

## **1.0 PIPELINE SYSTEM ALTERNATIVES**

To supply 4 billion cubic feet per day of natural gas to the CP2 LNG Terminal in Cameron, Louisiana, CP Express evaluated existing pipeline systems in the region and focused on proximity, pipeline age and condition, and the excess capacity of each system. Based on this review, CP Express determined that a new 48-inch-diameter pipeline beginning at an interconnection point with the Transco and CJ Express pipelines near Evadale in Jasper County, Texas, could intersect existing pipelines with sufficient capacity to provide the required gas volume. The CP2 LNG Terminal's geographic position approximately 54 miles due southeast of this starting point, and the preferred locations of additional interconnect points within both the United States Army Corps of Engineers (USACE) Galveston Regulatory District (USACE-Galveston District) and USACE New Orleans Regulatory District (USACE-New Orleans District), constituted the primary dictates for the proposed pipeline route in the USACE-Galveston District, which trends west to east and is approximately 26.9 miles in length.

CP Express completed an alternatives evaluation for the segment of the Pipeline System in the USACE-Galveston District to identify the "preferred" or "proposed" Project action. The proposed pipeline route and aboveground facility locations were selected because they represent the best balance of environmental protection, economic acceptability, and technical viability for meeting the Project's stated purpose and need.

To ensure consistency in comparisons, desktop level data were used to assess route alternatives. Information used during the analysis included aerial photographs, United States Geological Survey topographic maps, National Wetlands Inventory (NWI) maps, Rextag energy mapping data, public scoping comments, and agency input.

### **1.1 NO ACTION ALTERNATIVE**

Under the no-action alternative, the segment of the Pipeline System in the USACE-Galveston District would not be constructed and associated environmental impacts would therefore be avoided. However, adoption of the no action alternative would preclude the Pipeline System's receipt of gas through existing pipeline interconnects similarly located in the USACE-Galveston District and the transport of that gas for liquefaction at and export from CP2 LNG Terminal Facilities near Cameron, Louisiana. The volume of gas available through these interconnects comprises a substantial portion of the gas supplied through the Pipeline System as a whole and, under the no action alternative, a failure to construct the proposed facilities in the USACE-Galveston District would render the Terminal Facilities' nameplate liquefaction capacity of 20 million tonnes per annum unattainable and, consequently, the Project would be nonviable. As such, the no-action alternative is not a reasonable alternative.

### **1.2 OFFSITE ROUTE ALTERNATIVES**

CP Express evaluated three offsite route alternatives that cross, at least in part, the USACE-Galveston District. The geographic and system selection criteria for two of these alternatives were that they originate at one location that allows dual interconnects with the existing Transco and CJ Express pipeline systems in Jasper County, Texas, then trend west to east to allow interconnects with the existing TETCO and Boardwalk pipeline systems that cross Newton County, Texas and Calcasieu Parish, Louisiana, and continue through Calcasieu Parish to allow interconnects with the existing pipeline systems of Enable Gulf Run, Florida Gas Transmission, and Kinder Morgan. The third route alternative was evaluated in response to a Federal Energy

Regulatory Commission data request (Accession No. 20230413-3052) to provide and assess an alternative pipeline route with the intent of minimizing the crossing of environmental justice (EJ) communities. All three route alternatives are depicted in Figure 1.2-1.

Given the CP Express Pipeline System is necessarily located in two USACE regulatory districts (Galveston and New Orleans), realistic route alternatives that involve the USACE-Galveston District necessarily cross the boundary between the two districts at different locations, rather than being wholly confined to the USACE-Galveston District and sharing a single crossing location. Thus, any legitimate offsite route alternative analysis, while affording the capacity for comparison of those segments within the USACE-Galveston District alone, must consider the full route across both districts for each alternative.

Any route that follows a west to east alignment from the origination point in Jasper County, Texas necessarily crosses the Sabine River, which constitutes the north/south dividing line between the states of Texas and Louisiana in this region. From an environmental impact perspective, the crossing location and method are significant considerations during the route selection process. Accordingly, the two offsite route alternatives to the proposed route are identified as the Sabine River Northern Alternative and the Sabine River Southern Alternative. All three routes are discussed in more detail below and an environmental comparison is presented in Table 1.2-1.

### **Proposed Route Alternative**

The proposed route originates at Milepost (MP) 0.0 in Jasper County, Texas at a proposed interconnect with existing pipelines operated by Transco and CJ Express. The interconnect site is about 1.1 miles east of Farm-to-Market Road 105, which runs between the towns of Pine Forest and Evadale in this locality. The route extends due east for about 14.8 miles through predominantly rural land characterized by linear utility corridors and wooded land supporting timber production, crossing into Newton County, Texas at MP 7.5. From MP 14.8 to MP 18.1, the route trends southeast through similar terrain to the proposed site for interconnects with existing pipelines operated by TETCO and Boardwalk.

From MP 18.1 to 25.8, the proposed route trends east, crossing the bottomland hardwood-dominated floodplain of the Sabine River, the Sabine River itself between MP 20.0 and MP 20.1, and a section of the Sabine River Wildlife Management Area between MP 20.0 and MP 20.7. The Sabine River forms the boundary between Newton County, Texas and Calcasieu Parish, Louisiana.

Between MP 25.8 and MP 26.9, the proposed route runs southeast through predominantly wooded land to the common boundary of the USACE-Galveston District and the USACE-New Orleans District. An interconnect with CP Express's 24-inch-diameter Enable Gulf Run Lateral pipeline is proposed at MP 26.2. Except for the first 150 feet, this 6.0-mile-long pipeline, which trends north from the interconnect site, is within the USACE-New Orleans District. To ensure that the route alternatives analysis affords an accurate comparison of the pipeline facilities to be constructed and operated under each scenario, the Enable Gulf Run Lateral pipeline is included with the 50-mile-long CP Express pipeline segment under the Proposed Route Alternative, amounting to 56.0 miles of pipeline in total.

The Proposed Route Alternative segment in the USACE-Galveston District was selected to take advantage of collocation opportunities in a region characterized by forested land:

approximately 18.9 miles (79 percent) of the shared route length is collocated with other linear rights-of-way, primarily powerline rights-of-way.

The common terminus for the three route alternatives that cross the USACE-Galveston District is in Calcasieu Parish, Louisiana at MP 50.0 on the proposed route. The segment of the proposed route between MP 26.9 and MP 50.0 is wholly located within the USACE New Orleans District and continues to trend southeast, crossing predominantly open agricultural land, with much fewer and less extensive timbered areas than the segment from MP 0.0 to 26.9, located in the USACE-Galveston District. MP 50.0 is situated on the east side of the Intracoastal Waterway near the northern tip of Calcasieu Lake.

Of the 50.0-mile-long Proposed Route Alternative, 26.9 miles are in the USACE Galveston District and 33.1 miles are in the USACE-New Orleans District.

### **Sabine River Northern Alternative**

The Sabine River Northern Alternative follows the same alignment as the proposed route from MP 0.0 to MP 2.5. At MP 2.5, the Sabine River Northern Alternative deviates from the proposed route and proceeds northeast for approximately 14.1 miles, adjacent to an existing foreign pipeline, across forestland, State Highway (SH) 87, and the Sabine River.

After crossing the Sabine River, the Sabine River Northern Alternative continues to follow the existing foreign pipeline east across forestland for approximately 9.1 miles until it reaches the northern end of the proposed Enable Gulf Run Lateral. The route continues south along the same alignment as the Enable Gulf Run Lateral before rejoining the proposed route at MP 26.2 and following the same alignment as the proposed route to MP 50.0.

Of the 55.6-mile-long Sabine River Northern Alternative, 23.3 miles are in the USACE Galveston District and 32.3 miles are in the USACE-New Orleans District.

### **Sabine River Southern Alternative**

As mentioned previously, the Sabine River Southern Alternative was identified to evaluate a pipeline alignment that minimizes the crossing of EJ communities. From MP 0.0, the Sabine River Southern Alternative trends south southeast along existing rights-of-way and greenfield alignments, crossing a mix of forestland and open land for about 25.1 miles to a point southwest of Bridge City in Orange County, Texas. Here, the route turns east and proceeds for 33.6 miles along existing rights-of-way and greenfield alignments through Cameron and Calcasieu Parishes, crossing the Lower Neches Wildlife Management Area and extensive estuarine wetlands until it rejoins the proposed pipeline route at MP 50.0 east of the Intracoastal Waterway.

Of the 58.7-mile-long Sabine River Southern Alternative, 36.7 miles are in the USACE Galveston District and 22.0 miles are in the USACE-New Orleans District.

TABLE 1.2-1							
CP Express Pipeline System Comparison of Offsite Pipeline Route Alternatives Crossing USACE-Galveston District							
Environmental Factor	Unit	Proposed Pipeline Route Alternative <sup>a</sup>		Sabine River Northern Alternative		Sabine River Southern Alternative	
		USACE-Galveston District Only	Full route to MP 50.0	USACE-Galveston District Only	Full route to MP 50.0	USACE-Galveston District Only	Full route to MP 50.0
Length	miles	26.9	50.0	23.3	55.6	36.7	58.7
Length adjacent to existing right-of-way	miles	19.7	25.8	23.0	38.0	27.0	34.5
Forestland crossed	miles	11.5	12.5	8.6	12.3	5.3	6.9
Agricultural land crossed	miles	0.4	18.1	0.9	19.9	6.0	7.1
Waterbodies crossed	no.	31	90	32	107	43	44
NWI-mapped wetlands crossed	miles	6.1	9.6	6.0	9.7	21.2	25.7
Palustrine forested	miles	2.9	3.4	4.5	4.7	4.5	4.5
Palustrine scrub shrub	miles	0.7	0.8	0.0	0.1	0.3	0.3
Palustrine emergent	miles	2.5	3.9	1.5	3.2	0.3	3.1
Estuarine emergent	miles	0.0	1.5	0.0	1.7	16.1	17.8
Essential Fish Habitat <sup>b</sup>	miles	0.0	2.5	0.0	2.5	9.2	23.9
Fresh herbaceous marsh	miles	0.0	1.3	0.0	1.3	0.0	1.1
Brackish herbaceous marsh	miles	0.0	0.0	0.0	0.0	0.8	3.4
Intermediate herbaceous marsh	miles	0.0	1.2	0.0	1.2	8.4	19.4
State Wildlife Management Areas	no. (miles)	1 (0.6)	1 (0.6)	0	0	1 (3.2)	1 (3.2)
Potential Environmental Justice Communities Crossed <sup>c</sup>	no.	3	3	1	1	0	0
Existing residences/buildings within 100 feet of the pipeline centerline	no.	1	1	0	0	3	5
<sup>a</sup> The proposed pipeline route alternative includes both the CP Express pipeline and the Enable Gulf Run Lateral pipeline. <sup>b</sup> Nyman et al., 2022. <sup>c</sup> Data based on EJScreen V2.11 (United States Environmental Protection Agency, 2023).							

Of the three route alternatives within the USACE-Galveston District, the Sabine River Northern Alternative covers is the shortest (23.3 miles), although the Proposed Route Alternative is roughly comparable in length (26.9 miles), while the Sabine River Southern Alternative is significantly longer (36.7 miles) than the others. However, over the full comparison area, which extends from MP 0.0 to MP 50.0 on the proposed route and includes the route alternative segments that cross the USACE-New Orleans District, the Proposed Route Alternative is shorter (50.0 miles) than either the Sabine River Northern Alternative (55.6 miles) or the Sabine River Southern Alternative (58.7 miles). Thus, applying shorter route length as a basic measure of environmental impact minimization, the Proposed Route Alternative is the most favorable.

The segment of the Sabine River Northern Alternative in the USACE-Galveston District crosses slightly more agricultural land and slightly less forestland than the corresponding section of the Proposed Route Alternative; it also shows a higher percentage of collocation. One disadvantage of the Sabine River Northern Alternative in the USACE-Galveston District is that it crosses one more waterbody and 1.6 miles more forested wetland than the corresponding segment of the Proposed Route Alternative. While the Proposed Route Alternative crosses the Sabine Island Wildlife Management Area (which is avoided by the Sabine River Northern Alternative), CP Express plans to install the pipeline across the wildlife management area using the horizontal directional drill construction method, which will avoid trenching and mechanized tree clearing. With respect to the full length of each route alternative through both the USACE-Galveston District and the USACE-New Orleans District, the Proposed Route Alternative crosses significantly less waterbodies than the Sabine River Northern Alternative.

The Sabine River Southern Alternative offers no overriding environmental advantages compared with the Proposed Route Alternative or the Sabine River Northern Route Alternative, either for the route segments in the USACE-Galveston District or for the full route lengths. While potential EJ communities are avoided and the number of waterbody crossings is lower overall, crossing lengths are significantly greater with respect to estuarine emergent wetlands and essential fish habitat. The Sabine River Southern Alternative also crosses 3.2 miles of a state wildlife management area and has proximity to more residences than the other alternatives.

The Proposed Route Alternative has been configured to receive gas from five receipt points, which represents the full number of receipt points for the entire CP Express pipeline between MP 0.0 and the CP2 LNG Terminal at MP 85.4. These five receipt points (by milepost), the seven existing pipeline systems providing the gas, and the USACE regulatory district in which they are located are:

- MP 0.0 – Transco and CJ Express (Galveston);
- MP 18.1 – TETCO and Boardwalk (Galveston);
- MP 26.2 – Enable Gulf Run Transmission (Galveston) via CP Express's proposed Enable Gulf Run Lateral;
- MP 31.0 – Florida Gas Transmission (New Orleans); and
- MP 44.4 – Kinder Morgan Pipeline (New Orleans).

Each interconnect location has been carefully selected to ensure that construction and operational feasibility is guaranteed, with respect to both the existing supply systems and the proposed CP Express Pipeline System, and that appropriate gas specifications are met in terms of volume, pressure, reliability, composition, etc. While it may be possible to connect with at least some of the above-listed pipeline systems on the Sabine River Northern Alternative and Sabine River Southern Alternative, it is unlikely that the same system integration and functional efficiency

could be achieved with any less environmental impact than the Proposed Route Alternative. Other than metering facilities at the receipt locations, none of the above-listed companies needs to build additional pipeline infrastructure to meet CP Express's gas supply needs.

For the reasons discussed above, the Proposed Route Alternative was selected as the Least Environmentally Damaging Practicable Alternative (LEDPA) and the Sabine River Northern Alternative and Sabine River Southern Alternative were eliminated from further analysis.

### 1.3 Onsite Route Alternatives

Onsite route alternatives are defined as an alignment that deviates away from the base pipeline route to avoid site-specific routing constraints and/or environmentally sensitive areas. Following the selection of the initially proposed pipeline route, CP Express completed additional desktop analysis and field reviews to further refine the pipeline alignment. The discussion below provides an analysis of the onsite route alternatives evaluated within the USACE-Galveston District.

#### Robertson Alternative

The Robertson Alternative was identified to avoid a residential development south of Robertson in Jasper County, Texas (see Figure 1.3-1). The Robertson Alternative deviates from the initially proposed pipeline route at milepost (MP) 6.4 and proceeds northeast crossing SH 62. After crossing SH 62, the Robertson Alternative proceeds east, crossing primarily forestland and following property lines to the extent practicable, before turning southeast and rejoining the initially proposed pipeline route at MP 8.2.

An environmental comparison of the Robertson Alternative with the corresponding segment of the initially proposed pipeline route is presented in Table 1.3-1.

TABLE 1.3-1 CP Express Pipeline System Comparison of the Robertson Alternative to the Corresponding Segment of the Proposed Pipeline Route			
Environmental Factor	Unit	Initially Proposed Pipeline Route	Robertson Alternative
Length	miles	1.7	1.8
Length adjacent to existing right-of-way	miles	1.7	0
Forestland crossed	miles	1.3	1.5
Waterbodies crossed	no.	1	1
Wetlands crossed	miles	0.1	0.4
Existing residences/buildings within 100 feet of the pipeline centerline	no.	8	1

The primary advantage of the Robertson Alternative is that it crosses within 100 feet of seven fewer residences/buildings than the corresponding section of the initially proposed pipeline route. Residential homes and buildings about the Entergy Corporation (Entergy) electric transmission line right-of-way in this area and there is insufficient space between the right-of-way and the residences to allow for collocated pipeline construction. Crossing over to the south side of the Entergy electric transmission line right-of-way would not be feasible because there are similar constraints on the south side. While the Robertson Alternative is slightly longer and affects



slightly more wetlands, construction along the initially proposed route would not be feasible due to the presence of existing residences and buildings abutting the Entergy right-of-way. For this reason, CP Express eliminated the initially proposed pipeline route from further analysis and selected the Robertson Alternative as the LEDPA.

### Howard Road Alternative

The Howard Road Alternative was identified to increase the amount of separation between the CP Express pipeline and existing residences along Howard and Ozan Roads in Calcasieu Parish, Louisiana (see Figure 1.3-2). The Howard Road Alternative deviates from the initially proposed pipeline route at approximately MP 22.4 and proceeds southeast across forestland and recently harvested timber tracts before turning east and rejoining the initially proposed pipeline route at MP 23.4 near SH 109.

An environmental comparison of the Howard Road Alternative with the corresponding segment of the initially proposed pipeline route is presented in Table 1.3-2.

TABLE 1.3-2 CP Express Pipeline System Comparison of the Howard Road Alternative to the Corresponding Segment of the Proposed Pipeline Route			
Environmental Factor	Unit	Initially Proposed Pipeline Route	Howard Road Alternative
Length	miles	1.1	1.0
Length adjacent to existing right-of-way	miles	0.6	0.0
Forestland crossed	miles	1.0	0.7
Waterbodies crossed	no.	1	1
Wetlands crossed	miles	0	0.2
Existing residences/buildings within 100 feet of the pipeline centerline	no.	0	0

The main benefit of the Howard Road Alternative is that it avoids construction near existing residences along Howard Road and Ozan Road. In addition, the Howard Road Alternative crosses 0.3 mile less forestland than the corresponding segment of the initially proposed pipeline route. While the Howard Road Alternative crosses an additional 0.2 mile of wetlands, the wetland impacts will be temporary and short term because the scrub-shrub and emergent wetlands will revegetate within several years after construction is completed. For these reasons, CP Express eliminated the initially proposed pipeline route from further analysis and selected the Howard Road Alternative as the LEDPA.

### Big Woods Mitigation Bank Alternative

The Big Woods Mitigation Bank Alternative was identified to avoid the proposed Big Woods Mitigation Bank in Calcasieu Parish, Louisiana (see Figure 1.3-3). Peace River Mitigation, LLC is planning to develop the Big Woods Mitigation Bank, which will encompass 883.4 acres placed in a conservation easement, including 807.4 acres in which wetland enhancement activities are planned (USACE, 2019). The Big Woods Mitigation Bank Alternative deviates from the initially proposed pipeline route at MP 24.5 and proceeds south and then east to a point on the east side of No. 7 Road. From this point, the alternative proceeds southeast adjacent to No. 7 Road, crossing primarily timber tracts and the Sabine River Diversion System. After crossing

Big Woods Vinton Road, the alignment continues southeast along a greenfield alignment across primarily pastureland before rejoining the initially proposed pipeline route at MP 31.0.

An environmental comparison of the Big Woods Mitigation Bank Alternative with the corresponding segment of the initially proposed pipeline route is presented in Table 1.3-3.

TABLE 1.3-3 CP Express Pipeline System Comparison of the Big Woods Mitigation Bank Alternative to the Corresponding Segment of the Proposed Pipeline Route			
Environmental Factor	Unit	Initially Proposed Pipeline Route	Big Woods Mitigation Bank Alternative
Length	miles	7.9	6.4
Length adjacent to existing right-of-way	miles	3.5	2.1
Forestland crossed	miles	3.2	2.9
Waterbodies crossed	no.	21	14
Big woods mitigation bank crossing	miles	1.0	0.0
Wetlands crossed	miles	0.0	0.1
Existing residences/buildings within 100 feet of the pipeline centerline	no.	0	0

The main advantage of the Big Woods Mitigation Bank Alternative is that it avoids crossing the proposed Big Woods Mitigation Bank. The other advantages of the alternative are that it is 1.5 miles shorter than the corresponding segment of the initially proposed pipeline route and crosses less forestland and fewer waterbodies. For these reasons, CP Express eliminated the initially proposed pipeline route from further analysis and selected the Big Woods Mitigation Bank Alternative as the LEDPA.

## 1.4 Meter Station Alternatives

Meter station facilities on the proposed route will be located at the interconnects with existing pipelines and will be constructed by the gas supply companies. While recognizing the need to ensure proper system integration and functionality (see Section 1.3), to the extent practicable CP Express selected meter station sites that avoid impacts on sensitive mapped resources (e.g., wetlands and waterbodies) and, to minimize forest fragmentation, abut existing facilities. By selecting two sites (at MP 0.0 and MP 18.2) that will each support two interconnects rather than just one, the overall number of sites has been reduced from seven to five. Also, by locating other aboveground facilities (e.g., pig launchers/receivers and mainline valves) at the meter station sites, the overall aboveground facility footprint has been minimized. CP Express did not identify any environmental concerns at the meter station sites requiring the need to identify and evaluate alternative meter station sites or configurations.



## REFERENCES:

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