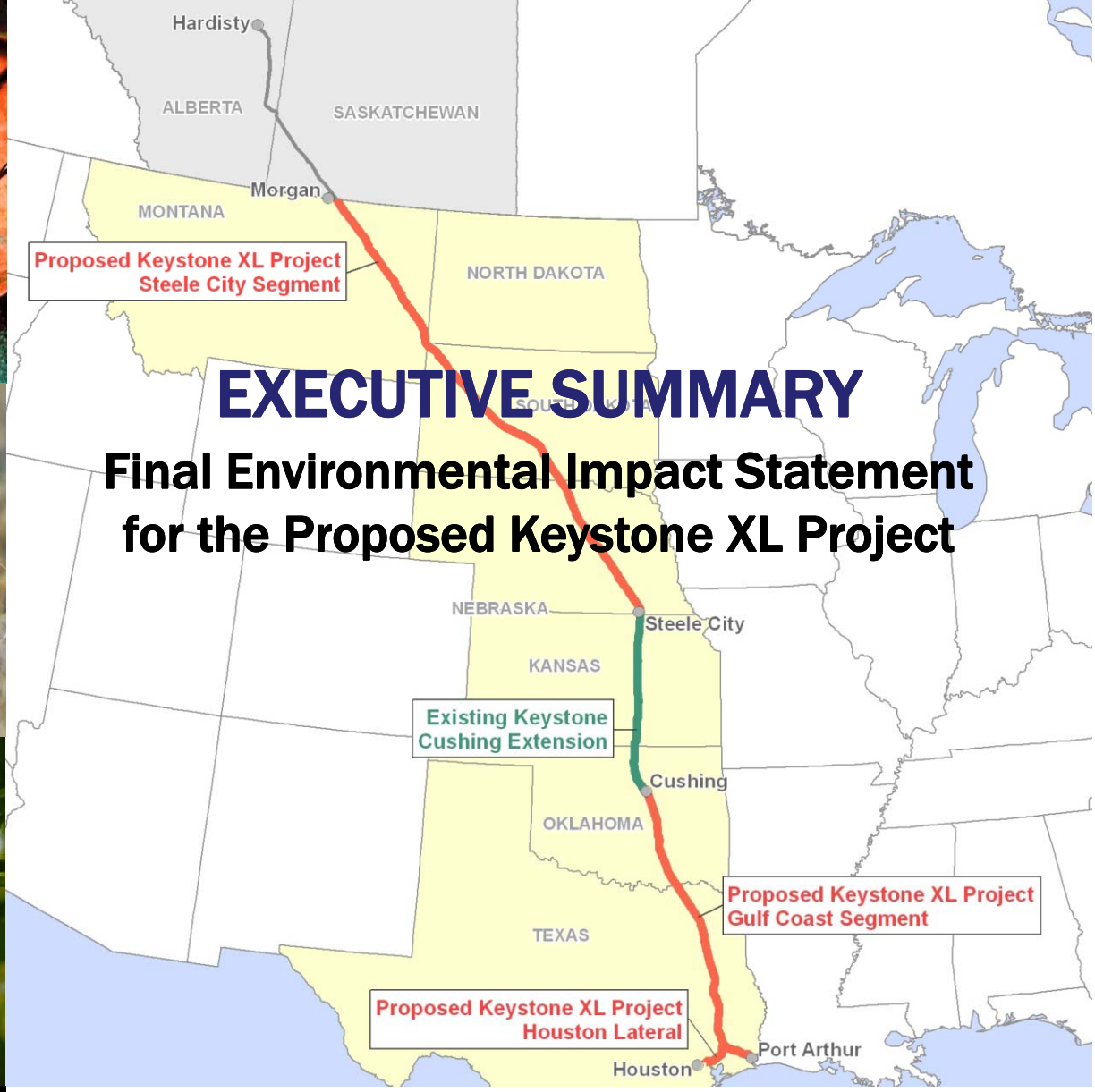

EXECUTIVE SUMMARY

Final Environmental Impact Statement for the Proposed Keystone XL Project

August 26, 2011

United States Department of State
Bureau of Oceans and International
Environmental and Scientific Affairs

Table of Contents

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INTRODUCTION

In September 2008, TransCanada Keystone Pipeline, LP (Keystone) filed an application for a Presidential Permit with the U.S. Department of State (DOS) to build and operate the Keystone XL Project. The proposed Project would have the capacity to transport 700,000 barrels per day (bpd) of crude oil to delivery points in Oklahoma and southeastern Texas.

This Executive Summary of the final environmental impact statement (final EIS) summarizes the proposed Project, including the purpose of and need for the Project, and the major conclusions and areas of concern raised by agencies and the public. More detailed information on the proposed Project, alternatives to the proposed Project, and the associated potential environmental impacts is presented in the final EIS that is provided in the CD in the sleeve on the back page.

PRESIDENTIAL PERMITTING PROCESS

All facilities which cross the international borders of the United States require a Presidential Permit. For liquid hydrocarbon pipelines, the President, through Executive Order 13337, directs the Secretary of State to decide whether a project is in the national interest before granting a Presidential Permit.

As part of the Presidential Permit review process, DOS determined that it should prepare an EIS consistent with the National Environmental Policy Act (NEPA). DOS is the lead federal agency for the NEPA environmental review of the Proposed Project because the need for a Presidential Permit is the most substantial federal decision related to the Proposed Project. To assist in preparing the EIS, DOS retained an environmental consulting firm, Cardno ENTRIX, following DOS guidelines on third-party contracts. The DOS environmental and safety review of the proposed Project that lead to the final EIS was conducted for nearly 3 years and included consultations with the third-party contractor, cooperating agencies, and scientists and engineers with expertise in key areas of concern related to the proposed Project.

The determination of national interest involves consideration of many factors, including energy security; environmental, cultural, and economic impacts; foreign policy; and compliance with relevant federal regulations. Before making a decision, DOS will consult with the eight federal agencies identified in Executive Order 13337: the Departments of Energy, Defense, Transportation, Homeland Security, Justice, Interior, and Commerce, and the Environmental Protection Agency (EPA). DOS will also solicit public input on the national interest determination by accepting written comments and holding comment meetings in the six states traversed by the proposed route and in Washington, D.C.

Figure ES-1 lists the major events, public outreach activities, and other details of the environmental review and national interest determination processes.

Aboveground Facilities

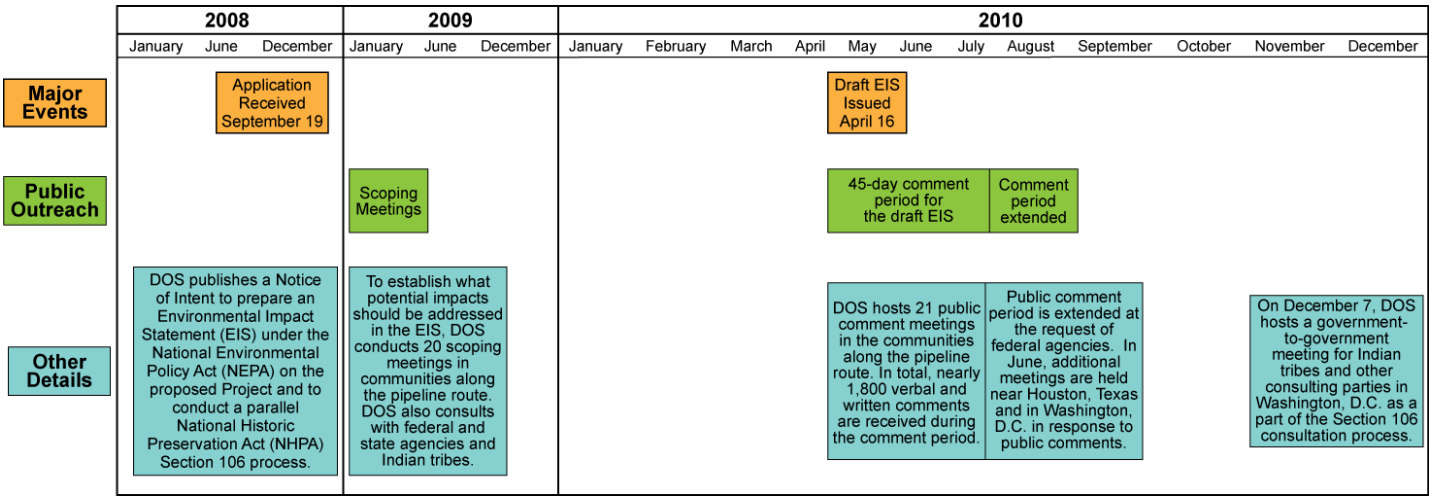
- 30 pump stations on 5- to15-acre sites
- Delivery facilities at Cushing, Oklahoma and Nederland and Moore Junction, Texas
- Densitometer sites located at all injection points and at all delivery points
- 112 mainline valves along pipeline and 2 mainline valves at each pump station
- Tank farm at Cushing, Oklahoma on a 74-acre site

See Section 2.2 for further information on aboveground facilities.

SUMMARY OF THE KEYSTONE XL PROJECT

The proposed Keystone XL Project consists of a crude oil pipeline and related facilities that would primarily be used to transport Western Canadian Sedimentary Basin crude oil from an oil supply hub near Hardisty, Alberta, Canada to delivery points in Oklahoma and Texas. The proposed Project would also be capable of transporting U.S. crude oil to those delivery points. The U.S. portion of the pipeline would begin near Morgan, Montana at the international border of the United States and extend to delivery points in Nederland and Moore Junction, Texas. There would also be a delivery point at Cushing, Oklahoma. These three delivery points would provide access to many other U.S. pipeline systems and terminals, including pipelines to refineries in the U.S. Gulf Coast region. Market conditions, not the operator of the pipeline, would determine the refining locations of the crude oil.

Figure ES-1
U.S. Department of State Environmental and National Interest Determination Review Processes



The proposed Keystone XL pipeline would consist of approximately 1,711 miles of new 36-inch-diameter pipeline, with approximately 327 miles of pipeline in Canada and 1,384 miles in the U.S. Figure ES-3 depicts the three segments of the proposed Project in the U.S. As noted in that illustration, the proposed Project would connect to the northern and southern ends of the existing Cushing Extension of the Keystone Oil Pipeline System.

Figure ES-4 illustrates the construction sequence that would be followed for the proposed Project. The proposed Project would also include 30 electrically operated pump stations, 112 mainline valves, 50 permanent access roads, and a new oil storage facility in Cushing, Oklahoma. If market conditions change, the capacity of the proposed Project could be increased to 830,000 bpd by increasing pumping capacity at the proposed pump stations.

The overall proposed Keystone XL Project is estimated to cost $7 billion. If permitted, it would begin operation in 2013, with the actual date dependant on the necessary permits, approvals, and authorizations.

Transport of Canadian Oil Sands Crude Oil

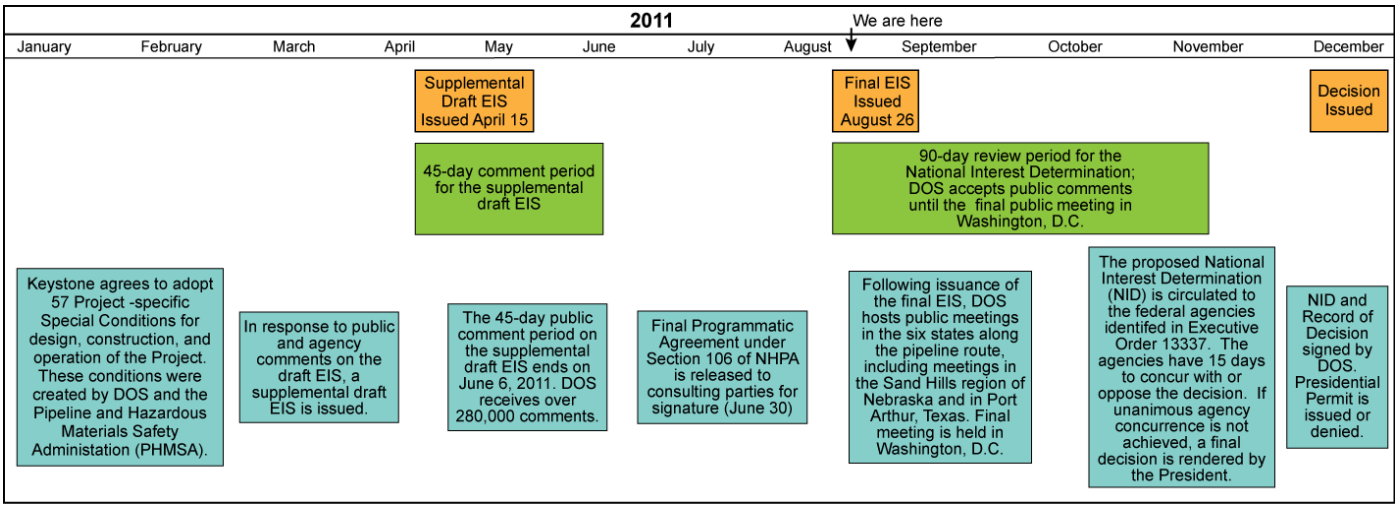
The proposed Keystone XL Project would primarily transport crude oil extracted from the oil sands areas in Alberta, Canada. Oil sands (which are also referred to as tar sands) are a combination of clay, sand, water, and bitumen, which is a material similar to soft asphalt. Bitumen is extracted from the ground by mining or by injecting steam underground to heat the bitumen to a point where it liquefies and can be pumped to the surface.

Bitumen is treated in several ways to create crude oil suitable for transport by pipeline and refining. The types of Canadian crude oil that would be transported by the proposed Project would primarily consist of synthetic crude oil and diluted bitumen.

Synthetic crude oil is produced from bitumen using refining methods – a process termed upgrading – that in general converts bitumen into lighter liquid hydrocarbons. In other words, the bitumen is converted into a crude oil similar to conventional crude oil.

Figure ES-2
36-Inch-Diameter Crude Oil Pipe

Figure ES-1 (Cont.)
U.S. Department of State Environmental and National Interest Determination Review Processes



Diluted bitumen – often termed dilbit – consists of bitumen mixed with a diluent, which is a light hydrocarbon liquid such as natural gas condensate or refinery naphtha. The bitumen is diluted to reduce its viscosity 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. The diluents in dilbit are integrally combined with the bitumen to form a crude oil that is a homogenous mixture that does not physically separate when released.

Both synthetic crude oil and dilbit are similar in composition and quality to the crude oils currently transported in pipelines in the U.S. and being refined in Gulf Coast refineries. Neither type of crude oil requires heating for transport in pipelines.

Pipe Specifications

- Material: High-strength X70 steel pipe, API 5L
- Outside diameter: 36 inches
- Operating Pressure: 1,308 psig
- External Coating: fusion-bonded epoxy

See Section 2.3.1 for further information on pipe specifications.

Transport of U.S. Crude Oil

In late 2010, Keystone Marketlink, LLC announced plans for two separate projects that would enable crude oil from domestic sources to be transported in the proposed Keystone XL Project. Those two projects, the Bakken Marketlink Project and the Cushing Marketlink Project, are considered "connected actions" under NEPA. The Bakken Marketlink Project would allow transport of up to 100,000 bpd of crude oil from the Bakken formation in the Williston Basin in Montana and North Dakota. These fields have experienced high growth in the last few years as new technology has allowed the oil to be profitably extracted. Keystone currently has long-term commitments for transporting 65,000 bpd of crude oil in the proposed Keystone XL Project from the Bakken Marketlink Project.

The Cushing Marketlink Project would allow transport of up to 150,000 bpd on the proposed Project from the Cushing, Oklahoma area to the proposed Keystone XL Project delivery points in Texas.

Other Connected Actions

In addition to the Marketlink projects, there are two other types of connected actions associated with the proposed Project: electrical distribution lines and substations that would provide power for the pump stations, and an electrical transmission line that would be required to ensure transmission system reliability when the proposed Project is operating at maximum capacity. Those projects would not be built or operated by Keystone, and the permit applications for those projects would be reviewed and acted on by other agencies. Although only limited information was available on the design, construction, and operation of the projects, DOS assessed the potential impacts of the projects based on currently available information.

Figure ES-3
Proposed Pipeline Route

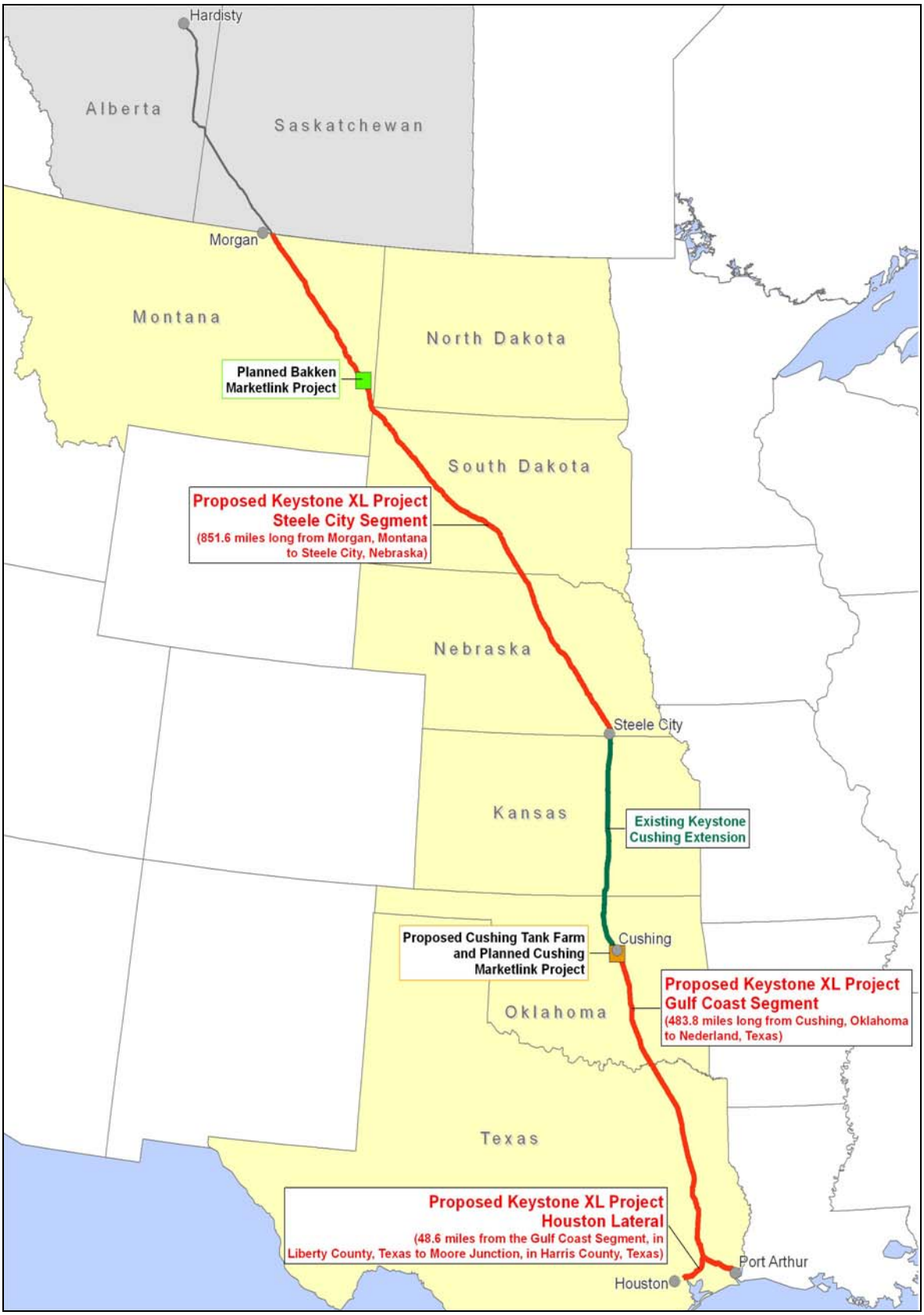
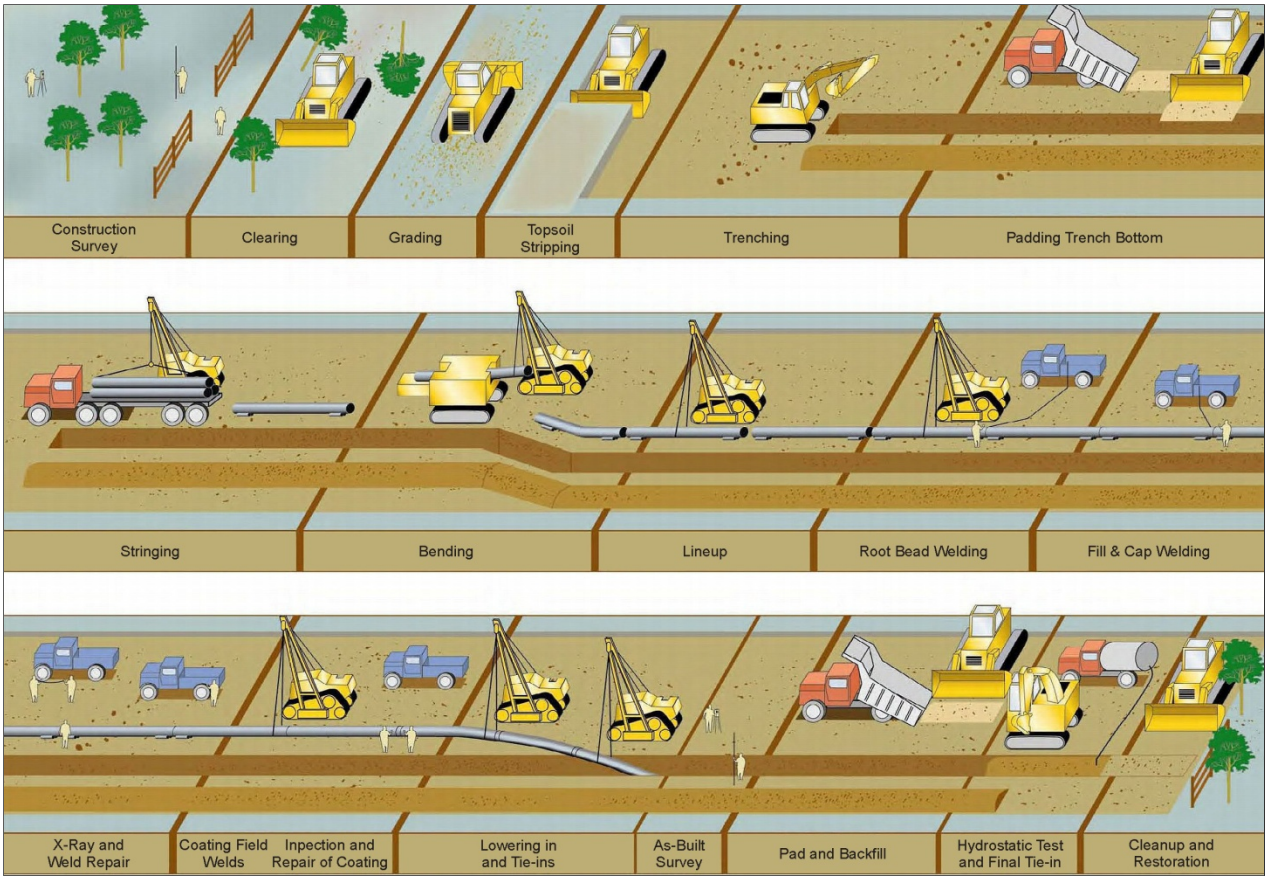


Figure ES-4
Typical Pipeline Construction Sequence



PURPOSE OF AND NEED FOR THE KEYSTONE XL PROJECT

The primary purpose of the proposed Project is to provide the infrastructure necessary to transport Western Canadian Sedimentary Basin heavy crude oil from the U.S. border with Canada to delivery points in Texas in response to the market demand of Gulf Coast refineries for heavy crude oil. This market demand is driven by the need of the refiners to replace declining feed stocks of heavy crude oil obtained from other foreign sources with crude oil from a more stable and reliable source. Keystone currently has firm, long-term contracts to transport 380,000 bpd of Canadian crude oil to the Texas delivery points.

An additional purpose of the proposed Project is to transport Canadian heavy crude oil to the proposed Cushing tank farm in response to the market demand of refineries in the central and Midwest U.S. for heavy crude oil. Keystone also has firm contracts to transport 155,000 bpd of Canadian crude oil to Cushing, Oklahoma in the existing Keystone Oil Pipeline Project. If the proposed Project is approved and implemented, Keystone would transfer shipment of crude oil under those contracts to the proposed Project. Although there is sufficient pipeline capacity from Canada to the U.S. in general to accommodate projected additional imports of Canadian crude in the short to medium term, there is extremely limited pipeline transport capacity to move such crude oils to Gulf Coast refineries.

The 58 refineries in the Gulf Coast District provide a total refining capacity of approximately 8.4 million bpd, or nearly half of U.S. refining capacity. These refineries provide substantial volumes of refined petroleum product, such as gasoline and jet fuel, via pipeline to the Gulf Coast region as well as the East Coast and the Midwest.

In 2009, Gulf Coast refineries imported approximately 5.1 million bpd of crude oil from more than 40 countries. The top four suppliers were Mexico, Venezuela, Saudi Arabia, and Nigeria. Of the total

volume imported, approximately 2.9 million bpd was heavy crude oil similar to the crude oil that would be transported by the proposed Project; Mexico and Venezuela were the major suppliers. However, imports of heavy crude oil from these two countries have been in steady decline while Gulf Coast refining capacity is projected to grow by at least 500,000 bpd by 2020, with or without the proposed Project.

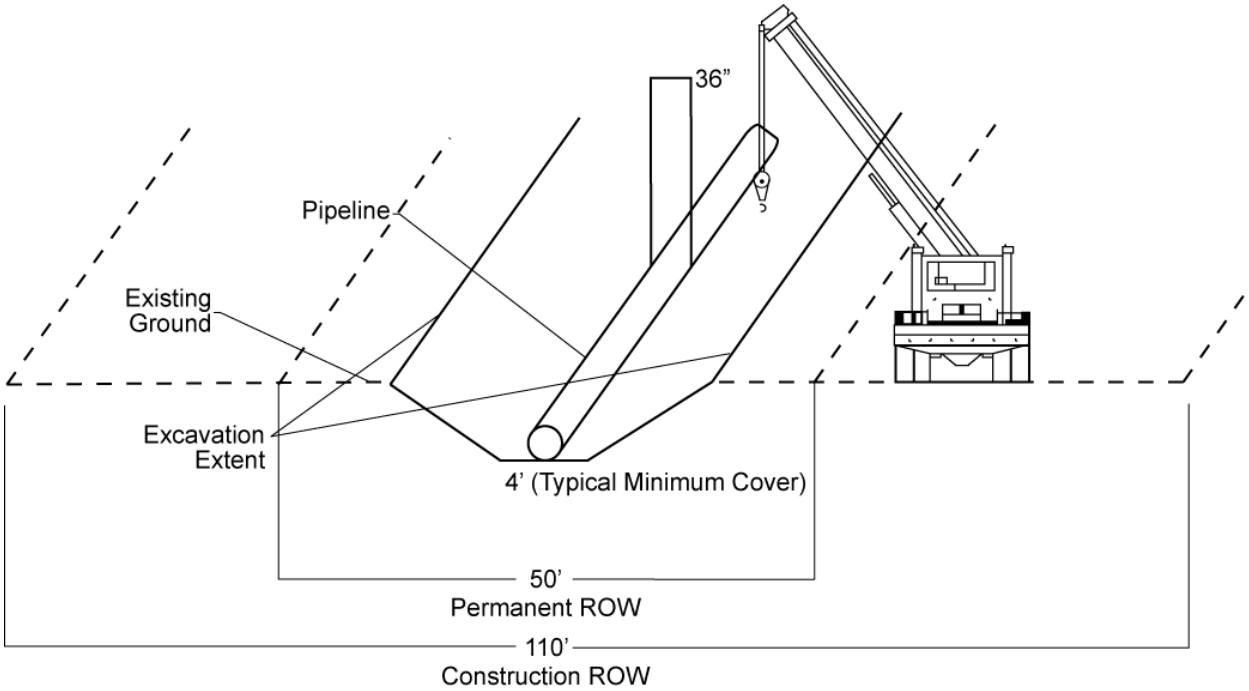
PROJECT DESIGN AND SAFETY

The Pipeline and Hazardous Materials Safety Administration (PHMSA), a federal agency within the U.S. Department of Transportation, is the primary federal regulatory agency responsible for ensuring the safety of America's energy pipelines, including crude oil pipeline systems. As a part of that responsibility, PHMSA established regulatory requirements for the construction, operation, maintenance, monitoring, inspection, and repair of hazardous liquid pipeline systems.

In 2009, Keystone applied to PHMSA for a Special Permit to operate the proposed Project at a slightly higher pressure than allowed under the existing regulations. DOS worked with PHMSA to develop Project-specific Special Conditions that would have been incorporated into the Special Permit. However, in August 2010, Keystone withdrew its application to PHMSA for a Special Permit. However, to enhance the overall safety of the proposed Project, DOS and PHMSA continued working on Special Conditions specific to the proposed Project and ultimately established 57 Project-specific Special Conditions. As a result, Keystone agreed to design, construct, operate, maintain, and monitor the proposed Project in accordance with the more stringent 57 Project-specific Special Conditions in addition to complying with the existing PHMSA regulatory requirements.

In consultation with PHMSA, DOS determined that incorporation of the Special Conditions would result in a Project that would have a degree of safety greater than any typically constructed domestic oil pipeline system under current regulations and a degree of safety along the entire length of the pipeline system that would be similar to that required in high consequence areas as defined in the regulations. Key aspects of the Special Conditions are summarized below. Appendix U of the EIS presents the Special Conditions and a comparison of the conditions with the existing regulatory requirements.

Figure ES-5
Pipeline Cross-section



Pipe Design and Manufacturing

The first nine Special Conditions present design standards to be used in manufacturing the pipe and requirements for pipe materials, pipe inspections at the mill and in the field, performance tests, and quality control procedures.

System Design, Construction and Testing

Conditions 10 through 23 address design and construction of the proposed Project, including testing of Project components. Those Conditions present requirements for aspects of the proposed Project such as field coatings, depth of cover over the pipeline, temperature and overpressure control, welding procedures, and testing prior to operations. Testing requirements include hydrostatic testing, a process which involves filling the line with water and increasing the pressure within the pipeline to test the pipeline's ability to withstand pressure. If the test water pressure drops, further testing must be conducted and reported to PHMSA, and faulty pipeline sections must be repaired or replaced. Operations could not begin until the entire system has passed the required hydrostatic testing.

Operations, Maintenance, and Monitoring

Conditions 24 through 49 present the requirements for the Supervisory Control and Data Acquisition (SCADA) system that would be used to remotely monitor and control the pipeline, as well as requirements for internal corrosion inspection, cathodic protection, identification of the location of the pipeline with aboveground markers, internal pipeline inspections using electronic sensing devices termed "smart pigs," visual monitoring of the pipeline corridor, and repair procedures. The SCADA system would alert the Operations Control Center of an abnormal operating condition, indicating a possible release of oil. The system would include automatic features that would ensure operation within prescribed pressure limits. There would also be a complete backup system.

Figure ES-6
Smart Pig

Pipeline pressure is the primary indicator used by the SCADA system to detect an oil spill. If the monitoring system identifies a pressure change in the pipeline, the controller would evaluate the data to determine if it is a false alarm or an actual spill. Using pipeline pressure allows the operator to detect leaks down to approximately 1.5 to 2 percent of pipeline flow rate.

The proposed Project would also include a computer-based system that does not rely on pipeline pressure to assist in identifying leaks below the 1.5 to 2 percent detection thresholds.

In addition to computer monitoring, there would be scheduled patrols of the pipeline right-of-way as well as public and landowner awareness programs. Communities along the pipeline would be given information to facilitate the reporting of suspected leaks and events that could suggest a threat to pipeline safety.

Reporting, Record Keeping, and Certification

The final eight conditions present requirements for maintaining detailed records, development a right-of-way management plan, reporting to PHMSA, and providing PHMSA with certification from a senior officer of Keystone that it has complied with the Special Conditions.

SPILL POTENTIAL AND RESPONSE

Spills could result from many causes, including corrosion (external or internal), excavation equipment, defects in materials or in construction, over-pressuring the pipeline, and geologic hazards, such as ground movement, washouts, and flooding. Although the leak detection system would be in place, some leaks might not be detected by the system. For example, a pinhole leak could be undetected for days or a few weeks if the release volume rate were small and in a remote area.

In most cases the oil from a small leak would likely remain within or near the pipeline trench where it could be contained and cleaned up after discovery. As a result, for most small leaks it is likely that the oil would be detected before a substantial volume of oil reaches the surface and affects the environment. Spills may be identified during regular pipeline aerial inspections, by ground patrols and maintenance staff, or by landowners or passersby in the vicinity of the spill.

For larger spills, the released oil would likely migrate from the release site. However, DOS analysis of previous large pipeline oil spills suggests that the depth and distance that the oil would migrate would likely be limited unless it reaches an active river, stream, a steeply sloped area, or another migration pathway such as a drainage ditch.

Estimated Frequency of Spills

In spite of the safety measures included in the design, construction, and operation of the proposed Project, spills are likely to occur during operation over the lifetime of the proposed Project. Crude oil could be released from the pipeline, pump stations, or valve stations.

Although a large spill could occur at the proposed Cushing tank farm, each of the three 350,000-barrel tanks would be surrounded by a secondary containment berm that would hold 110 percent of the contents of the tank plus freeboard for precipitation. Therefore, there would have to be a concurrent failure of the secondary containment berm for a tank-farm spill to reach the area outside of the tank. Such an event is considered unlikely.

DOS calculated estimates of spill frequency and spill volumes. Those estimates included potential spills from the pipeline, pump stations, and valve stations. The calculations used data from the PHMSA spill incident database for hazardous liquid pipelines and crude oil pipelines, and from the National Response Center (NRC) database for releases and spills of hazardous substances and oil.

Based on those data, DOS calculated that there could be from 1.18 to 1.83 spills greater than 2,100 gallons per year for the entire Project. The estimated frequency of spills of any size ranged from 1.78 to 2.51 spills per year.

Keystone submitted a risk analysis that also included an estimate of the frequency of spills over the life of the proposed Project. Keystone's analysis was for the pipeline only and did not include releases from pump stations, valve stations, or the tank farm.

Keystone initially calculated a spill frequency of 1.38 spills per year based only on the historical PHMSA spill incident database available in 2008 when the application was submitted. Keystone also calculated a Project-specific spill frequency for the pipeline that considered the specific terrain and environmental conditions along the proposed Project corridor, required regulatory controls, depth of cover, strength of materials, and technological advances in the design of the proposed Project. Using those factors, Keystone estimated that there could be 0.22 spills per year from the pipeline.

Spills from the Existing Keystone Oil Pipeline System

The existing Keystone Oil Pipeline System has experienced 14 spills since it began operation in June 2010. The spills occurred at fittings and seals at pump or valve stations and did not involve the actual pipeline. Twelve of the spills remained entirely within the confines of the pump and valve stations. Of those spills, 7 were 10 gallons or less, 4 were 100 gallons or less, 2 were between 400 and 500 gallons, and 1 was 21,000 gallons.

The spill of 21,000 gallons occurred when a fitting failed at the Ludden, North Dakota pump station. As a result, PHMSA issued a Corrective Action Order, halting pipeline operation. Keystone was required to consult with PHMSA before returning the pipeline to operation. In that incident, most of the oil was contained within the pump station, but 210 gallons discharged from the pump station to adjacent land. The land affected was treated in place in compliance with North Dakota Department of Health land treatment guidelines.

Maximum Spill Volume

Keystone conducted an assessment of the maximum potential pipeline spill volume from a complete pipeline structural failure. Keystone estimated that the maximum spill volume would be approximately 2.8 million gallons, which would be possible along less than 1.7 miles of the proposed pipeline route due to topographic conditions. For approximately 50 percent of the proposed pipeline route (approximately 842 miles), the maximum spill volume would be approximately 672,000 gallons.

Figure ES-7
Pump Station on the Existing Keystone Oil Pipeline System

Emergency Planning

As required by PHMSA regulations, Keystone must submit an Emergency Response Plan and a Pipeline Spill Response Plan to PHMSA for review prior to initiation of operation of the proposed Project. These plans would not be completed until the final details of the proposed Project are established in all applicable permits.

If a leak is suspected, the Emergency Response Plan and Pipeline Spill Response Plan would be initiated. After confirmation that a spill occurred, the operator would shut down pumps and close the isolation valves, actions that would require approximately 12 minutes.

Local Emergency Planning Committees (LEPCs)

LEPCs were established as a part of the Emergency Planning and Community Right-to-Know Act. Keystone has committed to a communication program to reach out to LEPCs along the proposed pipeline corridor during development of the Emergency Response Plan and the Pipeline Spill Response Plan, with particular consideration given to emergency planning for low income and minority populations. The LEPCs would participate in emergency response consistent with their authority under the Right-to-Know Act and as required by their local emergency response plans.

POTENTIAL ENVIRONMENTAL IMPACTS OF OIL SPILLS

Impacts from an oil spill would be affected by variables such as the weather, time of year, water level, soil, local wildlife, and human activity. The extent of impact would also depend on the response time and capabilities of the emergency response team.

The greatest concern would be a spill in environmentally sensitive areas, such as wetlands, flowing streams and rivers, shallow groundwater areas, areas near water intakes for drinking water or for commercial/industrial uses, and areas with populations of sensitive wildlife or plant species.

General Types of Potential Impacts

There are two primary types of impacts that occur with a spill of crude oil – physical impacts and toxicological impacts. Physical impacts typically consist of the coating of soils, sediments, plants, and animals. The coating of organisms can result in effects such as preventing them from feeding or obtaining oxygen, reducing the insulating ability of fur or feathers, and adding weight to the organism so that it cannot move naturally or maintain balance. In addition, oil may coat beaches along rivers or lakes and foul other human-use resources.

Toxicological impacts of an oil spill are a function of the chemical composition of the oil, the solubility of each class of compounds in the oil, and the sensitivity of the area or organism exposed. Crude oil may be toxic when ingested. Ingestion typically occurs when an oiled animal attempts to clean its fur or feathers. Some of the possible toxic effects include direct mortality, interference with feeding or reproductive capacity, disorientation, reduced resistance to disease, tumors, reduction or loss of various sensory perceptions, and interference with metabolic, biochemical, and genetic processes.

Birds typically are the most affected wildlife due to an oil spill. Oil on feathers causes hypothermia or drowning due to the loss of flotation, and birds may suffer both acute and chronic toxicological effects. In addition, dead oiled birds may be scavenged by other animals.

Fish and aquatic invertebrates could also experience toxic impacts of spilled oil. The potential impacts would generally be greater in standing water habitats − such as wetlands, lakes and ponds − than in flowing rivers and creeks.

Crude oil spills are not likely to have toxic effects on the general public because of the many restrictions that local, state and federal agencies impose to avoid environmental exposure after a spill.

Potential Impacts to the Ogallala Aquifer and other Groundwater Areas

DOS recognizes the public's concern for the Northern High Plains Aquifer System, which includes the Ogallala aquifer formation and the Sand Hills aquifer unit.

The Northern High Plains Aquifer system supplies 78 percent of the public water supply and 83 percent of irrigation water in Nebraska and approximately 30 percent of water used in the U.S. for irrigation and agriculture. Of particular concern is the part of the aquifer which lies below the Sand Hills region. In that region, the aquifer is at or near the surface.

DOS assessed the potential impacts of the proposed Project on many aquifer systems. The aquifer analysis included the identification of potable groundwater in water wells within 1 mile of the proposed centerline of the pipeline. More than 200 Public Water Supply wells, most of which are in Texas, are within 1 mile of the proposed centerline, and 40 private water wells are within 100 feet of the centerline. No sole-source aquifers, or aquifers serving as the principal source of drinking water for an area, are crossed by the proposed pipeline route.

The potential for a crude oil spill to reach groundwater is related to the spill volume, the viscosity and density of the crude oil, the characteristics of the environment into which the crude oil is released (particularly the characteristics of the underlying soils), and the depth to groundwater. The depth to groundwater is less than 10 feet for about 65 miles of the proposed route in Nebraska and there are other areas of shallow groundwater in each state along the proposed route. Diluted bitumen and synthetic crude oil, the two types of crude oil that would be transported by the proposed Project, would both initially float on water if spilled. Over time, the lighter aromatic fractions of the crude oil would evaporate, and water-soluble components could enter the groundwater.

Studies of oil spills from underground storage tanks indicate that potential surface and groundwater impacts are typically limited to several hundred feet or less from a spill site. An example of a crude oil release from a pipeline system into an environment similar to the Northern High Plains Aquifer system occurred in 1979 near Bemidji, Minnesota.

While the conditions at Bemidji are not fully analogous to the Sand Hills region, extensive studies of the Bemidji spill suggest that impacts to shallow groundwater from a spill of a similar volume in the Sand Hills region would affect a limited area of the aquifer around the spill site. In no spill incident scenario would the entire Northern High Plains Aquifer system be adversely affected.

In addition to the Northern High Plains Aquifer system, there are other groundwater areas along the proposed route, including shallow or near-surface aquifers. DOS in consultation with PHMSA and EPA determined that Keystone should commission an independent consultant to review the Keystone risk assessment. The independent review will be conducted by a firm approved by DOS in concurrence with PHMSA and EPA, and would focus on a review of valve placement and the possibility of deploying external leak detection systems in areas of particularly sensitive environmental resources, but would not be limited to those issues. The specific scope of the analysis will be approved by DOS, PHMSA, and EPA. DOS, with concurrence from PHMSA and EPA, will determine the need for any additional mitigation measures resulting from the analysis.

Potential Environmental Justice Concerns

Low income and minority communities could be more vulnerable to health impacts than other communities in the event of a spill, particularly if access to health care is less available in the release area. Exposure pathways could include direct contact with the crude oil, inhalation of airborne contaminants, or consumption of food or water contaminated by either the crude oil or components of the crude oil. Keystone agreed to remediate spills, restore the affected areas, and provide alternative water supplies if a spill contaminates groundwater or surface water. Keystone also agreed to develop communications directed at bilingual communities, such as signage in both English and Spanish languages, and emergency communications in both languages.

ALTERNATIVES CONSIDERED

DOS considered the following three major alternative scenarios:

- No Action Alternative – potential scenarios that could occur if the proposed Project is not built and operated;
- System Alternatives − the use of other pipeline systems or other methods of providing Canadian crude oil to the Cushing tank farm and the Gulf Coast market;
- Major Route Alternatives − other potential pipeline routes for transporting heavy crude oil from the U.S./Canada border to Cushing, Oklahoma and the Gulf Coast market.

No Action Alternative

Under the No Action Alternative, the potential adverse and positive impacts associated with building and operating the proposed Project would not occur. However, there is an existing market demand for heavy crude oil in the Gulf Coast area. The demand for crude oil in the Gulf Coast area is projected to increase and refinery runs are projected to grow over the next 10 years, even under a low demand outlook.

A report commissioned by the Department of Energy (DOE) indicated that whether the proposed Project is built or not is unlikely to impact the demand for heavy crude oil by the Gulf Coast refineries. Even if improved fuel efficiency and broader adoption of alternative fuels reduced overall demand for oil, demand for Canadian heavy crude oil at Gulf Coast refineries would not be substantially affected.

At the same time, three of the four countries that are major crude oil suppliers to Gulf Coast refineries currently face declining or uncertain production horizons. As a result, those refineries are expected to obtain increased volumes of heavy crude oil from alternative sources in both the near term and further into the future. Implementation of the No Action Alternative would not meet this need.

If the proposed Project is not built and operated, Gulf Coast refineries could obtain Canadian crude oil transported through other new pipelines or by rail or truck transport. Other pipeline projects have been proposed to transport Canadian crude oil to the Gulf Coast area, and both rail transport and barge transport could be used to meet a portion of the need. In addition, the Gulf Coast refineries could obtain crude oil transported by marine tanker from areas outside of North America. Many of the sources outside of North America are in regions that are experiencing declining production or are not secure and reliable sources of crude oil, including the Middle East, Africa, Mexico, and South America.

As a result of these considerations, DOS does not regard the No Action Alternative to be preferable to the proposed Project.

If the proposed Project is not implemented, Canadian producers would seek alternative transportation systems to move oil to markets other than the U.S. Several projects have been proposed to transport crude oil out of using pipelines to Canadian ports.

Whether or not the proposed Project is implemented, Canadian producers would seek alternative transportation systems to move oil to markets other than the U.S. Several projects have been proposed to transport crude oil out of the oil sands area of Alberta using pipelines to Canadian ports.

System Alternatives

System alternatives would use combinations of existing or expanded pipeline systems, pipeline systems that have been proposed or announced, and non-pipeline systems such as tank trucks, railroad tank cars, and barges and marine tankers to transport Canadian heavy crude oil to Gulf Coast refineries.

None of the pipeline systems considered would be capable of transporting Canadian crude oil to Gulf Coast delivery points in the volumes required to meet Keystone's commitments for transporting 380,000 bpd to delivery points in Texas. Therefore they would not meet the purpose of the proposed Project. A combination of the pipeline systems considered could, over time, deliver volumes of Canadian oil sands crude oil in volumes similar to the volumes that would be transported by the proposed Project. However, that would not meet the near-term need for heavy crude oil at the Gulf Coast refineries. Expanding the pipeline systems that were considered to meet the purpose of the proposed Project or construction of new components or a combination of those systems would result in impacts similar to those of the proposed Project.

The trucking alternative would add substantial congestion to highways in all states along the route selected, particularly at and near the border crossing and in the vicinity of the delivery points. At those locations it is likely that there would be significant impacts to the existing transportation systems. Trucking would also result in substantially higher greenhouse gas emissions and a higher risk of accidents than transport by pipeline.

Development of a rail system to transport the volume of crude oil that would be transported by the proposed Project would likely produce less impact from construction than would the proposed Project because it could be done using existing tracks. However, there would be greater safety concerns and greater impacts during operation, including higher energy use and greenhouse emissions, greater noise impacts, and greater direct and indirect effects on many more communities than the proposed Project.

As a result of these considerations as described in Section 4.2 of the EIS, system alternatives were considered either not reasonable or not environmentally preferable.

Major Route Alternatives

The analysis of route alternatives considered 14 major route alternatives. Figure ES-8 depicts the alternative routes considered. The analysis of alternatives routes was conducted following the approach to assessments of alternative pipeline routes used by the Federal Energy Regulatory Commission. As a result, the analysis began with a screening process that first established criteria for screening alternatives, then identified potential alternatives that met the criteria, and determined whether or not they would (1) meet the purpose of and need for the proposed Project, and (2) be technically and economically practicable or feasible. For those alternatives meeting the criteria, DOS assessed whether or not the alternative offered an overall environmental advantage over the proposed route.

Due to public concern regarding the Ogallala Aquifer (Northern High Plains Aquifer system) and the Sand Hills region, 5 of the alternative routes were developed to either minimize the pipeline length over those areas or avoid the areas entirely. These alternative routes consisted of I-90 Corridor Alternatives A and B, Keystone Corridor Alternatives 1 and 2 (which are parallel to all or part of the route of the existing Keystone Oil Pipeline System), and the Western Alternative.

The assessment considered the environmental characteristics of the areas that these alternatives would cross, including the presence of aquifers, the depth of wells, developed land, forested areas, wetlands, and streams and rivers.

The Western Alternative was eliminated since it was financially impracticable. Although the other four route alternatives could have been eliminated based on consideration of economical and technical practicability and feasibility without further evaluation, they were nonetheless examined further with an emphasis on groundwater resources. The I-90 Corridor and Keystone Corridor alternatives would all avoid the Sand Hills; however, they would not avoid the Northern High Plains Aquifer system, and they would not avoid areas of shallow groundwater. Instead, these routes would shift risks to other areas of the Northern High Plains Aquifer system and to other aquifers.

In addition, these alternatives would be longer than the proposed route and would disturb more land and cross more water bodies than the proposed route. In addition, I-90 Corridor Alternatives A and B require crossing Lake Francis Case on the Missouri River which would pose technical challenges due to the width of the reservoir and the slope of the western side of the crossing area.

Keystone Corridor Alternatives 1 and 2 would cost about 25 percent more than the proposed Project (about $1.7 billion more) and implementation of either of those alternatives would compromise the Bakken Marketlink Project and the opportunity to transport crude oil from the producers in the Bakken formation to markets in Cushing and the Gulf Coast.

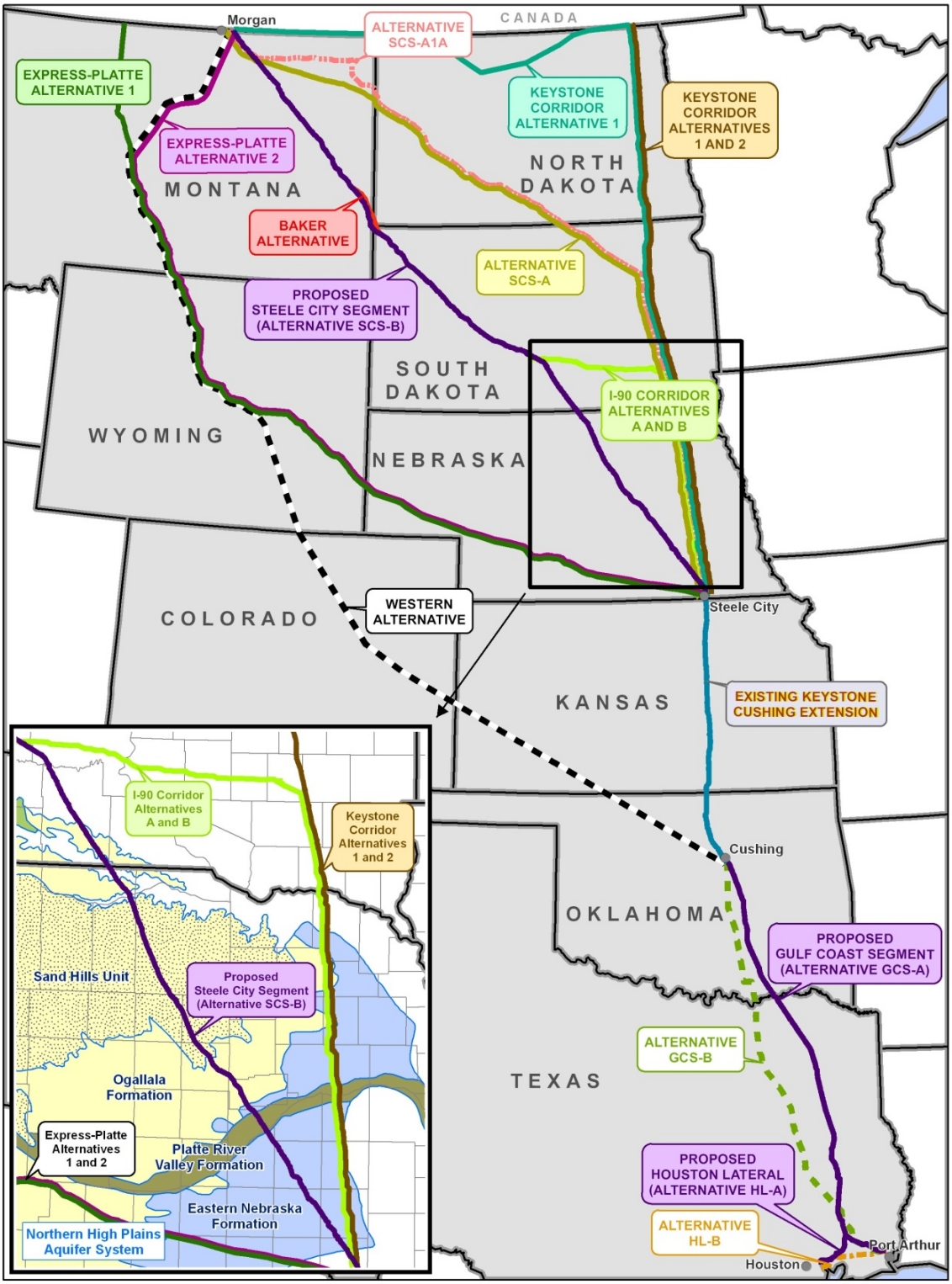
Based on the above considerations and as described in Section 4.3 of the EIS, DOS eliminated the major potential route alternatives from further consideration.

Route Variations and Minor Realignments

A route variation is a relatively short deviation from a proposed route that replaces a segment of the proposed route. Variations are developed to resolve landowner concerns and impacts to cultural resource sites, wetlands, recreational lands, and terrain.

DOS consulted with the Bureau of Land Management and state agencies to negotiate route variations and minor realignments, including nearly 100 in Montana and about 240 minor realignments in other states along the proposed route. Additional route variations and minor realignments may be added in response to specific conditions that may arise throughout the construction process.

Figure ES-8
Major Route Alternatives



The variations and minor realignments would replace short segments of the proposed Project, are relatively close to the proposed route, and would be implemented in accordance with applicable regulatory requirements of federal, state, or local permitting agencies. DOS considers the variations and minor realignments selected to have been evaluated sufficiently to meet the environmental review requirements of the National Environmental Protection Act.

Other Alternatives Considered

DOS also considered several other scenarios in response to comments on the draft EIS. The alternative pipeline designs considered consisted of an aboveground pipeline and a smaller diameter pipe to decrease the volume of oil released from a spill. DOS also considered alternative sites for the major aboveground facilities of the proposed Project, including pump stations, mainline valves, and the Cushing tank farm. None of the alternative designs or facility locations were considered safer or environmentally preferable to the proposed Project design.

Agency Preferred Alternative

DOS did not find any of the major alternatives to be preferable to the proposed Project for the reasons presented in the final EIS and summarized above. As a result, the agency-preferred alternative is the proposed Project route with the variations and minor route realignments described in the EIS, and the proposed location of the Cushing tank farm.

ENVIRONMENTAL ANALYSES

Four levels of impact duration were considered in the analysis of potential environmental impacts due to construction and normal operation of the proposed Project: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately afterward. Short-term impacts could continue for approximately 3 years after construction, and impacts were considered long term if the resources would require more than 3 years to recover. Permanent impacts would occur if the resources would not return to pre-construction conditions during the life of the proposed Project, such as impacts to land use due to installation of pump stations.

Conclusions in the EIS are based on the analysis of environmental impacts and the understanding that:

- Keystone would comply with all applicable laws and regulations;
- The proposed Project would be constructed, operated, and maintained as described in the EIS;
- Keystone has agreed to incorporate the 57 Project-specific Special Conditions developed by PHMSA into the proposed Project;
- Keystone has agreed to implement the measures designed to avoid or reduce impacts described in its application for a Presidential Permit and supplemental filings with DOS, the measures in its Construction, Mitigation, and Reclamation (CMR) Plan presented in Appendix B of the EIS, and the construction methods for the Sand Hills region described in Appendix H to the EIS; and
- Keystone would incorporate the mitigation measures required in permits issued by environmental permitting agencies into the construction, operation, and maintenance of the proposed Project.

Environmental Justice

Executive Order 12898 requires federal agencies to address and mitigate potential adverse impacts to minority and low income populations. In consultation with EPA, DOS identified these communities within a 4-mile-wide corridor centered on the pipeline using census and county level data.

Potential Construction Impacts: The assessment suggested that potential impacts to minority and low income populations could occur primarily in Harris, Jefferson, and Angelina Counties in Texas and in Lincoln County, Oklahoma. During construction, potential impacts include exposure to increased dust and noise, disruption of traffic patterns, and increased competition for social services in underserved populations. At any given location along the proposed pipeline route, the duration of the construction period would typically range from 20 to 30 working days. As a result, the impacts to minority and low-income populations due to construction would be temporary and minor.

Medical Services: Areas along the pipeline route that are medically underserved may be more vulnerable during construction periods. These communities have been identified as Health Professional Shortage Areas or Medically Underserved Areas/Populations. However, construction-related disruptions in those areas would be temporary and minor. In areas in

Montana and South Dakota, minor medical needs of workers would be handled in construction camps to avoid or minimize the need for medical services from the surrounding communities.

Air Emissions Related to Environmental Justice Issues: The refineries that are likely to receive oil transported by the pipeline are already configured to process heavy crude oil, and in the future would seek to continue processing heavy crude oil whether or not the proposed pipeline is constructed. The analysis in the EIS, including a DOE-commissioned study, indicates that the proposed Project would not likely affect the overall quality or quantity of crude oil refined in the Gulf Coast region, and, as a result, would not likely effect refinery emissions.

Greenhouse Gas Emissions

DOS commissioned a detailed study of greenhouse gas life-cycle emissions that compared Canadian oil sands crude with other selected reference crudes. This study was a thorough review of recent scientific literature on greenhouse gas life-cycle emissions for Canadian oil sands crude including extraction, upgrading, transportation, refining, and combustion.

The study's major conclusion was that, throughout its life cycle, oil sands crude is, on average, more greenhouse gas intensive than the crude oil it would replace in the U.S. However, the relative greenhouse gas intensity varies depending on (1) study design factors, such as the reference crudes selected for comparison with Canadian oil sands crudes (e.g., 2005 U.S. average crude oil, Venezuelan Bachaquero, Middle East Sour, and Mexican Heavy) and the timeframe selected, and (2) study assumptions, such as the extraction method and the mix of crudes that would be transported by the pipeline.

For example, the Department of Energy's National Environmental Technology Lab (NETL) study indicated that the life-cycle greenhouse gas emissions of gasoline produced from Canadian oil sands crude are approximately 17 percent higher than gasoline from the 2005 average mix of crude oil consumed in the U.S. The NETL study serves as a key input for analyses conducted by EPA and DOE. In comparison, a study conducted by TIAX, LLC, found that the greenhouse gas emissions from gasoline produced from Canadian oil sands crude are only 2 percent higher when compared to gasoline from Venezuelan heavy crude, a type of crude oil that is similar to the crude oil that would be transported by the proposed Project and is currently refined in large quantities by Gulf Coast refineries.

The proposed Project is not likely to impact the amount of crude oil produced from the oil sands. However, for illustrative purposes, the DOS-commissioned study estimated that incremental life-cycle U.S. greenhouse gas emissions from displacing reference crude oils with Canadian oil sands crude oils imported through the proposed Project would be between 3 and 21 million metric tons of carbon dioxide emissions annually. This range is equivalent to annual greenhouse gas emissions from the combustion of fuels in 588,000 to 4,061,000 passenger vehicles.

In addition, current projections suggest that the amount of energy required to extract all crude oils is projected to increase over time due to the need to extract oil from ever deeper reservoirs using more energy intensive techniques. However, while the greenhouse gas intensity of reference crude oils may trend upward, the projections for the greenhouse gas intensity of Canadian oil sands crude oils suggests that they may stay relatively constant. Although there is some uncertainty in the trends for both reference crude oils and oil sands derived crude oils, on balance it appears that the gap in greenhouse gas intensity may decrease over time.

Geology and Soils

Geologic Hazards: Potential geologic hazards assessed in the EIS include seismic hazards (earthquakes), landslides, or subsidence (sink holes). The proposed route extends through relatively flat and stable areas and the potential for these events is low. The pipeline would not cross any known active faults with confirmed surface offsets. During construction, land clearing could increase the risk of landslides and erosion. Keystone agreed to construct temporary erosion control systems and revegetate the right-of-way after construction.

There is a risk of subsidence (sink holes) where the proposed route potentially crosses karst formations in Nebraska, Oklahoma, and Texas. Site-specific studies would be conducted as necessary to characterize the karst features, if they are encountered, and evaluate and modify construction techniques as necessary in these areas. The overall risk to the pipeline from karst-related subsidence is expected to be minimal.

Soils and Sediments: Potential impacts to soils include soil erosion, loss of topsoil, soil compaction, soil contamination, damage to existing tile drainage

systems, and permanent increases in the proportion of large rocks in the topsoil. However, Keystone agreed to construction procedures that are designed to reduce the likelihood and severity of Project impacts to soils and sediments, including topsoil segregation methods, and to mitigate impacts to the extent practicable.

Sand Hills Region: Of particular concern is the soil of the Sand Hills region of Nebraska, which is particularly vulnerable to wind erosion. To address this concern, Keystone developed and agreed to construction, reclamation, and post-construction procedures specifically for this area in consultation with local experts and state agencies. The goal of the Sand Hills region reclamation plan is to protect this sensitive area by maintaining soil structure and stability, stabilizing slopes to prevent erosion, restoring native grass species, and maintaining wildlife habitat and livestock grazing areas. Keystone agreed to monitor the right-of-way through the Sand Hills region for several years to ensure that reclamation and revegetation efforts are successful.

Water Resources

Groundwater: Many of the aquifers along the proposed route are isolated from the surface due to soil types above the aquifers that prevent or slow downward migration of water. However, shallow or near-surface aquifers are also present along the proposed route, as discussed above. Construction of the proposed Project may result in temporary to short-term increases in suspended solids in the shallow aquifers. The risk of dewatering shallow groundwater aquifers during construction or reducing groundwater quality due to increased sediments in the water would be temporary to short term.

At some locations, groundwater may be used as a source of water for pressure testing the pipeline during construction. Keystone must obtain all applicable water withdrawal and discharge permits prior to testing, and the test water would be tested and discharged in accordance with permit requirements.

River and Stream Crossings: Surface water bodies would be crossed using one of three methods: the open-cut wet method, the dry-cut method, or the horizontal directional drilling method. The method selected would be based on the characteristics of the crossing location and the requirements of the permitting agencies.

The open-cut wet method, which involves trenching while the stream is flowing, would result in temporary increases in turbidity and bank erosion where vegetation is removed. The dry-cut method, which involves diverting stream flow around the construction site, results in lower increases in turbidity than the open-cut wet method.

Horizontal directional drilling would minimize impacts to the stream or river because it involves drilling well below the streambed. This method would be selected at large body crossings to avoid disturbing the streambeds and streamflow and to reduce the potential that deep scour during flooding would endanger pipeline integrity. Figure ES-9 presents a cross section of a river crossing using the horizontal directional drilling method.

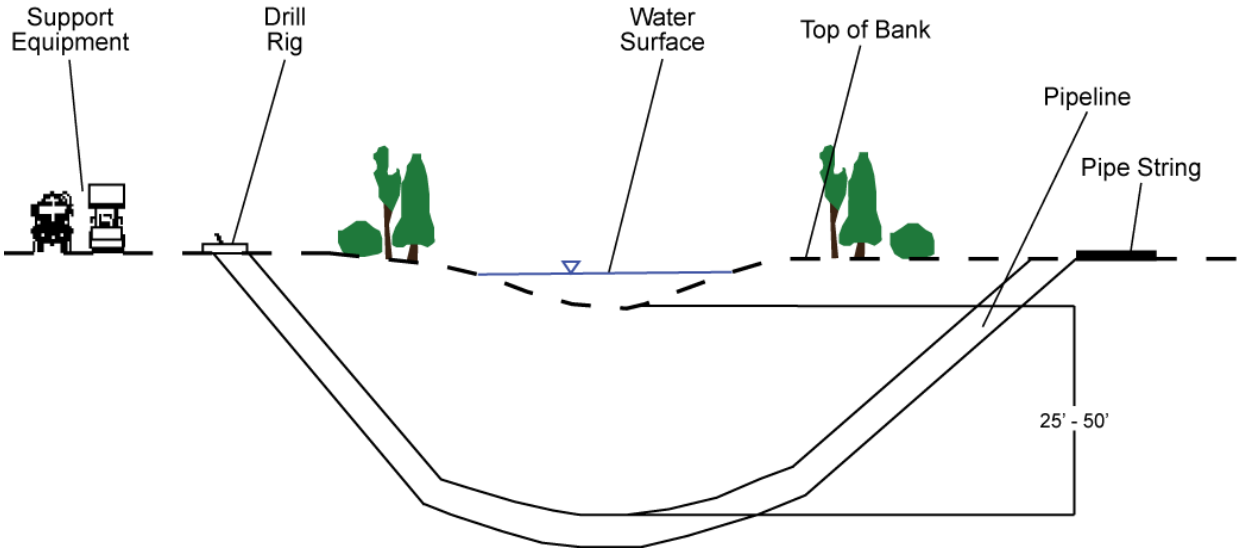
At all water crossings, Keystone agreed to use vegetative buffer strips, drainage diversion structures, and sediment barriers, and limit vegetation clearing to reduce siltation and erosion. After construction, the right-of-way would be restored and revegetated to reduce the potential for erosion of the stream bank.

Hydrostatic Test Water: Water used to pressure test the pipeline during construction would be discharged to its source waters or to an approved upland area within the same drainage and tested to ensure it meets applicable water quality standards and discharge rates.

Wetlands

The proposed Project route crosses emergent, scrub/shrub, and forested wetlands that are protected by the U.S. Army Corps of Engineers (USACE) and applicable state agencies under the review of EPA through Section 401 and 404 of the Clean Water Act. Specific plans regarding wetland avoidance and minimization of impacts, and the development of mitigation to compensate for the permanent loss or conversion of forested to emergent wetlands would be further developed during the permitting process. Wetland impacts presented in the EIS represent preliminary estimates based on the best available wetland information. DOS reviewed potential impacts to wetlands and the avoidance, minimization, and mitigation process that would be followed with USACE and EPA.

Figure ES-9
Cross Section of Horizontal Directional Drilling Method



Most wetlands crossed by the proposed Project in Montana, South Dakota, and Nebraska are emergent wetlands, and most wetlands crossed by the proposed Project in Oklahoma and Texas are forested wetlands. Construction of the pipeline would affect wetlands and their functions primarily during and immediately after construction activities, but permanent changes also are possible. Keystone agreed to use construction methods that avoid or minimize impacts to wetlands. These measures include installing trench breakers and/or sealing the trench to maintain the original wetland hydrology to avoid draining wetlands, using timber mats to protect wetlands during construction, and restoring wetland areas to a level consistent with the requirements of the applicable permits.

Most wetland vegetation communities would transition back into a community that would function similarly to the previously undisturbed wetland. Because most wetlands would be restored, the overall impact of the proposed Project to wetlands would be minor to moderate and would range in duration from short term to the life of the proposed Project. However, some forested and scrub-shrub wetlands over the pipeline would be converted to herbaceous wetlands since trees and shrubs would not be allowed to grow over the pipeline for inspection and integrity purposes. Keystone is working with each USACE district along the proposed route to identify wetlands and to develop wetland mitigation and compensation plans for the permanent conversion of forested wetland to herbaceous wetland.

Texas Bottomland Hardwood Wetlands: These are forested wetlands with trees, such as Bald Cypress, Water Oak, Water Hickory, and Swamp Tupelo that can exist in lowland floodplains in the Gulf Coast states. Clearing bottomland hardwood trees during construction would result in long-term to permanent impacts because forests require decades to re-establish and would mature over the span of centuries. DOS reviewed potential Project impacts on bottomland hardwood wetlands with EPA and USACE. Preliminary mitigation measures to protect bottomland hardwood wetlands are discussed in the EIS and would be developed further by the USACE during the wetland permitting process.

Figure ES-10
Texas Bottomland Hardwood Wetland

Terrestrial Vegetation

The proposed Project crosses primarily grasslands and rangelands, followed by croplands, upland forests, developed lands, and wetlands. After construction, Keystone agreed to restore topsoil, slopes, contours, and drainage patterns to preconstruction conditions as practicable and to reseed disturbed areas to restore vegetation cover, prevent erosion, and control noxious weeds. Keystone committed to controlling the introduction and spread of noxious weeds and pests by adhering to construction and restoration procedures recommended by local, state, and federal agencies. Soils and vegetation over the pipeline would be warmed slightly compared to surrounding soils by heat loss from the pipeline during operation.

Native Grasslands and Rangelands: Native mixed shrub rangelands would be crossed by the proposed Project in Montana and South Dakota and native grasslands would be crossed by the proposed Project in the Sand Hills region in Nebraska. Both of these native prairie habitats would be challenging to reclaim. In recognition of these challenges, Keystone developed specific construction and reclamation methods for the proposed Project in consultation with local, state, and federal agencies and local experts to ensure that sagebrush and native grasses are restored to rangelands in Montana and South Dakota and that fragile soils and diverse native vegetation cover are re-established in the Sand Hills region of Nebraska.

Figure ES-11
Sand Hills Grassland

Upland and Riparian Forests: Native forests, especially forested floodplains, were once an integral component of the landscape throughout the Great Plains and they provide important habitats for wildlife. Clearing trees in upland and riparian forest communities would result in long-term impacts because trees would be required to remain outside of the 50-foot-wide permanent right-of-way. These impacts would last throughout the life of the proposed Project because trees would not be allowed to reestablish within the permanent right-of-way and because forests require decades to re-establish and would mature over the span of centuries.

Wildlife

Big game animals, small game animals and furbearers, waterfowl and game birds, and other nongame animals use habitats in and around the six states crossed by the proposed Project. Construction would result in the temporary and permanent loss and alteration of habitats which provide foraging, cover, and breeding habitats for wildlife. Most habitat loss would be temporary as vegetation cover would be re-established after construction and would be small in context to habitats available throughout the region crossed by the proposed Project. Loss of shrublands and wooded habitats would be long-term (from 5 to 20 years or more), however; and trees and tall shrubs would not be allowed to re-establish over the pipeline for inspection and integrity purposes. Aboveground facilities would result in some permanent habitat loss. Power lines to pump stations can provide vantage perches for raptors that lead to increased predation on ground nesting birds and small mammals. Construction can produce short-term barriers to wildlife movement, direct and indirect mortality, and reduced survival and reproduction. Disturbance from construction activities may have moderate local affects on wildlife if important remnant habitats are crossed or when sensitive breeding or overwintering periods are not avoided. Habitat alteration and fragmentation caused by the pipeline right-of-way may reduce habitat suitability and use by wildlife.

Construction could also produce short-term barriers to wildlife movement, direct and indirect mortality, and reduced survival and reproduction. Disturbance from construction activities would have moderate local affects on wildlife if important remnant habitats are crossed or when sensitive breeding or overwintering periods are not avoided. Habitat alteration and fragmentation caused by construction of the pipeline could reduce habitat suitability and use by wildlife.

During the environmental review of the proposed Project, state and federal wildlife management agencies were contacted and they provided information on sensitive seasons and wildlife habitats such as big game overwintering habitats, important riparian corridors, and raptor and other migratory bird

nesting habitats. In addition state and federal wildlife management agencies provided recommendations for surveys to more specifically locate areas such as raptor nests and prairie dog colonies that could potentially be avoided. Keystone is working with state and federal wildlife management agencies to minimize impacts to wildlife during sensitive breeding periods. Measures developed to minimize impacts to wildlife include development of a Migratory Bird Conservation Plan in consultation with the USFWS, removal of litter and garbage that could attract wildlife, control of unauthorized off-road vehicle access to the construction right-of-way, and reclamation of native range with native seed mixes. Overall, the impact of construction to wildlife is expected to be minor and would be primarily temporary to short term. Normal Project operation would result in negligible effects to wildlife.

Figure ES-12
Mule Deer

Keystone must work with state and federal wildlife management agencies to minimize impacts to wildlife during sensitive breeding periods. Overall, the impact of construction to wildlife is expected to be minor and would be primarily temporary to short term. Normal Project operation would result in negligible effects to wildlife.

Fisheries Resources

The proposed route would cross rivers and streams, including perennial streams that support recreational or commercial fisheries. Most potential impacts to fisheries resources would occur during construction and would be temporary to short term. Potential impacts from construction of stream crossings include siltation, sedimentation, bank erosion, sediment deposition, short-term delays in movements of fish, and transport and spread of aquatic invasive animals and plants. Keystone has agreed to minimize vehicle contact with surface waters and to clean equipment to prevent transportation of aquatic invasive animals and plants on equipment.

Most streams would be crossed using one of several trenching methods. Trenching stream crossings when water is still flowing through the stream bed can result in destruction of fish that do not avoid the construction area. Trenching methods may also use dams, pumps, and flumes to divert the stream flow around the trench location to allow a “dry” trenching method. However, direct disturbance to the stream bed can release fine sediments during construction through flowing waters or after the flow is returned to the stream bed. Sediment would be transported downstream and could affect fish, other aquatic life, and aquatic habitats through either direct exposure or smothering. Most stream crossings would be completed in less than 2 days, grading and disturbance to waterbody banks would be minimized, and crossings would be timed to avoid sensitive spawning periods, such that resulting steam bed disturbance and sediment impacts would be temporary and minor.

Most large rivers would be crossed using the horizontal directional drilling method which would install the pipeline well below the active river bed. As a result, direct disturbance to the river bed, fish, aquatic animals and plants, and river banks would be avoided. Keystone has developed site specific plans for horizontal directional drill crossings and has agreed to develop site-specific contingency plans to address unintended releases of drilling fluids that include preventative measures and a spill response plan.

Figure ES-13
Recreational Fishing

Threatened and Endangered Species

The U.S. Fish and Wildlife Service (USFWS) is responsible for protecting threatened and endangered species under the Endangered Species Act (ESA). Federally-protected threatened or endangered species that are known or thought to be in the vicinity of the proposed Project include three mammals, five birds, one amphibian, five reptiles, three fish, two invertebrates, and four plants. DOS prepared a Biological Assessment and consulted with USFWS to evaluate the proposed Project's potential impact on federally-protected threatened or endangered species.

USFWS has determined that the proposed Project would have no affect on 12 of the listed species, and may affect, but is not likely to adversely affect 10 of those species. These evaluations are based on species occurrence and conservation measures developed in consultation with USFWS that Keystone has agreed to implement. DOS and USFWS determined that the proposed Project would likely adversely affect the American burying beetle and a formal consultation was initiated to determine whether impacts could jeopardize the continued existence of the species and to further develop conservation measures and an incidental take statement. Based on the formal consultation, USFWS is formulating a Biological Opinion that would be required prior to the issuance of a Record of Decision by DOS or any other federal cooperating agency.

Direct impacts to beetles could occur due to habitat loss, construction, and pre-construction conservation measures (where beetles would be trapped and relocated away from the project area). During operation, the flow of oil through the pipeline would generate heat that would warm the surrounding soils and could affect beetles during the winter when they bury themselves in the soil to hibernate. During formal consultation with the USFWS, conservation measures were developed that include Keystone providing funding for conservation efforts and monitoring of American burying beetle habitat restoration, and the establishment of a performance bond for supplemental habitat reclamation if initial reclamation efforts are unsuccessful.

Several candidate species for federal protection under the ESA are known or thought to be in the vicinity of the proposed Project including three birds, one reptile, one fish, and two plants. Measures that have been developed to avoid and minimize potential impacts to these species include reclamation of native range with native seed mixes, development of a Migratory Bird Conservation Plan in consultation with USFWS, and development of greater sage-grouse mitigation implementation plans for Montana and South Dakota in consultation with state and federal agencies.

Figure ES-14
American Burying Beetle

A total of 35 state-protected species may also be present along the proposed right-of-way. These species have been designated by state wildlife management agencies as being of concern to assist with conservation planning and maintenance of the state's natural heritage. Conservation measures developed in consultation with state agencies include conducting additional species-specific surveys to determine whether nests, dens, or suitable habitats are present along the proposed right-of-way; adhering to construction timing restrictions to avoid the breeding, denning, and spawning seasons; and reducing the width of the construction right-of-way in areas where state-protected plant populations have been identified.

Cultural Resources

DOS, in coordination with consulting parties, has minimized the potential for adverse effects to historic properties along the Area of Potential Effect (APE) of the proposed Project by the development of avoidance and mitigation measures. Since 2008, DOS has consulted with Indian tribes, State Historic Preservation Officers, federal agencies and local agencies under Section 106 of the National Historic Preservation Act. As part of this effort, DOS initially contacted over 95 Indian tribes to find out their level of interest in becoming a consulting party. DOS also conducted Section 106 government-to-government consultation with the consulting parties for the proposed Project. DOS also invited the consulting tribes to prepare Traditional Cultural Property studies as part of the lead agency responsibilities for the

identification, evaluation and mitigation of historic properties.

A Programmatic Agreement was developed by DOS and the parties. The Programmatic Agreement establishes a procedure for the further identification, evaluation, mitigation, and treatment of historic properties and will be completed prior to construction of the proposed Project. The Advisory Council on Historic Preservation participated in the development of this agreement with DOS and the other consulting parties. As part of this agreement, a Tribal Monitoring Plan and a Historic Trails and Archaeological Monitoring Plan were also developed. If previously unidentified archaeological sites are encountered during construction of the proposed Project, Keystone, DOS, and the consulting parties would follow the procedures described in the Unanticipated Discovery Plans.

Air Quality and Noise

Air Quality: Air quality impacts from construction would include emissions from construction equipment, temporary fuel transfer systems, fuel storage tanks, and dust and smoke from open burning. Most of these emissions would occur only intermittently, would be limited to active construction areas, and would be controlled to the extent required by state and local agencies.

All pump stations will be electrically powered by local utility providers. As a result, during normal operation there would be minor emissions from valves and pumping equipment at the pump stations. There would also be low levels of emissions from mobile sources, and low levels of emissions from the proposed Cushing tank farm and the surge relief systems at the delivery points. The proposed Project would not cause or contribute to a violation of any federal, state, or local air quality standards and it would not require a Clean Air Act Title V operating permit.

The proposed Project would cross five counties where the background concentration of ozone is greater than the national ambient air quality standards. Those areas are designated as nonattainment for the federal 8-hour ozone standard. However, the emissions from the proposed Project would be consistent with state implementation plans for air quality issues.

Noise: During construction there would be intermittent, temporary, and localized increases in sound levels as construction activities move through an area. To reduce construction noise impacts, Keystone agreed to limit the hours during which activities with high-decibel noise levels are conducted in residential areas, require noise mitigation procedures, monitor sound levels, and develop site-specific mitigation plans to comply with regulations. As a result, the potential noise impacts associated with construction would be minor and temporary.

During operation, sound levels within 2,300 feet of pump stations would increase. Outside of this distance, noise levels would remain at existing sound levels. Keystone committed to performing a noise assessment survey and to mitigating identified impacts by installing noise reducing measures at the pump stations.

Land Use, Recreation, and Visual Resources

The majority of land that would be affected by the project is privately owned (21,333 acres) with nearly equal amounts of state (582 acres) and federal (579 acres) lands being impacted.

Agriculture: After construction, nearly all agricultural land and rangeland along the right-of-way would be allowed to return to production with little impact on production levels in the long term. However, there would be restrictions on growing woody vegetation and installing structures within the 50-foot-wide permanent right-of-way. Keystone has agreed to compensate landowners for crop losses on a case-by-case basis.

There are 102 tracts of land that would be impacted which are part of the Conservation Reserve Program. The proposed Project is not expected to affect landowner ability to participate in that program.

Keystone agreed to use construction measures designed to reduce impacts to existing land uses, such as topsoil protection, avoiding interference with irrigation systems except when necessary, reducing construction time in irrigated areas, repairing or restoring drain tiles, restoring disturbed areas with custom seed mixes to match the native plants, providing access to rangeland during construction, installing temporary fences with gates around construction areas to prevent injury to livestock or workers, providing trench crossing areas to allow livestock and wildlife to cross the trench safely, and controlling noise and dust control.

Recreation: Operation of the proposed Project would not affect recreational resources, national or state parks, or users of those resources. Keystone has committed to cooperating with private landowners, and with federal, state, and local agencies to reduce

the conflict between recreational users and Project construction.

Visual Resources: During construction, there would be visual impacts associated activities along the proposed right-of-way such as clearing, trenching, pipe storage, and installing above-ground structures. Most of the visual impacts of the pipeline corridor in agricultural and rangeland areas would be substantially reduced with restoration and revegetation. Keystone agreed to install vegetative buffers around the pump stations to reduce the visual impacts of those facilities. Overall, the visual impacts of the proposed Project would generally be minor to moderate.

Socioeconomics

During construction, there would be temporary, positive socioeconomic impacts as a result of local employment, taxes on worker income, spending by construction workers, and spending on construction goods and services. The construction work force would consist of approximately 5,000 to 6,000 workers, including Keystone employees, contractor employees, and construction and environmental inspection staff. That would generate from $349 million to $419 in total wages. An estimated $6.58 to $6.65 billion would be spent on materials and supplies, easements, engineering, permitting, and other costs.

Adverse impacts during construction could include temporary and minor increases in the need for public services, disruption of local transportation corridors, and reduced availability of transient housing. Keystone would establish four temporary work camps in southeastern Montana and northwestern South Dakota to minimize impacts to transient housing and public services in those areas. Operation of the proposed Project would also result in long-term to permanent beneficial socioeconomic impacts, including employment and income benefits resulting from long-term hires and local operating expenditures, and increased property tax revenues. An estimated $140.5 million in annual property tax revenues would be generated by the proposed Project.

Cumulative Impacts

The analysis of cumulative impacts combined the potential impacts of the proposed Project with the impacts of past, present, and reasonably foreseeable future actions in the vicinity of the proposed route. This assessment included consideration of the many existing pipelines, electrical transmission lines, and roadways, as well as other linear projects that are under construction, planned, proposed, or reasonably foreseeable in the vicinity of the proposed route. The analysis also included existing and likely energy development projects.

During construction, the proposed Project would contribute to cumulative dust and noise generation, loss of vegetation or crop cover, and minor localized traffic disruptions where other linear projects are under construction at the same time and are in the vicinity of the proposed route.

One of the primary contributions to cumulative effects during operation would be emissions from storage tanks. However, the proposed Project and all other petroleum storage projects would have to comply with the emissions limitations of air quality permits. In addition, where Project-related aboveground facilities and visible corridors are present along with those of other projects, there would be cumulative effects to visual resources. Other cumulative impacts associated with operation include changes in land use, terrestrial vegetation, wetland function, and wildlife habitat, as well as increases in tax revenues, and employment. Where the pump stations or compressor stations of other pipeline systems are in the vicinity of the pump stations for the proposed Project, there would also be cumulative noise impacts.

An increase in the development of wind power projects in the central plains region as well as increased need for electrical power is likely to increase the number of electrical transmission lines in the vicinity of the proposed route. If the construction of power distribution or transmission lines in the vicinity of the proposed route overlaps with construction of the proposed Project, short-term cumulative impacts associated with noise, dust, and general construction activity could occur. Likely cumulative impacts of the proposed Project and operation of new transmission lines include viewshed degradation, changes to land uses and vegetation, and impacts to birds.

Environmental Impacts in Canada

An evaluation of the impacts resulting from extraction of crude oil from the oil sands in Canada is outside of the scope of analysis required under the National Environmental Policy Act. However, in response to comments and as a DOS policy decision, the general regulatory oversight and the environmental impacts in

Canada related to oil sands production were summarized in the EIS.

The potential environmental effects of the proposed Project have been assessed on both sides of the international border. In March 2010, the National Energy Board of Canada determined that the proposed Keystone XL Project is needed to meet the present and future public convenience and necessity, provided that the Board's terms and conditions presented in the project certificate are met. The Board's assessment included evaluations of need, economic feasibility, potential commercial impacts, potential environmental and socioeconomic effects, appropriateness of the general route of the pipeline, potential impacts on Aboriginal interests, and other issues.

Oil sands development projects undergo an environmental review in Canada under Alberta's Environmental Protection and Enhancement Act and other environmental regulations. Other federal and provincial agencies may participate in the review as Responsible Authorities or as Federal Authorities with specialist advice. Government regulators of oil sands activities in Canada are working to manage and provide regional standards for air quality, land impact, and water quality and consumption based on a cumulative effects approach.

Oil sands mining projects have reduced greenhouse gas emissions intensity by an average of 39 percent between 1990 and 2008 and are working toward further reductions. In addition, the Alberta Land Stewardship Act supports the Land-use Framework, which includes province-wide strategies for establishing monitoring systems, promoting efficient use of lands, reducing impact of human activities, and including aboriginal people in land-use planning.

EIS Contents

The locations of information within the EIS is provided below.