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December 11, 2020

Lindsay Tekler
Wisconsin Department of Natural Resources
Office of Energy
1300 W Clairemont Avenue
Eau Claire, WI 54701

Re: WDNR Water Resources Application for Project Permits – Data Request Response

Dear Lindsay:

Enbridge Energy, Limited Partnership (“Enbridge”) has prepared the enclosed information (provided electronically) in response to the Department of Natural Resources (DNR), which is in the process of preparing an Environmental Impact Statement (EIS) for the proposed Line 5 Wisconsin Segment Relocation Project. The DNR has identified additional supporting data and clarifications needed from Enbridge Energy related to the development of the EIS and provided a data request to Enbridge on November 3, 2020.

The following provides Enbridge’s response to the information requested.

If you have questions about the information presented in the attached materials, please contact me at (715) 817-8732.

Sincerely,

Cathryn Hanson

Cathryn Hanson
Supervisor, Environment Projects (US)
Enbridge Energy, Limited Partnership

Enclosures:

- Digital copy of responses to November 3, 2020 data request
- Data Request Question #2 Response: Shapefile provided as Confidential and Critical Energy Infrastructure Information (CEII), under separate cover
- Data Request Question #4 Response: Plains Midstream Correspondence
- Data Request Question #22(a) Response: Memorandum of Agreement
- Data Request Question #24 Response: Detailed table of the local, state, and federal land crossings for the proposed route and each route alternative
- Data Request Question #26(a): Revised Hydrotest Plan
- Data Request Question 27a Response: Revised site drawing for Bayside pipe yard

cc: w/o enclosures: Ben Callan, Wisconsin Department of Natural Resources
Adam Mednick, Wisconsin Department of Natural Resources
Bill Sande, U.S. Army Corps of Engineers

November 3, 2020 WDNR L5WSRP Data Request Response

Data Request Question #1:

Please confirm that the DNR may reuse or reproduce, with attribution, any of the graphics and illustrations included in the Environmental Impact Report (EIR) for use in the Draft and Final EIS.

Data Request Question #1 Response:

The WDNR is authorized to reuse or reproduce, with attribution, any of the graphics and illustrations included in the Environmental Impact Report for use in the Draft and Final EIS.

Data Request Question #2:

Please provide a GIS shapefile of the existing Line 5 route.

Data Request Question #2 Response:

A digital shapefile of the existing Line 5 route from Enbridge's Line 5 Ino Pump Station to the Saxon Pump Station is being provided under separate cover and is Confidential and Critical Energy Infrastructure Information (CEII).

Data Request Question #3:

Clarify what "other products" are produced from the oil and natural gas liquids (NGL) delivered via the Wisconsin segment of Line 5, as referenced in EIR section 1.1 (page 4).

Data Request Question #3 Response:




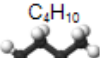

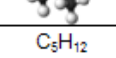
Natural gas liquids (NGLs) are hydrocarbons—in the same family of molecules as natural gas and crude oil, and are composed exclusively of carbon and hydrogen. Ethane, propane, butane, isobutane, and pentane are all NGLs. There are many uses for NGLs; they are used as inputs for petrochemical plants, burned for space heat and cooking, and blended into vehicle fuel.¹

- *Propane* is largely used as a fuel in the U.S., generally in areas where the supply of natural gas is limited or not available, and is highly seasonal, with the largest consumption occurring in the fall and winter months. Propane has two market categories: consumer (primarily as fuel) and non-consumer (primarily for nonfuel or feedstock uses). The four major consumer uses are in homes, on farms, in business and industry, and as fuel for internal combustion engine vehicles. It is also used as a U.S. EPA approved replacement for certain hydrofluorocarbon refrigerants (R-290).
- *Ethane* is mainly used to produce ethylene, which is then used by the petrochemical industry to produce a range of intermediate products, most of which are converted into plastics. Ethane consumption in the United States has increased during the past several years because of its increased supply and lower cost relative to other petrochemical feedstocks such as propane and naphtha. Ethane

¹ Sources: <https://www.eia.gov/energyexplained/hydrocarbon-gas-liquids/uses-of-hydrocarbon-gas-liquids.php>
[https://www.eia.gov/todayinenergy/detail.php?id=5930#:~:text=Natural%20gas%20liquids%20\(NGLs\)%20are,all%20sectors%20of%20the%20economy](https://www.eia.gov/todayinenergy/detail.php?id=5930#:~:text=Natural%20gas%20liquids%20(NGLs)%20are,all%20sectors%20of%20the%20economy)

can also be used directly as a fuel for power generation, either on its own or blended with natural gas. End use products of ethane include plastics, anti-freeze, and detergents.

- Although some normal *butane* is used as a fuel for lighters, most of it is blended into gasoline, especially during the cooler months. Because demand for isobutane exceeds supply, normal butane is also converted into isobutane through isomerization. Normal butane can also be used as a feedstock in the petrochemical industry. When normal butane is used in petrochemical cracking, the process yields (among other chemicals) butadiene, which is a precursor to synthetic rubber. Like propane, is also used as a U.S. EPA approved replacement for certain hydrofluorocarbon refrigerants (R-600).
- *Isobutane*, whether from natural gas plants, refineries, or isomerized from normal butane, is used to produce alkylates, which increase octane in gasoline and control the volatility of gasoline. High-purity isobutane can also be used as a refrigerant (R-600a).
- *Pentane* is a natural gasoline that can be blended into the fuels used in internal combustion engines, and in the U.S. may be added to fuel ethanol as a denaturant to make fuel ethanol undrinkable. Natural gasoline can also be used to make E85 and as a diluent for Canada's heavy crude oil.

NGL Attribute Summary				
Natural Gas Liquid	Chemical Formula	Applications	End Use Products	Primary Sectors
Ethane	C_2H_6 	Ethylene for plastics production; petrochemical feedstock	Plastic bags; plastics; anti-freeze; detergent	Industrial
Propane	C_3H_8 	Residential and commercial heating; cooking fuel; petrochemical feedstock	Home heating; small stoves and barbeques; LPG	Industrial, Residential, Commercial
Butane	C_4H_{10} 	Petrochemical feedstock; blending with propane or gasoline	Synthetic rubber for tires; LPG; lighter fuel	Industrial, Transportation
Isobutane	C_4H_{10} 	Refinery feedstock; petrochemical feedstock	Alkylate for gasoline; aerosols; refrigerant	Industrial
Pentane	C_5H_{12} 	Natural gasoline; blowing agent for polystyrene foam	Gasoline; polystyrene; solvent	Transportation
Pentanes Plus*	Mix of C_5H_{12} and heavier	Blending with vehicle fuel; exported for bitumen production in oil sands	Gasoline; ethanol blends; oil sands production	Transportation

C indicates carbon, H indicates hydrogen; Ethane contains two carbon atoms and six hydrogen atoms

*Pentanes plus is also known as "natural gasoline." Contains pentane and heavier hydrocarbons.

Source: U.S. Energy Information Administration, Bentek Energy LLC.

Data Request Question #4:

Provide estimates of the annual production of propane, gasoline, diesel, jet fuel (and other products, if possible) refined from oil and NGL transported via the Wisconsin segment of Line 5.

Data Request Question #4 Response:

Enbridge is an energy transportation company and does not own the products transported by Line 5, nor does Enbridge own the products refined by its shippers (customers). Therefore, it is not possible to provide annual production estimates for the propane, gasoline, diesel, jet fuel, and other products refined from the volumes transported on Line 5 without direct information from the shippers. One shipper that has shared information with Enbridge is Plains Midstream Canada. Plains Midstream Canada operates a Fractionation facility in Sarnia, Ontario that processes Line 5 feedstock into approximately 800 million gallons of propane and 400 million gallons of butane each year that is supplied to the regional energy market including Wisconsin and Michigan. Please see the attached letter from Plains Midstream Canada discussing their operations in Superior, Wisconsin, Rapid River, Michigan, and Sarnia, Ontario, Canada. Of particular note is Plains' statement that shutting down Line 5 would result in shutting down all three facilities and impacting 125 total workers.

Data Request Question #5:

Provide estimates of the proportion of annually-produced propane, gasoline, and diesel produced from Line 5 feedstock (see #3 above) that are sold and/or consumed in Wisconsin.

Data Request Question #5 Response:

Further to Enbridge's response to Data Request Question #4, Enbridge is an energy transportation company and does not own the products transported by Line 5, nor does Enbridge own the products refined by its shippers (customers). Therefore, it is not practicable for Enbridge to provide complete or comprehensive annual production estimates for the propane, gasoline, diesel, jet fuel, and other products refined from the volumes transported on Line 5.

Line 5 is part of an energy transportation system that meets energy market needs of the upper Midwest and Ontario, including those of Wisconsin. According to the United States Energy Information Administration (EIA), Wisconsin consumes nearly six times more energy than it produces. Excerpts from the EIA's website are included here²:

- *"Industry is Wisconsin's leading end-use energy consumer. In addition to agriculture, the energy-intensive food and beverage manufacturing industry is a major contributor to the state's gross domestic product (GDP). An important dairy state, Wisconsin produces about one-third of the cheese made in the nation, and beer is the state's most valuable processed beverage product. The industrial sector accounts for one-third of the energy consumed in the state, the transportation sector and the residential sector each use nearly one-fourth, and the commercial sector consumes one-fifth. Overall, Wisconsin consumes almost six times as much energy as it produces."*

The Superior, Wisconsin refinery that is set to resume operations in 2022 receives crude oil deliveries from Canada and North Dakota via railcar and a major crude oil pipeline. The EIA notes:

- *"The same pipeline system transports crude oil south across the state to the Chicago area and also across northern Wisconsin to Michigan's Upper Peninsula and then south to a Canadian refinery. Refined products are delivered to Wisconsin markets from the refinery in Superior and from refineries in the Chicago and Minneapolis metropolitan areas. Most of the petroleum consumed in Wisconsin is used in the transportation sector as motor gasoline and distillate fuel oil, which includes diesel fuels and*

² Source: <https://www.eia.gov/state/analysis.php?sid=WI> Retrieved on 11/24/2020

heating oil. Although most of Wisconsin can use conventional gasoline, a cleaner-burning reformulated motor gasoline blend of 10% ethanol and 90% conventional motor gasoline is required in a six-county area surrounding Milwaukee, in southeastern Wisconsin. That blend, known as E10, is sold at most retail gasoline stations in Wisconsin, and other ethanol-motor gasoline blends are also available across the state. Statewide, more than 230 fueling stations sell E85, a blend of motor gasoline with 85% ethanol. The transportation sector accounts for about four-fifths of state petroleum consumption, and the industrial sector consumes almost 13%. Most of the rest, about 6%, is used in the residential sector, where more than one in seven Wisconsin households use petroleum products—mostly propane but also fuel oil and kerosene—for home heating.”

- Wisconsin is entirely dependent upon natural gas resources produced outside the state. *“Wisconsin's natural gas needs are met by several interstate pipelines. Natural gas from Oklahoma, Texas, Louisiana, Kansas, and Alberta, Canada is transported to the state by interstate pipelines. Natural gas enters Wisconsin primarily from Minnesota and Illinois, and most of the natural gas that is not consumed in Wisconsin is sent on to Michigan. Wisconsin's industrial sector is the state's largest natural gas consumer, accounting for nearly three-tenths of state deliveries to end users in 2019. Natural gas consumption in Wisconsin remained fairly constant until 2012 but then rose as natural gas use by the electric power sector increased. The electric power sector's natural gas consumption now almost equals that of the industrial sector. The residential sector, where about two-thirds of state households use natural gas as their primary fuel for home heating, follows closely after the electric power sector and accounts for more than one-fourth of the natural gas delivered to Wisconsin consumers.”*

Data Request Question #6:

Provide additional detail on the type(s) and source(s) of crude oil transported via the Wisconsin segment of Line 5. Please note how much (total quantity and percentage) is light crude extracted from Bakken shale versus various bitumen blends (e.g., AWB, CLWB, CLSB) derived from Alberta oil sands. Please include provinces and states of origin.

Data Request Question #6 Response:

Line 5 does not carry, nor has it ever carried, heavy crude (or bitumen) from the Alberta (Canada) oil sands regions. In 2019, Line 5 volumes averaged 519,000 barrels per day (bpd), of which 439,000 bpd were light crude and 80,000 bpd were natural gas liquids.

Products shipped through Enbridge's Line 5 pipeline through Wisconsin originated in:

- Canada – Alberta, British Columbia, Saskatchewan, Manitoba, Northwest Territories
- United States—North Dakota

Data Request Question #7:

Provide the estimated cost of construction for the proposed route, and clarify if funding would be private, public, and/or a combination.

Data Request Question #7 Response:

The total cost of the project is subject to several factors including timing of permit receipt, construction schedule, and industry demand at the time of procurement and construction. Enbridge is privately funding this project.

Data Request Question #8:

Provide an estimate of how many construction workers will be employed over the anticipated construction period, including the proportion (rough if necessary) that will likely come from Wisconsin; and if possible, the proportion from project counties (Ashland, Bayfield, and Iron).

Data Request Question #8 Response:

Based on the Project's scope (mainline length, above ground facilities), Enbridge anticipates needing approximately 700 workers throughout mainline construction. Approximately 50 percent of these jobs will be provided by the contractor(s), the remainder of staffing will come from local union halls, subject to availability.

Several unions are expected to be involved in construction including:

- LIUNA Local 1091 – Members in Ashland, Bayfield and Douglas counties, WI
- International Union of Operating Engineers Local 139
- Teamsters
- Pipeliners Local 798

Data Request Question #9:

Provide a projection of the average construction worker's annualized income over the anticipated construction period; e.g., 57K over nine months is annualized to 76K.

Data Request Question #9 Response:

Enbridge estimates that the average annualized income would be approximately \$121,200.

Data Request Question #10:

Provide employment estimates (see #8 above) and projected annual incomes (see #9 above) for the additional jobs described in Sec. 6.7.1.1 of the EIR (Construction Schedule and Workforce): "supervisors, environmental inspectors, and those highly skilled in the mechanical, electrical, and instrumentation/ control trades." If necessary, these may be aggregated across multiple job types.

Data Request Question #10 Response:

The total number of non-construction workforces for the project is approximately 150 people. The potential annualized income for these positions is approximately \$100,000.

Data Request Question #11:

Provide a list of the local (county and municipal) permits and/or approvals required for the project and their current status, as referenced in EIR section 2.2.7.

Data Request Question #11 Response:

No local environmental permits are required, however local road permits may be needed. Enbridge has acquired all local road crossing permits.

Data Request Question #12:

Provide an estimate of the cost of physically removing the Line 5 pipeline from the Bad River Reservation and restoring the right-of-way to natural conditions.

Data Request Question #12 Response:

Removal of the pipeline is outside the scope of this project and given the numerous considerations affecting the cost of construction (removal) Enbridge is not able to provide a cost estimate for this hypothetical scope of work.

Industry standard and Enbridge's past practice is to leave decommissioned pipe undisturbed unless environmental circumstances require otherwise. Enbridge is obligated to remove certain segments of Line 5 on BIA trust parcels after easement expiration or two years of non-use. This will occur in consultation with the interest landholders, and Enbridge anticipates that leaving much of the pipeline in place after it is decommissioned. The remaining tracts have a perpetual easement and would remain in place after a reroute is installed and operational.

Data Request Question #13:

Provide a desktop evaluation of physically removing the Line 5 pipeline from the Bad River Reservation. This evaluation should include the environmental features used in table 3.1.4-1 of the EIR.

Data Request Question #13 Response:

Enbridge has completed a desktop analysis of the environmental features that are crossed by the existing Line 5 pipeline within the Bad River Reservation based off of publicly available information. The results are provided below in a similar format to Table 3.1.4-1 in the EIR. These features would be disturbed if the existing pipeline is physically removed from the reservation.

Enbridge Line 5 Wisconsin Segment Relocation Project
November 3, 2020 Wisconsin DNR Data Request Responses

Environmental Features	Unit	Removal Route Length ^a: 12.3 miles Route Corridor ^b: 89.6 acres
Wetland Crossed—NWI		
PEM	acres	0.97
PSS	acres	8.997
PFO	acres	7.97
Wetland Crossing Length—WWI	miles	4.41
Wetland Crossed—WWI		
emergent/wet meadow	acres	9.88
scrub/shrub	acres	8.23
forested	acres	13.686
State-Listed Species Occurrences ^c	number	6
Migratory Bird Concentration Areas	number	1 area, 2 crossings
Agricultural Land ^d	acres	0
Coniferous Forest ^d	acres	18.14
Broad-leaved Deciduous Forest ^d	acres	44.67
Prime and Statewide Importance Farmland Soils	miles	3.28
Hydric Soils	miles	0.59
Highly Wind Erodible Soils	miles	1.89
Intermittent / Fluctuating Waterbody Crossings—WDH	number	10
Perennial Waterbody Crossings—WDH	number	4
Designated Trout Stream Crossings	number	1
WDNR Priority Navigable Waterways Crossings	number	4
Wild and Scenic Rivers	number	0
Wild Rice Production Areas	number	0
Areas of Special Natural Resource Interest Crossings (WDNR owned)	number	0
Federal, County, and State-Owned Lands	acres	0
WDNR-Owned Lands	miles	0
County Forest Land	miles	0
Railroad Crossings	number	0
Road Crossings ^e	number	4
<p>Notes:</p> <p>^aCenterline length.</p> <p>^bA standard 120 foot corridor was used for each route comparison.</p> <p>^cBased on NHI data review, includes state threatened and endangered species.</p> <p>^dWisland 2 Land Cover Data (WDNR 2019s).</p> <p>^eIncludes county and local roads, and state and U.S. highways.</p> <p>NLCD2011 = National Land Cover Database 2011; WDH – Wisconsin 24k Hydrography Dataset; NHI = Natural Heritage Inventory; NWI = National Wetlands Inventory; PEM = Palustrine Emergent; PFO = Palustrine Forested; PSS = Palustrine Scrub-Shrub; WDNR = Wisconsin Department of Natural Resources; WWI = Wisconsin Wetland Inventory</p>		

Data Request Question #14:

Provide a brief discussion of what would be required to transport current quantities of oil and NGL from Superior to Sarnia via the Great Lakes. Include an estimate of the annual number of barge trips that would be required, including assumptions about the size and capacity of the barges.

Data Request Question #14 Response: Line 5 currently transports approximately 540 kbpd of crude oil and NGLs between Superior, WI and Sarnia, ON. In the early 1950s oil was shipped across the Great Lakes.³ However, the weather-shortened shipping season on the Great Lakes made the use of tankers impractical as a long-term solution. As a result, Line 5 was constructed in 1953.⁴

The issues that made shipping crude oil across the Great Lakes challenging in the 1950s have not changed today. Indeed, although one could assume that approximately five (5) 120,000 barrel Articulated Tug-Barge vessels could be used per day to attempt to transport Line 5's crude and NGL volume across the Great Lakes (totaling approximately 1,606 loaded vessel trips per year and an equal number of empty return trips)⁵, for the reasons that follow shipping is not, as a practical matter, a feasible means of replacing Line 5 for a number of reasons.

First, while light crude oil and NGL are transported via Line 5 on a daily basis, vessels and barges cannot cross the Great Lakes year-round. Vessels transporting NGL and crude oil from Superior to Sarnia must pass through the Sault St. Marie locks, which are closed every year from January 15 until March 25 for maintenance.⁶ The locks are also at risk of suddenly shutting down to tanker traffic for unexpected and/or unplanned repairs, because they are aging and need significant investment. Additionally, the operating season can be further shortened by ice in harbors and on the lake persisting after March 25.⁷

When the lakes are covered in ice during severe winters, shipments would have to be coordinated with icebreakers. Further, during the approximately three months of each year when barges cannot operate, Line 5 product would need to move into storage (much or all of which, as explained below, must be constructed). Constructing rail terminals or acquiring large truck fleets that would be needed for alternative transportation for these shutdowns of uncertain duration would be economically and practically infeasible, even if it were possible.

³ Oil was being shipped across the Great Lakes in 1951, shortly after Enbridge completed the Line 1 Pipeline from Canada to Superior. "A Modern Miracle: the Quick Completion of Canada's First Long-haul Crude Oil Pipelined", <https://www.enbridge.com/stories/2019/april/enbridge-70th-anniversary-canadas-first-long-haul-crude-pipeline>; Patrick Lapinski, "The Port's Past: Not Your Classic Mix", Duluth Seaway Port Authority Magazine, Spring 2005, <http://inlandmariners.com/PDF%20Files/Lakehead.pdf>.

⁴ Patrick Lapinski, "The Port's Past: Not Your Classic Mix", Duluth Seaway Port Authority Magazine, Spring 2005, <http://inlandmariners.com/PDF%20Files/Lakehead.pdf>.

⁵ Notably, these calculations assume that there is no down time for any of the vessels. If a vessel unexpectedly required maintenance or repair and could not be in service throughout the entire shipping season, at least one additional back-up barge and tug would be needed to cover periods of downtime caused by damage or unexpected maintenance.

⁶ Dynamic Risk, "Final Report: Alternatives Analysis for the Straits Pipelines," 26 October 2017, p. 7-2.

⁷ "Great Lakes Shipping Starts, but Ice Still Halts Cargo," *Universal Cargo*, 24 March 2015. <https://www.universalcargo.com/great-lakes-shipping-season-starts-but-ice-still-halts-cargo/>.

In addition, significant storage capacity at Sarnia and Superior would need to be built to house 70 days of both crude and NGL volume. We estimate that building this storage capacity for crude alone would cost approximately \$1.7 billion.⁸ NGL storage would be more complicated and have a higher cost on a per barrel basis. In addition, when the shutdown was over, shipping capacity would have to be added to handle the shipment of the crude oil and NGL in addition to the daily throughput “to fill the storage back up for the next closure.”⁹

Second, publicly available data indicates that there was no oil or NGLs transported across the Great Lakes in 2018.¹⁰ Given that little to no oil or NGL appears to be shipped across the Great Lakes, we have not found sufficient unloading and loading capabilities or the existence of the specialized vessels and double-hulled tankers that would be needed to carry the required volumes during the shipping season. The vessels and barges that would be necessary are specialized in terms of both size and capability and for NGL by pressure containment design.

Various navigation restrictions in the St. Lawrence Seaway and on the Great Lakes constrain the introduction of sizes of suitable barges that may be used to ship crude oil and NGL between Duluth, Minnesota or Superior, Wisconsin and Sarnia, Ontario. The size restrictions most relevant to the proposed waterborne transport of crude oil and NGL are the 78-foot maximum allowable beam, which is a controlling factor for all vessels transiting the St. Lawrence Seaway and Welland Canal in the lower regions of the waterway, and the nominal 27-foot depth that limits the maximum permissible vessel drafts system wide.

Currently, there is no barge capacity suitable for the proposed crude oil and NGL transport available on the Great Lakes. As a result, the required new capacity would either have to be brought in from sources outside the lakes (and potentially be of a sub-optimal size due to navigation restrictions) or be constructed at one of the shipyards in the region. The size constraints imposed by the locks on the Lower Lakes and Seaway would also limit the sizes of barges available for deployment between Superior and Sarnia if they had to come from outside the Great Lakes. Water depth and draft limitations likely impose the most limiting constraint on the size of barge that can be used for movements between Superior and Sarnia. Assuming a 120,000 barrel Articulated Tug-Barge vessel size for both crude and NGL volume, if there were no shut down for weather or maintenance of the locks, about 25 such vessels would be required for 365-day operation. Considering the 70-day lock shut down and possible freezing of the lakes, an additional 5 vessels would be required to transfer the crude and NGL stored in Superior during the shutdown to replenish the storage tanks in Sarnia.

Third, along with building additional vessels to ship the crude oil and NGL, significant additional storage and shipping assistance capacity must be procured or constructed. Efficient terminals with multiple server berths, large capacity pipelines and a robust amount of back-up tank storage capacity would be required. Publicly available information did not yield any evidence that infrastructure that might be both suitable and accessible

⁸ Dynamic Risk states that each 570,000-barrel storage tank costs \$15 million. 61.6 million barrels will require 109 tanks for an estimated total of 1.635 billion. Dynamic Risk, “Final Report: Alternatives Analysis for the Straits Pipelines,” 26 October 2017, p. 7-2.

⁹ Dynamic Risk, “Final Report: Alternatives Analysis for the Straits Pipelines,” 26 October 2017, p. 7-2.

¹⁰ Waterborne Statistics Commerce Center 2018, Public Domain Data at <https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/1414/>.

on a common user basis is available at either Duluth-Superior or Sarnia.¹¹ And to the extent any access might be possible via existing lakeside docks, they would undoubtedly require major amounts of investment (pipeline connection to Enbridge Line 5, storage tanks, pumps, loading booms, spill containment apparatus, etc.) to make them suitable for purpose. In addition, support vessels—icebreakers and a limited number of backup tug barges to cover damage or maintenance outages—would need to be available to provide assistance for the transportation of oil and NGL across the Great Lakes.

The economics of shifting transportation from Line 5 to shipping across the Great Lakes are challenging. As noted above, there will be costs—perhaps significant ones—related to building sufficient storage, loading/unloading capacity, and vessel/tanker capacity. It is not certain that any commercial entity would think building the necessary capacity would be worthwhile from a pure economic or required asset utilization risk perspective. The specialized craft necessary to move crude oil would by their very nature have to be dedicated exclusively to service on the Upper Great Lakes and the venture being proposed. While this strategy could yield important benefits, it would also entail greater investment risk should the project terminate prematurely. The barges would face an uncertain future given there would likely be little prospect for alternative deployment. At the same time, under some design options, their purpose-built and oversized design characteristics could make them captive to the region with no ability to exit the lakes to pursue other opportunities. From an economic perspective, the smaller vessels are not as operationally efficient and do not benefit from the economies of scale that tend to permit larger vessels, if able to utilize their greater capacities, to lower unit operating costs. This combination of factors could make it less likely that commercial vessel investors would be willing to take the risk, or that shippers would agree to what could likely be “take or pay” long term charters.

In addition to the challenging economic realities, shifting transport of oil and NGL across the Great Lakes creates regulatory challenges that will need to be addressed. The accessibility of available vessels will likely also be limited by other factors, including potentially flag of registry. Under registry as a US vessel, various Jones Act restrictions would be triggered that could increase operating costs with US staffing requirements and mandate vessel construction in higher cost US shipyards. A vessel operating between a US port and a Canadian port is engaged in foreign trade, so the Jones Act restrictions could likely be avoided. Given this reality, one could reasonably expect project approval might be contingent on complying with all applicable regulations that govern Canadian- and US-flagged vessels and crews. These regulatory approvals are another obstacle that must be addressed if crude oil and/or NGL are going to be moved across the Great Lakes rather than through Line 5.

Data Request Question #15:

Provide a brief discussion of the feasibility to transport current Line 5 quantities of oil and NGL from Superior to Sarnia via existing Enbridge pipelines. If not considered feasible, explain why not, including information on increased pumping capacity, upgrades that would be required, if additional pipe segments would be needed in addition to existing pipelines, and a rough cost estimate.

¹¹ While Enbridge possesses extensive tankage adjacent to both ports, that storage may not be available when needed. In all events, there is not enough storage for Enbridge’s current use and the significant need that would arise from requiring storage for 70 days of shipping the relevant volumes of oil and NGLs.

Data Request Question #15 Response:

Line 5 is designed to transport 540 kbpd of oil and NGLs from Superior to receipt and delivery points in Michigan and Sarnia, Ontario. The total quantities of oil and NGLs that are transported on Line 5 from Superior to points in Michigan and Sarnia cannot be transported on any existing Enbridge pipeline due to geographic considerations, capacity limitations, and infeasibility of reconfigurations to transport the additional Line 5 volumes of light crude and NGLs. These points are discussed below.

First, there is no other existing Enbridge pipeline that is geographically situated to serve all of the receipt and delivery points that are served by Line 5's routing from Superior, through the Upper and Lower Peninsulas of Michigan, to Sarnia. Line 5, for example, delivers NGLs to Rapid River, Michigan in the Upper Peninsula, where Line 5 product is converted to propane, which is used for home and commercial heating as well as other uses. The Rapid River facility supplies a significant percentage of the total Upper Peninsula propane demand, as well as demand in Northern Wisconsin. Line 5 also receives Michigan-produced oil from points in the Lower Peninsula of Michigan and makes deliveries of crude oil at other points in Michigan before transporting remaining volumes to its terminus in Sarnia. No existing Enbridge pipeline is routed in a manner to transport Line 5 quantities of oil and NGLs to and from these points in Michigan. For this reason alone, no existing Enbridge pipeline can serve as a feasible alternative to Line 5.

Second, capacity constraints on existing Enbridge pipelines cause them to be infeasible alternatives for the transport of Line 5 volumes from Superior to Sarnia. Specifically, only one other existing Enbridge pipeline, Line 78, terminates in Sarnia. Line 78 originates at the Enbridge Flanagan Terminal in Pontiac, Illinois extending through Indiana and into the Lower Peninsula of Michigan to Sarnia, Ontario. Line 78's capacity is, however, finite. Based on existing Line 78 demand, Line 78 could currently transport a small percentage (perhaps approximately 10%) of Line 5 volumes. However, Line 78 demand is historically at or near the full 500 kbpd capacity of the line south of Stockbridge, at which point Line 78 would not be able to transport any Line 5 volumes as well as the volumes it normally transports. More importantly, any light crude diverted from Line 5 to Line 78 would mean reducing the amount of heavy crude carried on Line 78. Accordingly, the total volumes that can be carried on Line 78 is limited – moving Line 5 crude to Line 78 would displace those products currently transported on Line 78 and create other shortages to delivery points on Enbridge's system.

Third, no existing Enbridge pipeline can serve as a feasible alternative to transport any of the NGLs that are transported on Line 5. Pipelines are generally operationally configured to transport NGLs or crude oil, but not both. For example, the transport of NGLs requires specific facilities to allow operations, such as station placement based on hydraulics, pumps specified to operate on their curve, and software (gaskets/seals) on valves and equipment. Terminals to which pipelines connect must also be configured with three-sided shelters, tandem pump seals, flare pits, and seals on equipment. Line 5 is relatively unique in that the pipeline has installed equipment to allow it to transport both crude oil and NGLs, and Line 5 stations are configured with the required equipment. Because Line 5 transports both crude and NGLs, it must be a steady-state operation pipeline, meaning that it is specifically designed, operated, and maintained to minimize frequency of start-stops and flow rate changes in order to maximize reliability. Failure to have the necessary equipment and operate a dual-product line in a steady-state could result in excessive fatigue of pipeline steel, and wear on motors, pumps, seals, and other equipment.

Only one other existing Enbridge pipeline is configured to transport NGLs – Line 1. Line 1, however, extends from Edmonton, Alberta to Superior, providing Line 5 with NGLs for further delivery in Michigan and to Sarnia. Line 1 does not extend beyond Superior and thus does not serve as an alternative to Line 5. Further, Line 78 (the only other Enbridge line that serves Sarnia), and the stations it connects to, are not designed to transport NGLs. It is also infeasible to reconfigure Line 78 and stations to transport NGLs, given that demand requires the pipeline to be slated for 100% crude oil service. The loss of the Line 5 NGL supply at Sarnia given the absence of pipeline alternatives to transport those NGLs would result in economic dislocations. Sarnia facilities today produce propane and butane from the Line 5 NGLs to meet the energy-industry needs for those products in the Midwest and elsewhere. The loss of the Sarnia-produced propane and butane would cause shortages that could not be readily addressed.

Additional information on the absence of feasible existing pipeline alternatives to Line 5 is available in the 2017 report prepared by Dynamic Risk Assessment Systems, Inc. for the State of Michigan. See <https://mipetroleumpipelines.org/document/alternatives-analysis-straits-pipeline>. The report explains in terms that are relevant to WDNR's inquiry that there is no existing pipeline (whether owned by Enbridge or third parties) that can accommodate Line 5 volumes. See Dynamic Risk Report, at pages 5-1 to 5-5.

Data Request Question #16:

Please provide a brief description of planned or anticipated efforts to prevent, respond, and minimize the effects of trespassing during and after pipeline construction. Note how facilities, equipment, and public safety will be protected.

Data Request Question #16 Response:

Enbridge gives thoughtful consideration to the safety and security of both the public and construction crews. Enbridge will ensure that the limits of the proposed workspace and access roads are clearly marked and construction personnel will be made aware of the construction workspace during project kick-off training and throughout the duration of construction through daily tailgate meetings. Enbridge will ensure construction activities are confined to approved work areas and any incidence of trespass by Enbridge and/or our representatives (Contractors and assigns) will not be tolerated.

To ensure the safety of the public and construction personnel, equipment, and resources, the Line 5 Wisconsin Segment Relocation Project will implement physical security measures to prevent, minimize, and respond to the potential for trespass including utilization of fencing, security cameras and security guards during construction, where deemed necessary by Company. Enbridge will work with local authorities to prohibit public access to the right-of-way during construction to promote public safety and security, as needed. Enbridge will respect the rights of the public to legally exercise their constitutional rights without interference.

During operations the facilities, equipment, and public safety will be protected through the implementation of the Operations Security Plan.

Data Request Question #17:

Please provide a copy of Enbridge's current Integrity Management Plan (IMP), as referenced in Sec. 4.8.1 of the EIR (Integrity Management Program).

Data Request Question #17 Response:

Overview material highlighting Enbridge's approach to Integrity Management including threat prevention, monitoring and mitigation to maintain fitness, has been provided in Section 4.8.1 of the EIR. The Company's Integrity Management Program (IMP) contains confidential business information and trade secrets. Accordingly, the IMP document is not intended for public distribution. The IMP meets or exceeds the criteria established for pipeline operators in 49 C.F.R. § 195.452.

Data Request Question #18:

Please provide a copy of Enbridge's currently-approved Integrated Contingency Plan (ICP), as referenced in Sec. 4.8.4 of the EIR (Emergency Response).

Data Request Question #18 Response:

The Integrated Contingency Plan (ICP) is Enbridge's full emergency response plan and program description, which meets the applicable federal regulations in United States as referenced here: https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title49/49cfrv2_02.tpl

Enbridge has provided the WDNR with links to the following information pertaining to the ICP via an email submitted on 11/5/2020:

1. Enbridge Emergency Response Action Plans (website with the overview information material)
<https://www.enbridge.com/projects-and-infrastructure/public-awareness/emergency-response-action-plans>
2. In order to provide the most current version of the Inland Spill Response Tactics Guide please use this link to fill out the online request form:
<https://www.enbridge.com/Projects-and-Infrastructure/Public-Awareness/Emergency-Response-Action-Plans/Inland-Spill-Response-Tactics-Guide.aspx>
3. Additionally, Wisconsin DNR actively participated in the Enbridge 2019 full-scale exercise at Wisconsin Rapids, Wisconsin. The DNR representatives that participated in that exercise include:
 - Jennifer Bergman, Command Post, Wisconsin DNR, 09/19/2019
 - Karen Kalvelage, Command Post, Wisconsin DNR, 09/19/2019
 - Dan Werner, Command Post, Wisconsin DNR, 09/19/2019

Data Request Question #19:

State if any easements/land agreements with the Bad River include any language regarding removal of Line 5 once easements/agreements expire.

Data Request Question #19 Response:

There are two sets of easements issued by the U.S. government. The first is for land held in trust for the Bad River Band of Lake Superior Chippewa Indians and the second is for land held in trust for the Individual Indian Allottees. Both easements require, upon expiration or termination, Enbridge to "remove all materials, equipment and associated installations within six months of termination," and to "restore the land to its prior condition."

Data Request Question #20:

Identify the data source used to calculate Wild Rice Production Areas, as identified in table 3.1.4-1 of the EIR.

Data Request Question #20 Response:

Enbridge used the following data source to identify wild rice production areas:

- Name: Wisconsin DNR Surface Water Data Viewer
- Data Type: ArcGIS Map Service
- Server: <https://dnrmaps.wi.gov/arcgis/services>
- Name: WT_SWDV/WT_Designated_Waters_WTM_Ext
- Group: Priority Navigable Waterways (PNW, ASNIR, PRF)
- Layer: PNW-ASNRI Wild Rice Areas
- Accessed: January 2020

Data Request Question #21:

Specify when Enbridge or their consultants will conduct field surveys along the proposed route to identify existing locations of noxious and invasive species, as noted in EIR section 4.7.

Data Request Question #21 Response:

Enbridge's wetland and waterbodies surveys, which were conducted in 2019 and 2020, identified wetlands where noxious and invasive species were observed. Enbridge intends to address the control and treatment of noxious and invasive species in accordance with landowner agreements and procedures outlined in Enbridge Environmental Protection Plan (EIR - Attachment D) filed on February 11, 2020.

Data Request Question #22:

Per section 5.6 of the EIR:

- a) Provide a summary of communications that have occurred with the applicable local, state, and federal agencies regarding the 2 proposed crossings of North Country National Scenic Trail.
- b) Clarify who owns the land at the 2 crossings of the North Country National Scenic Trail.
- c) Describe how construction across the North Country National Scenic Trail would occur, including if full or partial closures to the trail during construction would be needed, and the timing and duration of those closures. Identify what steps Enbridge will employ during construction to minimize impacts to the North Country National Scenic Trail surface, as well as to users of the trail, including safety measures to alert recreational users, trail detours, and trail surface restoration.
- d) Provide an update on the reconfiguration of an access road across a WDNR parcel near the White River.

Data Request Question #22(a) Response:

Enbridge has entered into an agreement with the City of Mellen in which Enbridge has agreed to keep the property open for public use so long as the use does not interfere with the construction, maintenance, operation, or inspection of the pipeline or right-of-way, or risk the safety of members of the public or the safety of any of the Company's employees or contractors. The attached Memorandum of Agreement is included for reference.

Data Request Question #22(b) Response:

Enbridge is the fee owner of the west crossing of the trail, just east of the Bad River. Iron County is the fee owner of the land at the second (east) crossing of the trail at Vogues Road. As part of the fee purchase Enbridge committed to working with the Trail association to grant an easement for the trail and keep the trail open except when it needs to be closed during construction and maintenance for safety reasons.

Data Request Question #22(c) Response:

Enbridge's crossing of the North County National Scenic Trail ("NCNST") near the Bad River (approximately milepost [MP] 24.3) will be completed using the horizontal directional drill ("HDD") technique as part of the Bad River HDD. Enbridge does not anticipate the need to close this section of the trail during HDD activities; however, a temporary closure of the existing boardwalk may be necessary during clearing activities to allow construction crews to safely remove trees within the 30-foot-wide operational maintenance corridor and to protect the public during clearing activities.

If a temporary closure of the boardwalk path is necessary, Enbridge will establish an alternative walking route along Highway 169, then rejoin the existing trail north of the HDD. Enbridge will install signs directing potential trail users to the appropriate alternate pathway. Enbridge will also provide trail users with an escort along the road shoulder until the individuals are safely beyond the construction area and can rejoin the trail.

Enbridge's second crossing of the NCNST will occur where the trail follows the shoulder of Vogues Road, a gravel road, in Iron County. Enbridge proposes to cross Vogues Road and the NCNST using a directional bore. No road closure is expected at this location, thus no disruption to foot or vehicle traffic. Enbridge does not anticipate establishing an alternate trail route or detour at this crossing location. However, if hikers/trail users are present at the time of the crossing, Enbridge will assign staff to assist individuals in safely navigating through the construction zone to allow access down Vogues Road.

Data Request Question #22(d) Response:

Enbridge has evaluated the Project-specific need for this access road. Enbridge has determined that this road is not required and has removed it from the project. This road, and associated impacts, were not included in resource impact calculations submitted to the WDNR in August 2020.

Data Request Question #23:

Per EIR section 6.5.3 – page 102 says the project will cross 17 designated trout streams, but then page 103 says the project will cross 27 designated trout streams and their perennial tributaries, which is also reflected in the wetland/waterway crossing table (EIR Attachment H). Clarify which is correct.

Data Request Question #23 Response:

According to WDNR online mapping, the Project will cross 18 designated trout streams. One of the 18 designated trout streams that will be crossed is Feldcher Creek, which was field delineated as a wetland at the crossing location due to recent beaver activity, and was therefore not included in the original count of 17. This waterbody is footnoted in Table 6.5.3-1 and was included in Supplemental Information Appendix F as feature I.D. WDH-103. In addition to these 18 streams, the Project will cross 10 USGS-identified unnamed perennial tributaries (UNT) to designated trout streams.

Because some features will be crossed more than once by the Project, there will be a total of 27 designated trout streams crossings, and 23 crossings of perennial tributaries to designated trout streams, for a grand total of 50 crossings. The waterways will be crossed by a combination of pipeline, access roads, and construction workspaces. Specifically, there will be 28 pipeline crossings, 16 access road crossings, and six workspace-related crossings (e.g., HDD pullbacks or waterway is in the proposed construction workspace but is not crossed by the pipe). All of these trout stream and perennial tributaries to trout stream crossings are listed in Table 6.5.3-1.

Data Request Question #24:

Per EIR section 3.1.4 – provide a detailed table of the local, state, and federal land crossings for the proposed route and each route alternative. The table(s) should note the property owner, name of the public land, land cover type, and acreages that would be impacted.

Data Request Question #24 Response:

The requested table is attached.

Data Request Question #25:

Per EIR section 3.1.4 – Several narrative statements do not match the numbers listed in table 3.1.4-1, as noted below. Provide an updated table 3.1.4-1 if appropriate.

a. Route Alternative RA-01:

- i. Section 3.1.4.1 text states “...and cross approximately 73 fewer acres of Federal, State, or County owned lands than the proposed route”. But then in Table 3.1.4-1, adding together the “Federal, County, and State – Owned Lands”, “WDNR Owned Lands”, and “County Forest Land” rows, RA-01 totals 35.5 acres and the proposed route totals 114.9 acres. The difference between 114.9 and 35.5 is 79.4 acres, not 73 acres.
- ii. Section 3.1.4.1 text states “However, RA-01 has the potential to have increased wetland impact...”. But then in Table 3.1.4-1, adding together the “wetlands crossed – WWI” 3 sub-rows for RA-01, RA-01 totals 56.2 acres of WWI, while the proposed route totals 59.4 acres of WWI.
- iii. Section 3.1.4.1 text states “However, RA-01 has the potential to have increased..., to cross more...deciduous forest...”. But then in Table 3.1.4-1, the “broad-leaved deciduous forest” row for RA-01 has less acres than the proposed route.
- iv. Section 3.1.4.1 text states “However, RA-01 has the potential to have increased..., and cross additional roadways.” But then in Table 3.1.4-1, the “road crossings” row for RA-01 has less road crossings than the proposed route.

b. Route Alternative RA-02:

- i. Section 3.1.4.2 text states “RA-02 has the potential to cross approximately 86 fewer acres of Federal, State, or County owned land than the proposed route.” But then in Table 3.1.4-1, adding together the “Federal, County, and State – Owned Lands”, “WDNR Owned Lands”, and “County Forest Land” rows, RA-02 totals 21.3 acres and the proposed route totals 114.9 acres. The difference between 114.9 and 21.3 is 93.6 acres, not 86 acres.

c. Route Alternative RA-03:

- i. Section 3.1.4.3 text states “The route would also disturb approximately 768 additional acres of Federal, State, or County owned public land...”. But then in Table 3.1.4-1, adding together the “Federal, County, and State – Owned Lands”, “WDNR Owned Lands”, and “County Forest Land” rows, RA-03 totals 879.9 acres and the proposed route totals 114.9 acres. The difference between 879.9 and 114.9 is 765 acres, not 768 acres.

Data Request Question #25 Response:

Table 3.1.4-1 is correct. (Note: Enbridge has further clarified the trout stream and perennial tributaries to designated trout stream crossings in response to Data Request Question #23. Enbridge recommends those numbers and associated explanations be used for any sections related to trout.)

Data Request Question #25(a.i.) Response:

In the August EIR submittal, Table 3.1.4-1 provided feature information in different units using a sampling of the factors in a variety of units that are used to compare the route alternatives. As described in footnote a, centerline length, and footnote b, a standard 120 foot corridor, were used for comparisons. Table 3.1.4-1 displays the “Federal, County, and State owned lands” in acres however the WDNR owned lands and County Forest Land are displayed in miles crossed. Because these are in different units (i.e., acres versus miles) they cannot be summed.

As shown in the table, RA-01 would cross approximately 34.7 acres of Federal, State, or County owned land while the proposed route crosses 107.5 acres, which is a difference of approximately 73 acres. WDNR owned lands, and County Forest Land, are shown in miles. RA-01 crosses 0.7 mile of WDNR owned land whereas the proposed route crosses 0.0 mile of WDNR owned land. RA-01 crosses <0.1 mile of County Forest Land while the proposed route crosses 7.4 miles of County Forest Land.

See response to Data Request Question #24 for a detailed table of acres and length of crossings by public land parcel.

Data Request Question #25 (a.ii.) Response:

Table 3.1.4-1 is accurate. RA-01 crosses a total of 56.2 acres of WWI wetlands while the proposed route crosses 59.4 acres. The text should be modified to read “The proposed route has the potential to increase wetland impacts by 3.2 acres compared to RA-01.”

Data Request Question #25 (a.iii.) Response:

Table 3.1.4-1 is accurate. RA-01 crosses a total of 222.8 acres of broad-leaved Deciduous Forest while the proposed route crosses 297.2 acres. The text should be modified to read “The proposed route has the potential to increase broad-leaved Deciduous Forest impacts by 74.4 acres compared to RA-01.”

Data Request Question #25 (a.iv.) Response:

Table 3.1.4-1 is accurate. RA-01 crosses 37 roads while the proposed route crosses 39 roads. The text should be modified to read “The proposed route has the potential to increase the number of road crossings by two road crossings compared to RA-01.”

Data Request Question #25 (b.i.) Response:

In the August EIR submittal, Table 3.1.4-1 provided feature information in different units to compare the route alternatives. As described in footnote a, centerline length, and footnote b, a standard 120 foot corridor, was used for comparisons. Table 3.1.4-1 displays the “Federal, County, and State owned lands” in acres, however the WDNR owned lands and County Forest Land are displayed in miles crossed.

Because these are in different units (i.e. acres versus miles) they cannot be summed. As shown in the table RA-02 would cross approximately 21.3 acres of Federal, State, or County owned land while the proposed route crosses 107.5 which is approximately 86 acres difference. WDNR owned lands, and County Forest Land, are shown in miles. RA-02 crosses 0.0 mile of WDNR owned land and the proposed route crosses 0.0 miles. RA-02 crosses 0.0 mile of County Forest Land while the proposed route crosses 7.4 miles.

See response to Data Request Question #24 for a detailed table of acres and length of crossings by public land parcel.

Data Request Question #25 (c.i.) Response:

In the August EIR submittal, Table 3.1.4-1 provided feature information in different units to compare the route alternatives. As described in footnote a, centerline length, and footnote b, a standard 120 foot corridor, was used for comparisons. Table 3.1.4-1 displays the “Federal, County, and State owned lands” in acres, however the WDNR owned lands and County Forest Land are displayed in miles crossed.

As shown in the table, RA-03 would cross approximately 875.7 acres of Federal, State, or County owned land while the proposed route crosses 107.5 acres, which is a difference of approximately 768 acres. WDNR Owned Lands, and County Forest Land, are shown in miles. RA-03 crosses 0.1 mile of WDNR owned land whereas the proposed route crosses 0.0 mile of WDNR owned land. RA-03 crosses 4.1 mile of County Forest Land while the proposed route crosses 7.4 miles of County Forest Land.

See response to Data Request Question #24 for a detailed table of acres and length of crossings by public land parcel.

Data Request Question #26:

Per Attachment K of the EIR (Draft Hydrotest Plan):

- a. The very last sentence on page 1 is incomplete, it starts with “Water...” but then doesn’t finish the sentence on the next page. Is there missing text here?
- b. Will water withdrawal exceed 100,000 gallons per day in any 30 day period?
- c. Several of the waterway proposed for water withdrawal are trout streams. Will the return/discharge water to the source water be a higher temperature than when it was withdrawn? If yes, how will the water be cooled to avoid potential thermal impacts to the trout streams?
- d. Specify any potential restrictions for water withdrawal to avoid or minimize impacts (i.e. not withdraw during periods of low flow, not withdraw during drought conditions, etc.).
- e. Are there any potential contaminants or chemicals from the inside of the pipe that could be discharged to the waterways?
- f. Would water withdrawal and discharge occur during the fish timing restriction periods?
- g. Specify how water will be returned to the source (i.e. trucked back, etc.).

Data Request Question #26(a) Response:

The text on page 1 of the Draft Hydrotest Plan with the erroneous word “water” has been revised and an updated version is attached.

Data Request Question #26(b) Response:

Yes, Enbridge anticipates that water withdrawal events will likely exceed 100,000 gallons per day during a 30-day period to facilitate hydrotesting.

Data Request Question #26(c) Response:

All surface-water discharges will follow Wisconsin Department of Natural Resources (DNR) Water Use General Permit requirements, regulatory restrictions, and/or agreed-upon water withdrawal timing restrictions or minimum flow conditions.

Data Request Question #26(d) Response:

All surface-water withdrawals will follow Wisconsin Department of Natural Resources (DNR) Water Use General Permit requirements, regulatory restrictions, and/or agreed-upon water withdrawal timing restrictions or minimum flow conditions.

Data Request Question #26(e) Response:

Enbridge will be installing new pipe. Enbridge will comply with applicable Wisconsin Department of Natural Resources (DNR) Water Use General Permit requirements.

Data Request Question #26(f) Response:

It is possible that the construction schedule could require hydrostatic test water appropriation and discharge during the fish time of year restriction periods. As described in Enbridge's response to questions #26(d), all surface-water withdrawals will follow DNR Water Use General Permit requirements, regulatory restrictions, and/or agreed-upon water withdrawal timing restrictions or minimum flow conditions.

Data Request Question #26(g) Response:

Hydrotest water will be returned to the source in compliance with applicable Wisconsin Department of Natural Resources (DNR) Water Use General Permit requirements. It is anticipated that water that is trucked in for testing purposes will be trucked back to the municipal source for disposal, while hydrotest water appropriated from waterbodies will be returned to the source water at the time of discharge.

Data Request Question #27:

Regarding laydown yards:

- a. There are 2 pocket wetlands within the Bayside Yard proposed to be impacted. Can these wetlands be avoided by modifying the yard boundary to not include the wetlands (similar to how the Peter's Yard boundary excludes the pocket wetland there)?
- b. What measures will be implemented at the Peter's Yard to ensure the wetland in the middle of the yard will not be impacted (i.e. exclusionary fencing, signage, etc.).

Data Request Question #27(a) Response:

Enbridge has re-evaluated the configuration of the Bayside Yard and has found an alternative arrangement to avoid impacts to the two wetlands. A revised site drawing is **provided**.

Data Request Question #27(b) Response:

As discussed in Section 3.0 of the EPP, Enbridge will post signs identifying the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements. Additionally, erosion and sediment controls will be installed, as necessary, to prevent sediment transport into the wetlands.

Data Request Question #28:

The wetland/waterway crossing table includes 3 waterways with blasting entries of “TBD”. State at what point would it be known if blasting in these 3 waterways is required or not.

Data Request Question #28 Response:

Based on Enbridge’s preliminary investigations, there are a number of locations where the underlying bedrock is close to the surface and may be within trench depth. Additional exploration via shallow boreholes at the crossing locations will be required to positively determine if the rock shelf is deep enough to avoid blasting. In circumstances where a minimal amount of rock needs to be removed it may be possible to remove it using alternate methods such as ripper teeth, or jack hammer methods. The final evaluation of whether or not blasting will be required will be made during construction once the trench has been opened and construction crews can accurately identify the depth of the rock.

Data Request Question #29:

Clarify the use of in-stream supports for all bridge types - EIR section 4.5 (page 40) states “Enbridge is proposing to only use engineered bridges and would not use instream supports”, however the Environmental Protection Plan section 23.2.2 states “Instream supports may be utilized...”. Clarify which is correct.

Data Request Question #29 Response:

As stated in the EPP Introduction, Enbridge’s EPP outlines construction-related environmental policies, procedures, and protection measures Enbridge developed as a baseline for construction. The EPP addresses typical circumstances that may occur along the Project. Project-specific permit conditions and/or landowner agreements may supersede the general practices described in the EPP. Alternative construction procedures implemented in lieu of the EPP must provide an equal or greater level of protection to the environment. As an alternative to the bridging procedure described in the EPP, Enbridge has committed to using bridging methods and materials that will not require instream supports.

Data Request Question #30:

Clarify regarding driving on the bed of waterways – EIR section 4.3.2 (page 32) states “The clearing crew and related equipment...may require a single pass through streams...and install the bridge”, however EIR section 4.5 (page 41) states “Typically, temporary construction access bridge installation can be completed from adjacent areas, and equipment is not required to pass once through a stream to cross to the other side for installation. However, for the bridge installation at Tyler Forks (waterbody sira004p) on Casey Sag Road (access road 085) and at the HDD crossing of Tyler Forks (waterbody sirc005e), equipment will need to pass once through Tyler Forks for bridge installation and removal at each location.”

Data Request Question #30 Response:

EIR Section 4.3.2 text states: *“The clearing crew and related equipment, as well as equipment necessary for installation of equipment crossings, may require a single pass through streams prior to installation of*

temporary equipment crossing (bridges) to clear bank vegetation, prepare the site of bridge placement, and install the bridge, unless restricted by federal, state, or local agency requirements.”

EIR Section 4.5 text states: “Typically, temporary construction access bridge installation can be completed from adjacent areas, and equipment is not required to pass once through a stream to cross to the other side for installation. However, for the bridge installation at Tyler Forks (waterbody sira004p) on Casey Sag Road (access road 085) and at the HDD crossing of Tyler Forks (waterbody sirc005e), equipment will need to pass once through Tyler Forks for bridge installation and removal at each location.

Enbridge is requesting approval for a single pass (that involves driving on the bed) through most streams prior to installation of temporary equipment crossings (bridges) to clear bank vegetation, prepare the site of bridge placement, and install the bridge. A single pass of equipment for bridge removal may also be necessary. Typically, the equipment associated with clearing activities will also be used to install temporary bridges at each waterbody crossing where a temporary bridge will be used to allow construction equipment and personnel access across a waterbody. This process reduces the potential instream disturbance associated with a single pass through each waterbody prior to installation of temporary equipment crossing (bridges). However, due to the size of the engineered bridge needed for crossing Tyler Forks at Casey Sag Road and at the HDD crossing of Tyler Forks, additional equipment, not related to clearing activities, will be required to ford the waterbody and assist with placement and of the bridges. Enbridge does not intend to have equipment cross the other waterbodies that will horizontally directionally drilled.

Data Request Question #31:

Section 4.3 of the EIR discusses construction procedures but is targeted towards pipe installation via open-cut trenching. Describe how applicable construction procedures would differ for pipe installation via directional drilling or direct pipe (trenchless methods), including clearing requirements.

Data Request Question #31 Response:

Trenchless crossing methods include Cradle boring, Track boring, Horizontal Directional Drilling and Direct Pipe Installations. Cradle, Track and Direct pipe methods are common in the sense that they continuously support the bore wall with pipe throughout the drilling process.

The track and cradle bore methods use a sacrificial casing for the boring activities and run the drill through the inside of the sacrificial casing. An auger inside the casing pulls the drill spoil material back out of the bore as it advances through the drill profile. No water is used. In both cases, a pilot hole is drilled to establish a path for the pipe. Once the pilot hole is established, the Product pipe is welded on to the sacrificial pipe and it is pulled back through the bore to complete the installation.

The Direct pipe installation method does not use the sacrificial casing but rather uses the product pipe as the means to advance the drilling head through the drill profile. The drilling head mechanism includes the cutting head as well as the motors used to turn the cutting head. The mud motors use drilling mud that is pumped through a hose that runs inside the pipe back to the pumps to hydraulically rotate the cutting head and cut the bore path. Mud from the outlet of the mud motors is then jetted into the rock face to cool the cutting teeth and sweep the cut material away from the face and into the exhaust mud line that is also inside the product pipe. This exhaust mud line carries the spoil from the drilling face back to the mud tanks where the mud and

debris are separated through screens and shakers, the clean mud is then recirculated down the hole and the process is repeated. The drilling head is fitted with instrumentation and steering rams that provide data for the operator, allowing them to steer the cutting head as it is advanced. Once through to the exit point, the steering head is cut off from the product pipe and the drill is complete.

Horizontal directional drilling as the names implies is essentially just that. A drill bit is attached to a hollow drill pipe that is turned by a drilling machine at the ground surface. To start an HDD the operator uses a smaller bit, typically a 12-inch bit, attached to a steering device called a SUB. The SUB is magnetically coupled to guide wires that are run above ground on either side of the drill, allowing the operator to steer the bit. Once the pilot hole has been completed, larger drill bits are attached to the drill stem and run through the pilot hole to ream out the bore to the desired size. Mud is circulated to cool the bit and carry spoil back to the surface for screening, before is it recirculated. Several reaming passes of increasing size are typically required in order to create a bore hole to prepare it for "pull back". The bore hole is reamed larger than the product pipe to ensure it can be pulled back into the reamed hole without getting stuck. Once the bore hole has been completed, a pulling head is attached to the product pipe and it is "pulled back" into the hole to complete the bore. The pull string is welded, inspected, hydro tested and coated in advance of being pulled back into the reamed hole. Drilling mud is also used to lubricate, seal and support the bore throughout drilling and pull back process.

Enclosure: Data Request Question #4 Response: Plains Midstream Correspondence

December 3, 2020

Honorable Gretchen Whitmer
Governor of Michigan
P.O. Box 30013
Lansing, Michigan 48909

Re: Great Lakes Tunnel Project – Case No U-20763

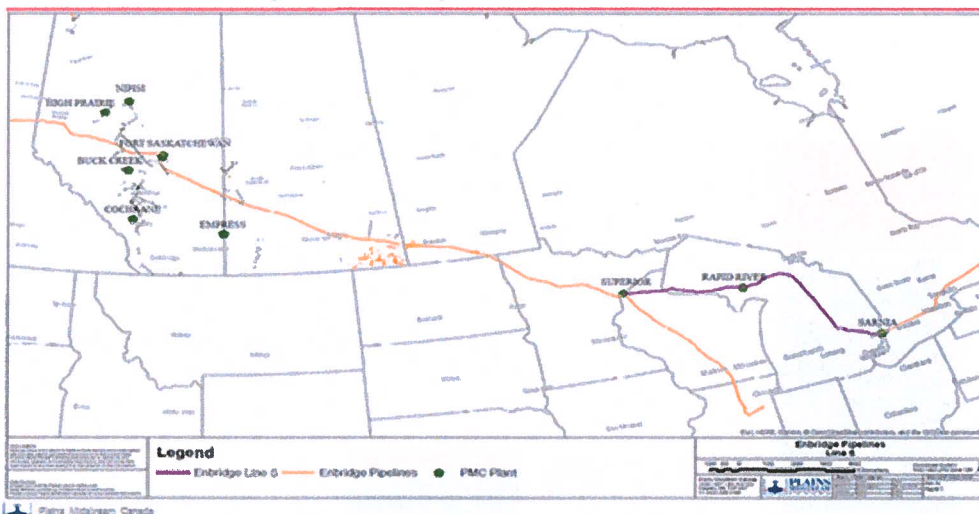
Michigan Public Service Commission

I am writing on behalf of Plains Midstream Canada ULC (“Plains”) to express our support for the proposal to build a tunnel to host the Enbridge Line 5 energy pipeline and other utilities. This pipeline is a vital facility for the transport of crude oil and natural gas liquids to destinations in the U.S. and Canada.

I would like to provide some details on the value this infrastructure provides to Plains and our customers and other stakeholders.

Line 5 is essential to meeting the energy needs of Michigan and the surrounding region. As Figure 1 below demonstrates, Line 5 supplies all the feedstock to Plains’ Sarnia Fractionation facility in Ontario from production points in Western Canada. Sarnia in turn processes this feedstock into about 800 million USG¹ of propane and 400 million USG of butane per year for supply to surrounding markets. Plains in turn sells approximately 200 million USG of these products directly in Michigan per year.

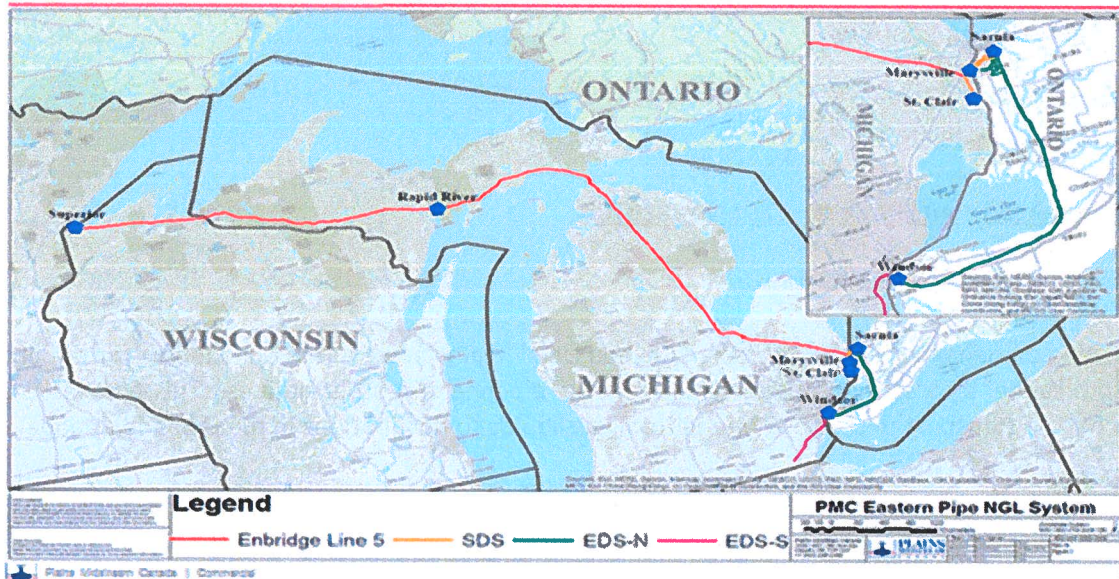
West to East Pipeline Map



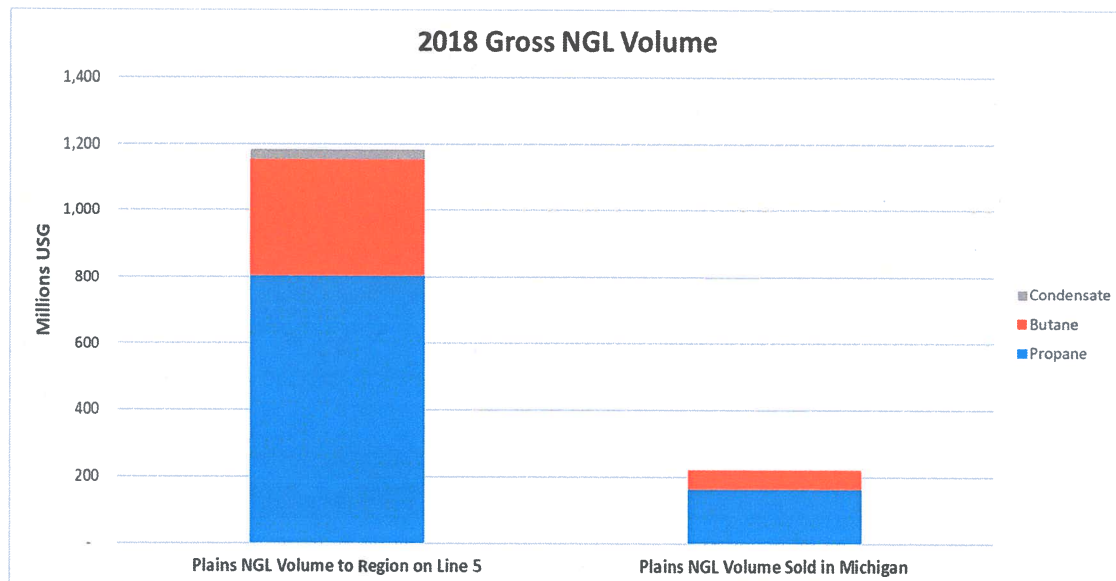
¹ Based on 2018 averages.

Without the Sarnia Fractionator to separate the feedstock into propane and butane, Plains' Rapid River, MI and Superior, WI facilities would become redundant.

Eastern NGL Pipeline Map



Notably, shutting down Line 5 would result in the inevitable shutdown of Plains facilities at Sarnia, Rapid River, and Superior. This would directly impact the employment of approximately 125 Plains' workers in the the United States and Canada. The shutdown of these facilities would not only remove ~200 million USG of direct supply to MI, but would also remove indirect supply of ~800 million USG of propane and 400 million USG of butane from the eastern region, which would be expected to have a devastating price impact on the region, and more acutely the State of Michigan.





In the medium term, propane shortage induced price impacts would be expected to be much more severe and lasting than those experienced during the polar vortex induced shortages in the winter of 2013/14 that prompted Michigan and several other surrounding states to declare a state of emergency. Further to the economic impact, supply shortages pose a significant safety risk in winter as individuals may not have supply to heat their homes at any price.

The Alternatives Analysis commissioned by the State of Michigan correctly observed that the vital service that Line 5 provides cannot be feasibly or economically replaced by other pipelines or modes of transportation. The existing pipeline infrastructure through the region is either at capacity or dedicated to other products and could not handle the products or capacity transported by Line 5. The analysis clearly shows that pipelines are the safest, most economic and most reliable method to transport oil and NGLs when compared to other modes of transportation assessed.

The report also concluded that Line 5 is in safe operating condition and could continue to operate safely into the foreseeable future and provide its essential service to all of the many stakeholders and broad population who rely upon it. The Tunnel Project represents a significant investment by the energy industry to provide this service as safely as possible.

About Plains Midstream Canada ULC (Plains)

Plains is a transportation and midstream service provider. We specialize in transportation, storage, processing and marketing solutions for crude oil, natural gas, and natural gas liquids (NGLs). Plains is headquartered in Calgary, Alberta and has more than 1,500 employees in Canada and the U.S. We are an indirect subsidiary of Plains All American Pipeline, L.P. (Plains All American), a publicly traded master limited partnership headquartered in Houston, Texas.

Sincerely,

Plains Midstream Canada ULC

A handwritten signature in blue ink that reads "Sterling Koch". The signature is fluid and cursive, with a large loop at the end of the last name.

Sterling G. Koch
Vice President, Legal and Land

Enclosure: Data Request Question #22(a) Response: Memorandum of Agreement

Document Number

MEMORANDUM OF AGREEMENT

Title of Document

DOCUMENT NO **350527**

Received for Record on
03-10-2020 at 09:47 AM
JULIE M GLEESON
REGISTER OF DEEDS
ASHLAND COUNTY, WI
Pages: 3
Fee Amount: \$30.00

See attached Memorandum of Agreement Regarding Public Access and Use of Property for Outdoor Recreational Activity Purposes

All that part of a strip or parcel of land lying in the Township Forty-five (45) North, Range Two (2) West, Section Thirty-two (32), the Southwest Quarter of the Northwest Quarter (SW1/4 NW1/4) thereof, bounded by the following described lines:

Beginning on the north-south 1/4 line 532.0 feet north of the west 1/4 corner of said Section 32, thence N. 74° 35' 30" E. 623.0 feet, thence N. 0° 14' E 226.0 feet, thence S. 89° 46' E. 100.0 feet, thence S. 0° 14' W. 302.0 feet thence S. 74° 35' 30" W. to the easterly right of way limits of present laid out and travelled C.T.H. "K" thence southwesterly along said easterly right of way limits to east-west 1/4 line of said Section 32, thence westerly along said east-west 1/4 line to the northeasterly bank of the Bad River; thence along said easterly bank of the Bad River to the aforementioned north-south 1/4 line of Section 32, thence north along said north-south 1/4 line to the place of beginning.

All as surveyed, staked, and as more fully appears on right of way plats and plans for Division Job No. 8619, and containing 5.58 acres more or less exclusive of present laid out and owned highway right of way.

Drafted by:
Dante Tomassoni
26 E Superior Street,
Duluth, MN 55802
and
Tyler W. Wickman, SBN 1057612
Anich, Wickman & Lindsey, S.C.
PO Box 677, Ashland, WI 54806

Recording Area

Name and Return Address
Attorney Tyler W. Wickman
Anich, Wickman & Lindsey, S.C.
220 Sixth Avenue West
P.O. Box 677
Ashland, WI 54806

018-01295-0200
Parcel Identification Number (PIN)

**MEMORANDUM OF
AGREEMENT REGARDING
PUBLIC ACCESS AND USE OF PROPERTY FOR
OUTDOOR RECREATIONAL ACTIVITY PURPOSES**

The City of Mellen, Wisconsin a Wisconsin municipal corporation, conveyed the lands described on the attached Exhibit A (the "Property") to Tri-State Holdings, LLC (collectively, the "Parties"). The Parties agreed to keep the property open for public use so long as the use does not interfere with construction, maintenance, operation, or inspection of the pipeline or right-of-way, or risk the safety of members of the public or the safety of any of the Company's employees or contractors. By way of Agreement Regarding Public Access and Use of Property for Outdoor Recreation Activity Purposes dated March 3, 2020, the Parties have memorialized the terms of the agreement.

CITY

City of Mellen, a Wisconsin municipal corporation

By: *Joseph Barabe*
Its: Joseph Barabe, Mayor

Dated: March 3, 2020

COMPANY

Tri-State Holdings, LLC, a Michigan limited liability company

By: *[Signature]*
Its: AUTHORIZED AGENT RICHARD L. KERN

Dated: 03/03/2020

State of Wisconsin)
) ss.
Ashland County)

Personally came before me on March 3, 2020
the above named Joseph Barabe, and RICHARD L. KERN

to me known to be the persons who executed the
foregoing instrument and acknowledge the same.

Tyler Wickman
* Tyler Wickman
Notary Public, State of Wisconsin
My commission expires: permanently

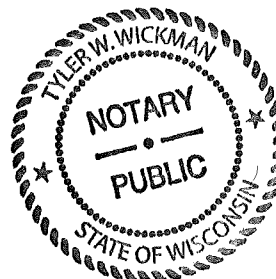


Exhibit A

All that part of a strip or parcel of land lying in the Township Forty-five (45) North, Range Two (2) West, Section Thirty-two (32), the Southwest Quarter of the Northwest Quarter (SW1/4 NW1/4) thereof, bounded by the following described lines:

Beginning on the north-south 1/4 line 532.0 feet north of the west 1/4 corner of said Section 32, thence N. 74° 35' 30" E. 623.0 feet, thence N. 0° 14' E 226.0 feet, thence S. 89° 46' E. 100.0 feet, thence S. 0° 14' W. 302.0 feet thence S. 74° 35' 30" W. to the easterly right of way limits of present laid out and travelled C.T.H. "K" thence southwesterly along said easterly right of way limits to east-west 1/4 line of said Section 32, thence westerly along said east-west 1/4 line to the northeasterly bank of the Bad River; thence along said easterly bank of the Bad River to the aforementioned north-south 1/4 line of Section 32, thence north along said north-south 1/4 line to the place of beginning.

All as surveyed, staked, and as more fully appears on right of way plats and plans for Division Job No. 8619, and containing 5.58 acres more or less exclusive of present laid out and owned highway right of way

Enclosure: Data Request Question #24 Response: Detailed table of the local, state, and federal land crossings for the proposed route and each route alternative

Data Request Question #24 Response: Table of Local, State, and Federal Land Crossings

Owner	Name of Public Land	Acres in Corridor	Agricultural	Barren	Forested	Grassland	Open Water	Urban / Development	Wetland
Proposed Route									
Iron County	Iron County Forest	107.7	0.0	0.0	95.3	0.0	0.0	0.0	12.4
	Total	107.7	0.0	0.0	95.3	0.0	0.0	0.0	12.4
RA-01									
State of Wisconsin	White River Wildlife Area	3.5	0.0	0.0	1.8	0.7	0.0	0.1	1.0
Ashland County Memorial Forest	--	4.0	0.0	0.0	3.8	0.0	0.0		0.2
Ashland County Fair Association Inc.	--	3.6	0.0	0.0	0.6	2.6	0.0	0.1	0.0
State of Wisconsin	Copper Falls State Natural Area	6.8	0.0	0.0	6.8	0.0	0.0	0.0	0.0
State of Wisconsin – WDNR	Copper Falls State Park	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
State of Wisconsin – WDNR	--	8.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0
Iron County	Iron County Forest	14.1	0.0	0.0	13.3	0.0	0.0	0.0	0.8
	Total	42.0	0.0	0.0	36.2	3.2	0.0	0.2	2.3
RA-02									
Ashland County Highway Dept.	--	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Iron County	Iron County Forest	13.1	0.0	0.0	12.6	0.0	0.0	0.2	0.0
Iron County	--	8.4	0.0	0.0	7.7	0.0	0.0	0.0	0.7
Town of Knight	--	4.2	0.0	0.0	4.2	0.0	0.0	0.0	0.0
Town of Pence	--	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
City of Montreal	--	12.7	0.0	0.0	9.3	0.0	0.0	0.0	3.4
City of Hurley / City Hall	--	9.9	0.0	0.0	8.0	1.7	0.0	0.0	0.3
Hurley School District	--	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1
State of Wisconsin	--	0.6	0.0	0.0	0.5	0.0	0.0	0.1	0.0
	Total	51.5	0.0	0.0	44.5	2.2	0.0	0.3	4.5
RA-03									
Ashland County Forest	Ashland County Forest	59.3	0.0	0.0	38.0	0.0	0.0	0.0	21.3
Bayfield County	Bayfield County Forest	195.5	0.0	0.0	188.0	0.0	0.0	0.0	7.4
Bayfield County	--	14.4	0.0	0.0	4.2	0.0	0.0	0.0	10.3
City of Montreal	--	5.8	0.0	0.0	3.3	0.0	0.0	0.4	2.2
Dept. of the Interior (US)	--	1.6	0.0	0.0	0.5	0.0	0.0	0.0	1.1
US Forest Service	--	2.6	0.0	0.0	1.9	0.0	0.0	0.0	0.6

Owner	Name of Public Land	Acres in Corridor	Agricultural	Barren	Forested	Grassland	Open Water	Urban / Development	Wetland
US Forest Service	Fairyland	14.4	0.0	0.0	14.4	0.0	0.0	0.0	0.0
Iron County	Iron County Forest	167.2	0.0	0.2	100.6	0.0	0.0	0.0	66.4
National Park Service	--	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Sanitary District #1, Town of Cable	--	6.8	0.0	0.0	3.2	3.6	0.0	0.0	<0.01
State of Wisconsin	--	7.7	0.0	0.0	0.0	0.0	0.0	0.0	7.7
State of Wisconsin	Island Lake Hemlocks	1.8	0.0	0.0	0.6	0.0	0.0	0.0	1.2
Town of Cable	--	<0.01	0.0	0.0	0.0	0.0	0.0	0.0	<0.01
Town of Gordon	--	3.9	0.0	0.0	3.6	0.0	0.0	0.0	0.3
Town of Namakagon	Fairyland	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Town of Namakagon	--	<0.01	0.0	0.0	<0.01	0.0	0.0	0.0	0.0
Town of Pence	--	1.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5
U.S.A.	Chequamegon-Nicolet National Forest	397.2	0.0	0.0	285.4	<0.01	0.0	0.0	111.8
U.S.A.	Bearsdale Creek & Hyatt Spring State Natural Area	4.5	0.0	0.0	0.4	0.0	<0.01	0.0	4.1
U.S.A.	Saint Croix National Scenic Riverway	4.9	0.0	0.0	0.7	0.0	0.0	0.0	4.1
U.S.A.	Rock Lake	5.8	0.0	0.0	5.8	0.0	0.0	0.0	0.0
WIDOT		0.2	0.0	0.0	<0.01	0.0	0.0	0.1	0.0
Total		895.3	0.0	0.2	651.1	3.6	0.0	0.4	240.0

Enclosure: Data Request Question #26(a) Response: Revised Hydrotest Plan

Draft
Hydrostatic Test Plan
Rev. 2
November 2020

L5WSR Hydrostatic Test Water Appropriations and Discharge Planning

The Enbridge Line 5 Wisconsin Segment Relocation Project (“L5WSRP” or “Project”) consists of the installation of approximately 42 miles of 30-inch diameter, Grade X-70 carbon steel pipe via open trench, conventional bore, and trenchless crossing techniques to reroute the existing Line 5. As part of the construction process the newly installed pipe will be hydrotested prior to being placed into service. The summary below provides details on the preferred test section design and water appropriation sources, volumes, and discharge points.

Test section breaks depend on access requirements, water sourcing, elevation change, and material strength parameters. Test sections breaks will be determined by the water sources that can be utilized for testing activities. Water will be withdrawn and discharged for each mainline test section independent of other test segments. Enbridge’s proposed test sections are discussed below:

Option A (Preferred): *Two test sections, water appropriation from Bad River*

The preferred scenario is to withdraw water from Bad River and test the mainline in two test sections with Test Section 1 extending from the Bad River at approximately MP 24.1 to the west at MP 0. Test Section 2 would extend from Bad River at approximately MP 24.1 to the east to MP 41.1.

Test Section	Start MP	End MP
1	0.0	24.1
2	24.1	41.1

Option B (Alternative): *Three test sections, water appropriation from Silver Creek and Tyler Forks*

An alternative testing scenario would create three test sections. Test Section 1 from MP 0.0 to 19.5 and Test Section 2 from MP 19.5 to MP 33.8 would utilize water from Silver Creek. Test Section 3 would extend from MP 33.8 to MP 41.1 and utilize water from Tyler Forks.

Test Section	Start MP	End MP
1	0.0	19.5
2	19.5	33.8
3	33.8	41.1

Water quantity estimates for the hydrotesting include the fill volume, squeeze volume, and 15% contingency water. The cumulative water volume required for testing purposes is approximately 8.7 million gallons. Water will not be re-used between test sections; therefore, separate appropriations are proposed to test each pipeline segment. When filling from a natural waterbody, suction piping shall be maintained at sufficient depth to eliminate the introduction of air, debris, silt, or other granular materials into the test medium. Additionally, a mesh screening will be used to prevent aquatic species from entering the system. Proposed withdrawal rates range from 1,000-1,500 gallons per minute, subject to permit conditions. Hydrostatic test water will be returned (discharged) to the source water according to permit conditions and in a manner to prevent erosion, scour, or flooding.

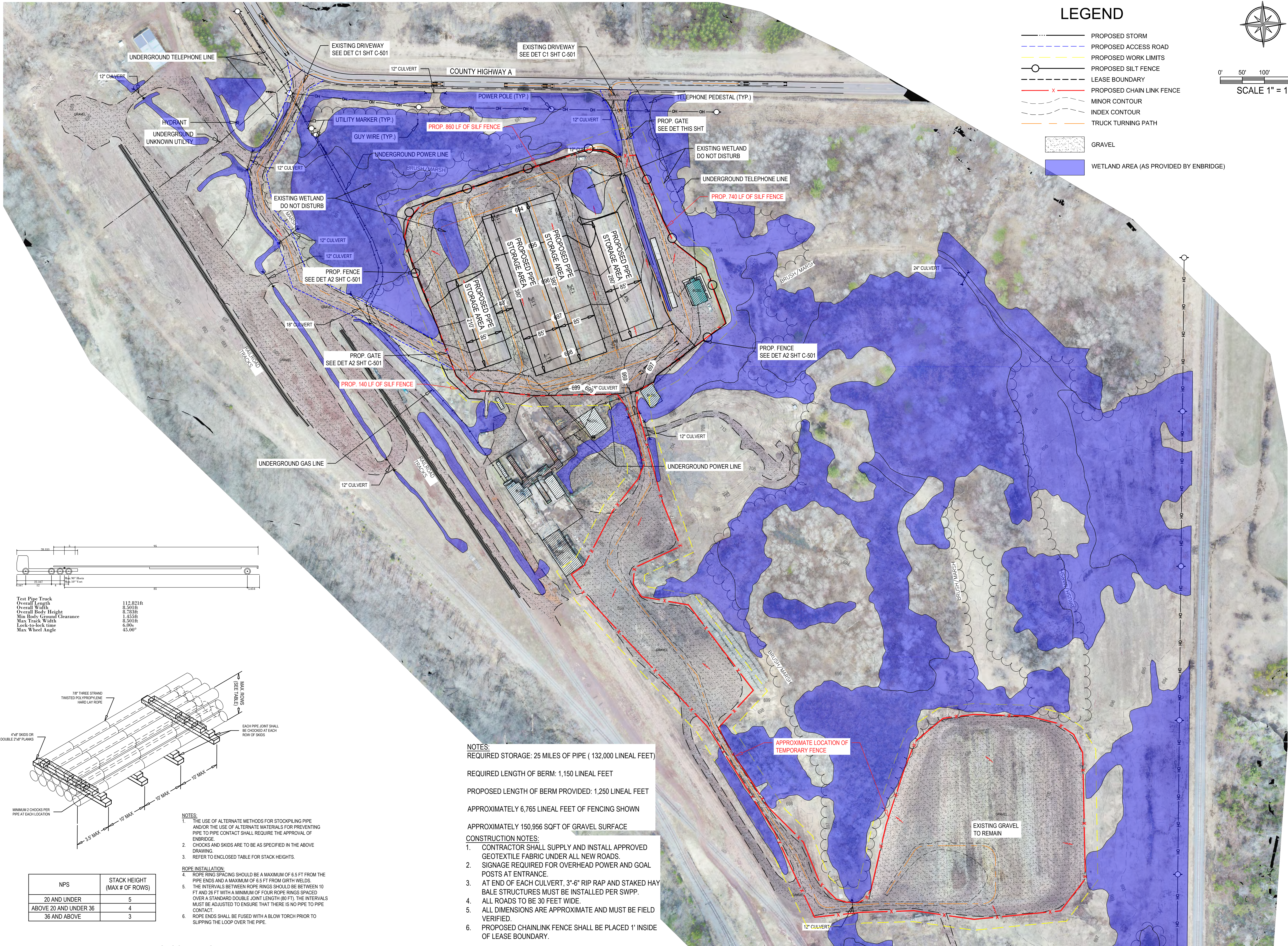
The table below illustrates how that volume would be utilized in the two testing scenarios described above.

Option	Test Description	Length (ft)	Theoretical Fill Volume (gal)	Theoretical Squeeze Volume (gal)	15% Contingency Volume (gal)	Total Water Required (gal)
A	Section 1	127,037	4,359,000	51,000	662,000	5,072,000
A	Section 2	89,971	3,088,000	37,000	469,000	3,594,000
B	Section 1	102,960	3,533,000	42,000	537,000	4,112,000
B	Section 2	75,504	2,591,000	31,000	394,000	3,016,000
B	Section 3	38,544	1,323,000	16,000	201,000	1,540,000

Additionally, for the proposed reroute, Enbridge intends to install the pipeline using trenchless techniques (i.e., horizontal directional drill [HDD] or direct pipe method) at 13 locations. All piping installed via HDD pipe will be pretested prior to installation. After installation, these sections will then be welded to the rest of the mainline and included in the mainline pressure tests. Crossings utilizing conventional boring methods (non-HDD) do not require a pre-installation pressure test. For many of the sections Enbridge intends to utilize water from municipal sources and will haul water to and from the site for purposes of testing the pipe sections. Enbridge proposes to utilize water at four of the crossing locations as indicated in the table below. For the Trout Brook and Billy Creek HDDs, Enbridge proposes to utilize water from Trout Brook, and at Silver Creek and Tyler Forks, Enbridge proposes to utilize water from the respective waterbodies utilizing the same appropriations and discharge criteria described for the mainline hydrotest.

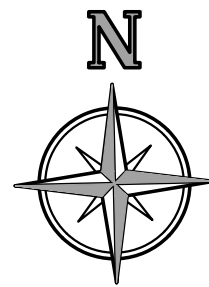
Test Description	Length (ft)	Water Source	Theoretical Fill Volume (gal)	Theoretical Squeeze Volume (gal)	15% Contingency Volume (gal)	Total Water Required (gal)
White River	4,439	Hauled In	147,200	1,700	22,400	171,300
Deer Creek	1,777	Hauled In	60,000	800	9,100	69,900
Marengo River	1,985	Hauled In	67,000	800	10,200	78,000
Brunsweller River	2,790	Hauled In	94,100	1,200	14,300	109,600
Hwy13/Canadian National Railroad	1,998	Hauled In	66,300	800	10,100	77,200
Trout Brook	2,337	Trout Brook	78,900	1,000	12,000	91,900
Billy Creek	1,775	Trout Brook	59,900	800	9,100	69,800
Silver Creek	3,435	Silver Creek	113,900	1,300	17,300	132,500
Krause Creek	1,597	Hauled In	53,900	700	8,200	62,800
Bad River	1,774	Hauled In	58,800	700	9,000	68,500
Tyler Forks	1,841	Tyler Forks	62,100	800	9,500	72,400
Potato River	3,472	Hauled In	115,100	1,300	17,500	133,900
Vaughn Creek	2,055	Hauled In	69,400	900	10,600	80,900

Enclosure: Data Request Question #27(a) Response: Revised site drawing for Bayside pipe yard

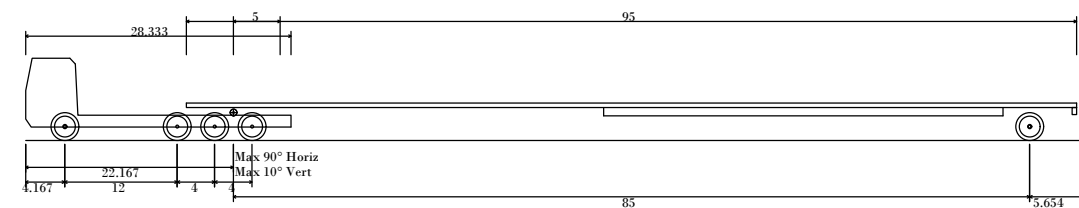


LEGEND

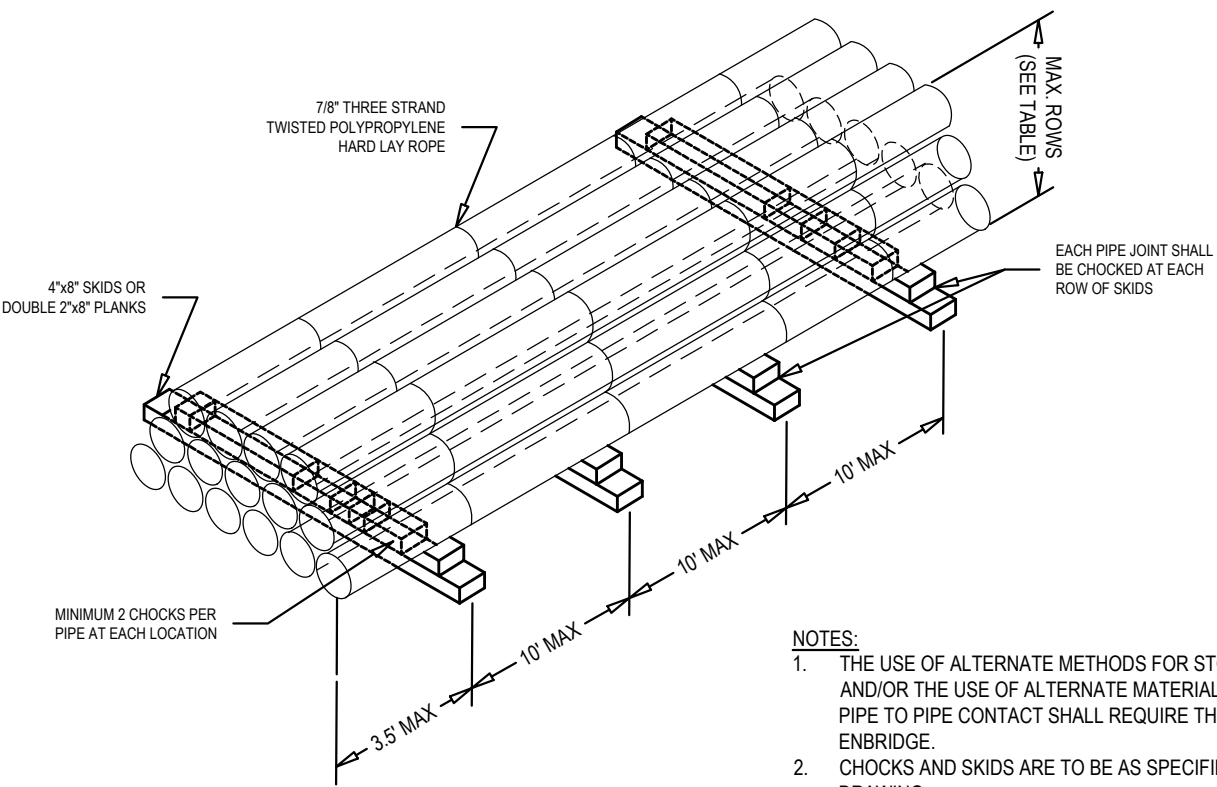
- PROPOSED STORM
- PROPOSED ACCESS ROAD
- PROPOSED WORK LIMITS
- PROPOSED SILT FENCE
- LEASE BOUNDARY
- PROPOSED CHAIN LINK FENCE
- MINOR CONTOUR
- INDEX CONTOUR
- TRUCK TURNING PATH
- GRAVEL
- WETLAND AREA (AS PROVIDED BY ENBRIDGE)



0' 50' 100' 200'
SCALE 1" = 100'



Test Pipe Truck
Overall Length 112.821ft
Overall Width 8.501ft
Overall Body Height 8.785ft
Min Body Ground Clearance 1.453ft
Max Truck Width 8.501ft
Lock-to-lock time 6.90s
Max Wheel Angle 45.00°



NOTES:

- THE USE OF ALTERNATE METHODS FOR STOCKPILING PIPE AND/OR THE USE OF ALTERNATE MATERIALS FOR PREVENTING PIPE TO PIPE CONTACT SHALL REQUIRE THE APPROVAL OF ENBRIDGE.
- CHECKS AND SKIDS ARE TO BE AS SPECIFIED IN THE ABOVE DRAWING.
- REFER TO ENCLOSED TABLE FOR STACK HEIGHTS.

ROPE INSTALLATION:

- ROPE RING SPACING SHOULD BE A MAXIMUM OF 6.5 FT FROM THE PIPE ENDS AND A MAXIMUM OF 6.5 FT FROM GIRTH WELDS.
- THE INTERVALS BETWEEN ROPE RINGS SHOULD BE BETWEEN 10 FT AND 26 FT WITH A MINIMUM OF FOUR ROPE RINGS SPACED OVER A STANDARD DOUBLE JOINT LENGTH (80 FT). THE INTERVALS MUST BE ADJUSTED TO ENSURE THAT THERE IS NO PIPE TO PIPE CONTACT.
- ROPE ENDS SHALL BE FUSED WITH A BLOW TORCH PRIOR TO SLIPPING THE LOOP OVER THE PIPE.

NPS	STACK HEIGHT (MAX # OF ROWS)
20 AND UNDER	5
ABOVE 20 AND UNDER 36	4
36 AND ABOVE	3

PIPE STOCKPILING

NOT TO SCALE

HOLLAND
ENGINEERING

220 Hoover Boulevard
Holland, Michigan 49423-3766
www.hollandengineering.com
T 616-392-5938 F 616-392-2116

ENBRIDGE

BAYSIDE TIMBER WOOD
PIPE YARD

1406 COUNTY HIGHWAY A
ASHLAND, WI 54806

ATTN: MR.
STREET ADDRESS
CITY, STATE ZIP

Date	Description	No.
05/20/2020	PROPOSED PIPE YARD LAYOUT	A
06/02/2020	UPDATE PIPE STOCKPILING DETAIL	B
09/24/2020	80% DESIGN DEVELOPMENT	C

Project Manager
RYAN T. YSSELDYKE, P.E.

Vertical Datum
NAVD 88

Horizontal Datum
NAD83

Drawn by
STEVE A. MORRIS

Checked by
Survey

Civil
Struc.

L. A.

HEI Project Number
19-08-029

Sheet Title
SITE
LAYOUT
PLAN

Sheet No.
3