether, and most of the Edwards Trinity Plateau Aquifer (and all of its karst areas and most sensitive portions). Because the Carrizo-Wilcox Aquifer and Gulf Coast Aquifer run without interruption and parallel to the Texas Gulf Coast, they cannot be avoided.

A major distinction of the All American Pipeline was that it considered alternatives to new construction, while the proposed project would use an existing pipeline.

3.5.2 Description of Austin Re-route Alternative

The Austin Re-route was developed by Longhorn to meet the terms of the Settlement calling for a new construction alternative that would avoid populated areas in and around Austin. Although driven primarily by the objective to avoid populated areas, the routing also took into account the objective to avoid environmental features such as the Colorado River and the Highland Lakes. A general map of this route is shown in Figure 3-1. It is 21 miles long and would replace 12 miles of pipeline running through densely populated areas in south Austin.

The Austin Re-route departs from the Longhorn pipeline at MP 161 near the community of Pilot Knob just east of US 183 in southeast Travis County. It proceeds generally southwest crossing Farm-to-Market (FM) 1327 to a point northeast of Buda, then west crossing Interstate 35 (I-35), then northwest of Buda along the Hays and Travis county lines. The route continues west, crossing FM 1626, then turns northeast crossing Loop 1 (Mopac Boulevard) to a tie-in on the existing Longhorn pipeline just east of FM 1826 (MP 173 on the Longhorn pipeline). This alternative is described and analyzed in more detail in Chapters 7 and 9.

3.5.3 Description of El Paso Route Alternatives

There are two alternative unconstructed lateral pipeline routes in El Paso. Both routes are approximately 8 miles and consist of three parallel lateral pipelines (and a return line) in the same ROW connecting the El Paso Terminal (and tankage) with two existing Kinder Morgan pipelines (one 8-inch and one 12-inch diameter) and one existing 8-inch Chevron pipeline. The Kinder Morgan pipelines supply Arizona markets while the Chevron pipeline goes north to Albuquerque. The Kinder Morgan and the Chevron pipelines run from central El Paso in a northerly direction. One alternative route goes through Fort Bliss, and the other route would run along Montana Avenue (US 62).

The proposed Fort Bliss Route runs west through Fort Bliss, then northwest through Fort Bliss, and generally parallel to SH 375 where it connects with two interstate pipelines approximately 8.3 miles from El Paso Terminal. Its connection with the interstate pipelines is on Fort Bliss property. This route runs through open desert and avoids developed areas.

The Montana Avenue Alternative goes west, southwest from the El Paso Terminal along Montana Avenue. There is developed property along the route and several road crossings. It is approximately the same length as the Fort Bliss Route. This route terminates on El Paso Airport property where it connects to the three interstate pipelines. Figure 3-1 shows the general area of these two routes.

In addition to the three 8-inch lateral lines, Longhorn proposes a fourth 8-inch lateral that would lie in the same ROW as the other three. This fourth lateral would be used to create a return system between the El Paso Terminal and the point of the lateral pipeline connections to Kinder Morgan and Chevron. The return system would be used to displace product from within the lateral pipelines back to the El Paso Terminal. The return system would allow product of one type to be removed from a lateral pipeline, prior to initiating delivery of a different product into one of the Kinder Morgan or Chevron pipelines, thus facilitating quality control of products delivered to those pipelines. The return system would be accomplished by installation of a manifold at the point where the lateral pipelines connect to the Kinder Morgan and Chevron pipelines.

3.6 DESCRIPTION OF POLLUTION CONTROL ALTERNATIVES

This section generically describes several pollution control alternatives stipulated by the Settlement to be analyzed in this EA. See Chapter 9 for the analyses of these alternatives for application specifically to the Longhorn pipeline and other mitigation measures.

3.6.1 Enhanced Leak Detection

Traditional leak detection methods rely on mass balance, based on flow measurement and visual observations. The sensitivity of these methods depends on the accuracy and precision of the flow measuring equipment and the time interval over which the flow measurements are made. This technique is standard in the industry. Another method is to monitor and respond to changes in pressure at various points along the pipeline.

Enhanced leak detection could involve the following:

- More sophisticated real-time models, using equations and theory from fluid-flow dynamics, conservation of momentum, and conservation of energy. A technique called pressure point analysis might also offer enhanced capabilities using existing equipment.
- Additional and more sensitive flow meters and pressure sensors installed at more frequent intervals along the route to narrow the uncertainty in location if a leak were detected.
- Special hydrocarbon vapor sensors at strategic locations along the pipeline to provide early warning of leakage.
- More frequent patrolling with a hand-held hydrocarbon vapor analyzer to spot-check for leaks at selected locations.
- Acoustic monitoring.
- Ground water monitoring in some areas to test for contamination.
- More techniques are also available for pump station leak detection, including surface drain systems, tank leak detection systems, and various ground water tracer options.

3.6.2 Enhanced Ground Surveillance

Ground surveillance or patrolling is an important part of maintaining the security of the pipeline. Patrols observe conditions along the pipeline that may indicate if any leaks have occurred or whether the pipeline has been or is about to be threatened by natural conditions, such as land movement or flooding, or by outside interference, such as third-party damage or vandalism.

The primary means for enhancing surveillance is to increase the frequency and to increase the number of specific types of meaningful observations required by the patrol staff. More ground patrols, in addition to air patrols, could be added in critical areas. Enhanced surveillance could also involve increasing the amount of face-to-face interaction between patrol staff and landowners along the route. This increases awareness and provides for enhanced observation and early warning of adverse conditions by persons other than the pipeline company staff.

Where aircraft are used, patrol effectiveness is also a function of the speed and altitude of the aircraft, the use of spotters in addition to pilots, the ROW condition, and the training of the personnel involved.

3.6.3 Enhanced Emergency Response Capability

Enhanced emergency response capabilities are related to both enhanced early warning of a leak or spill (addressed above) and improved means to respond to an event that has already occurred. It is preferable to employ prevention alternatives first.

Emergency response is based on participation by both company and governmental agencies responders. Company responders include both company employees and contract emergency response staff. Enhanced emergency response capability involves both quicker response and more effective response in terms of qualified responders and appropriate equipment for each type of emergency. Some possible enhancements to any current capability include:

- Emergency response personnel and equipment could be located closer to the most sensitive impact areas. A primary limitation is the availability of qualified contractors and the location of public responders such as fire departments.
- Additional equipment could be provided to both contractors and governmental agencies responders. Limitations in response capability can include unavailability or delayed arrival of certain equipment such as earth moving equipment used in spill control, lack of protective equipment to allow personnel to approach a large spill or fire more closely to deal with it, and the like.
- More pre-planning based on specific and realistic scenarios could be conducted on a more site-specific basis.
- More drills and other training could be conducted for the company, company contractor, and governmental agencies responders associated with the above item.

3.6.4 Replacement of Pipe Segments with New or Double-Wall Pipe

Technically, replacement of older pipe with new pipe, and the use of special pipe such as a double-wall or lined pipe, are possibilities for reducing the likelihood of accidental releases. New pipe addresses a portion of the risk, namely the likelihood of failure by corrosion or other structural failure caused by any deterioration of the pipe that may have occurred. New pipe does not necessarily reduce the potential for third-party damage. Thicker walled pipe would offer more resistance against all anticipated loads.

Double-wall pipe offers some potential improvement in reducing the likelihood for third-party damage. It also offers some potential improvement in leak prevention by adding an additional barrier to external corrosion of the primary containment wall, and by providing an additional opportunity for leak detection in annular space between the inner and outer walls. However, double-wall pipe could increase the potential for corrosion of the containing (inner) wall if the external wall failed due to improper installation or corrosion protection. Corrosion in the outer wall would be difficult to detect since it would be "un-piggable." Industry experience reveals problems associated with casings – double-wall pipe is being discontinued in many applications. A special double-wall system, including control and monitoring of the annular space, would need to be designed to overcome inherent weaknesses in the concept.

3.6.5 Increased Depth/Protection of Buried Segments

Depth of burial protects the pipe primarily from outside interference, such as third-party damage. The need for a given depth and the benefits would be very specific to location and land use in the area of the pipeline. Supplements or alternatives to additional cover include concrete coating, concrete slabs, riprap, and casings.

3.6.6 Additional Block and/or Check Valves and Remote or Automatic Operation Capability

Block and check valves can reduce the quantity of draindown in a leak situation. In level terrain, the benefit achieved is directly proportional to the spacing: reducing the spacing between two valves by one-half reduces the draindown potential by one-half. The advantage of more valves may be partially offset by the increase in the potential for leakage from the valve itself, such as seals or flanged connections to the pipe. Also, the increased likelihood of unintentional closures creates its own set of risks.

Remote operation reduces the closure time for a valve from what it would be with manual operation. Increasing remote operation capability might be appropriate for valves protecting sensitive areas. Studies (e.g., California Fire Marshal Report) have indicated that automatic valves may not be a cost-effective risk reduction alternative.

3.6.7 Other Mitigation Measures

The Settlement also calls for the development of any other mitigation measures that could further reduce risk to the public and the environment. These are presented in Chapter 9.

3.7 ELIMINATION OF ALTERNATIVES FROM DETAILED CONSIDERATION

This EA does not analyze the re-route alternatives in as much degree of detail as the route alternative proposed by Longhorn. The degree to which alternatives must be evaluated under the National Environmental Policy Act (NEPA) is determined by whether they are "reasonable," i.e., whether they are a feasible means of accomplishing fundamental project purposes. An EA or an EIS must generally devote substantial treatment to reasonable alternatives and must briefly discuss the reasons other alternatives are eliminated from further study as unreasonable. See generally 40 CFR §152.14(b). Attachment B, Section C2 of the Settlement also reflects this doctrine.

Most commentors on the draft EA who sought additional analysis of alternatives focused on the 370-mile AA/M Route Alternative, claiming it should also have been the Lead Agencies' preferred alternative because it would avoid potential effects on the Edwards Aquifer. Although it would avoid those impacts, it is unlikely the AA/M Route Alternative would serve the proposed project's purpose, i.e., allowing Longhorn a means to transport refined petroleum products to the markets in which it hopes to compete. The additional costs of constructing 370 miles of new pipeline, estimated at $300 million, would likely eliminate Longhorn's potential ability to compete in those markets, which are currently served by its competitors transporting refined petroleum products for shorter distances via truck and, in the future, by shorter pipelines. The purchase and conversion of an existing pipeline covering the majority of the length of the system is critical to meeting this need.

For these reasons and because the Lead Agencies do not have legal authority to compel Longhorn to change the routing of its existing pipeline, the re-routing alternatives are eliminated from detailed analysis. Nevertheless, Chapter 7 does address impacts from these re-routing alternatives, and Chapter 9 compares the routes with the route of the Longhorn pipeline.

3.8 NO-ACTION ALTERNATIVE

Both NEPA and the Settlement require that this EA include a No-Action Alternative. Typically the No-Action Alternative is treated as the environmental baseline against which the proposed action is compared. In the draft EA, the No-Action Alternative was defined as the resumption of crude oil shipments along the Crane-to-Houston former EPC pipeline. Based in part upon public comments, the Lead Agencies now define the No-Action Alternative as no operation of the pipeline. For purposes of deciding whether to require an EIS, the No-Action Alternative is considered to be an idled pipeline. In fact, Longhorn has asserted that it would recoup investment costs by resumption of crude oil shipments from El Paso to Houston should it be denied the right to proceed with its proposed project. The use of its existing assets is deemed by Longhorn as its next best option. Longhorn has provided supporting economic justification for this assertion. This, along with a public comment letter to the contrary, appears in Appendix 3A.

Table 3-1. Construction Chronology of Longhorn Pipeline Actions Prior to the EA

1949-1950	Exxon constructed the 18- inch and 20- inch pipeline, Crane to Baytown, to transport crude oil.
1990	An internal inspection (smart pig) of the 20-inch pipeline was performed.
1995	An internal inspection of the 18-inch pipeline was performed.
1995-1996	The 18- and 20- inch pipelines were subjected to a hydrostatic pressure test and purged with nitrogen.
1997	Longhorn acquired the existing pipeline from EPC.
1998	Longhorn cleaned the existing pipeline to remove crude oil from the inner walls, to prepare the existing pipeline for use in petroleum products service. Construction of new pump stations, terminals, and new pipeline segments began.
1998	New Construction completion dates: • Galena Park Origin Station – August 1998 • Satsuma Pump Station – August 1998 • 20-inch pipeline, Galena Park to tie-in to existing 20-inch Pipeline, Houston – October 1998 • 18-inch pipeline, Crane to El Paso – November 1998 • 8-inch pipeline, Crane to Odessa – November 1998 (0.5 mile remains to be constructed to Odessa Meter Station) • Odessa Meter Station – In design • Cleaning refurbishment of the existing pipeline 18 inches/20 inches – March to November 1998
1999	New Construction completion dates: • Cedar Valley Pump Station – June 1999 • Kimble County Pump Station – June 1999 • Crane Pump Station – June 1999 • El Paso Terminal and Pump Station – August 1999 • Equipment installation remaining at a few sites - August 1999 • Pipeline Laterals – In design (from El Paso Terminal to tie-in point with three interstate pipelines) – August 1999

Table 3-2. Description of Nineteen Pump Stations Required to Attain Various Flow Rates

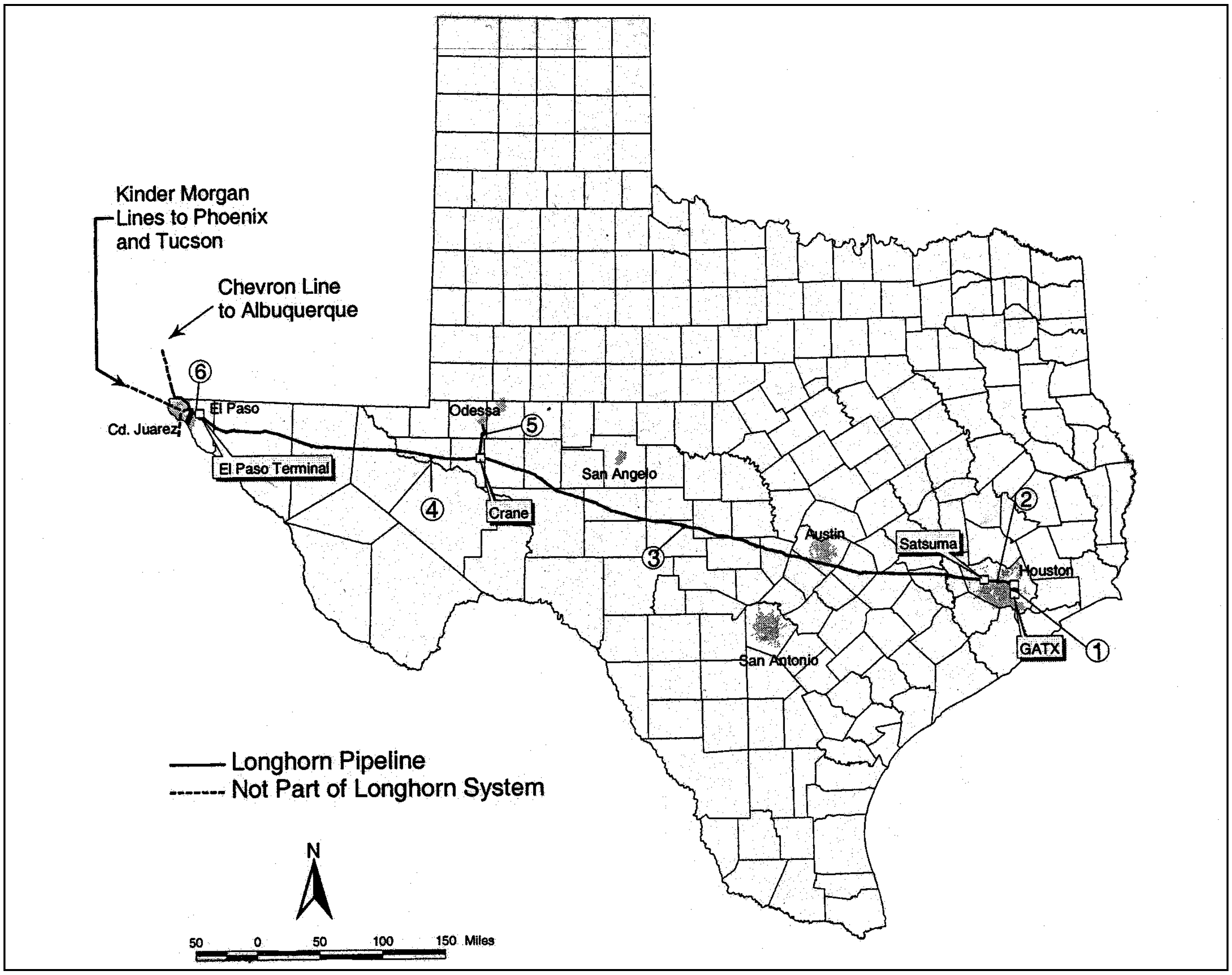
Station	Location	72,000 bpd	125,000 bpd	206,000 bpd	225,000 bpd	Other Description
1. Galena Park	Harris County (MP 0.0)	X	X	X	X	Newly constructed, 0.86-acre site inside Galena Park Terminal in Galena Park. Two 1000 HP pumps, 2 meters, and electric power substation.
2. Satsuma	Harris County (MP 34.1)	X	X	X	X	Newly constructed, 3.4-acre site. One 3000 HP pump and scraper launcher receiver.
3. Buckhorn	Austin County (MP 67.5 - MP 77.5)			X	X	Future pump station. Exact location is undetermined.
4. Warda	Fayette County (MP 112.9)		X	X	X	Previously existing pump station. Currently bypassed. New 3000 - 4000 HP pump to be added. Will be similar to Cedar Valley Station.*
5. Bastrop	Bastrop County (MP 141.9)			X	X	Previously existing pump station. Currently bypassed.
6. Cedar Valley	Hays County (MP 181.6)	X	X	X	X	Newly constructed, 4.5-acre site. Two 1000 HP pumps and electrical substation.
7. Orotaga	Blanco County (MP 203.8 to 213.81)			X	X	Future pump station. Exact location is undetermined.
8. Eckert	Gillespie County (MP 227.8)		X	X	X	Previously existing pump station. Currently bypassed. New 3000 to 4000 HP pump to be added. Similar to Cedar Valley Station.*
9. Llano	Mason County (MP 265.0 to MP 275.0)			X	X	Future pump station. Exact location is undetermined.
10. Kimble County	Kimble County (MP 295.1)	X	X	X	X	Newly constructed, 13.8-acre site. Two 1000 HP pumps and electrical substation.
11. Cartman	Schleicher County (MP 334.0 - MP 344.0)			X	X	Future pump station. Exact location is undetermined.
12. Big Lake	Crockett County (MP 373.5)		X	X	X	Future station. New 3000 to 4000 HP pump to be added. Similar to Cedar Valley Station.*
13. Olson	Reagan County (MP 410.0 - MP 420.0)			X	X	Future pump station. Exact location is undetermined.
14. Crane	Crane County (MP 457.6)	X	X	X	X	Refurbished, 40-acre site. 2 pumps (4500 HP and 1000 HP), metering equipment, control building, 3 breakout tanks (171,000 bbls total) located in diked containment area. This is the origin of Crane-to-Odessa Lateral.
15. Pecos	Ward County (MP 516.2 - MP 526.2)			X	X	Future pump station. Exact location is undetermined.
16. Utica	Reeves County (MP 543.6 - 553.6)			X	X	Future pump station. Exact location is undetermined.
17. Cottonwood	Culberson County (MP 576.3)		X	X	X	Future pump station. New 3000 - 4000 HP pump to be added. Similar to Cedar Valley Station.*
18. Harris	Hudspeth County (MP 642.6 - MP 652.6)			X	X	Future pump station. Exact location is undetermined.
19. El Paso Station	El Paso County MP 694.4	X	X	X	X	Newly constructed 418-acre site. Terminus of mainline. Initially designed for 50,000 bpd pumping station to interstate pipelines. Initial storage of 900,000 bbls of product.

*Cedar Valley Station west of Austin will have more extensive secondary containment than the others, but otherwise is a prototype of future pump stations.

Table 3-3. Changes to Existing Stations and Addition of Eight Future Stations for Ultimate Build out of Longhorn Pipeline System (225,000 bpd)

Station	Changes and Additions	Horsepower Requirement Range
Galena Park	Replace pumps due to higher flow rates.	3,000 HP
Satsuma	Replace pump due to higher flow.	4,000 HP
Buckhorn	Future pump station to be located between Satsuma Station and Warda Station.	4,500 HP
Warda	Replace pump due to higher flow.	4,500 HP
Bastrop	Pump station, which is currently bypassed, located at MP 141.9 between Warda Station and Cedar Valley Station.	4,500 HP
Cedar Valley	Replace pump due to higher flow.	4,500 HP
Orotaga	Future pump station to be located between Cedar Valley Station and Eckert Station.	3,500 HP
Eckert	Replace pump due to higher flow.	4,000 HP
Llano	Future pump station to be located between Eckert Station and Kimble County Station.	4,500 HP
Kimble County	Replace pump due to higher flow.	4,500 HP
Cartman	Future pump station to be located between Kimble County Station and Big Lake Station.	5,000 HP
Olson	Future pump station to be located between MP 410.0 and MP 420.0 intermediate to Big Lake Station and Crane Station in Reagan County.	5,000 HP
Big Lake	Replace pump due to higher flow.	5,000 HP
Crane	Replace pump due to higher flow. Double storage capacity.	5,500 HP
Pecos	Future pump station to be located between MP 516.2 and MP 526.2 intermediate to Crane Station and Utica Station in Ward County.	5,000 HP
Utica	Future pump station to be located between MP 543.6 and MP 553.6 intermediate to Pecos Station and Cottonwood Station in Reeves County.	5,000 HP
Cottonwood	Replace pump due to higher flow.	5,000 HP
Harris	Future pump station to be located between MP 642.6 and MP 652.6 intermediate to Cottonwood Station and El Paso Station in Hudspeth County.	5,000 HP
El Paso	Additional storage capacity in the range of 1.5 to 2 million barrels.	-

3-1 Longhorn Pipeline System and Route Alternatives



	Segment	Status	Approximate Length (miles)	Diameter (inches)
1	Galena Park Station to EPC* connection (Valve J1)	Newly built	9	20
2	J1 to Satsuma Station	Built in 1949**	25	20
3	Satsuma Station to Crane Station	Built in 1949**	424	18
4	Crane Station to El Paso Terminal	Newly built	237	18
5	Crane Station to Odessa Lateral	Newly built	28	8
6	El Paso Terminal to Interstate Pipelines Laterals	Not yet built	8	Two 8, One 12
		Total	731	

*EPC denotes former Exxon Pipe Line Company crude oil pipeline
**Pipelines are existing with refurbishment in 1998

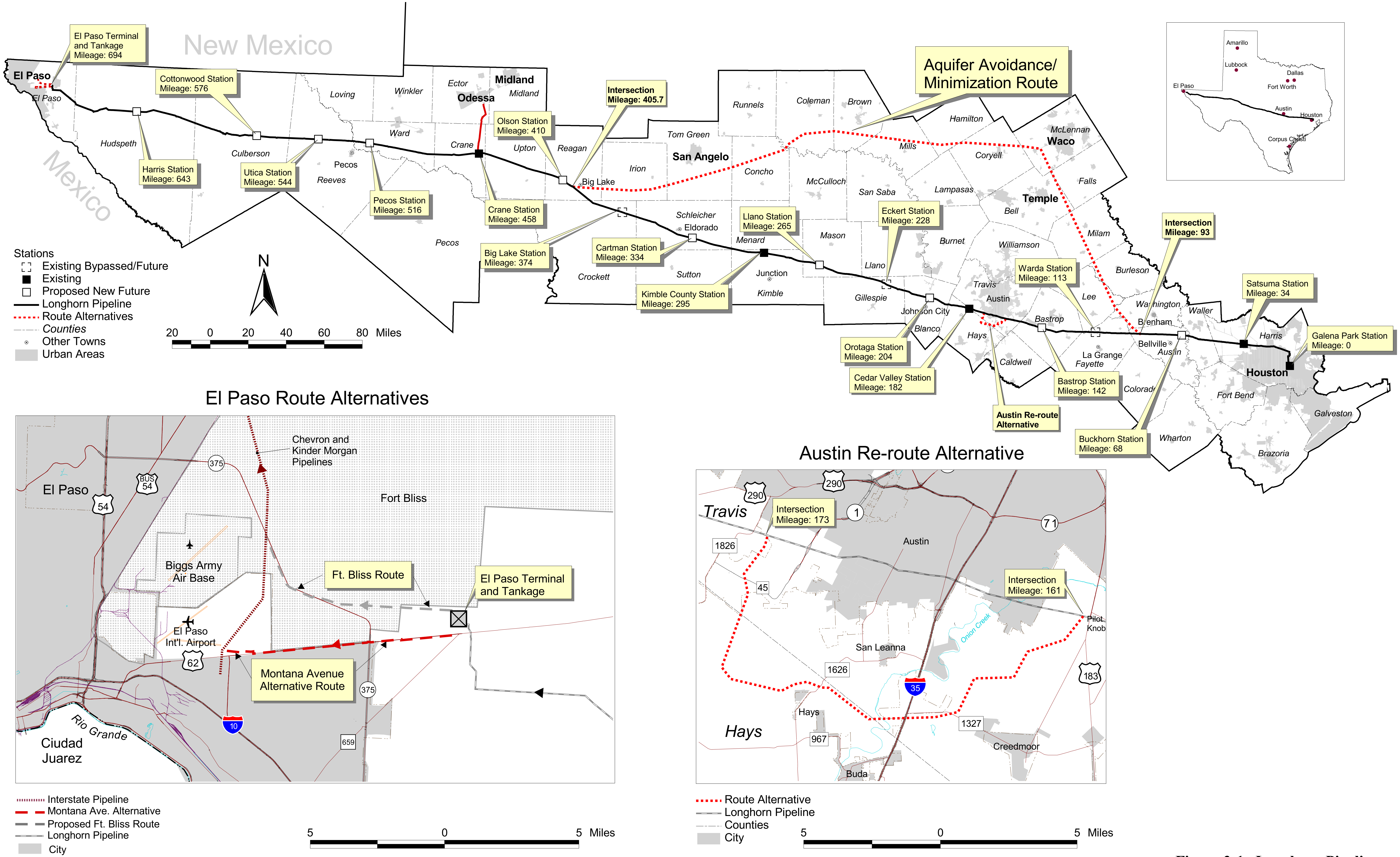


Figure 3-1. Longhorn Pipeline System and Route Alternatives