

2.0 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

This chapter describes the proposed Keystone XL Project (proposed Project) and alternatives to the proposed Project that will be analyzed in full in this Final Supplemental Environmental Impact Statement (Final Supplemental EIS). This chapter also describes those alternatives that were considered by the U.S. Department of State (the Department), but were eliminated from detailed analysis in the document. All alternatives that were eliminated from further analysis were subjected to a screening process to assess whether they were reasonable. In all, three alternatives were carried forward for full analysis in this Final Supplemental EIS in addition to the Proposed Action. These three alternatives include:

- No Action Alternative, including three intermodal options involving rail/pipeline, rail/tanker transport, and rail direct to the Gulf Coast;
- Keystone XL 2011 Steele City Alternative (2011 Steele City Alternative), as proposed in the 2011 Final EIS, provided as a reference point to illustrate the differences between it and the proposed Project and other alternatives; and
- I-90 Corridor Alternative.

Consistent with the National Environmental Policy Act, federal agencies must consider reasonable alternatives to a proposed action, which in this case is an application for a Presidential Permit for an international border crossing for a pipeline and ancillary facilities. Considering alternatives helps to ensure that ultimate decisions concerning the proposed Project are well founded and consistent with other national policy goals and objectives.

The Department, aided by the cooperating agencies, conducted an analysis of alternatives to the proposed Project. The alternatives were developed based on the purpose and need for the proposed Project, as discussed in Section 1.3, Purpose and Need. The alternatives analysis relied on information obtained through independent research and analyses conducted by the Department and its third-party contractor, information provided to the Department, state permitting applications (including supplemental submittals), and information and comments provided during the public comment period on the Draft Supplemental EIS and during scoping for this Final Supplemental EIS.

TransCanada Keystone Pipeline, LP (Keystone) proposes to construct, operate, maintain, inspect, and monitor a pipeline system that would transport crude oil from its existing facilities in Hardisty, Alberta, Canada, as well as crude oil from an on-ramp in Baker, Montana, to Steele City, Nebraska. The proposed pipeline would connect at that point to the existing Keystone Cushing Extension pipeline (see Figure 2.0-1), which extends from Steele City, Nebraska, to Cushing, Oklahoma.

The proposed Project would have the capacity to deliver up to 830,000 barrels per day (bpd) of crude oil. Keystone has firm, long-term contracts to transport approximately 555,000 barrels per

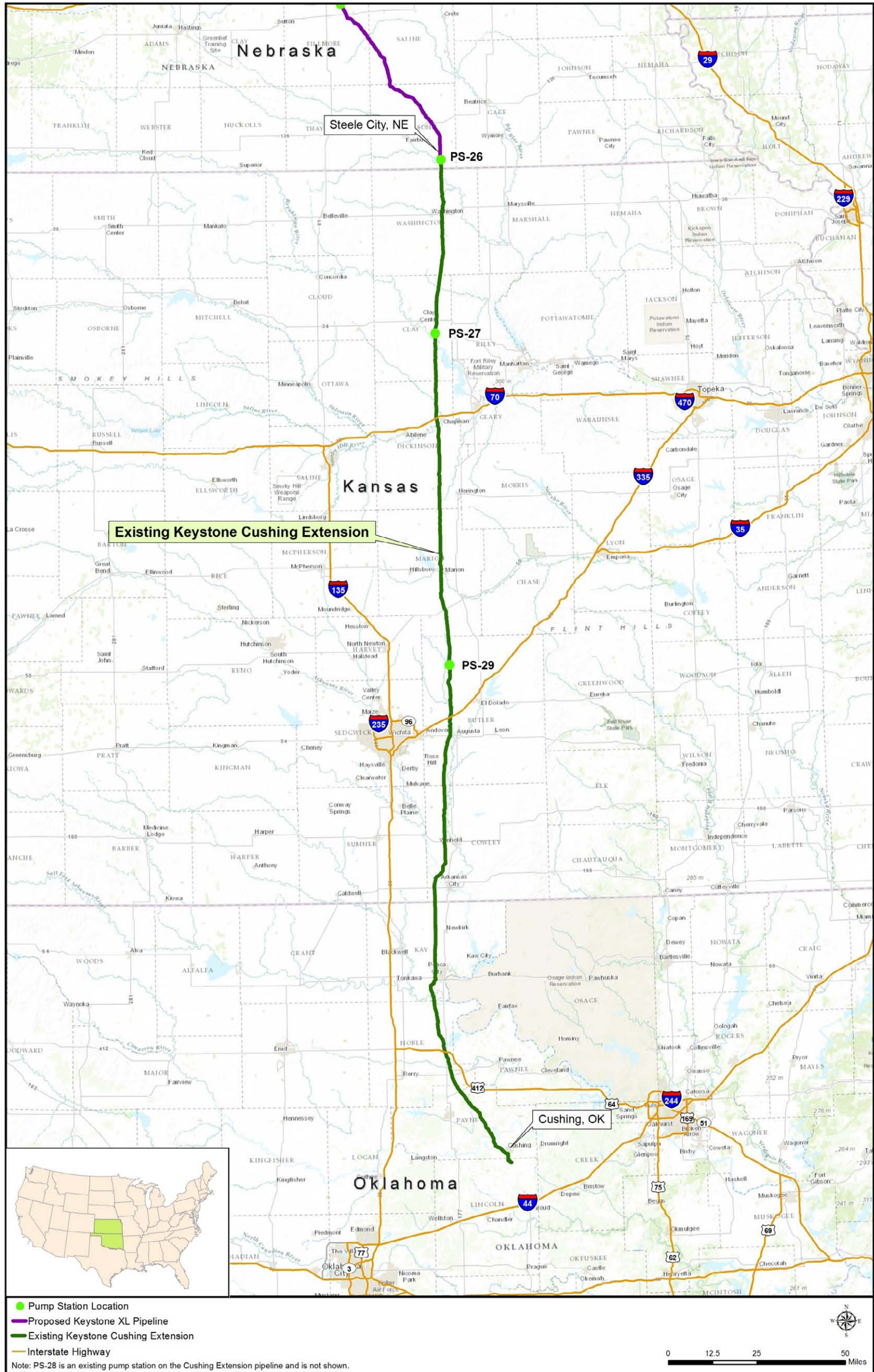
day (bpd) of WCSB crude oil on the proposed Project to existing Gulf Coast area¹ delivery points and 155,000 bpd of WCSB crude oil to Cushing, Oklahoma. This 155,000 bpd is currently transported to Cushing, Oklahoma, via the existing Keystone Oil Pipeline Project, which includes the Keystone Mainline and the Keystone Cushing Extension (see Section 1.2, Overview of Proposed Project). If the proposed Project were approved and implemented, Keystone would transfer shipment of crude oil under those contracts to the proposed Project. In addition, the proposed Project has firm commitments to transport approximately 65,000 bpd of crude oil, and could ship up to 100,000 bpd of crude oil, originating in the Williston Basin in Montana and North Dakota, which would be delivered to the proposed Project through the Keystone Marketlink, LLC, Bakken Marketlink Project in Baker, Montana (see Section 2.1.12.1, Bakken Marketlink Project).

The WCSB crude oil would be extracted predominantly from the oil sands (also referred to as tar sands), which are primarily a combination of clay, sand, water, and bitumen. Bitumen is a material similar to soft asphalt and is extracted from the ground by mining or by injecting steam underground to heat it to a point where it liquefies and can be pumped to the surface. Raw bitumen is too thick to be transported by pipeline. To overcome this, producers reduce the density of the bitumen, generally by diluting it with light, low-viscosity petroleum compounds. Bitumen might require as much as 40 percent dilution. The bitumen can be thinned by mixing it with diluents, which are light hydrocarbon liquids such as natural gas condensate (a low-density mixture of hydrocarbon liquids that are present as gases in the raw natural gas produced and which change from gas to liquid if the temperature is reduced), refinery naphtha (a very light oil obtained from natural gas production), or a lighter crude oil such as synthetic crude oil. This diluted bitumen is referred to as *dilbit* or *synbit*. This dilution is done to reduce the viscosity of the bitumen so that it is in a more liquid form that can be transported via pipeline.

Dilbit is also processed to remove sand, water, and other impurities. Dilbit is considered a heavy crude oil. The American Petroleum Institute (API) weight, known as API gravity, is a measure of how heavy or light a petroleum liquid is compared to water. If its API gravity is greater than 10° API, it is lighter and floats on water; if less than 10° API, it is heavier and sinks. As explained in Section 1.4, Market Analysis, crude oil may be classified as light, medium, or heavy according to its measured API gravity. Dilbit is considered a heavy crude oil and has an API gravity of around 20° API.

Another type of Canadian crude oil that would be transported by the proposed Project is synthetic crude oil. Synthetic crude oil is produced from bitumen through a process called *upgrading*. Upgrading means using fractional distillation and/or chemical treatment to convert bitumen and reduce its viscosity so that it can be pumped through pipelines (bitumen is 1000 times more viscous than light crude oil). This process produces a medium-weight crude oil. Both synthetic crude oil and dilbit are similar in composition and quality to the crude oils currently transported in pipelines in the United States and being refined in Gulf Coast refineries. Neither type of crude oil requires heating for transport in pipelines.

¹ Unless otherwise specified, in this Final Supplemental EIS the Gulf Coast area includes coastal refineries from Corpus Christi, Texas, through the New Orleans, Louisiana, region. See Section 1.4, Market Analysis, for a description of refinery regions.



Source: TransCanada 2012, Esri 2013

Figure 2.0-1 Existing Keystone Cushing Extension

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This chapter includes the following sections:

- Overview of the Proposed Project (Section 2.1), which includes a detailed discussion of the proposed Project, including land requirements, aboveground facilities, design and construction procedures, operation and maintenance, and connected actions, among other aspects; and
- Description of Alternatives (Section 2.2), which describes the process used to identify reasonable alternatives to the proposed Project and provides an overview of each of those alternatives.

Information presented in this Final Supplemental EIS on the proposed Project was obtained from various documents, including the following sources:

- Keystone's application to the Department for a Presidential Permit, dated May 4, 2012;
- The Department's Final EIS and attachments, dated August 26, 2011, and prepared for a previous Keystone application;
- Keystone's Environmental Report on the proposed Project;
- Keystone's Supplemental Environmental Report for the Nebraska Reroute portion of the proposed Project;
- Keystone's responses to the Department's data requests; and
- Public comments received.

References

Esri. 2013. World Imagery (Aerial Photography), USA Topo Maps (Topographic Mapping), and World Street Map (Administrative and Political Boundaries and Transportation). Contributing Data Sources, World Imagery: DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. Contributing Data Sources, USA Topo Maps: DeLorme, Copyright © 2013 National Geographic Society, i-cubed, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community. Contributing Data Sources, World Street Map: DeLorme, NAVTEQ, USGS, Intermap, iPC, METI, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, Bing Maps.

TransCanada Keystone Pipeline, LP. 2012. Keystone Cushing Extension information provided via shapefile. Received November 16, 2012.

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