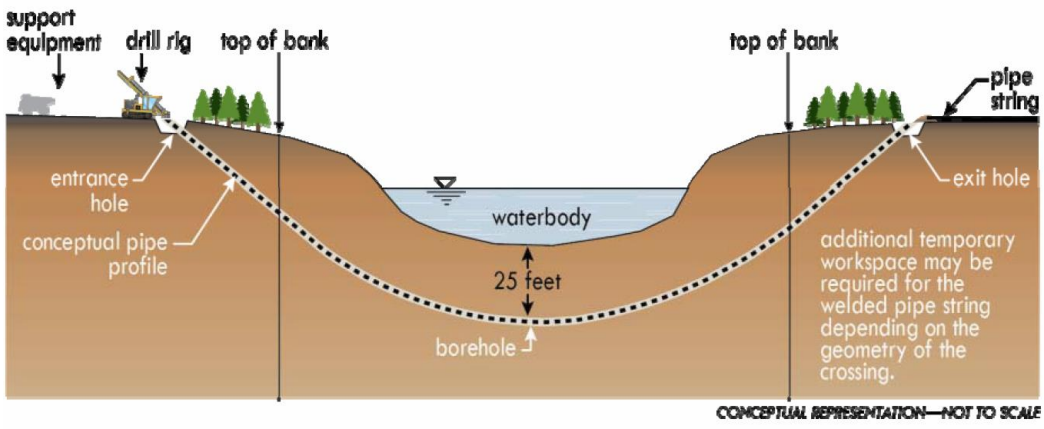
Supplemental Impact Questions

June 8, 2017

Will there be any likely economic impact to recreational businesses operating in the Elkhorn and Niobrara Rivers caused by the pipeline crossing those water bodies?

The Keystone XL Pipeline will use Horizontal Directional Drilling (HDD) for crossing five rivers in Nebraska, including both the Niobrara and Elkhorn. This technique results in minimal river impact because the pipeline is installed approximately 25 feet below the riverbed. The following figure, taken from the Nebraska Department of Environmental Quality Keystone XL EIS, illustrates HDD. During the actual construction phase there will be some temporary noise, dust, and material storage in the immediate vicinity of the river. Also during construction, there may be temporary changes in sedimentation, which can result in a short-term degradation of the immediate aquatic habitat. None of these temporary impacts will have any meaning effect on recreational use of either the Niobrara or Elkhorn rivers.

Figure ES-5. Conceptual Horizontal Directional Drilling at a Waterbody Crossing



Niobrara River

1. Segments of the Niobrara River are classified under the National Wild and Scenic Rivers Act as having scenic and recreational qualities. The western portion of the river, from Borman Bridge near Valentine to its confluence with Chimney Creek and from its confluence with Rock Creek to State Highway 137, is classified as scenic. The pipeline crossing is downstream from the sections of the Niobrara designated as a National Scenic River.
2. The vast majority of float activity on the Niobrara occurs in the designated scenic segments. A list of commercial outfitters shows a strong clustering around Sparks and Valentine. The list of commercial outfitters provided by the Niobrara National Scenic River Information Center is included the following page.
3. The eastern segment of the Niobrara is considered a recreational resource under the National Wild and Scenic Rivers Act. The pipeline crossing is 46 miles upstream from this designated recreational section. Because the crossing is upstream, there is some threat posed by a future spill. According to the NDEQ Nebraska's Keystone XL Pipeline Evaluation, January 2013:

    > If a spill were to occur into the Niobrara River, and the spill were not contained within the river prior to its reaching the recreational area, then the spill would adversely affect recreational uses of this resource until the adversely affected

sections of the recreational area were remediated. However, because of 1) the spill detection systems required by PHMSA and proposed to be used by Keystone, 2) the probable location of an intermediate MLV and/or check valve near the crossing that could reduce the volume of a potential spill, 3) the emergency response proposed by Keystone, and 4) the distance between the Niobrara River crossing and the reach designated as the national recreational river would reduce the likelihood of impacts on the recreational areas if a spill were to occur. (6-39)

4. The section of the river where the pipeline crosses the Niobrara is considered a warmwater fishery. Key species include channel catfish, rock bass, largemouth bass, and bluegill. None of these species are endangered or will be significantly impacted by the HDD pipeline installation.

Elkhorn River

1. The pipeline will cross the Elkhorn River in Antelope County, just southeast of Neligh.
2. There is some recreational floating on the river, mostly concentrated along the west side of Omaha. This floating area is approximately 100 miles southeast of the crossing (as the crow flies). The river meanders considerably, so the actual river miles distance is substantially more. Construction will have no appreciable impact on the suitability of the river for float activities.
3. No segment of the Elkhorn is designated through the National Wild and Scenic Rivers Act.
4. The Elkhorn is a warmwaters fishery. Key species identified by NDEQ include: northern pike, channel catfish, flathead catfish, and largemouth bass. None of these species are endangered or will be significantly impacted by the HDD pipeline installation.

Outfitter List

Revised 07/17/2014

Niobrara National Scenic River
Valentine, NE
www.nps.gov/niob

Brewer's Canoers & Tubers 433 East Hwy 20 Valentine, NE 69201 (402) 376-2046; (Randy & Mary Mercure) www.brewerscanoers.com

Dryland Aquatics 41115 Sparks Rd. Sparks, NE 69220 (402) 376-3119 or 800-337-3119; (Ed and Louise Heinert) www.drylandaquatics.com

Graham Canoe Outfitters 90173 Hatchery Rd. Valentine, NE 69201 (402) 376-3708 or 800-322-3708 (Doug & Twyla Graham) www.grahamoutfitters.com

Heartland Elk Guest Ranch 90236 Sparks River Rd., Valentine, NE 69220 (402) 376-2553 Managers- Shane & Brenda Hamilton; www.heartlandelk.com Email – heartlandelk@gmail.com

Little Outlaw Canoe & Tube Rentals, Ltd. 1005 E. Hwy 20 Valentine, NE 69201 (402) 376-1822 or 800-238-1867 (Rich Mercure) www.outlawcanoe.com

Niobrara River Ranch 90427 Timber Ridge Rd. Valentine, NE 69201 (402) 890-1245 (Lee Simmons) http://nrranch.com/

Rock Barn Outfitters 41805 River Rd. Sparks, NE 69220 (402) 376-1764 or 800-335-6252 (Fred & Diane Eglehoff) www.rockbarnoutfitters.com

Rocky Ford Outfitters P.O. Box 3 Valentine, NE 69201 (402) 376-1124 (Kerry & Lisa Krueger) http://rockyfordoutfitters.com/ Email – Rockyfordoutfitters@gmail.com

Sharp's Outfitters 90048 Sparks River Rd. Sparks, NE 69220 (402) 376-2506 (Wayne, Doris, & Dwite Sharp) http://www.sharpsoutfitters.com

Smithfalls Outfitters 505 E. 2nd St. Valentine, NE 69201 (402) 376-3134 (Jodi Hissong) www.smithfallsoutfitters.webs.com *(tube rental & shuttle services only)*

Smith Falls State Park, Nebraska Game & Parks 90159 Smith Falls Rd. Valentine, NE 69201 (402) 376-1306 http://outdoornebraska.ne.gov/parks.asp Call for camping reservations.

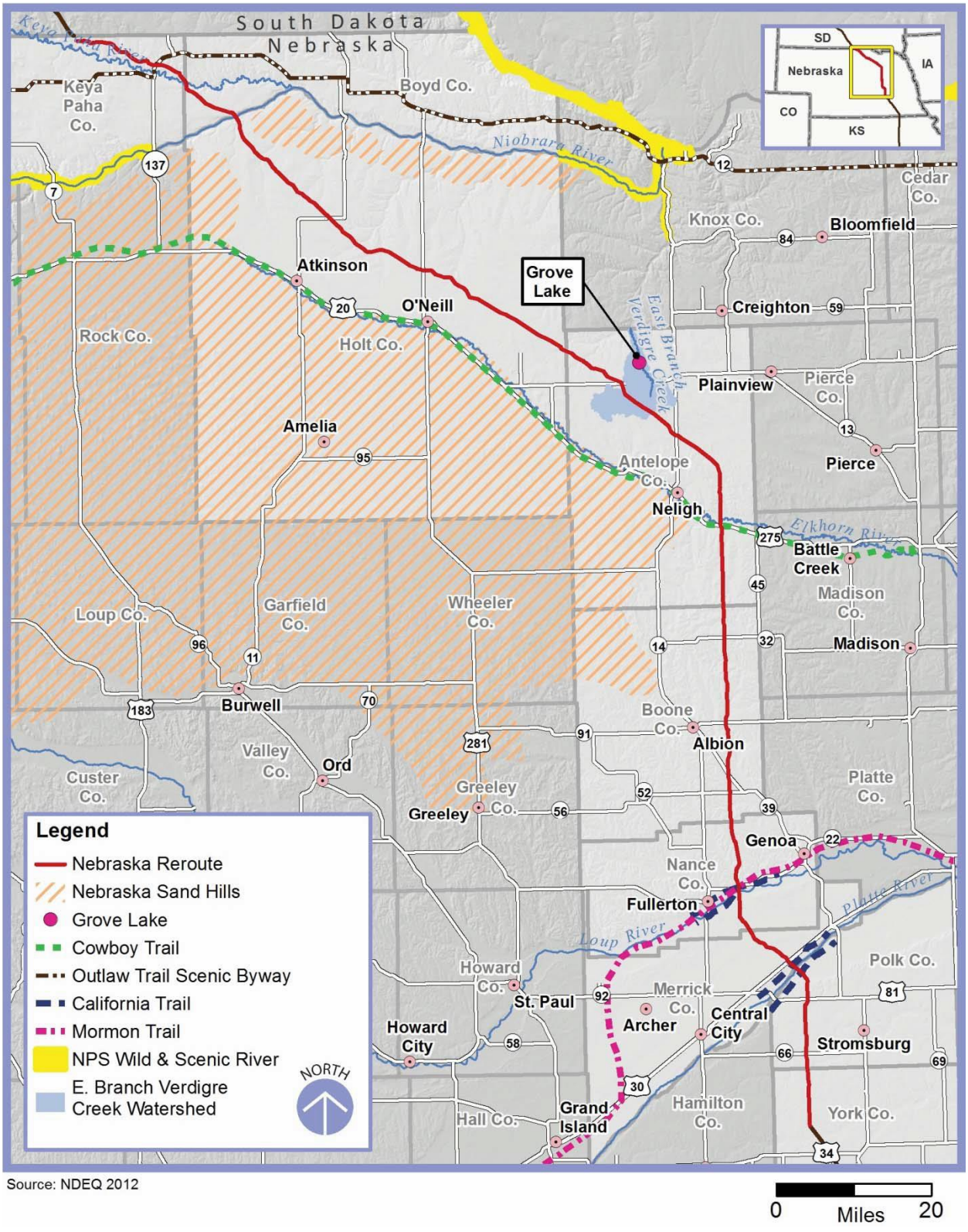
Stan's Landing & Fritz's Island Campground 89927 Sparks River Rd. Sparks, NE 69220 (402) 376-3791 or 877-700-3791 (Stan Hanson) www.campniobrara.com

Prairie River Outfitters & Sunny Brook Camp 41508 River Rd. Sparks, NE 69220 (402) 376-1887 or 1-877-376-1887 (Rhonda Kneifl, Twyla Graham, and Shirley Winter) www.sunnybrookcamp.com

Supertubes 39862 State Hwy.12 Valentine, NE 69201 (402) 376-2956; (Rich Mercure)www.niobrarasupertubes.com

= Tent Camping (at Niobrara NSR)
= Tent Camping (outside of Niobrara NSR)
= Cabin Rental
=Trailer/RV Hook-Ups
=Electric Only Trailer/RV Hook-Up
=Facebook

Experience America Enjoy Your National Parks
www.nps.gov


South Dakota
Nebraska
SD
Nebraska
IA
CO
KS
Keya Paha Co.
Boyd Co.
Niobrara River
Knox Co.
Cedar Co.
Bloomfield
Atkinson
Grove Lake
O'Neill
Creighton
East Branch Verdigre Creek
Rock Co.
Holt Co.
Plainview
Pierce Co.
Amelia
Pierce
Antelope Co.
Neligh
Elkhorn River
Battle Creek
Madison Co.
Loup Co.
Garfield Co.
Wheeler Co.
Madison
Burwell
Boone Co.
Albion
Valley Co.
Ord
Custer Co.
Greeley Co.
Greeley
Platte Co.
Genoa
Nance Co.
Fullerton
Platte River
Loup River
Howard Co.
Polk Co.
St. Paul
Merrick Co.
Archer
Central City
Howard City
Stromsburg
Hall Co.
Grand Island
Hamilton Co.
York Co.
Legend
Nebraska Reroute
Nebraska Sand Hills
Grove Lake
Cowboy Trail
Outlaw Trail Scenic Byway
California Trail
Mormon Trail
NPS Wild & Scenic River
E. Branch Verdigre Creek Watershed
NORTH
Source: NDEQ 2012
0
Miles
20

Will there be any likely impact to ecosystem services caused by the pipeline?

The Nebraska Department of Environment Quality has completed a comprehensive, 480+ page evaluation of the environmental impact related to the Keystone XL Pipeline. This existing report addresses all aspects of the likely impacts to Nebraska's ecosystem. The general conclusion of the NDEQ Report is that the operation of the pipeline will have minimal environmental impact, barring a major spill. Thus, the normal operation of the pipeline will not require additional ecosystem services employment. Ecosystem services related to pipelines are businesses that are involved in the clean up after a spill or restoration after construction activities are completed. In either case, total ecosystems services employment in Nebraska will be minimal. Most of the land used for the pipeline is agricultural, so after construction the right-of-way will be cropped or grazed without regard to the pipeline. A major spill will bring in outside experts and their equipment.

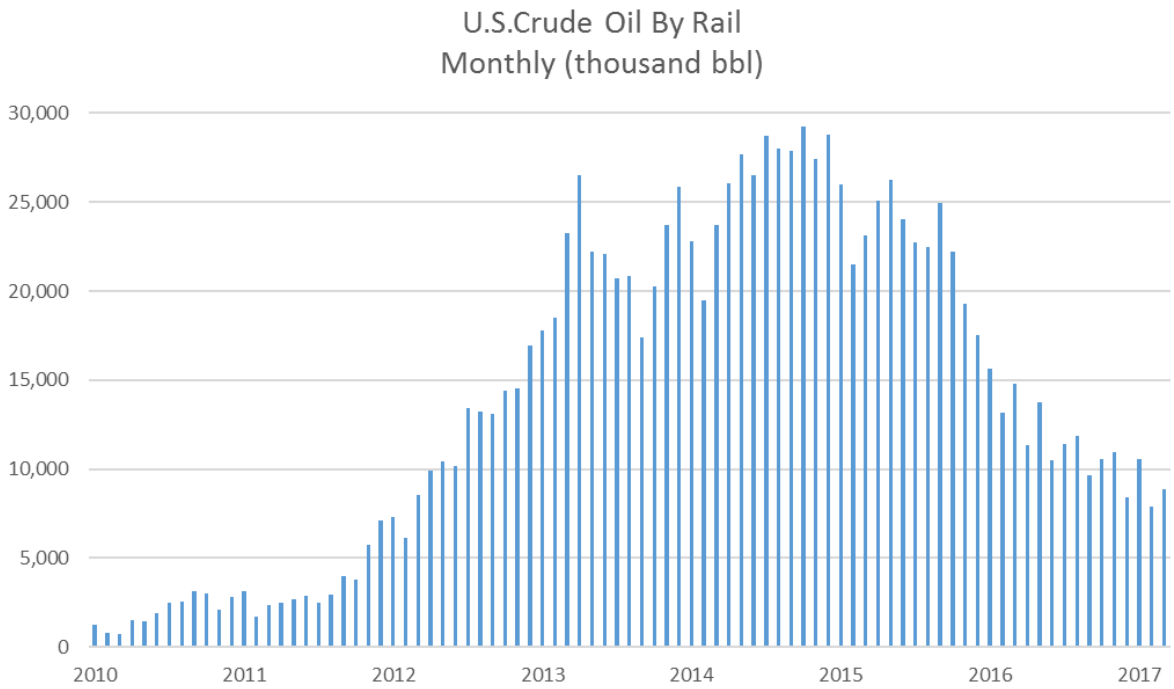
Nebraska's existing economy does not create opportunities for development of a robust environmental service sector. The variety of occupations, as listed in the following table, are more suited to densely populated areas and regions with considerable petroleum production.

Segment	Description
Environmental Services (Environmentally Preferable Services)	
Environmental Testing & Analytical Services	Provide testing of "environmental samples" (soil, water, air and some biological tissues)
Wastewater Treatment Works	Collection and treatment of residential, commercial and industrial wastewaters. Facilities are commonly know as POTWs or publicly owned treatment works.
Solid Waste Management	Collection, processing and disposal of solid waste
Hazardous Waste Management	Collection, processing and disposal of hazardous, medical waste, nuclear waste
Remediation/Industrial Services	Cleanup of contaminated sites, buildings and environmental cleaning of operating facilities
Environmental Consulting & Engineering (C&E)	Engineering, consulting, design, assessment, permitting, project management, O&M, monitoring, etc.

Source: Environmental Business International Inc. (San Diego, Calif.)

Will there be any negative impact to existing rail companies caused by the pipeline?

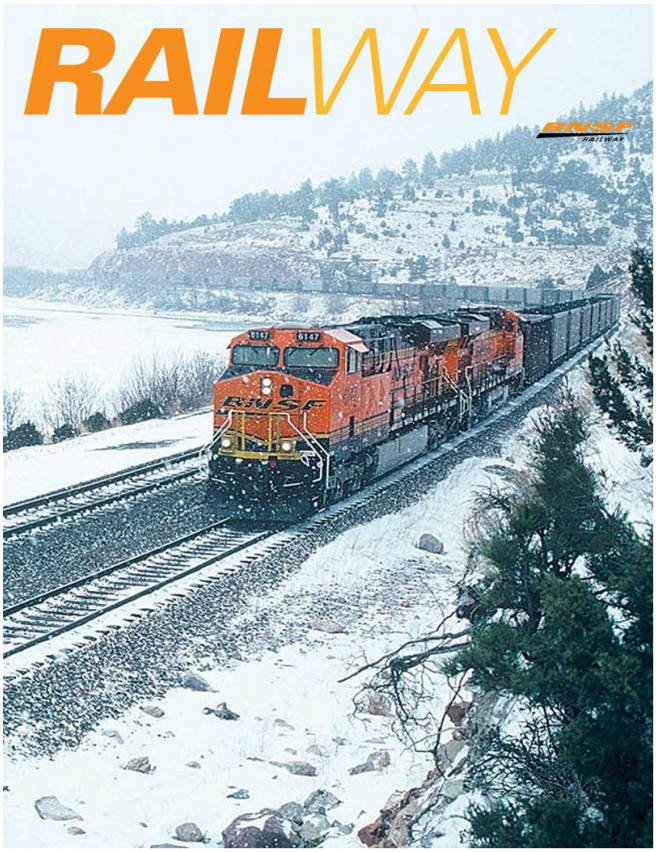
Petroleum shipment via rail was practically non-existent prior to 2010, because shipping by rail costs roughly three times more than moving product through a pipeline. The explosive growth of the North Dakota Bakken deposits created a short-term demand for rail service. The area simply lacked the pipeline infrastructure needed to move the increased production. As the following graph illustrates, rail shipments of crude oil have declined steadily since reaching a peak in October 2014. This decline will continue regardless whether or not the Keystone XL Pipeline is finalized.



Data source: Energy Information Administration, 2017

In addition to the expansion of pipeline capacity, rail transport is also being impacted by a set of new mandates regarding the safety of tank cars. These regulations were prompted by a number of crude-freight-train derailments—including one in Lac Mégantic, Quebec, that killed 47 people in 2013. Older tank cars are being phased out, and must be replaced by safer, and more expensive, tank cars. The new requirements thus make it more expensive to ship crude oil via rail.

The dominant rail company in crude oil shipments in the Midwest is BNSF. The following excerpt from the BNSF corporate magazine directly addresses the issue of the impact of the Keystone XL Pipeline.



Winter 2013

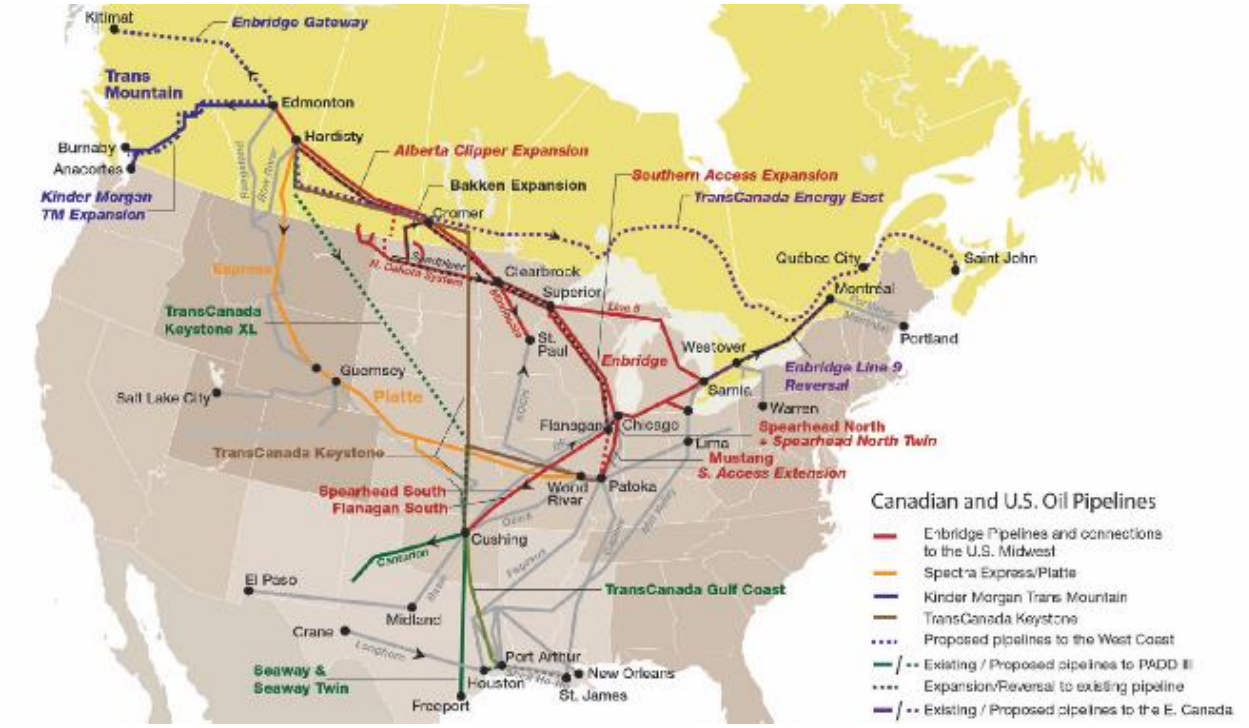
Q: What advantages do crude unit trains offer customers when compared with pipelines? If additional pipelines are built, what will that mean for our business? **What if the Keystone XL pipeline is not built?**

A: One of the biggest benefits crude-by-rail brings to the table is our flexibility to respond quickly to changes in the marketplace and move crude to the most advantageous destination. BNSF plans to serve more than 50 crude oil destinations by the end of 2014. Building a pipeline is a costly long-term project, while new rail capacity can be added at the originating and terminating facilities relatively quickly and cost- effectively. In most cases, it takes 12 to 18 months to establish a new rail facility with costs in the millions, not the billions that may be required for a pipeline.

Additional pipeline construction may bring increased competition in certain markets, but it may also open up new business opportunities for BNSF, such as a pipe-to-rail option, giving BNSF access to handle barrels where we may not have existing infrastructure, such as in Canada.

If there have been spills from similar pipelines, what were the documented economic impacts from the spills?

Technological improvements have made Canadian tar sands competitive in global petroleum markets leading to an increase in diluted bitumen production in Alberta. This product is shipped via pipeline across North America (see map). Because the diluted bitumen is a thick, viscus material, the increase in shipment created environmental safety concerns. Congress asked the U.S. Department of Transportation (DOT) to investigate the potential risks associated with pipeline transportation of diluted bitumen. The DOT then commissioned two studies from the National Academies of Sciences, Engineering, and Medicine. The general conclusion of the first study, released in 2013, was that there was no evidence of pipeline failure caused by the unique characteristics of diluted bitumen. The second study, released in 2015, concludes that bitumen does have unique properties that effect its behavior in the environment, thus warranting modifications in the regulations governing spill response and cleanup. Therefore, the economic impact of bitumen spills may exceed the cost of normal crude oil spills.



Kalamazoo River Bitumen Spill

While most pipeline spills are small and localized, a pipeline carrying Canadian diluted bitumen suffered a major rupture resulting in the worst onshore oil spill in U.S. history. On Monday, July 26, 2010, a 30-inch pipeline owned and operated by Enbridge Energy Partners LLP ruptured near Marshall, Michigan. The bitumen release, estimated by Enbridge at 843,000 gallons, entered Talmadge Creek and flowed into the Kalamazoo River.

Incredibly, as the rupture occurred, the technicians monitoring the pipeline misread the evidence and actually increased the materials flow. The spill was not identified for 18 hours. Compounding the damage, heavy rains then caused the river to overtop existing dams and carry oil at least 35 miles downstream on the Kalamazoo River.

The oil spill cleanup, originally estimated at $5 million, eventually took four years and cost $1.21 billion. Segments of the Kalamazoo River and all of Morrow Lake were closed for recreational activities for two years.

In addition to the cleanup cost, Enbridge was fined $177 million for company negligence. The company's behavior is the topic of discussion in the accompanying side bar.

NET – Nebraska's NPR Station (July 10, 2012)

SHOGREN: NTSB investigators determined that the six-foot gash in the pipe was caused by a flaw in the outside lining which allowed the pipe to crack and corrode. Now, in 2005, Enbridge actually had learned that this section of pipe was cracked and corroding.

HERSMAN: Yet for five years, they did nothing to address the corrosion or the cracking at the rupture site. And the problem festered.

SHOGREN: That same 2005 internal report pointed to 15,000 defects in the 40-year-old pipeline. And Enbridge decided not to dig up this area to inspect it. Enbridge did report those defects to the agency charged with pipeline safety, the Pipeline and Hazardous Safety Materials Safety Administration. But according to investigators, that agency is poorly staffed and its regulations are weak.

Hersman says the pipeline safety agency should have the power to make sure companies aggressively inspect their pipelines and replace them before they get so decrepit. (Deborah Hersman chairs the NTSB, which was charged with figuring out what caused the catastrophic spill.)

Will there be any loss of revenue associated with ag land for the pipeline construction?

TransCanada's total expenditures during the construction phase includes payments to land owners for any disruption of normal farming enterprises. The Goss and Associates Report Table 2.1 identifies payment to farmers for land purchase, easements, and crop damage as $73,044,094.

Crop damages are included in the language of the formal Keystone XL Pipeline application. Relevant sections include:

Section 4.1 Interference with Irrigation Systems

> If the pipeline or temporary work areas intersect an operational (or soon to be operational) pivot or other spray irrigation system, Keystone shall establish with the landowner or landowner's designate an acceptable amount of time the irrigation system may be out of service. If an irrigation system interruption results in crop damages, either on the pipeline construction right-of-way or off the construction right-of-way, the landowner shall be compensated reasonably for all such crop damages.
>
> If the pipeline or temporary work areas intersect an operational sheet flow irrigation system, Keystone shall establish with the landowner or landowner's designate an acceptable amount of time the irrigation system may be out of service. If an irrigation system interruption results in crop damages, either on the pipeline construction right-of-way or off the construction right-of-way, the landowner shall be compensated reasonably for all such crop damages.