IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STANDING ROCK SIOUX TRIBE, Plaintiff, and CHEYENNE RIVER SIOUX TRIBE, Plaintiff-Intervenor, v. U.S. ARMY CORPS OF ENGINEERS, Defendant-Cross Defendant, and DAKOTA ACCESS, LLC, Defendant-Intervenor-Cross Claimant.	Case No. 1:16-cv-1534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267)

FOURTH DECLARATION OF JOHN EAGLE, SR.

1. Hau Mitakuyepi. Anpetu ki le, cante waste nape ciyuza pelo. Hehaka Ska imaciyapi, na wasicu eya Jon Eagle Sr., hemaca. Hunkpapa hemaca na canka ohkan tiospaye ematahan, na Wanbli Koyag Mani ematahan. My relatives. Today I greet you with a good-hearted handshake. My Lakota name is White elk and my English name is Jon Eagle Sr. I am hunkpapa and come from the Sore Back extended family, and the family of Walks Dressed in Eagle.

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2. You may be wondering why I start in my language. In our belief system that is the most respect I can show you. To address you in one of the first languages spoken on this land. When you think of the wisdom of my ancestors and why our elders taught us to introduce ourselves in this way, it is so that as good relatives we are going to listen to each other. It also prepares us for times like today when we don't agree with each other. If we look at each other as relatives we will always have that to fall back on.

3. I am the Tribal Historic Preservation Officer ("THPO") for the Standing Rock Sioux Tribe, and as I have stated in previous declarations, those four words—Standing Rock Sioux Tribe—do not accurately reflect who I really am. That's who the United States government says I am. Every man, woman and child enrolled at the Standing Rock Reservation has the same first three numbers in their enrollment numbers, 302. That is the Prisoner of War camp we come from. 302, a remnant of the Indian Wars.

4. I think it is important for you to understand that I do not look at myself as a victim. I am still standing on my own two feet. Protecting my wife and providing for my family. I also think it is important for you to understand that the world my family prepared me for no longer exists. I was taught how to live off the land, following ancient protocols which actually stimulate new growth. Never taking more than we need. And yet, in my lifetime I have witnessed changes to our natural environment that cause me to worry about my children and grandchildren. Will they be able to live off the land like I and everyone before me did?

5. Everywhere I go, I see sick or dying trees and I ask myself, "Where have the birds gone?" When I was a child they used to blacken the sky. I see that deer and elk have wasting disease and we can no longer trust our food source. We are told not to let children and our elders eat too much fish because our rivers are polluted. There is no clean water anywhere in this

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country. What are we supposed to eat when they're gone? The loss of the buffalo had a devastating effect on my ancestors that has been passed down the generations to us living today. It created a dependency that people in this country hold against us.

6. My ancestors signed treaties with the United States government in the hopes that their grandchildren would have a future. And yet our experience is that the United States does not honor the treaties of their grandfathers. Does our treaty not say, "absolute and undisturbed use and occupation of the Indians therein named?" How is it that a pipeline could be allowed to go through our treaty territory without our consent? In fact, the Environmental Assessment didn't even mention that we were here. Is it not true that treaties are the supreme law of the land?

7. As a THPO who has participated in environmental reviews under the National Environment Protection Act, I now question whether or not the law is adequate. Federal agencies want me to pin-point on a map the cumulative effect of the extractive industries without acknowledging that the cumulative effect is now global.

8. On February 8, 2016, I was appointed by my people to serve as THPO for my tribe. One of the first things brought to my attention was our resistance to the Dakota Access Pipeline. From the onset of my participation, I have struggled with trying to explain to a culture who has a different experience in this world than my people, what irreparable harms means to us. I've thought about it over and over again and can only explain it like this. While studying sociology at Fort Lewis College in Durango, Colorado a professor asked, "If you want to know what it's like to be white in this country, who do you ask?" A young white student spoke up and said, "You ask a white person." The professor, Jim Fitzgerald, Ph.D. said, "No, you ask an

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African-American or an Asian-American or a Native American because they live outside of that experience."

9. I served in the United States military and come from a family with a long history of that. My father was a Vietnam veteran. I wanted to share that with you because I believe I understand what sacrifice and duty means. I believe that I understand what discipline means because at one time in my life I had to do things I didn't want to do. Maybe writing this is one of those times. Because for me to come from where I came from, a place where I am surrounded by love and I live in peace, I had to step outside that comfort zone to write this declaration. Reaching out to a culture that isn't aware of my experience in my own country.

10. When I joined the United States Army I was asked if I spoke a foreign language. I replied, "Yes. English." That is why I opened this declaration in my own language to help you to understand that I am descendant of an ancient people who has cultural affiliation to the land, the water and the air going back to the beginning of time. I am much older than the concept of an American or a Native American. Ma Lakota, I am Lakota.

11. I don't want you to feel sorry for me because I don't feel sorry for myself. I come from a culture that had to deal with papal bulls which said a European religion could refer to me as a fractionated human being and force my ancestors through rape and torture to convert to their belief systems. I come from a culture that had to deal with doctrine of discovery which said a foreign people who came to this land had a god-given right to take it away from us. I went to school and learned about manifest destiny as if it was a good thing. I remember sitting in class embarrassed. When I got older and learned about Carlisle, the first federally funded boarding school whose motto was, "To kill the Indian and save the man." Despite everything that

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happened to us as a people I don't feel like a victim. Nahaci Lena Unkupelo, we're still here. An ancient people deeply connected to our environment.

12. When in times of need, we reach out to and engage with a living universe. We call back to our ancestors for help and they come. Our chiefs still guide us today. Tatanka Iyotanke, Sitting Bull once said "What promises have they made that they kept? Not one. And what promises have we made that we broke? Not one."

13. I understand that the pipeline permits have been declared illegal and the Court has ruled that the Corps should have complied with NEPA but did not. We have been saying this from the very beginning, and being vindicated in our position was valuable. Despite this, the pipeline continues to operate. We won our lawsuit finding that the pipeline was permitted illegally, but the pipeline gets to operate anyway. This is part of a pattern. A pattern where the rules are changed to benefit non-Indians at our expense. The U.S. Government stole land promised to us in perpetuity, and the Supreme Court upheld that. Then the Corps built dams that flooded our best remaining lands, without our consent, and that was upheld too. Now the rules have been changed again, so that a pipeline that never should have been authorized gets to keep operating, exposing us to risk and stress of catastrophe. This pattern has caused so much trauma and pain among the people in my Tribe. It signals to us that the Government sees us as less. It signals that the Government will never keep its word to us or meet its obligations to us. It signals that if we play by the rules of the U.S. legal system and win, the rules will be changed to our detriment. I have previously discussed the historic trauma that every Tribal member carries with them. Allowing this pipeline to continue operating will compound this trauma yet again, causing untold harm.

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I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on this 15th day of October, 2020.

Jon Eagle, Sr.

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CERTIFICATE OF SERVICE

I hereby certify that on October 16, 2020, I electronically filed the foregoing FOURTH DECLARATION OF JON EAGLE, SR. with the Clerk of the Court using the CM/ECF system, which will send notification of this filing to the attorneys of record and all registered participants.

/s/ Jan E. Hasselman
Jan E. Hasselman

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EXHIBIT A

TO SECOND DECLARATION OF MARIE FAGAN, PH.D

Impacts of a temporary shutdown of Dakota Access Pipeline: Update

prepared for Earthjustice by London Economics International LLC

October 13, 2020

London Economics International LLC ("LEI") was engaged by Earthjustice on behalf of the plaintiff tribes to provide an independent view of the impact of a temporary shutdown of the Dakota Access Pipeline ("DAPL") while the US Army Corps of Engineers conducts the Environmental Impact Statement ("EIS"). The timeframe of LEI's analysis is 2020-2022.

DAPL transports crude oil produced in North Dakota. North Dakota oil production is, in turn, part of a globally interwoven system of oil production, demand, and transportation. Oil producers such as those in North Dakota were facing a challenging business environment, even before the economic crisis triggered by global and US efforts to contain the spread of COVID-19. For the reasons discussed in this report, LEI believes relatively low oil demand and low oil prices (and, with it, low demand for oil transportation out of North Dakota) will last through 2021-2022.

This brief report serves as an update to LEI's report "Impacts of a temporary shutdown of Dakota Access Pipeline" dated May 19, 2020 and Declaration of Mare Fagan, in the United States District Court for the District of Columbia Case No. 1:16-cv-1534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267).

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1 Executive summary

In the London Economics International LLC ("LEI") report "Impacts of a temporary shutdown of Dakota Access Pipeline" dated May 19, 2020 and Declaration of Mare Fagan, in the United States District Court for the District of Columbia Case No. 1:16-cv-1534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267), LEI examined the impacts of a temporary shutdown of the Dakota Access Pipeline ("DAPL"). Key conclusions from LEI's May 19, 2020 report were:

- oil production from the Bakken region which DAPL serves would be much lower than historical levels, reducing the need for the pipeline over the next one to two years, and thus minimizing the impact of a shutdown;
- oil producers were facing headwinds even before COVID-19- related oil demand destruction and the ensuing oil price collapse, and the financial backing needed to support a full recovery in oil production will not be forthcoming in the next year or two;
- the current low price/weak oil demand environment could persist for one to two years;
- rail shipping could take up the slack if DAPL were temporarily closed;
- rail would be a cost-effective alternative to DAPL; and
- economic losses are overstated by other witnesses, based on unrealistic estimates for scarcity of railcars and unrealistic assumptions for rail traffic.

The current report update supports and strengthens the conclusions in LEI's May 19, 2020 report, namely:

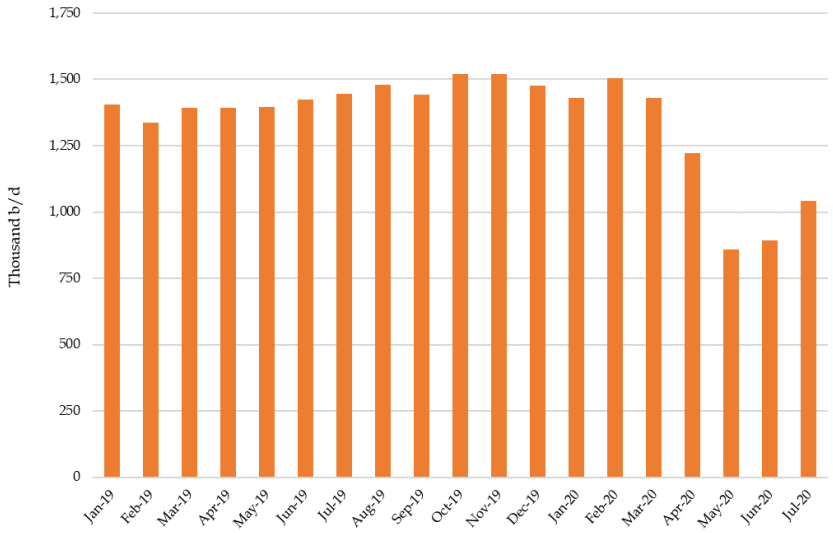
- crude oil production from North Dakota has been as weak as LEI projected in May 2020;
- prospects for recovery of oil production in the next one to two years are dim as oil prices remain low and the industry is starved of capital;
- crude-by-rail shipments have been weak, freeing railcars for crude transport;
- weak demand for rail transport overall reduces the potential for rail congestion; and
- North Dakota oil producers have confirmed they have cost-effective alternatives to DAPL.

The development since May 2020 of key indicators: oil production, oil prices, availability of capital, availability of rail cars and cost to use rail, and extent of rail traffic; all confirm and strengthen the conclusions of the LEI May 19, 2020 report.

2 Oil production from North Dakota has settled at levels projected by LEI

In the May 19, 2020 report, LEI projected that an ongoing loss of 500,000 b/d could last though most of the coming 12 months or more. The latest information from North Dakota supports LEI's outlook. It shows production at about 1 million barrels per day ("mbd") as of July 2020 (see Figure 1), which is consistent with what LEI predicted: about 500,000 b/d below previous peak levels.

Figure 1. North Dakota oil production



Source: ND Pipeline Authority. "US Williston Basin Oil Production." <https://northdakotapipelines.com/us-williston-basin-oil-production>

LEI does not expect a strong rebound in North Dakota production for the reasons discussed in the May 19, 2020 report:

- oil prices are too low to cover full-cycle costs;
- drilling activity is weak;
- many companies are facing bankruptcy; and
- the financial sector is tightening the purse strings.

As discussed in the following sections, these drivers are all still in place in the oil industry.

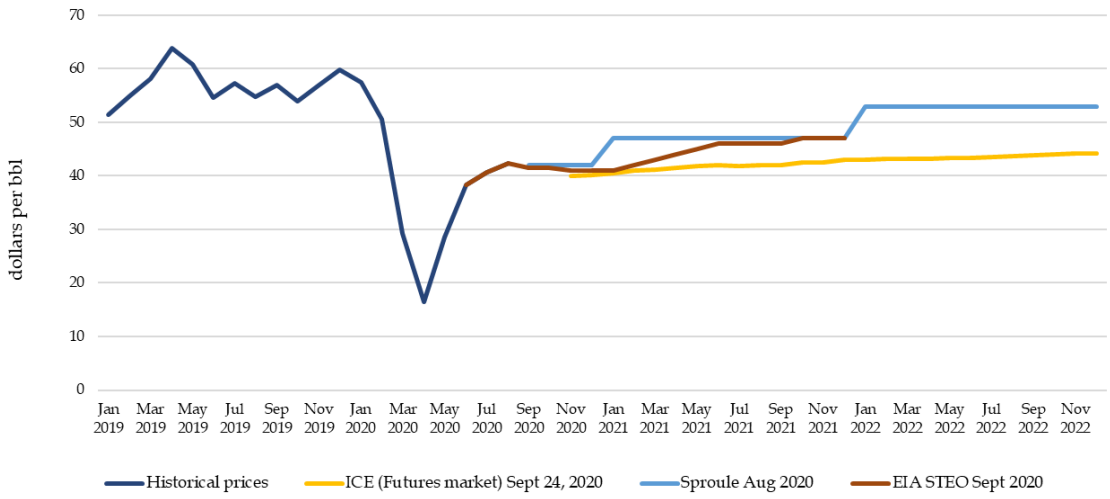
2.1 Oil prices are too low to cover full-cycle costs

West Texas Intermediate ("WTI") oil prices were about $40/bbl in late September; futures are under $45 per barrel ("bbl") into 2022 (see Figure 2). This is higher than the futures market was in May 2020, when WTI was trading at about $35/bbl for 2022. However, it is not high enough to support a full recovery of oil production. As LEI noted in the May 19, 2020 report, $45/bbl can

cover costs for an average existing Bakken well, but is below the full-cycle (drilling, fracking, and completion) cost of an average new well. Harold Hamm, Chairman of Continental Resources Inc. (the largest oil producer in the Bakken), commented, "[a]s you look at what it's going to take to bring back activity, you're probably in that $50, $60 [per barrel] world. And so until that point in time, I think the industry will be pursuing pretty moderate growth rates."[1]

The futures market is not pricing crude oil at anywhere near $50-$60/bbl yet, which means it is unlikely that producers can hedge at a price that can cover full-cycle costs; and without such hedges, producers need to be careful about managing cash flow. They cannot drill more wells in the near term (the next year or so) than they can pay for out of the cash from current production.

Figure 2. Outlooks for WTI oil prices to 2022



Sources: Sproule. <https://sproule.com/price-forecast/>;
US Energy Information Administration, Short-term Energy Outlook ("STEO").
<https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RWTC&f=M>;
Intercontinental Exchange ("ICE"). <https://www.theice.com/products/213/WTI-Crude-Futures/data?marketId=463544&span=1>

2.2 Drilling activity is weak

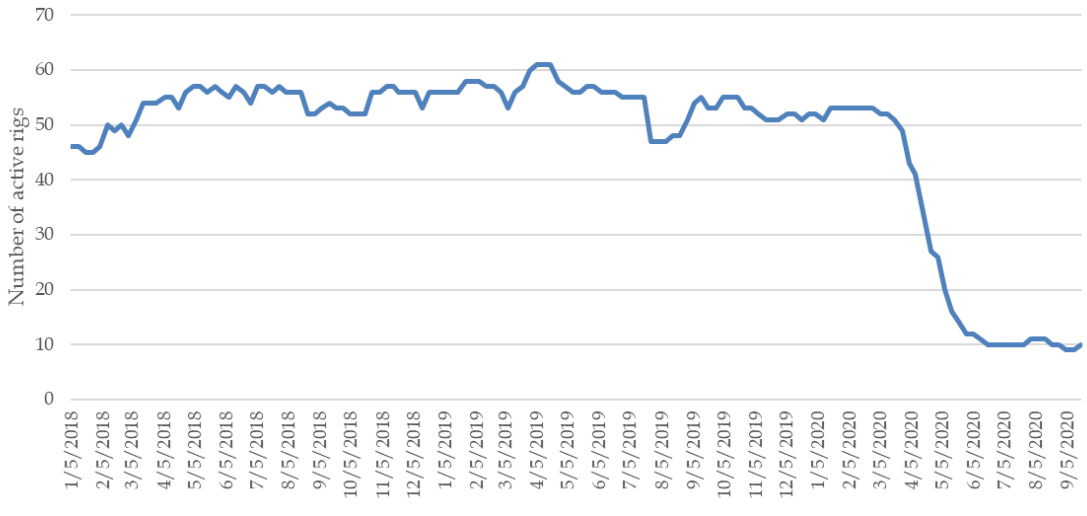
Drilling activity in the Williston Basin[2] had declined dramatically as of May 2020, with only 13 rigs actively drilling for oil (see Figure 3). Since that time, there have been even fewer rigs—only

[1] S&P Global Market Intelligence. *Continental Resources chairman sees no need for rise in US shale oil output*. August 4, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/continental-resources-chairman-sees-no-need-for-rise-in-us-shale-oil-output-59752326>

[2] Oil production from the Williston Basin is more-or-less synonymous with North Dakota production, and the Bakken geological formation is part of the Willison Basin. In this report, as in much data from the State of North

about 10 per week—drilling for oil in the Williston Basin. Oil prices are still too low to support new drilling, except for a handful of prospects. Without new drilling, oil production cannot increase.

Figure 3. Active oil-directed rigs in the Williston Basin



Source: Baker Hughes North American Rig Count. <https://rigcount.bakerhughes.com/na-rig-count>

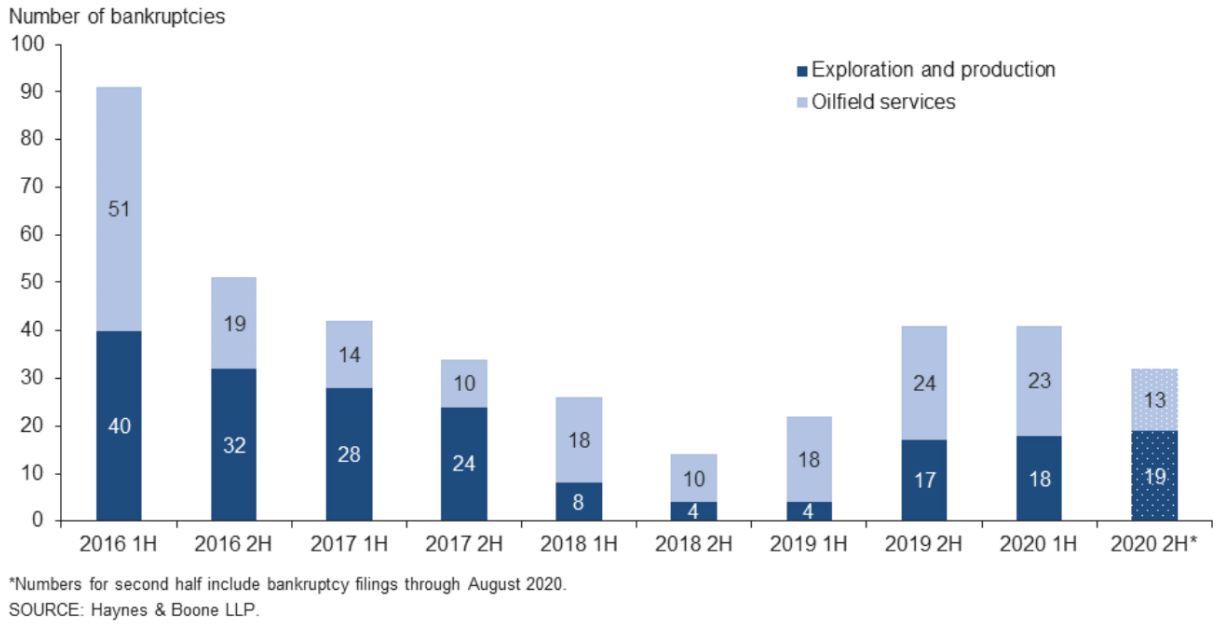
2.3 Bankruptcies have not abated

In the LEI report of May 19, 2020, LEI described the difficulty which oil producers face in attracting funding from investors while oil prices are expected to remain low. This is still the case. Reported bankruptcies remain high through August 2020 (see Figure 4) as companies are unable to service debt at currently low oil prices. Oasis Petroleum, recently one of the top ten oil producers in North Dakota, filed for bankruptcy in September 2020.[3]

Dakota and other sources, the terms "Williston Basin," "Bakken region," and "North Dakota" oil production are used more or less interchangeably.

[3] S&P Global Market Intelligence. *Moody's downgrades Oasis Petroleum following bankruptcy filing*. September 30, 2020. <https://platform.marketintelligence.spglobal.com/web/client?auth=inherit#news/article?id=60556754&KeyProductLinkType=58&utm_source=MIAlerts&utm_medium=ScheduledAlert&utm_campaign=Alert_Email>

Figure 4. Bankruptcies of oil and gas producers and oilfield service companies



Source: Federal Reserve Bank of Dallas. *Energy Indicators*. September 18, 2020. <https://www.dallasfed.org/research/energy/indicators/2020/en2007.aspx>

In addition to bankruptcies that have already been declared, there could be more on the way. A respondent to the Federal Reserve Bank of Dallas's quarterly survey of oil and gas executives ("Dallas Fed Survey") commented that "Lots of undeclared bankruptcies are still in the pipeline in the shale plays. As production drops due to the decline rates for shale, cash flows will demand bankruptcy. Private equity is not going to save the day for them."[4]

2.4 The financial sector is not supporting a near-term increase in oil production

Another executive's comment reported in the Dallas Fed Survey was, "[w]e are anxiously awaiting the fall re-determinations for shale players. We believe strongly that banks and operators will have to face reality, which will lead to widespread bankruptcies and assets sales. Banks will likely recover less than 35 cents of each $1 loaned."[5] Redeterminations are a re-set of the borrowing base that a bank uses to determine the amount of debt it will provide to an oil and gas company. The borrowing base is the amount of money that a lender is willing to loan a company, based on the value of the collateral the company pledges.[6] Barrels of oil serve as

[4] Federal Reserve Bank of Dallas. *Dallas Fed Energy Survey*. September 23, 2020. <https://www.dallasfed.org/-/media/Documents/research/surveys/des/2020/2003/des2003.pdf>

[5] Ibid.

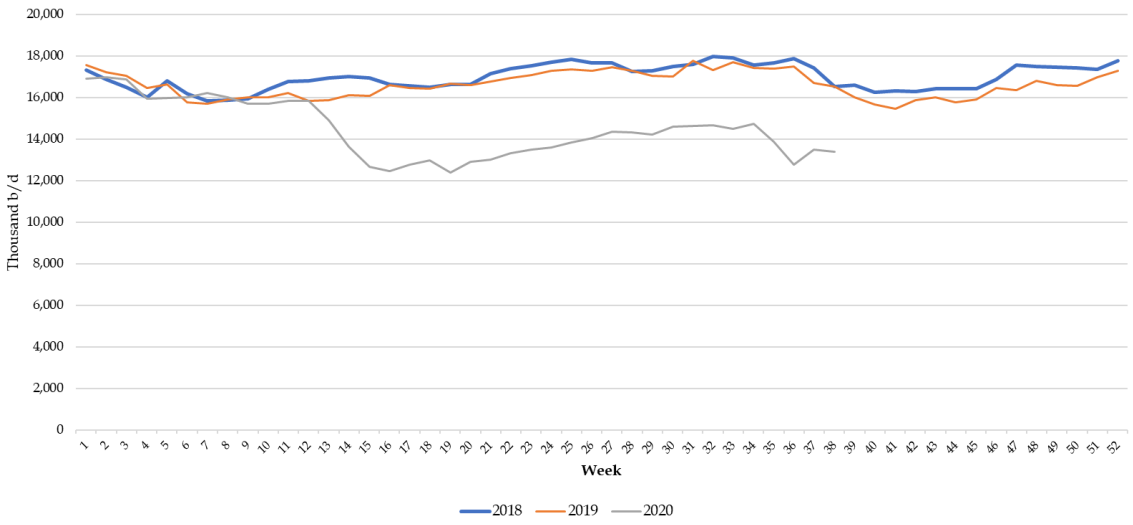
[6] Investopedia. <https://www.investopedia.com/terms/b/borrowing-base.asp>

collateral for energy companies; lower oil prices reduce the value of that collateral. With a lower borrowing base, companies must rely less on debt and more on cash flow, to maintain and/or increase oil production. Therefore, production growth is constrained. Moody's estimates a 20-30% reduction in borrowing bases during 2020.[7]

2.5 Oil demand remains below normal, and future demand outlooks are also weak

US demand for refined products has not recovered from its collapse owing to COVID-19–related lockdowns and reduced travel. US refinery runs (which include refined products for export as well as domestic consumption) remains strongly below typical seasonal levels (see Figure 5).

Figure 5. US refinery weekly net inputs of crude oil



Source: EIA. "US weekly supply estimates." <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WCRRIUS2&f=W>

Outlooks for oil demand for the next 12-18 months show a weak and slow recovery, with expectations that a full recovery does not materialize until 2022:

[7] S&P Global Market Intelligence. *Moody's says global outlook for oil and gas producers improved to "stable."* September 11, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/moody-s-says-global-outlook-for-oil-and-gas-producers-improved-to-stable-60291747#:~:text=11%20Sep%2C%202020-,Moody's%20says%20global%20outlook%20for,gas%20producers%20improved%20to%20'stable'&text=Moody's%20upgraded%20its%20outlook%20on,improved%20the%20sector's%20credit%20outlook>

- Deloitte, a consultancy, projects normal US demand levels, but not until about March 2022;[8]
- Moody's also does not expect oil demand to reach 2019 levels until 2022;[9]
- the International Energy Agency ("IEA") projected in July 2020 that the 7.9 mbd decline it expects for annual average global oil demand for 2020 will only be made up for in part in 2021 (with a 5.3 mbd increase expected over 2020 levels);[10] and
- the US Energy Information Administration ("EIA") projected in October 2020 that global oil consumption would be lower by 8.6 mbd on average for 2020 compared to 2019; and then will increase by 6.3 mbd in 2021.[11] In other words, the increase EIA projects for 2021 will not make up for the decline during 2020.

The expectations of these independent organizations are in contrast to statements by witness Glenn Emery who argued that independent forecasting agencies expect global oil demand will recover almost fully to 2019 levels by the fourth quarter of 2020.[12]

Ongoing weak demand implies that low oil prices will persist, and low oil prices will continue to discourage increases in production.

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[8] S&P Global Market Intelligence. *Oil producers in no-win scenario as prices stall at $40/b, COVID-19 risk remains.* September 28, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/oil-producers-in-no-win-scenario-as-prices-stall-at-40-b-covid-19-risk-remains-60465053>

[9] S&P Global Market Intelligence. *Moody's says global outlook for oil and gas producers improved to "stable."* September 11, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/moody-s-says-global-outlook-for-oil-and-gas-producers-improved-to-stable-60291747#:~:text=11%20Sep%2C%202020-,Moody's%20says%20global%20outlook%20for,gas%20producers%20improved%20to%20'stable'&text=Moody's%20upgraded%20its%20outlook%20on,improved%20the%20sector's%20credit%20outlook>

[10] International Energy Agency. *Oil Market Report - July 2020*. <https://www.iea.org/reports/oil-market-report-july-2020>

[11] Energy Information Administration. Short-term Energy Outlook ("STEO"). October 6, 2020. https://www.eia.gov/outlooks/steo/

[12] United States District Court for the District of Columbia. 2020. *Second Declaration of Glenn Emery in Support of Dakota Access, LLC's Reply Brief on The Question of Remedy*. Case No. 1:16-cv-1534-JEB. P. 8.

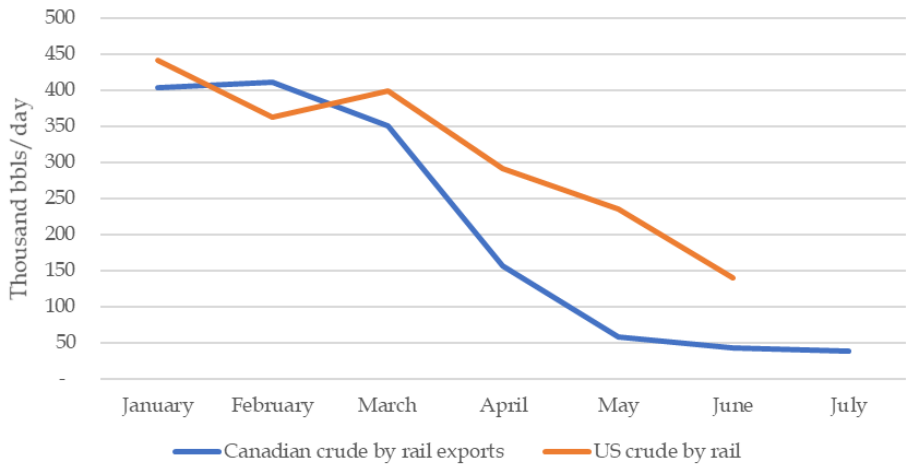
3 Alternatives to DAPL are available

In the May 19, 2020 report, LEI demonstrated that there are more railcars available than witness William Rennicke assumed. LEI's demonstration relied upon data showing that shipments of crude oil by rail had declined and were likely to stay below 2019 levels. Since that time, crude oil rail shipments have declined further. This decline has two impacts on the availability of alternatives to DAPL. First, it frees up railcars for use by DAPL shippers if needed; and second, it reduces rail congestion on the routes that are used by oil shippers.

3.1 Crude shipments by rail have declined dramatically

Mr. Rennicke's estimate of available railcars relied upon data as of January 2020.[13] In the following months, US crude-by-rail shipments declined dramatically; in Canada, crude oil exports by rail collapsed (see Figure 6). This implies that Mr. Rennicke's estimate of only 3,685 available US and Canadian railcars was far too low. The rail system has been shipping only a fraction of the crude oil that it was carrying in January and February: many more railcars are now idle and could be called upon by shippers seeking alternatives to DAPL.

Figure 6. US crude by rail, and Canadian crude oil exports by rail



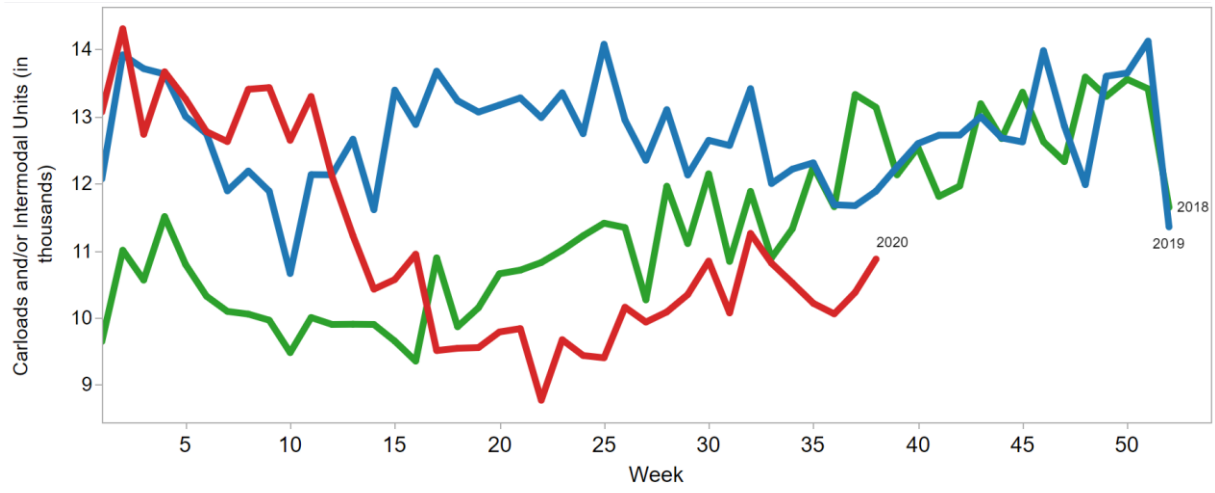
Source: Energy Information Administration. <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=ESM_EPC0_RAIL_NUS-NUS_MBBL&f=M> and Canadian Energy Regulator. "Canadian Crude Oil Exports by Rail." <https://www.cer-rec.gc.ca/nrg/sttstc/crdlndptrlmprdct/stt/cndncrdlxprtsrl-eng.html>

Combined rail traffic for petroleum and petroleum products recovered somewhat from the lows seen during the second quarter of 2020, but are still below levels of previous years, for both the

[13] Declaration of William Rennicke: Case No. 1:16-cv-1534-JEB, 509-6 Ex. D - Rennicke Declaration and Exhibit. Exhibit 3, Page 8.

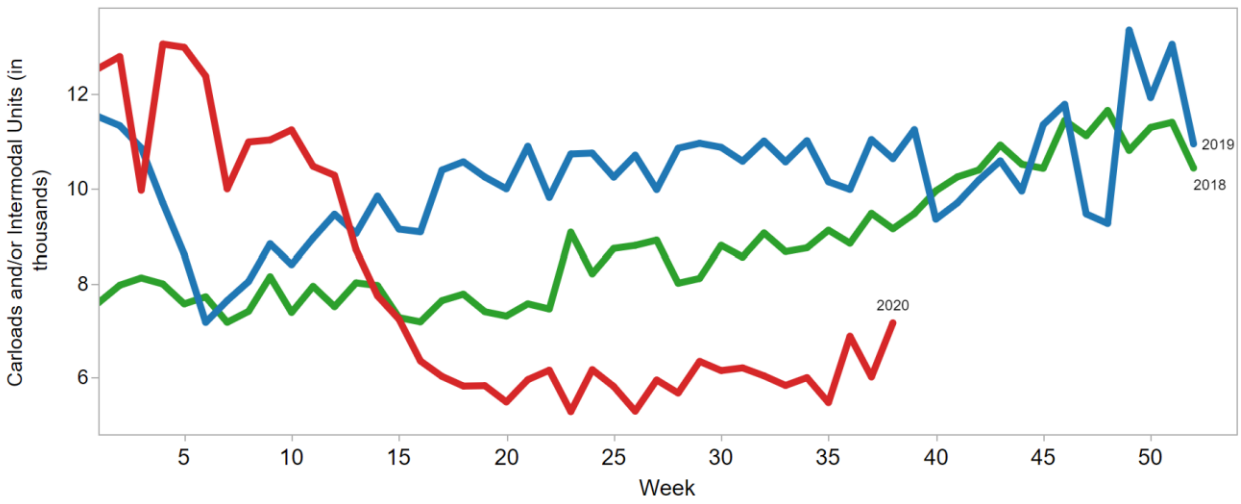
United States and Canada (see Figure 7 and Figure 8). With crude oil shipments down dramatically as shown above, the recovery shown in Figure 7 and Figure 8 is owing to a recovery of shipments of refined products.

Figure 7. Petroleum and petroleum products originated rail traffic (United States)



Source: Association of American Railroads. <https://www.aar.org/data-center/rail-traffic-data/>

Figure 8. Petroleum and petroleum products originated rail traffic (Canada)



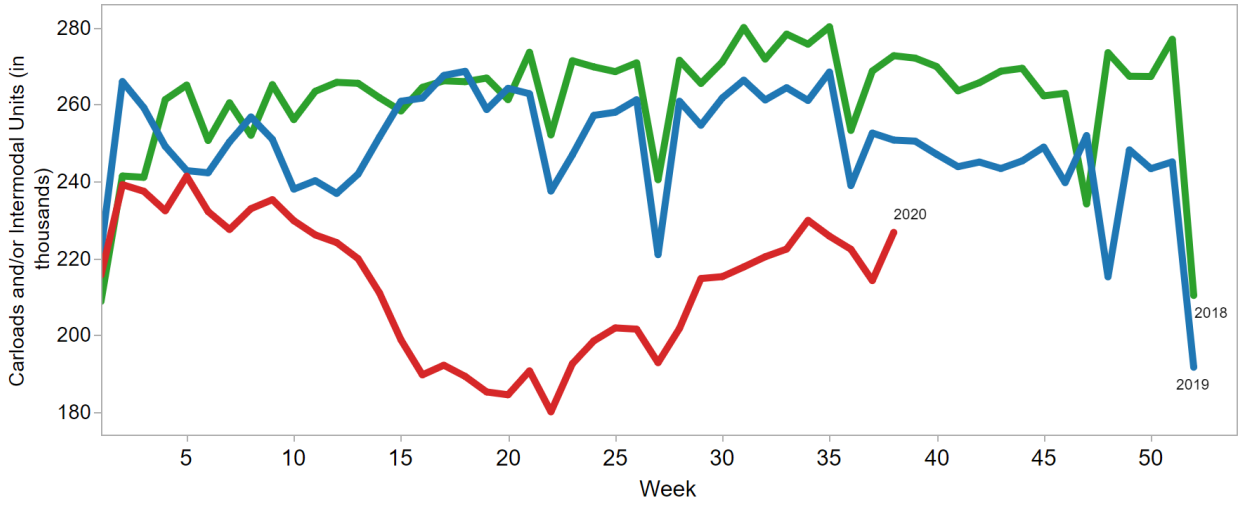
Source: Association of American Railroads. <https://www.aar.org/data-center/rail-traffic-data>

3.2 Rail transport of other commodities is at low levels

Although it has recovered somewhat, overall rail traffic remains lower than typical levels (see Figure 9). This implies that many routes are not as congested as they may have been in the past. The lower levels of congestion pose much less of a threat to transport of farm products than in

2014, the year witness Elaine Kub chose as an illustration of the threat that crude-by-rail poses to transportation of agricultural products.[14]

Figure 9. Total originated rail traffic (United States)



Source: Association of American Railroads. <https://www.aar.org/data-center/rail-traffic-data/>

3.3 North Dakota shippers are ready and willing to use alternatives to DAPL

In the May 19, 2020 report, LEI quantified the capacity of alternatives to DAPL that are available to North Dakota oil producers if DAPL is shut down. In the past few months, Bakken producers and midstream operators have confirmed there are alternatives to DAPL and expressed little concern about the potential closure of DAPL. For example:

- CEO and Director Terry Spencer of Oneok (a large midstream operator in the Bakken) is not concerned about a DAPL shutdown in the near term, because current production is low and will take some time to recover. He noted "[i]n our view, any impact from a DAPL shutdown would mostly impact 2021, providing some time for more solutions to develop."[15] One of the solutions may be the conversion of Oneok's Bakken natural gas liquids ("NGL") pipeline to accommodate crude oil flows, which the company is considering.[16]

[14] Declaration of Elaine Kub: Case No. 1:16-cv-1534-JEB, 509-8 Ex. F - Kub Declaration and Exhibits.

[15] S&P Global Market Intelligence. *As Dakota Access shutdown looms, Oneok caps midstream capex to defend dividend*. July 29, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/as-dakota-access-shutdown-looms-oneok-caps-midstream-capex-to-defend-dividend-59648477>

[16] Oneok. Second Quarter 2020 Earnings call. July 29, 2020. <https://ir.oneok.com/news-and-events/events-and-presentations>

- John Hess, CEO of Hess (the second-largest Bakken oil producer) re-assured shareholders "If DAPL is shut in, we have the capacity to move all of our Bakken production because of the flexibility provided by our marketing capability; our [Hess Midstream LP] infrastructure and long-term commitments to multiple markets....And specifically, if DAPL were interrupted, rail would feature [in the company's transportation options], plus other pipeline systems that we move oil on currently," Hess said. "So it would not have a major impact on moving all of our production if DAPL were shut in, and the cost to us would be a few dollars per barrel."[17]

It is notable that Mr. Hess said the additional cost of shipping by rail would be only "a few dollars per barrel."

The assurances from these executives that alternatives are available and are not cost-prohibitive are in clear contrast to assertions by several witnesses. William Rennicke argued that "[f]orcing shippers to transfer DAPL volumes to rail would be both costly and disruptive to the crude oil supply chain."[18] Glenn Emery asserted "[a]lternate transport options are either unavailable or far more expensive and less effective than DAPL..."[19] Mr. Emery went on to argue that "It takes significant capital and time—typically months of years—to create the infrastructure needed to move these volumes to different outlets."[20] Jeff Makholm argued that "Shutting DAPL will have severe disruptive effects on those it has served for the past three years."[21] The view from the oilfields, as conveyed by top executives, does not support the arguments of these witnesses.

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[17] S&P Global Market Intelligence. *Hess raises Bakken output, has options if Dakota Access shuts down, CEO says*. July 29, 2020. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/hess-raises-bakken-output-has-options-if-dakota-access-shuts-down-ceo-says-59656608>

[18] United States District Court for the District of Columbia. 2020. *Second Declaration of William Rennicke in Support of Dakota Access, LLC's Reply Brief on The Question of Remedy*. Case No. 1:16-cv-1534-JEB. P. 7.

[19] United States District Court for the District of Columbia. 2020. *Second Declaration of Glenn Emery in Support of Dakota Access, LLC's Reply Brief on The Question of Remedy*. Case No. 1:16-cv-1534-JEB. P. 2.

[20] Ibid. P. 5.

[21] United States District Court for the District of Columbia. 2020. *Second Declaration of Jeff Makholm in Support of Dakota Access, LLC's Reply Brief on The Question of Remedy*. Case No. 1:16-cv-1534-JEB. P. 26.

4 Conclusion

The key indicators which LEI relied upon to come to its conclusions of May 19, 2020 continue to support LEI's analysis:

- Crude oil production from North Dakota has been as weak as LEI projected in May 2020, and prospects for recovery of oil production in the next one to two years are dim. This supports LEI's May 19, 2020 conclusion that the amount of "stranded oil" that would need to find other means of export from the Bakken would be nowhere near the full 570,000 b/d claimed by other witnesses; nor would the loss of export capacity have the large impact on North Dakota state revenues that was claimed by other witnesses.
- Crude-by-rail shipments have been even weaker than in February 2020, freeing more railcars for crude transport. Rail cars will not be in short supply; and North Dakota producers have themselves confirmed that they have cost-effective alternatives to DAPL.
- Weak demand for rail transport overall reduces the potential for rail congestion and has a correspondingly lower impact on rail transport for agricultural supplies and products.
- Energy security concerns—worries about dependence on oil from unfriendly or unstable countries—are diminished in a world which will remain over-supplied with oil for the next few years.

In summary, the events and indicators of the past five months have unfolded as LEI projected, and they validate and reinforce LEI's conclusions.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STANDING ROCK SIOUX TRIBE, Plaintiff, and CHEYENNE RIVER SIOUX TRIBE, Plaintiff-Intervenor, v. U.S. ARMY CORPS OF ENGINEERS, Defendant-Cross Defendant, and DAKOTA ACCESS, LLC, Defendant-Intervenor-Cross Claimant.	Case No. 1:16-cv-1534-JEB (and Consolidated Case Nos. 16-cv-1796 and 17-cv-267)

SECOND DECLARATION OF PATRICK FLANDERS

1. I previously offered testimony in this matter as an expert in pipeline safety and operations. ECF 527-8. My qualifications and expertise are laid out in that declaration. I offer the following testimony in response to a declaration filed by Dakota Access Pipeline LLC witness John Godfrey (ECF 543-2), which comments on my earlier declaration. In general, the points raised by Mr. Godfrey do not undermine the opinions offered in my earlier declaration, which I reaffirm here. To the contrary, Mr. Godfrey confirms that DAPL did not take seriously the designation of the Lake Oahe crossing as a High Consequence Area. High Consequence Areas are defined as those that include waterways, populated areas, or environmentally sensitive

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areas were a pipeline rupture would likely cause permanent or long-term environmental damage. As this definition applies to the pipeline crossing at Lake Oahe, the HCA designation justifies higher than minimum accepted industry practice performance requirements for risk mitigation systems to offset the potential for high consequence outcomes. This lack of consideration explains their reliance on safety systems as protection layers without proper analysis, quantified risk reduction, or installed performance verification widely accepted within the oil and gas industry.

2. Mr. Godfrey argues that DAPL is "extremely safe." I disagree. More to the point, this claim is not supported by any expert, third party review of functional testing or performance verification results of the installed field hardware and implemented procedures that make up the DAPL safety systems. The SRST technical team has long challenged the sweeping qualitative claim of a safe pipeline without documented results that would support that claim. As stated in my previous declaration, "Reliable operations and process safety/risk reduction require safety system fault tolerant architecture, functional testing, and performance verification. Deficiencies exist within the DAPL installed protective systems including Surge Relief, Integrity of Controls used for Surge Prevention and WCD crude inventory control, and external monitoring and leak detection. These deficiencies result in unacceptable risk to Lake Oahe and the Standing Rock Sioux Tribe." Flanders Decl. ¶ 9. Simply calling the pipeline safe does not make it so. I stand by my previous opinion that unacceptable risk remains.

3. Mr. Godfrey accuses me generally of a "lack of knowledge about transmission pipeline design and operations." Godfrey Decl. ¶ 3(c). This is a preposterous accusation. I have more than 40 years of technical expertise that has extended from the wellhead to gas oil separating plants to refineries to loading arms and tank farms with integrated oil and gas

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companies like Shell, Amoco, and Aramco. I have provided technical support to projects and operations responsible for the operations, design, and installation of literally thousands of miles of transmission pipelines. For example, I consulted directly for the East/West crude pipeline that connected the eastern province of Saudi Arabia with the Red Sea terminals. The E/W pipeline is 48 inches in diameter with a production flow rate of 5 million barrels per day (roughly ten times the current capacity of DAPL). My previous declaration pointed out deficiencies with the DAPL surge prevention and protection systems based on extensive experience with crude oil transmission pipelines, the fact that additional protective measures are justified at the Lake Oahe Crossing as a High Consequence Area, and reference to applicable federal regulations and findings cited within in the DAPL surge analysis study.

4. Mr. Godfrey asserts that my conclusions about surge pressures are "incorrect" and "inconsistent with industry design standards and best practices." *Id.* ¶ 3(c). This is false. My conclusions were consistent with the DAPL surge analysis findings and existing regulatory requirements regarding overpressure limits for crude oil pipelines. 49 C.F.R. § 195.406(b) is clear: the requirements for adequate surge "prevention and protection" apply to the Lake Oahe crossing pipeline segment. 49 C.F.R. § 195.452 requirements for prevention and mitigative measures to protect high consequence areas raises the bar for pipeline operators to go beyond the minimum industry design template when routing crude oil pipelines through High Consequence Areas. Operators designing overpressure protection, emergency shutdown, and leak detection systems to reduce risk of crude oil pipelines installed within High Consequence Areas are required to "evaluate the capability … as necessary, to protect the high consequence area." 49 C.F.R. § 195.452(i)(3). Based on the surge study findings, additional surge pressure protection was warranted at the DAPL Lake Oahe crossing to mitigate unacceptable levels of pressure in

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the event of a spurious closure of the main line valves such as the automated emergency isolation valves at both sides of the Lake Oahe pipeline crossings. High Consequence Areas require automated protection systems to provide risk reduction that goes beyond minimum industry design.

5. Mr. Godfrey denies that there is any surge risk at the Oahe crossing and accuses me of "misunderstanding" fluid mechanics. This is untrue—as a pipeline safety engineer, surge is an issue that I have substantial experience with and something I consider all the time. More specifically, Mr. Godfrey critiqued my testimony (at ¶ 15 of my previous declaration) that DAPL's surge analysis report "limited the scope of the required Surge Relief Valves to only the pump station inlets, leaving the pipeline High Consequence Area river crossing HDD pipeline segments without protection." He said such critique "makes no sense" because "surge relief valves are installed on the *upstream* side of DAPL pump stations so they can protect the *upstream* pipeline from surges initiating at the pump stations." Godfrey Decl. ¶ 33. But my conclusions were supported by the results of DAPL's own surge analysis study. The study identified that the Lake Oahe pipeline crossing was at overpressure risk due to a spurious closure of a main line valve upstream of the pump station inlet valve. The flow analysis study did not support Mr. Godfrey's statement that the pump station surge relief valves "ensure that every surge initiator (including those in the pump stations) is addressed." The pump station surge relief valves will only protect the upstream pipeline from the pump station inlet valve or other pump station surge initiators. Again, the flow study was clear that the pipeline was not protected from high pressure due to surge should a spurious closure of a main line valve upstream of the pump station occur. Failure to address this finding, and operating DAPL without dedicated surge

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relief valves at both sides of Lake Oahe, increased the likelihood of pipeline damage and the associated negative consequence to Lake Oahe and the Standing Rock Sioux Tribe.

6. Mr. Godfrey next criticizes me for saying there is no surge relief on both sides of the Oahe crossing, claiming that "only one of the Lake Oahe valves, the downstream valve, could potentially have any impact on pressure surges at the crossing. Pressure surges initiated at the upstream valve would travel upstream, away from the crossing." Godfrey Decl. ¶ 34. This oversimplifies things considerably and ignores material risk. While it is true that a spurious valve closure on the upstream side of the crossing would not result in surge in the HDD portion of the pipeline underneath Oahe itself, it would result in surge upstream of the closed valve. A release at or above the upstream valve could still result in an oil spill in Lake Oahe, a fact documented by DAPL's own spill model. RAR 8855. Moreover, the pipeline crosses many tributaries to Lake Oahe, and a release into those tributaries would contaminate Lake Oahe and other important resources. That is why surge relief is important both upstream and downstream of the crossing.

7. Mr. Godfrey next complains that I "focus only on surge relief valves and ignores other surge protection efforts" like the SCADA system. Godfrey Decl. ¶ 35. Again, the critique misses the point. Of course I am aware of the other systems and concur that multiple layers of safety systems are appropriate. My focus on the need for relief valves at the Lake Oahe high consequence area pipeline crossing was consistent with the design philosophy adopted to protect the pipeline from overpressure due to surge caused by a closure of the pump station valve. The "multiple layers of protection" identified by Mr. Godfrey, were also present at the pump station. Yet, the installation of dedicated, surge relief valves for the pipeline protection from overpressure due to a spurious pump station inlet valve closure was provided in spite of the other

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protection layers. In addition, no documentation of functional testing, maintenance, or performance verification that demonstrated the installed capabilities of the additional "layers of protection" has ever been provided. Instrumentation used within pipeline safety systems, like all oil and gas sector safety instrumented systems, has potential for hidden, dangerous failures that can only be detected and repaired with a structured program of functional testing, maintenance, and performance verification. I assume that Mr. Godfrey, as a Consultant with DNV, is well aware of the safety life cycle requirements for safety instrumented systems that apply when installed on a pipeline. DAPL's failure to ever provide this documentation, or submit to any independent review of its claims about the pipeline's safety, has been a consistent focus of the Standing Rock technical team and undermines Mr. Godfrey's claims of safety.

8. Mr. Godfrey critiques my use of the Fluid Flow Consultants report, claiming that it was "actually a study used to inform design engineers about risks and potential mitigations that are then incorporated into the overall system design," stating that the risks identified therein have been fully mitigated. Godfrey Decl. ¶ 36. This is inaccurate. The flow analysis study clearly identified a surge related, overpressure event scenario on the DAPL pipeline at the Lake Oahe river crossing that will exceed the limits of 49 C.F.R. § 195.420(b). The potential for dangerous, unacceptable high pressure at the Lake Oahe high consequence area pipeline crossing due to a spurious closure of a main line valve was clearly identified and not addressed. Mr. Godfrey admitted that no surge relief valves were installed at the Lake Oahe pipeline crossing and even criticized the idea citing potential for additional leaks. The automated emergency isolation valves were installed at both sides of the Lake Oahe pipeline crossing to reduce the worst case discharge estimates. However, the use of the automated valves introduced the potential for spurious valve closures that the flow analysis study identified as a dangerous overpressure

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initiating event. A similar overpressure scenario exists at the pump station inlet valve closure, yet no dedicated, surge protection via surge relief valves were installed at the Lake Oahe pipeline crossing.

9. Mr. Godfrey asserts that I should not have made reference to the International Society of Automation's International Electrotechnical Commission ("ISA/IEC") because such standards were promulgated for the process industry (such as refineries and chemical plants), not crude oil pipelines. Godfrey Decl. ¶ 37. First, the statement is inaccurate because IEC/ISA standards were extended beyond refineries and chemical plants in the 8th edition of API RP 14C, which provides guidance to the design of safety instrumented systems used on offshore oil and gas producing platforms. Second, the application of ISA/IEC standards when designing safety instrumented systems, although not specifically required by pipeline regulations, would demonstrate the intent to apply the best available technology to reduce the risk of crude oil releases within a High Consequence Area. Adoption of IEC/ISA requirements for the DAPL safety critical instrumentation would also align with 49 C.F.R. § 195.452(2). IEC/ISA standards provide an established and proven, step by step, methodology that translates directly to pipeline applications that address similar relevant risk factors when using automated safety systems for risk mitigation. Here again, we see that DAPL falls back on minimum regulatory standards—which are well known to be inadequate—rather than embracing standards that would actually ensure pipeline safety. Mr. Godfrey makes this explicit when he complains, "I am aware of no regulatory requirement to have surge protection at HDD river crossings and HCAs. And Mr. Flanders points to none." Godfrey Decl. ¶ 38. To the contrary, as noted above, 49 C.F.R. § 195.452(2) states, "In identifying the need for additional preventative and mitigative measures, an operator must evaluate the likelihood of a pipeline release occurring and how a release could

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affect the high consequence area. This determination must consider all relevant risk factors, including, but not limited to … viii) exposure of the pipeline to operating pressures exceeding established maximum operating pressure." As such, the absence of surge protection in an HCA is a critical safety flaw that undermines the company's generic claims of safety.

10. Next Mr. Godfrey attacks the principle of having surge relief at the Oahe crossing site, claiming that it "would only increase the risk of a release from multiple potential sources in close proximity to an HCA." But as emphasized already, the Lake Oahe crossing is classified as a High Consequence Area, which means that additional pipeline protection is required per 49 C.F.R. § 195.452 to mitigate potential risks. Overpressure exceeding the limits established by 49 C.F.R. § 195.420(b) was identified within the surge analysis study. The overpressure risk due to a spurious closure of a main line valve upstream of the pump station valve would not be mitigated by the surge relief at the pump station. The deficiencies and regulatory requirements were clear. The safety systems required to mitigate the risk to the Lake Oahe high consequence area may require innovation and engineering that go beyond established templates used on existing crude oil pipelines in low risk applications. The claim made by Mr. Godfrey that installing surge relief valves at Lake Oahe was not justified due to the introduction of leak points is absurd. Surge relief valves are proven-in-use devices, installed on 1000's of crude oil pipelines applications worldwide. Installing surge relief valves to protect the Lake Oahe pipeline crossing from overpressure risk would represent an appropriate mitigative measure widely used within the industry. Thus, the need to apply risk based design techniques when designing pipeline safety systems and weighing alternative pipeline routes. Of course, such alternative pipeline routes were never seriously considered.

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11. Mr. Godfrey further opines that Standing Rock expert Don Holmstrom ignores that DAPL provided evidence that a leak as small as 0.75% can be detected in fewer than 45 minutes. The implication is that Mr. Holmstrom's opinions about the risk of smaller leaks taking a long time to detect are unfounded. However, these leak detection system vendor claims have never been verified. Performance verification of the installed leak detection system capabilities via a "draw test" would be appropriate, but to my knowledge has never occurred—or, if it has, has never been shared with us or included in the administrative record. It is not prudent to rely on vendor provided leak detection performance metrics without leak detection performance verification, carried out at the Lake Oahe crossing, under normal operating conditions. In fact, performance testing of the leak detection system is required by ISO 13623[1] and 49 C.F.R. § 195.452.[2] Field-level, verified capabilities of the installed leak detection system capabilities via a "draw test" should be used when calculating the estimated worst case discharge, not vendor provided system specifications.

12. Mr. Godfrey also criticizes Mr. Holmstrom for failing to address asserted "conservative assumptions" in DAPL's claimed worst case discharge ("WCD") estimate. We continue to disagree—these conservative assumptions have been addressed and discredited for years. The assumptions used to calculate the WCD need to be reexamined based on installed

[1] "The performance of the leak-detection system should be reviewed and tested periodically to confirm compliance with the requirements of 5.5. Records should be kept of alarms and leaks to assist the performance review. Where appropriate, leakage surveys should be carried out. The type of survey selected shall be effective for determining if potentially hazardous leakage exists." ISO 13623:2017(E), § 13.3.4.

[2] 49 C.F.R. § 195.452(i)(3) ("An operator must have a means to detect leaks on its pipeline system. An operator must evaluate the capability of its leak detection means and modify, as necessary, to protect the high consequence area.")

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performance via documented results of functional valve testing and primary power supply availability since DAPL commissioning before taking credit for remotely operated valves that reduce the WCD. For example, performance verification of the installed valves on both sides of Lake Oahe via a "full stroke test" is warranted. It is not prudent to rely on stroke time "estimates" without actual performance verification, carried out at the Lake Oahe crossing. As noted above, performance testing of the EFRD's is required by ISO 13623, 49 C.F.R. § 195.452, and 49 C.F.R. § 195.420. Field-level, verified capabilities of the installed EFRD's via "end-to-end, full stroke testing" should be used when calculating the estimated worst case discharge, not estimates based on valve supplier or textbook reliability design specifications. Again, if this has ever been done, it was never supplied to either us or to the Corps.

13. As we have repeatedly emphasized, a critical deficiency with the Oahe WCD estimate is the assumed availability of the valves to operate in an emergency. The valves at Lake Oahe were equipped with electric motor operated actuators. This type of actuator requires primary electrical power to operate. Because no back up primary power supply was provided, the design is inconsistent with federal standards and industry best practices. 49 C.F.R. § 195.420(a) ("Each operator shall maintain each valve that is necessary for the safe operation of its pipeline systems in good working order at all times."); 49 C.F.R. § 195.262(b)(3) applicable pumping equipment requirement ("The following must be provided … If power is necessary to actuate the safety devices, an auxiliary power supply."); ISO 13623:2017(E) ("Remotely operable valves and actuators should be tested remotely to ensure the correct functioning of the whole system.").

14. In sum, my opinions previously stated remain valid and nothing in Mr. Godfrey's declaration causes me to modify my previous opinion that DAPL is not being operated safely

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and consistent with industry and regulatory best practices. To prevent the risk of permanent environmental damage, it should be shut down pending completion of an EIS.

I declare under penalty of perjury the foregoing is true and correct.

Executed on this 12th day of October, 2020.

PATRICK FLANDERS

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CERTIFICATE OF SERVICE

I hereby certify that on October 16, 2020, I electronically filed the foregoing SECOND DECLARATION OF PATRICK FLANDERS with the Clerk of the Court using the CM/ECF system, which will send notification of this filing to the attorneys of record and all registered participants.

/s/ Jan E. Hasselman
Jan E. Hasselman

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