Levi, Andrew (COMM)

From: sedna101@aol.com
Sent: Friday, June 23, 2017 12:35 AM
To: MN_COMM_Pipeline Comments
Subject: NO PERMIT. SHUT DOWN LINE 3 AND DEVELOP RENEWABLE ENERGY INFRASTRUCTURE.

The Draft Environmental Impact Statement (DEIS) for the Line 3 pipeline attempts to justify why the oil industry's need to profit is greater than the need of the Anishinaabeg people to survive.

TRIBAL IMPACTS

- The United Nations international standard for projects that impact Indigenous Peoples is **Free, Prior and Informed consent**. Tribal consultancy after the project is already proposed and designed is not free, prior, and informed consent.
- Most of the issues specific to tribal people and tribal resources are **confined to a separate chapter** that attempts to provide "an American Indian perspective." They are excluded from the main chapters that assess potential impacts. This allows the EIS to **avoid drawing conclusions** about the impacts on tribal people. (Chapter 9)
- Chapter 9, "Tribal Resources," states that ANY of the possible routes for Line 3 "**would have a long-term detrimental effect on tribal members and tribal resources**" that cannot be accurately categorized, quantified, or compared (9.6). It also acknowledges that "traditional resources are essential to the maintenance and realization of tribal lifeways, and their destruction or damage can have profound cultural consequences" (9.4.3). **This does not acknowledge the treaty responsibilities the state of Minnesota has to the tribal members**.
- Chapter 11, "Environmental Justice," acknowledges that pipeline impacts on tribal communities "**are part of a larger pattern of structural racism**" that tribal people face in Minnesota, which was well documented in a 2014 study by the MN Department of Health. It also concludes that "the impacts associated with the proposed Project and its alternatives

would be an additional health stressor on tribal communities that already face overwhelming health disparities and inequities" (11.4.3).

- The DEIS concludes that "disproportionate and adverse impacts would occur to American Indian populations in the vicinity of the proposed Project" (11.5) **But it also states that this is NOT a reason to deny the project**!
- Chapter 6 states that Enbridge's preferred route would impact **more wild rice lakes and areas rich in biodiversity** than any of the proposed alternative routes (Figure ES-10).
- Most of the analysis of archaeological resources in the path of the pipeline rely on **Enbridge's surveys**. For some reason, only 3 of their 8 surveys are available, and the 5 missing are the most recent! In those, Enbridge found 63 sites, but claims that only 3 are eligible for protection under the National Register of Historic Places. (5.4.2.6.1). Honor the Earth has had the studies we have been able to see reviewed, and there are numerous flaws in their methodology. 0514-1
- The DEIS acknowledges that "The addition of a temporary, cash-rich workforce**increases the likelihood that sex trafficking or sexual abuse will occur**," and that these challenges hit Native communities the hardest. But the DEIS dismisses this problem quickly, saying that "Enbridge can prepare and implement an education plan or awareness campaign around this issue" (11.4.1). What experience does Enbridge have planning and implementing an anti-sex trafficking program?

BIG PICTURE PROBLEMS

- Many of the environmental impacts and "plans" for minimizing them are drawn directly from Enbridge's permit application ("Enbridge would do this" and "Enbridge would do that") without any evidence of compliance or genuine consideration that maybe, just maybe, Enbridge won't follow all the rules. History shows that they continually violate permit conditions - we are working on compiling an enormous record of these violations. The DEIS should analyze the likelihood of compliance.
- **The Alternatives chosen for comparison to the pipeline proposal are absurd** -- for example, the only rail alternative assumes the construction of a new rail terminal at the US

border, and thousands of new railcars to transport oil to Clearbrook and Superior. Enbridge would never do that. The only reasonable rail option would begin in Alberta. The truck alternatives are similarly unreasonable.

- **The "No Build" Alternative is not genuinely considered.** It is framed as "Continued Use of Existing Line 3" (Chapters 3 and 4), but nowhere is the "Shut Line 3 Down" option considered. There is no discussion of renewable energy, conservation, or the rapid development of electric car infrastructure. There is no assessment of the decline in oil demand. The entire study assumes that society needs X amount of oil, simply because Enbridge says they can sell it. That assumption ignores the massive fossil fuel subsidies and debts that make Enbridge's profits possible, and avoids the moral question of what is good for people and the planet. We know we must stop burning fossil fuels yesterday.
- There is zero discussion of how all this extra oil will go once it leaves Superior, Wisconsin. With 370,000 bpd of additional capacity, Enbridge will need a new pipeline departing its terminal in Superior. We know that they plan to build Line 66 through Ojibwe territories in Wisconsin, but they continue to deny this. Why isn't MN asking?
- The DEIS contains **no spill analysis for tributaries of the St. Louis River or Nemadji River**, where spills could decimate **Lake Superior** and the harbors of the Twin Ports. 0514-2
- For calculations of impact, the lifespan of the new Line 3 is estimated at *30 years*. But Lines 1-4 are 55-65 years old! And hasn't the technology improved? The lifespan should be at least 50 years, a shorter lifespan is a clear indication that Enbridge themselves know that the fossil fuel era is coming to an end. In Honor the Earth's analysis, we have attempted to predict the impacts of this pipeline on the next 7 generations. 0514-3
- This project is a further investment in a dying Tar Sands industry. Numerous international oil companies and financing institutions are divesting from the tar sands. Why should Minnesota invest in this industry? Why should our Nation be forced to deal with a bad idea in perpetuity.
- The DEIS assumes that the Koch pipelines to MN refineries get all their oil from Line 3, but the current Line 3 does not supply enough capacity for this (390,000 barrels per day), and we know that some of it comes from Line 81, which brings oil from the Bakken in North Dakota.

SPILL RISK

- The 7 sites chosen for spill modeling are not representative of the locations and resources put at risk along the entire corridor. A more thorough analysis of different locations is needed - for example, what about Lake Superior?
- There is no analysis on Enbridge's leak detection system, or their inability to respond quickly to major emergencies.
- Enbridge's response plans are highly guarded, and Honor the Earth's attempts to receive and review these documents has been blocked. What we can infer is that Enbridge relies on local first responders for their emergencies. They attempt to use the money they donate to communities along their corridors as proof that they have an integrated emergency response program.

The DEIS estimates the annual probability of different kinds of spills on the proposed route in MN:

- Pinhole leak = 27%
- Catastrophic = 1.1%
- Small Spill = 107%, Medium = 7.6%, Large = 6.1%

So in 50 years, we can expect **14 pinhole leaks, 54 small spills, 4 medium, 3 large, and 1 catastrophic**!

ABANDONMENT

- The risks of pipeline abandonment are not adequately assessed. For example, there is no discussion of landowner property values and the effect that an abandoned pipe could have on them, especially if there is indeed "**legacy contamination**" on people's land.
- Impacts on human and natural resources due to the abandoned Line 3 are anticipated to be minimal in the near term but could be significant in the longer term, absent effective monitoring, adaptive management, and the timely introduction of mitigation measures. There is not much information on what these mitigation and management plans are.

- If there is a dearth of surrounding soil, or if the cover for the pipeline is relatively shallow, the pipeline bears more of the load and, all things being equal, is more likely to fail. We know from experience that there are numerous areas where the pipes are exposed and near the surface.
- There is also no discussion of **exposed pipe, how fast it will corrode, or how much currently buried pipe will become exposed once it is emptied**. "When a pipe is empty, the weight of the liquid load that once contributed to buoyancy control is lost. As a result, the pipe could become buoyant and begin rising toward the surface at watercourse crossings, in wetlands, and in locations where soil density is low and the water table is high" (8.3.1).
- We know that the abandonment of the existing line 3 is bad. But there is also no mention of **the abandonment of the other 3 ancient pipelines in Enbridge's existing mainline corridor (Lines 1, 2, and 4)**, which we expect Enbridge will very soon attempt to abandon. Nor is there any discussion of the **abandonment of the NEW Line 3** in the future.
- The DEIS states that it will be very risky to remove and clean up the existing Line 3 because the pipelines are very close together. "The distance between pipelines within this corridor varies, but they are generally 10 to 15 feet apart" (8.3.1). This is not consistent with our extensive observations and physical measurements on the land. Also, don't they dig up pieces of pipe for maintenance purposes all the time? **Why is it suddenly risky?**
- The DEIS simply states that "Enbridge has indicated that it would develop a contaminated sites management plan to identify, manage,and mitigate historically contaminated soils and waters" found during the abandonment or removal of the existing Line 3 (8.3.1.1.1). **We want to see that plan**.

CONSTRUCTION AND RESTORATION

- Chapter 2, "Project Description" states that Enbridge has requested a 750-foot route width (375 feet on each side of the Line 3 Replacement pipeline centerline). They claim only 50 of the 750 feet would remain a permanent right-of-way (2.1) All of this width should be included in an impact analysis because Enbridge's environmental protection plan and record is abysmal.

- Their “restoration” plans for restoring the landscape around the corridor after installation is laughable. Enbridge’s process for restoring wetlands includes dumping the now compacted (and probably de-watered) soil back in the trench, sowing some oats and “letting nature take it’s course”. This is not how you re-establish a wetland. Studies have shown that even with proper restoration practices, it can take decades to get back to the biological functioning it was at prior to disturbance. When Enbridge stores the soil, they will also be driving equipment over it- which compacts it, they also plan to compact the soil after refilling the trenches. This is not good for the soil.
- Cathodic protection, which applies electric current to the pipeline in order to protect it from corrosion caused by nearby utility lines, **will not be installed for up to 1 year after pipeline construction** (2.3.2.3). Lack of cathodic protection is what caused many pinhole leaks in the Keystone pipeline, almost immediately after construction. The proposed route for Line 3 follows a utility corridor for much of its length - this is a recipe for disaster. Even the US Army Corps’s rubber-stamp approval of the Dakota Access pipeline required the cathodic protection system to be installed within 6 months!

ECONOMIC IMPACTS

- Chapter 5, “Existing Conditions, Impacts, and Mitigation” states that Line 3 will create ZERO permanent jobs. Enbridge’s application states that “existing operations staff would be able to operate the [pipeline] and that few additional employees would be hired to assist the staff” (5.3.4).
- Also in Chapter 5, the DOC assumes “all workers would re-locate to the area” and ZERO construction jobs will go to Minnesotans. The pipeline would have “no measureable impact on local employment, per capita household income, median household income, or unemployment” (5.3.4).
- The DEIS does not acknowledge that when the existing Line 3 shuts down, Enbridge will stop paying taxes to the MN counties along the mainline corridor. For many of these poor counties in the north, revenue from Enbridge’s property tax makes up a significant portion of the county budget. There is also the issue that Enbridge is now in the process of appealing

years of back taxes, burdening two of the poorest counties in Minnesota with over $10 million due.

CLIMATE CHANGE

- The DEIS acknowledges that Line 3 would contribute to climate change. It analyses 3 different types of emissions - direct, indirect, and lifecycle. Direct emissions are those that the pipeline infrastructure itself emits, and these are very small. Indirect emissions are those created by the power plants that provide electricity for the pipeline's pumping stations, and these are significant. Lifecycle emissions are those caused by the refinement and eventual use of the oil, and these are massive. Line 3's direct and indirect emissions alone would be 453,000 tons of CO2 per year. Over a 50-year lifespan, that would cost society an estimated $1.1 billion. (Executive Summary p.18).
- The lifecycle emissions of Line 3 would be 193 million tons of CO2 each year. Over a 50-year lifespan, that would cost society an estimated $478 billion (5.2.7.3)
- The DEIS does not discuss the unprecedented challenges of human casualty, displacement, conflict, natural disaster, biodiversity loss, etc, that climate change is causing, or the consensus from the scientific community that we must leave fossil fuels in the ground. It also fails to acknowledge that across the planet, Indigenous people are disproportionately impacted.

The DEIS affirms that the MN PUC can only grant the permit if "the consequences to society of granting are more favorable than the consequences of denying the certificate." Regardless of whether or not Enbridge can find customers, the DEIS shows that the negative impacts far outweigh the benefits. So our position remains:

NO PERMIT. SHUT DOWN LINE 3 AND DEVELOP RENEWABLE ENERGY INFRASTRUCTURE.

Jane Eagle

MINNESOTA

Comment Form
Line 3 Project Draft EIS Public Meeting

Please provide your contact information. This information and your comments will be publicly available.

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Please share your comments on the Line 3 Project Draft EIS. What could be improved in the EIS? What is missing?

I am wondering how "Drinking Water Sources" & "Drinking Water Areas of Interest" are calculated in table ES-2. How were these numbers settled upon? With Line 3 replacement crossing the Mississippi & MN river & would bring crude oil closer to Lake Superior, there is no way that the proposed route can have half of the number of drinking water areas of interest than the current line 3??

0673-1

I'm also very concerned by the table ES-4. Although truck spills might be more common there is no mention that these spills would occur in areas that have more traffic, would be seen quicker & are infinitely easier to clean (ie roadways not wetlands). In addition, this table doesn't say that the type of tar sands oil (dilbit) that will be transported through this pipeline is denser than water & will sink. Where are the statistics that show how much more likely pipeline spills are to flow into water or sink into aquifers?

0673-2

If including additional pages please number them and tell us how many you are providing:_____ pages

My name is Andrea Eger. I am a third generation Minnesotan, a organic farmer and educator. I am testifying today about the immense inadequacies I see in the Draft Environmental Impact Statement. I am concerned about many things that I have read in the DEIS but I will cover just a few of them today. Primarily I am concerned with the massive disruption to existing ecosystems along the proposed Line 3 corridor, the lack of state agency oversight in the construction process, and the compacting effect that this pipeline will cause to accelerate climate change.

One of the things that I am greatly concerned about is the effect that this pipeline will have on Minnesota's wetlands and forests. According to the MN Pollution Control Agency, the proposed route of line 3 would cross some of the areas of Minnesota that are most susceptible to groundwater contamination. This is highly permeable soil that will allow leaked oil to quickly pass to aquifers. In chapter 2 of the DEIS, Enbridge requests a 750 foot swath of land for construction purposes. This is the equivalent of it is the length of 2 football fields put together. It would run like a scar through wetlands in Northern Minnesota. Think of what a huge disturbance this will be to the Minnesota ecosystem. Critical habitat for wildlife, wildlife migration corridors, and mating grounds would all be effected. I am also very disturbed by section 2.7.2.4 which states that "Disturbed wetlands would be seeded with oats or a temporary seed mix (unless standing water is prevalent), or as otherwise directed by landowners or regulatory agencies." Enbrige has said that they "would otherwise allow the wetlands to revegetate naturally from the seeds and rhizomes present in the topsoil and natural recruitment." In whatever machine-compacted, dry, chemical-laden soil that is replaced after construction is done, "natural rejuvenation" would not be possible. Another thing that greatly disturbs me is that there is no mention of pesticides in the DEIS. Will Enbridge be allowed to spray pesticides at will into these fragile areas? Pesticides sprayed in a wetland would endanger pollinators locally as well as wash downstream. Why doesn't the DEIS ban use of toxic pesticides in clearing the land for the pipeline? To destroy this much pristine Minnesota wetlands without a plan for restoration is criminal.

0674-1

I am also incredibly concerned by 2.7.1.1 which talks about construction monitoring and inspection. It states that environmental inspectors will be supplied by Enbridge and they "would monitor and document compliance with company requirements, and the requirements of permit conditions." This is a perfect example of the fox guarding the hen house. The DEIS also says that state agents will also be on site but have diminished power Enbridge's inspectors and will not be able to haul construction on the project so Minnesota is left to blindly trusting

Fredrikson & BYRON, P.A.

July 5, 2017

VIA EMAIL AND ELECTRONIC FILING

Jamie MacAlister, Planning Director
Minnesota Department of Commerce
85 7th Place East Suite 500
St Paul, MN 55101

Re: In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement – Phase 3 Project in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/CN-14-916; OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement Project in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/PPL-15-137; OAH Docket No. 65-2500-33377

Dear Ms. MacAlister:

The Draft Environmental Impact Statement for the Line 3 Project ("DEIS") provides extensive evaluation and discussion of the potential benefits, impacts and mitigation measures for the Line 3 Replacement Project (the "Project") and alternatives being considered by the Minnesota Public Utilities Commission ("Commission"), following the direction provided in the Commission's February 5, 2016 Final Scoping Decision Document ("FSDD"), as well as the content requirements found in Minn. R. 4410.2300. Enbridge Energy, Limited Partnership ("Enbridge") appreciates the significant time and effort put into the DEIS by agency staff.

Enbridge is providing these initial comments identifying certain proposed discrete changes to the DEIS. To simplify the process of addressing these issues, Enbridge has organized these comments in the attached table (Attachment A). The table provides the statement or section of the DEIS being addressed, a citation to where it appears in the DEIS, and the proposed change, with a citation to the record or other source for the change, as appropriate.

Enbridge plans to file additional DEIS comments on or before the July 10, 2017 comment deadline.

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These comments have also been e-filed today through www.edockets.state.mn.us and a copy of the filing is being served upon the persons on the Official Service List of record.

Sincerely,

/s/ *Christina K. Brusven*

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Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
ES	1	Second paragraph states that the "Minnesota portion runs from the Canadian border to a terminal in Clearbrook..."	Modify this sentence to read, "the Minnesota portion runs from the Minnesota/North Dakota border to a terminal in Clearbrook..."	1568-1
ES	1	Fifth paragraph, line eight states: "Enbridge's proposed route for the new Line 3 avoids crossing the Leech Lake and Fond du Lac reservations but does cross a disputed section of the White Earth Indian Reservation, as well as ceded territory that tribal members value for wild rice, hunting, and fishing."	A short segment of the route passes through Nora Township in Clearwater County. Nora Township is the northernmost of four townships that were ceded by the White Earth Band of Chippewa Indians to the United States in 1889, after which cession the townships were no longer part of the reservation and on which no Indian hunting and fishing rights have existed. *White Earth Band of Chippewa Indians v. Alexander* , 518 F. Supp. 527 (D. Minn. 1981) (concluding that "the language of the Nelson Act and the agreement ceding the four northeastern townships to the United States was "precisely suited" to diminished the White Earth Reservation as established by the Treaty of 1867 . . . and that the legislative history, surrounding circumstances, and subsequent history clearly indicate that the four northeastern townships of the original reservation are no longer part of the White Earth Reservation"), aff'd, 683 F.2d 1129 (8th Cir. 1982) ("If the four townships were ceded and never returned to reservation status, no Indian hunting and fishing rights exist within the four townships."), cert. den., 459 U.S. 1070 (1982); see also *State v. Butcher* , 563 N.W.2d 776, 781 (Minn. Ct. App. 1997) (stating that "[t]he four ceded townships are no longer considered part of the White Earth Reservation"). Based on this case law, there is no ongoing dispute regarding whether these parcels are within the White Earth Reservation; accordingly, recommend deleting reference to "disputed section of the White Earth Indian Reservation." Also recommend that the phrase related to "ceded territory" be removed or presented in a manner that does not leave readers with an impression that crossing ceded territories is distinct to the APR. According to Figure 9-2 of the DEIS, all alternatives under consideration cross ceded territory.	1568-2
ES	1	Fifth paragraph states that the APR follows new right-of-way after 92 miles of co-location with the transmission line.	Enbridge estimates that between Park Rapids and the Minnesota/Wisconsin border, the APR is collocated with other utility or road rights-of-way for approximately 110 miles. Over 75% of the APR between Clearbrook and the Minnesota/Wisconsin border parallels existing rights-of-way.	1568-3
ES	1	Fifth paragraph states "Then it follows new right-of-way into Superior, Wisconsin."	Modify this sentence to read: "Then it follows new right-of-way before rejoining the Enbridge Mainline corridor and then traveling into Superior, Wisconsin."	1568-4
ES	2	Figure ES-1 shows a line going into Superior labeled "SPP"	The reference to "SPP" (the Sandpiper Pipeline Project) should be removed from this figure. Applications for that project were withdrawn in August 2016.	1568-5

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
ES	4	Fourth paragraph states: "If the Commission denies the requested CN, the Applicant (or entities other than the Applicant) could reasonably be expected to meet shipper demand for the oil through other means, such as a different pipeline system, or by train or truck."	Enbridge recommends this statement be deleted. It lacks the objectivity required by Minn. R. 4410.2300 and is inconsistent with Section 4.7 of the FSDD, as it may lead a reader to assume that the purpose or need for the Project or the economic viability of other regional pipelines or alternatives were considered in the remainder of the DEIS.	1568-6
ES	7	Fifth paragraph states: "Any routing option within the existing Mainline corridor (and some other routes) would require Enbridge to obtain permanent right-of-way across a large area of federal and state public lands and two American Indian reservations."	Correct to state "Any routing option within the existing Mainline corridor east of Clearbrook..."	1568-7
ES	7	Fifth paragraph states: "Enbridge would need to acquire its permanent right-of-way in these locations through amicable agreements with tribal or federal landowners because it cannot use eminent domain to acquire a pipeline right-of-way across these lands."	The sentence should be revised to acknowledge permanent easements are not granted by the BIA on Trust lands. Instead, Enbridge would need to acquire a voluntary term easement on Tribal lands in accordance with BIA ROW regulations. Enbridge also believes it would be relevant to add a new sentence here acknowledging that the Leech Lake Band of Ojibwe has submitted letters to the Commission noting that they will not grant permission for alternatives RA-07 and RA-08 through their reservation.	1568-8
ES	7	Second paragraph: "Enbridge has asked for approval to use a 120-foot-wide area..."	Revise to state: "Enbridge has asked for approval of a route of up to 750 feet, within which an up to 120-foot-wide construction workspace area and 50-foot permanent right-of-way will be located." See Mr. Paul Eberth's Direct Testimony, Schedule 7 at 8-9.	1568-9
ES	8	Paragraph three states "Chapter 7 highlights the important variations between RSA-53 and the segment of the Applicant's preferred route it would replace."	RSA-53 is a connector segment that would allow for multiple variations of the route; however, Chapter 7 does not discuss any variations nor does it compare this RSA to the APR. Suggest removing this sentence.	1568-10
ES	9	The legend for figure ES-3 is missing symbols and misrepresents routes shown on the figure, and the title is not correct.	The fuchsia lines that show RA-06, RA-07, RA-08, and RA-03AM on the inset map do not match with the colors presented for these routes in the legend. Suggest changing the fuchsia color to the appropriate legend color for each alternative. There is no item in the legend to describe what the dotted lines are and it is unclear what their relevance is to this map. The title of this map is misleading as it is shows route alternatives and route segment alternatives instead of just "Route Segment Alternatives" as its title suggests.	1568-11
ES	11	Third paragraph states: "A significant portion of the Applicant's proposed Project would be located outside the existing Mainline corridor, causing habitat fragmentation and expanding the total acreage of land and resources exposed to the risk of a potential accidental release from a pipeline. Continued use of existing Line 3 avoids these impacts. Continued use of existing Line 3 also avoids the construction impacts associated with clearing a 120-foot-wide right-of-way and trenching hundreds of miles across Minnesota."	This is a misleading paragraph that ignores that the APR parallels existing rights-of-way, including other crude oil pipelines, for approximately 75% of its length.	1568-12

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
ES	11	Fourth paragraph, bulleted list on drawbacks of continuing to use Line 3 is incomplete.	Add "year after year disturbance to landowners along the Line 3 corridor to maintain the pipeline" to the list of drawbacks.	1568-13
ES	11	Footnote 3 directs the reader to an inactive link.	Remove this footnote and the text that it references or modify the text to include an appropriate publicly available replacement reference.	1568-14
ES	14, 26	Figures ES-5 and ES-10. High-Quality Surface Waters Crossed by Certificate of Need Alternatives/Route Options	The figures and discussion notes that the alternatives "cross" these resources when truly these are resources contained within the ROI (within 0.5 mile of the centerline). Retitle these figures to capture what the data truly represents, such as "High-Quality Surface Waters within the ROI for Certificate of Need Alternatives." For Figure ES-5, the resources considered are only in MN; all non-MN impacts are omitted. Add text to note when only Minnesota-specific data is used.	1568-15
ES	15	Third paragraph states: "A total of 38 miles of the Applicant's preferred route...would permanently fragment 21 large-block habitats. System alternative SA-04 avoids habitat fragmentation and permanent forest conversion in wooded northern Minnesota."	Comparing SA-04 to 'wooded northern Minnesota' is an oversimplification of current land cover and habitat composition patterns in the northern part of the state and the areas crossed by the APR. Many forested areas have been previously fragmented by transportation corridors and other rights-of-way, and often this fragmentation is not reflected in broad categories of land cover classes as represented in data sets such as the NLCD. Quantifying the degree to which habitats will be newly fragmented requires examination of rights-of-way that have not been incorporated into land cover classes as well as changes in land cover (e.g., intrusions of agricultural land) that have occurred since classification. Two other important considerations in assessing the potential impacts of habitat fragmentation in specific areas are: (1) the quality of existing habitats (e.g., forest stand age and measures of species diversity) and (2) the perimeter-to-area ratio of existing blocks of habitat, because where this ratio is high, the effect of fragmentation will typically be smaller than where the ratio is low. Suggest defining the methodology by which this conclusion was achieved and any limitations to the analysis.	1568-16

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
ES	15	Section titled "Will the Proposed project damage forests and wildlife habitat in northern Minnesota far more than other alternatives?"	Remove the word "far," as there is no definition in the text for what constitutes "far more." The following corrections should be made in this section: Enbridge will use a 120-foot-wide construction area in uplands and a 95-foot-wide workspace in wetlands. The discussion of SA-04 does not mention that it will also pass through the states of Iowa and Illinois, and will impact wildlife habitat in other states, some of which is in federally protected areas. Finally, the text contained under this header addresses a wide variety of resource impacts, not just forests and wildlife habitats. Suggest removing text from this section that does not address these specific resources. This section should also be updated to reflect more robust discussion of SA-04, and the habitats it impacts, as outlined in Enbridge's Comments.	1568-17
ES	18	Table ES-3, the fourth cell in header and third cell in first row: "a" and "c" aren't footnoted.	This table appears to be missing footnotes that outline the methodology and assumptions used to create this table. Add the footnotes to the table.	1568-18
ES	19	The final bullet states: "The lands and resources affected by the Project are important to preserving the traditional ways of life, including fishing, hunting, wild rice farming, maple sugar gathering, and the collection of plants for medicines, spiritual and ceremonial purposes, shelter, and other needs."	This statement over-generalizes the use of the lands affected by the Project. These subsistence activities do not occur on all of the lands and resources affected by the Project. To date, no information has been provided to identify specific areas along the APR where traditional uses would be impacted by the Project. Revision could state, "Some of the lands and resources affected by the Project..."	1568-19
ES	21	Final paragraph reads "As part of the Project, Enbridge proposes to abandon the existing Line 3, permanently removing it from service."	Modify to read, "As part of the Project, Enbridge proposes to abandon the existing Line 3, permanently removing it from service. Enbridge will continue to maintain the Line 3 once it is out of service."	1568-20
ES	26	Page ES-26, first paragraph.	When discussing Chapter 11 and environmental justice impacts, the DEIS states that RA-03AM and the APR come near the White Earth Reservation, but it doesn't mention that RA-07 and RA-08 cross the Leech Lake and Fond du Lac Reservations, and that RA-06 crosses the Fond du Lac Reservation. These facts should be added to this paragraph.	1568-21
ES	26	Under the Surface Water heading: "While the CN Alternatives differ significantly in their potential effects on water quality.."	Revise to state, "While the CN Alternatives differ significantly in their potential effects on water quality when considering only Minnesota measurements of water quality…"	1568-22
1	2	Section 1.1: "Enbridge proposes to abandon the current Line 3 in place."	This is the first use of the term abandon in Chapter 1. The meaning of the term "abandon" is not defined in this chapter. Chapter 2 (Page 2-3) presents the term along with the definition. Enbridge suggests defining "abandon" in Section 1.1 at its first mention so that the public is aware of the full regulatory meaning of the term.	1568-23

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
1	2	Discussion regarding creating a new corridor.	Use of the term "new corridor" is misleading here. Approximately 75% of the APR between Clearbrook and the Minnesota/Wisconsin border follows existing rights-of-way. This description should note that south of Clearbrook, the APR follows existing crude oil pipeline rights-of-way to Hubbard County, where it turns east and generally follows existing transmission line rights-of-way.	1568-24
1	3	Final paragraph: "As a result, the Mainline corridor was not subject to state or federal environmental review, or the Commission's procedures for CN and route permitting. Certain permits and authorizations were required prior to the construction of these early pipelines. However, some environmental review considerations that today are understood to be essential to informed decision-making (e.g., environmental justice issues, threats to rare resources, and climate change impacts) were not factored into the original establishment of the Mainline."	Enbridge's Line 67 (located in the Enbridge Mainline) underwent a full environmental review, including a U.S. Department of State Environmental Impact Statement when it was constructed. In addition, Enbridge's Line 67 Expansion project underwent a full federal environmental review (see DOS 2017 citation in Chapter 5). The EIS should recognize these prior environmental review processes as resources that document the impacts of pipelines in the Enbridge Mainline.	1568-25
2	2	Figure 2.1-1: The inset figure for the Superior Terminal includes the Sandpiper Pipeline Project.	Remove the Sandpiper Pipeline Project from the Superior Terminal inset figure in Figure 2.1-1. Applications for that project were withdrawn in August 2016.	1568-26
2	2	Figure 2-2: The pump station at Clearbrook is not shown.	Revise Figure 2-2 to include the pump station at Clearbrook.	
2	5	In a few places, the acreages provided are different from what is presented in other sections. For example, section 2.3 vs. Section 5.1.3 (5,604 total acres; 3,309 temporary and 2,134 permanent)	Verify acreages are presented consistently between sections.	1568-27 1568-28
2	9	Section 2.3.2.1.2, second paragraph, last line: "The maximum power capacity of the motors at each of the facilities would be 7,000 hp."	Revise this statement to clarify that, at each facility, the capacity of each individual motor would be 7,000 hp.	1568-29
2	10	Section 2.3.2.1.3, first paragraph, second line: "Each facility would contain three 7,000-hp motor and pump units..."	Revise this statement to clarify that the Cromwell pump station only has two 7,000-hp units.	
2	32	Section 2.7.2.7, first paragraph, first line: "All waterbody construction would require a Minnesota DNR License to Cross Public Waters and would be subject to CWA permits issued by USACE."	Revise this statement to clarify that the jurisdiction of the Minnesota DNR is limited to Minnesota Public Waters; therefore, the Minnesota DNR License to Cross Public Waters only applies to crossings of Minnesota Public Waters. Furthermore, the USACE CWA permit only applies to waterbody crossings that are under the jurisdiction of the USACE.	1568-30 1568-31
2	36	Section 2.7.3, last sentence: "Pumps would be installed on foundations and would not be housed in buildings."	Revise this statement to clarify that the pumps would housed inside buildings as shown on Figures 5-10 through 5-18 of the EAW. The Building/Area Identification Key on each drawing shows that areas identified as 'B' are Pumphouse/UPB Buildings.	1568-32
2	37	Section 2.7.5, second paragraph, first sentence: "Enbridge would restore widened and graded roads to preconstruction conditions upon completion of construction."	Revise this statement to clarify that the roads upgraded at the Two Inlets and Palisade pump stations would be retained after construction is complete to provide access to the facilities for maintenance activities during operation.	1568-33

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2	43	Section 2.9 states that abandonment of the existing Line 3 pipeline would involve disconnecting the pipeline from pump stations, terminals, and other operating facilities; purging all crude oil or other combustibles from the line; charging the pipeline with an inert gas; and sealing the pipes and facilities left in place.	Enbridge does not plan to charge the pipeline with inert gas under the abandonment scenario. Remove the following statement from this paragraph: "...charging the pipeline with an inert gas..." See DEIS Appendix B at 12-13.	1568-34
3	0	This section provides an overview of permitting requirements strictly for oil pipelines in MN, which includes the Applicant's Preferred Routes and portions of the route alternatives; however, it does not make the distinction between the permits that would be required for CN or Route Alternatives.	Enbridge recommends focusing Chapter 3 on the APR and removing the regulatory and permit requirements that are not associated with the APR from the table and the associated write-ups. Permits and authorizations associated with deactivation should also be removed from this chapter. The following permits and authorizations would not be required for the APR and should be removed: USFS Special Use Permit, BIA ROW Grant, Federal Consistency Review.	1568-35
3	1	Fourth paragraph, second sentence: "...and potential wetland impacts would require a Section 404 wetland permit from the U.S. Army Corps of Engineers (USACE)."	Revise this statement to say, "…and potential dredge and fill impacts to waters of the U.S. would require a Section 404 wetland permit..."	1568-36
3	10	Section 3.6, Table 3.6-1, second row: "Section 7 Environmental Species Act...".	Revise this to say "Section 7 Endangered Species Act...".	1568-37
3	10	Section 3.6, Table 3.6-1, third row: Bald Eagle Removal Permit	Based on recent field verification, Enbridge will no longer be seeking a Bald Eagle Removal Permit from the USFWS, and will instead apply for a Bald Eagle Nest Disturbance Permit. Update Table 3.6-1 to reflect this change.	1568-38
3	10	Section 3.6, Table 3.6-1, Minnesota DNR entries: The osprey nest removal permit required by the Minnesota DNR is not included in this table.	Enbridge will be applying for an Osprey Nest Removal Permit from the Minnesota DNR to remove an inactive osprey nest located within the construction workspace. Update Table 3.6-1 to include this permit.	1568-39
3	10	Section 3.6, Table 3.6-1, USACE: USACE Section 14 of the Rivers and Harbor Act, Section 408 Flowage Easement Permit is not included in this table.	Based on recent information provided by the USACE Realty Department, the APR will cross USACE flowage easements and will therefore require an authorization unders Section 14 of the Rivers and Harbor Act (33 U.S.C 408), also known as Section 408 Flowage Easement Permits. Update Table 3.6-1 to include this permit.	1568-40
3	12	Section 3.6.1.2, third paragraph, last sentence: "After consulting with the permitting agency, USFWS issues a Biological Opinion and Incidental Take Permit statement, if necessary"	Remove "statement" from this sentence. The USFWS would issue an "Incidental Take Permit" or an "Incidental Take Authorization".	1568-41

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3	14	Section 3.6.3.2: Missing air permit discussion.	Revise this section as follows: 3.6.3.2 Minnesota Pollution Control Agency Minnesota PCA monitors air and water quality in Minnesota and uses technical and financial assistance as well as a variety of regulations to protect and enhance environmental quality in Minnesota. An air quality permit authorizes construction and operation of the modified Clearbrook terminal. A National Pollutant Discharge Elimination System/State Disposal System construction stormwater permit from Minnesota PCA is required for stormwater discharges from construction projects. The general NPDES/State Disposal System permit requires (1) use of best management practices; (2) a Stormwater Pollution Prevention Plan; and (3) adequate stormwater treatment capacity once the project is constructed. Minnesota PCA must certify that proposed activities will not violate air and water quality standards.	1568-42
3	14	Section 3.6.3.1, second paragraph: "Minnesota's Lake Superior Coastal Program, within the Minnesota DNR, coordinates the review of federal actions to determine whether they will be consistent with the state's coastal management program. Minnesota DNR's federal consistency review includes activities requiring certain federal licenses or permits."	The APR does not cross the Lake Superior Coastal Zone; therefore, this review would not apply and reference to this review should be removed from this section. However, RA-06, RA-07 and RA-08 would cross the Minnesota Coastal Zone.	1568-43

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4	21	4.3.2: **Route Alternative RA-03AM Would Avoid Lakes, Fens, Fish Hatcheries, and Wildlife Management Areas** Route alternative RA-03AM is an alternative between Clearbrook and Carlton. The Minnesota Pollution Control Agency (Minnesota PCA) originally proposed this as a CN "system alternative" that included a new terminal in Crookston, Minnesota, in part to avoid the Mississippi River Headwaters area as well as the Minnesota's Lakes region. During scoping for the Sandpiper Project, this route option was added as a modified version of the original proposal that would provide access to the Clearbrook terminal, allowing deliveries to the Northern Tier Energy and Flint Hills Resources refineries through MPL's pipeline. (Thus, it is called RA-03AM, or "as modified.") Minnesota Department of Natural Resources (Minnesota DNR) subsequently proposed additional modifications during the 2015 Line 3 process. This route alternative parallels an existing pipeline right-of-way from Clearbrook to Park Rapids, thereby focusing pipeline construction and operations impacts in an area already affected by a crude oil pipeline. Compared to other alternatives, this option reroutes around fens, fish hatcheries, and communities, and avoids specific Wildlife Management Areas (WMAs).	The heading of this section is misleading and should reflect the following corrections: 1) RA-03AM would not avoid fens. As is stated in Chapters 4 and 6, RA-03AM, the APR, and the other RAs would share the same route between Neche, ND and Clearbrook, MN where all routes would impact the Gully 30 calcareous fen. Remove the word "fens" from the header. 2) The APR would not cross the Spire Valley Fish Hatchery, or any other fish hatchery. Remove "fish hatcheries" from the heading. RA-03AM would cross nine cities and would be installed in congested and heavily developed areas, including the Hinckley Golf Course; therefore, the final sentence that states that RA-03AM would reroute around communities is inaccurate. The impact to cities is greater along RA-03AM as compared to the APR. Remove "and communities" from the last sentence. In Table 3.6-1, MDNR noted that they would not permit the RA-03AM crossing of the Alexander Woods SNA, thus making this route alternative as proposed unpermittable ("Minnesota Department of Natural Resources has indicated that the agency would not grant license for line RA-03AM to cross Alexander Woods Scientific and Natural Area."). This information is relevant to this alternative summary and the footnote text from Table 3.6-1 should be included here.	1568-44
4	27	Section 4.3.4.3, first line: "From Neche to Clearbrook, Line 3 is one of six pipelines co-located in a single corridor."	Revise this statement to say that Line 3 is one of seven pipelines co-located in a single corridor between Neche and Clearbook.	
4	27	Section 4.3.4.3, third line: "From Clearbrook to Superior, the corridor includes seven pipelines."	Revise this statement to say that the corridor between Clearbrook and Superior includes six pipelines.	1568-45
4	31	Section 4.3.6, Table 4.3-5, RSA-05: "Minnesota PCA requested a route alternative to avoid the Eastern Wild Rice Watershed, and a possible hydrological connection to Lower Rice Lake."	Enbridge developed RSA-05. Revised text should read "Enbridge proposed RSA-05 to avoid Eastern Wild Rice Watershed, and a possible hydrological connection to Lower Rice Lake in response to comments the White Earth Band of Ojibwe filed in the Sandpiper Pipeline Project."	1568-46 1568-47
4	33	Section 4.3.6, Table 4.3-5, RSA-22: "Minnesota DNR recommended a route alternative that would avoid important habitat in the Big Sandy Lake watershed as well as Grayling Marsh WMA, McGregor WMA, Lawler WMA, and Salo Marsh WMA."	APR does not cross the Salo Marsh WMA or the McGregor WMA. Remove these WMAs from the list in this statement.	1568-48

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4	34	Section 4.3.6, Table 4.3-5, RSA 23: "The Applicant removed this route segment alternative from further analysis; however, it is being carried forward into the route alternatives analysis because it was recommended by several landowners throughout the comment period."	As noted in Enbridge's analysis of RSA-23 in Schedule 7 of Mr. Barry Simonson's January 31, 2017 testimony, Enbridge analyzed but did not select this alternative based on constructability constraints, permanent trail impacts, increased wetland and SNA impacts, and its proximity to residences. Enbridge also originally analyzed this as a possible route alternative in the Environmental Information Report (see section 2.3.3, Aitkin County Soo Line Document) submitted for the Sandpiper Pipeline Project on January 31, 2014. While Enbridge did not carry it forward as its preferred route, RSA-23 is being studied now because it was recommended by several landowners throughout the comment period."	1568-49
4	35	Table 4.3-5 RSA-28: "There was a map submitted without a written comment. It appears the segment was suggested to avoid gravel pits. It also avoids diagonal crossings of rural land."	RSA-28 would cross an active wetland mitigation site. Through landowner communication, Enbridge confirmed the presence of a wetland mitigation site, where normally the purpose is to restore wetland habitat. Typically, wetland mitigation sites have either deed restrictions or conservations easements associated with them that prevent pipeline construction. The APR would completely avoid the wetland mitigation site.	1568-50
5	0	5.2.5.2.2: Errors are present in the list of federally listed species potentially occurring along "Continued Use of Existing Line 3" alternative and potentially other alternatives as well.	The following federally listed species may occur in the counties crossed by the respective CN or Route Alternative not listed in the draft EIS: SA-04: red knot RA-06, RA-07, and RA-08: western prairie fringed orchid, piping plover, Dakota skipper, and Poweshiek skipperling RA-03AM: piping plover, red knot, spectaclecase, Dakota skipper, Poweshiek skipperling, and western prairie fringed orchid	1568-51
5	2	Section 5.1.2, third sentence: "In addition, data available as part of Enbridge's application, Enbridge's April 2016 Environmental Assessment Worksheet (EAW), and responses to data requests from the Minnesota Department of Commerce Energy, Environmental Review and Analysis (DOC-EERA) were considered."	The analyses in this chapter later use the November 2016 version of Enbridge's EAW (see page 5-39, 5-45). Please correct "April 2016" to "November 2016." Note that Enbridge also submitted an updated EAW as Schedule 2 to Mr. Paul Eberth's Direct Testimony on January 31, 2017.	1568-52
5	14	Section 5.2.1.1.2, Applicant's Preferred Route, Glacial Aquifers, Water Table Glacial Aquifers, last sentence: "The depth to the water table along with the soil types indicates the degree of vulnerability to impacts."	This statement should be augmented because depth to the water table is only part of the consideration in terms of vulnerability. There are conditions in which the water table could be shallow but the groundwater has low vulnerability.	1568-53
5	15	Section 5.2.1.1.2, page 15, third paragraph: "With the exception of shallow bedrock (either igneous/metamorphic or sedimentary, which is not common along the Applicant's preferred route) **and karst bedrock,** bedrock aquifers are not expected to be affected by pipeline construction and operation because they exist at depths averaging from 300 to 400 feet, which is well below pipeline construction depths."	APR does not cross karst bedrock. Remove "and karst bedrock," from this sentence.	1568-54

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5	17	5.2.1.1.2: "The Applicant's preferred route would not cross any wellhead protection areas in North Dakota, and it would cross 87 acres in Minnesota."	Based on the Schedule 2 to Mr. Eberth's Direct Testimony, the only WHPA crossed by the APR is Wrenshall 1 within the drinking water supply management area ("DWSMA") crossed for 390 feet. Verify this acreage and clarify that this is the acreage represented contained within the ROI; not construction impacts.	1568-55
5	25	Section 5.2.1.1.3, page 25, third full paragraph: "Applicant has identified one location at MP 354.6 where bedrock outcrops at the surface for approximately 0.3 mile, and four blasting events would be required to install the pipeline (Enbridge 2016b)."	On November 10, 2016 Enbridge provided a response to DR01-70 that indicated that blasting would occur at one location at MP D1128.4 and that blasting was estimated to be approximately one quarter mile in length. Revise text to reflect Enbridge's response to DR01-70.	1568-56
5	26	Section 5.2.1.1.3, page 26, second full paragraph, second sentence: "The Applicant's preferred route crosses the City of Plummer...Wellhead Protection areas."	The APR would not cross the City of Plummer's Wellhead Protection Area (WPA), but this WPA is within the ROI. Revise this statement to clarify that the WPA is located within the ROI, but would not be crossed by the APR.	1568-57
5	29	"If the water table is exposed by blasting, the turbidity, sedimentation, or chemical contamination that could result would be localized and likely would be diluted or attenuated before it could travel very far into the aquifer."	This conclusion does not appear to account for SA-04 crossing 70 miles of karst features, which could potentially result in a very far and fast contamination.	1568-58
5	34	Section 5.2.1.1.4 and Table 5.2.1.1-4: "Overall, impacts on groundwater for the Applicant's preferred route and the CN Alternatives would be temporary and negligible to minor, or no impact would occur. Potential construction impacts due to karst sensitivity would be the highest for SA-04. Potential construction and operation impacts due to vulnerable groundwater would be the highest for the Applicant's preferred route."	Table 5.2.1.1-3 indicates that SA-04 would cross 30,201 acres of high vulnerability aquifers, which is greater than the 25,765 acres of high vulnerability aquifers crossed by the APR referenced in section 5.2.1.1.2 pg. 5-17; therefore, the conclusion should indicate that magnitude and potentially the duration associated with the construction and operation impacts on both groundwater associated with karst terrain, which is highly vulnerable to contamination, and to highly vulnerable aquifers would be greatest on SA-04.	1568-59
5	35	Section 5.2.1.1.4, Summary, Construction Impacts, first bullet: "Potential impacts on groundwater availability from groundwater withdrawals, hydrostatic testing, trench dewatering, and other construction activities, as a result of the Applicant's preferred route and the SA-04, would be temporary and minor."	The summary should acknowledge that SA-04 would still have a greater magnitude of impacts on groundwater availability relative to the APR due to the increased length and demand for groundwater sources.	1568-60
5	42	Section 5.2.1.2.1, Regulatory Context	Revise this paragraph to include the USACE Section 404/10 permit.	
5	44	Section 5.2.1.2.1, page 44, first partial paragraph: "CWA Section 401 Individual Water Quality Certification for the Project in Minnesota is under the jurisdiction of USACE – St. Paul District and Minnesota PCA."	Remove "USACE - St. Paul District" from this sentence.	1568-61 1568-62

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5	48, 54	Section 5.2.1.2.2, Applicant's Preferred Route, Surface Waters Crossed: "Various surface waters would be crossed by the Applicant's preferred route, as shown in Table 5.2.1.2-2. The Applicant's preferred route also would cross numerous non-jurisdictional ditches/drains, for which flows are unknown and crossing permits are not required." and Section 5.2.1.2.2, System Alternative SA-04, Surface Waters Crossed: "The types of surface waters crossed by system alternative SA-04 are listed in Table 5.2.1.2-8. System alternative SA-04 also would cross many non-jurisdictional ditches/drains, for which flows are unknown and crossing permits are not required."	Revise these statements to clarify that local permits would be required for crossings of county ditches and drains. Enbridge works with County drain jurisdictions, watershed districts and water resource boards in order to permit crossings of drains and/or ditches.	1568-63
5	51	Section 5.2.1.2.2, Applicant's Preferred Route, Wild Rice Waterbodies: "Fifteen wild rice waterbodies occur within 0.5 mile of the Applicant's preferred route." However, Table 5.2.1.2-13 (page 62) indicates that there are 17 wild rice lakes within 0.5 mile of the Applicant's Preferred Route.	Verify the correct number of wild rice waters that occur within 0.5 mile of the APR and ensure the count is stated consistently between all EIS sections.	1568-64
5	64	Section 5.2.1.2.3, Existing Surface Water Conditions in the Region of Interest, Applicant's Preferred Route: "The Applicant's preferred route intersects the highest number of wild rice lakes (17) compared to the CN Alternatives. For other notable resources, this route passes 17 trout streams and 8 lakes of high and outstanding biodiversity significance as well as 4 tullibee lakes. See Table 5.2.1.2-13 for comparison of resources intersected."	Revise these statements to clarify that the features noted are within 0.5 mile of the APR; the APR does not cross this number of features. For example, the APR crosses 6 trout streams, however it is unclear what exactly is meant by "this route passes 17 trout streams."	1568-65
5	73	Section 5.2.1.2.4, Degradation of Water Quality and Habitat from Releases of Drilling Mud during HDD Crossings, Disturbance of Wild Rice Waterbodies: "Five wild rice waterbodies would be crossed by the Applicant's preferred route, with about 5 acres of the delineated waterbody basins within the construction work area."	The APR only crosses one wild rice waterbody. Acres of delineated wild rice waterbodies, within the construction work area were not calculated, as described in the DEIS. A connectivity analysis was completed to determine which wild rice waterbodies are connected to the APR, and the analysis is available in Mr. Jeff Lee's Direct Testimony.	1568-66
5	107	Section 5.2.1.3.1, first paragraph: "CWA Section 404/ and Rivers and Harbors Act Section 10 Individual Permits and associated state CWA Section 401 Individual Water Quality Certification for the Project in Minnesota are under the jurisdiction of USACE – St. Paul District and Minnesota PCA."	Remove "and Rivers Harbors Act" from this statement.	1568-67
5	108	Section 5.2.1.3.1, page 108, first full paragraph, fourth sentence: "Iowa relies solely on CWA Section 401 for wetland permitting and does not have supplemental required regulations (Illinois AC 567-61.2)."	Incorrect citation (Illinois instead of Iowa). Revise the citation to include the correct state.	1568-68

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5	125	Section 5.2.1.3.3, Applicant's preferred route, Operations Impacts, Specially Designated Wetlands, first paragraph: "Line 3 crosses three calcareous fen wetlands (Chester 24, Viking 18, and Gully 30). Potential impacts on calcareous fens during operations could occur if excavation is required at these locations; however, repeated pipeline repairs or replacement are unlikely at these locations. The resultant impacts would be similar to those for initial construction of the pipeline through the fens (i.e., the impact is expected to be short- to long-term and minor)."	Enbridge recommends providing a write-up that describes the enhancement of the Gully 30 Fen that occurred following construction and restoration of the Alberta Clipper pipeline and the ongoing hydrology and protected flora monitoring that is being conducted for Alberta Clipper and is likewise proposed for the Line 3 Replacement Project. The Minnesota DNR has already requested a Fen Management Plan for this area.	1568-69
5	124	Section 5.2.1.3.3, Continued Use of Existing Line 3, Operations Impacts, General Wetlands, second paragraph: "Because of the age of the existing Line 3, excavation and repair or replacement of the pipeline would occur at a higher rate than for new pipelines, with an estimated 267 excavations per year over the next 15 years."	In Ms. Laura Kennett's Direct Testimony filed January 31, 2017, Lines 589-591 reads: "Combined, the total digs required to maintain Line 3 at its current operating condition over the next 15 years is approximately 7,000 digs in the U.S., with approximately 6,250 of these digs in Minnesota." A total of 7,000 digs over the next 15 years equates to on average of approximately 466 digs per year, which is a higher number of digs than stated in Section 5.2.1.3.3. Correct this discrepancy.	1568-70
5	131	Section 5.2.1.3.4: Table 5.2.1.3-6 indicates 440 acres of forested and scrub-shrub wetland impacts would be associated with the Applicant's preferred route.	Table 5.2.1.3-1 in Section 5.2.1.3.2, indicates there are 423.5 acres of forested and scrub-shrub wetland impacts. Verify the correct total of impacts on forested and scrub-shrub wetlands and make consistent between these two tables.	1568-71
5	131	Section 5.2.1.3.4: Table 5.2.1.3-6 indicates 178 acres of emergent wetland impacts would be associated with the Applicant's preferred route.	Table 5.2.1.3-1 in Section 5.2.1.3.2 indicates there are 170.4 acres of emergent wetland impacts. Verify the correct total of impacts on forested and scrub-shrub wetlands and make consistent between these two tables.	1568-72
5	153	Section 5.2.2.2.1, Shallow Bedrock: DEIS states that there is one segment of surface bedrock that may require blasting along the preferred route between mileposts 354.6 to 356.6 in Carlton County, MN (2 miles).	On November 10, 2016 Enbridge provided a response to DR01-70 that indicated that blasting would occur at one location at MP D1128.4 and that blasting was estimated to be approximately one quarter mile in length. Revise the statement in the DEIS to reflect the information provided in DR01-70.	1568-73
5	156-157	Sections 5.2.2.2.4 Transportation by Rail and 5.2.2.2.5 Transportation by Truck, first line of each discussion: "Soil and geology conditions for the rail [truck] alternative are similar to those of the other alternatives."	This statement is misleading as there would likely be few additional soil impacts necessary to support the Transportation by Rail and Transportation by Truck alternatives. Revise both statements.	1568-74
5	161	Section 5.2.2.3.1, Operations Impacts: The subsection Permanent Loss of Soil Cover states "Construction of permanent access roads and associated facilities would require permanent removal of soil, to be replaced with materials such as cement and gravel. Loss of soil cover would total 278 acres for access roads and 67 acres for other permanent facilities along the Applicant's preferred route in Minnesota."	This statement is incorrect based on the data filed in Schedule 2 to Mr. Eberth's Direct Testimony. According to the EAW, the total permanent acreage of soil impacts for access roads would total 3.5 acres (though 274.2 acres would be temporarily impacted) and there would be an additional 40.9 total acres of permanent impacts at facilities, mainline valves, and cathodic beds combined. This section overstates the permanent impacts to soils.	1568-75
5	161	Section 5.2.2.3.1, Landslide Hazards: The DEIS states "It should be noted that, although the potential is low, a landslide could occur at any time throughout the life of the Project."	This is a universal conclusion that should be applied to all alternatives. It was not included in the assessment of SA-04 on page 5-164, where the same low probability of landslides was noted.	1568-76

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5	162	5.2.2.3.3: "Geology impacts that vary from the Applicant's preferred route include an increased occurrence of shallow bedrock and karst terrain on the SA-04 route. If constructed, it was assumed that measures similar to the Applicant-proposed measures would be implemented along the SA-04 route to reduce the impacts on geologic resources and soils that were identified for the Applicant's preferred route."	There are no karst features along the APR, therefore, the Applicant-proposed mitigation measures would not address potential issues with crossing karst terrain along SA-04.	1568-77
5	167	Section 5.2.2.4.1, Table 5.2.2-4: Under the Operation Impacts for permanent loss of soil cover, the DEIS states: "The extent of permanent soil conversion to an impervious surface would be up to 140 acres for the truck alternative, up to 360 acres for the rail alternative, about 345 acres for the Applicant's preferred route, and about 700 acres for SA-04."	As previously noted in comment on Section 5.2.2.3.1 (p. 5-161), these permanent impact acreages are either incorrect (compared to data presented in the EAW), or possibly overestimating permanent impacts.	1568-78
5	175	Section 5.2.3.1.2, Page 175, fifth paragraph, second sentence: "Mapping is still being conducted for portions of the northern-most counties crossed by all routes, except SA-04. MBS Sites are rated for a suite of biodiversity values and are assigned a rank from "outstanding" to "below." The biodiversity ranks help to guide conservation and management."	In general, the SOBS and biodiversity data used for the DEIS analysis is preliminary and is, therefore, subject to change before the FEIS is issued. Amend these statements to clarify the preliminary nature of SOBS and biodiversity data used as part of the DEIS analysis.	1568-79
5	181	Section 5.2.3.2, Existing Conditions, Table 5.2.3-3: Noxious Weeds and Invasive Plants within 0.5 Mile of the Applicant's Preferred Route and System Alternative SA-04	This table should distinguish between which noxious and invasive plant species that can be found within 0.5 mile of the APR vs. SA-04. Also, data for Iowa and Illinois is missing for SA-04.	1568-80
5	215	Section 5.2.3.4.2, Mitigation, Table 5.2.3-18 Loss or alteration of rare native plant communities: SA-04 Long-term to permanent/major impacts • 2 acres of rare native plant communities	Table 5.2.3-16 states there are 3.6 acres of construction impacts. Verify the information presented in these tables and revise to ensure consistent information is presented.	1568-81
5	222	Figure 5.2.4-1: Aquatic Management Areas Crossed by the Applicant's Preferred Route and CN Alternatives	Revise Figure 5.2.4-1 title to read "Aquatic Management Areas within the ROI of the APR and CN Alternatives." Not all of these AMAs are "crossed" by the APR or CN Alternatives.	1568-82
5	229	Section 5.2.4.2.1: "Coldwater fisheries support trout and salmon (Salmonidae); these are important commercial and sport fishes that require cold, clean water for survival and reproduction. Chinook (Oncorhynchus tshawytscha), coho (Oncorhynchus kisutch), and pink salmon (Oncorhynchus gorbuscha) have been introduced to Lake Superior and now spawn in its tributaries (Minnesota DNR 2016i). Lake trout (Salvelinus namaycush) are naturally reproducing in cold lakes throughout the region. The native brook trout (Salvelinus fontinalis) and the introduced brown trout (Salmo trutta) and rainbow trout (Oncorhynchus mykiss) are also present in rivers and streams in the region."	Revise this discussion to clarify that the APR does not cross salmon fisheries.	1568-83
5	231	Section 5.2.4.2.1, Page 231, Management Units: "The Applicant's preferred route crosses a variety of Minnesota DNR wildlife management and conservation areas, including WMAs, wildlife refuges, state forests, and recreation areas."	APR does not cross state wildlife refuges or recreation areas. Remove these items from the sentence.	1568-84

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5	242	5.2.4.2.1, Wildlife in the Project Region, Birds, Non-game Birds : "Raptor stick nest surveys were conducted within 0.5 mile along the Applicant's preferred route to locate and identify bald eagle and osprey nests between 2014 and 2016."	Correct this statement to reflect the following: "In Minnesota, aerial surveys were conducted for bald eagle nests within 0.25 miles of the APR and for osprey nests within the project's environmental survey corridor, which is a 250-foot- to 450-foot-wide corridor encompassing all project components. Aerial surveys for bald eagle and osprey nests were completed in 2017 and are planned through the year(s) up to construction."	1568-85
5	244	Section 5.2.4.2.2: "The route of the existing Line 3 pipeline crosses several wildlife conservation areas, including one wildlife refuge and three state forests; it also crosses the Chippewa Plains IBA."	Enbridge reviewed the APR to confirm wildlife refuge crossings and found that no wildlife refuges are crossed by the APR. Correct this statement.	1568-86
5	251	Section 5.2.4.3.1, Table 5.2.4-6 Aquatic Management Areas Crossed by the Applicant's Preferred Route in Minnesota (acres): The information in this table indicates that the Applicant's preferred route would impact the Blackhoof River, Spire Valley, and Straight River AMA.	The APR does not cross the Blackhoof River, Spire Valley or Straight River AMA. Table 5.2.4-6 should be corrected to indicate these AMAs are not crossed by the APR. Pg. 5-256, accurately states; that the APR would affect 0.4 acre of the La Salle Creek AMA. The APR would come within 0.5 mile of three other AMAs but would not directly disturb these areas.	1568-87
5	256	Section 5.2.4.3.1, Aquatic Management Areas: "LaSalle Creek would be crossed using the HDD method; this would affect 0.4 acre of the La Salle Creek AMA."	As stated in Appendix G, La Salle Creek would be crossed using a dry-crossing technique. It is also important to note that during meetings with the MDNR on this crossing, they requested that the HDD method not be used due to prior frac-outs in this area from a non-Enbridge project. Correct this statement to reflect the information in Appendix G to the DEIS.	1568-88
5	258	Section 5.2.4.3.1, Table 5.2.4-7 Number of Trout Streams Crossed by the Applicant's Preferred Route in Minnesota and Wisconsin	Revise title to Number of Trout Streams within ROI of the APR in Minnesota and Wisconsin. As illustrated in the table, the majority of these trout streams are not crossed by the APR.	1568-89
5	261	Table 5.2.4-8 indicates that the APR would impact 5.5 acres of the Pembina County Waterfowl Production Area.	Enbridge has confirmed that the APR would not cross the Pembina WPA. Correct this discrepancy throughout the document. For example (but not limited to), in Sections 5.2.6.2.1, 5.2.6.3.1, and 5.3.2.2.1.	1568-90
5	261	Section 5.2.4.3.1, Table 5.2.4-8: Indicates that the APR is impacting 1.5 operational acres the White Earth State Forest Land.	The APR does not cross the White Earth State Forest. Correct this discrepancy.	1568-91

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5	263	Section 5.2.4.3.1, Page 263, third paragraph: "Two colonial waterbird nesting sites (rookeries) occur within 0.5 mile of the Applicant's preferred route; both sites provide habitat for great blue heron. Waterbirds can be vulnerable to development, particularly when appropriate replacement habitat is not available and disturbance, even though a number of the species are not rare. Direct impacts may occur from the loss of nesting habitat; indirect impacts could occur from disturbance to adults, nests, young due to construction. Wildlife agencies often recommend a buffer of no impact around the colony and/or season restrictions on construction. The Shell River rookery is about 1,220 feet, from the closest construction work area. The impact on this rookery is expected to be indirect, temporary, and negligible to minor, depending on the time of year construction takes place. The Mahtowa rookery is about 340 feet from the closest construction work area. Because construction activities are expected to occur within a distance that would affect the Mahtowa colony, the Applicant should consult with Minnesota DNR and USFWS, to establish construction BMPs and timeframes to minimize impacts on the rookeries. A permit may be required. The impact of construction within this buffer zone would be temporary to long-term and could be minor to major, depending on the construction activities conducted."	The Applicant has not received conservation measures or other guidance from the USFWS or Minnesota DNR regarding rookeries. Impacts on rookeries would be limited to active rookeries, and potential disturbance would hinge on time of year of construction; existing human activities in the vicinity of the rookery; and topographic, vegetation, or other visual and auditory barriers that may be present between the rookery and APR. If the USFWS or Minnesota DNR recommends that the Applicant implement conservation measures related to the Mahtowa rookery or other rookeries, the Applicant would research these factors that would influence the potential for impact and would coordinate with the agency as appropriate.	1568-92
5	266	Section 5.2.4.3.1, Operations Impacts, Page 266, fourth paragraph: "The pipeline right-of-way could also attract migratory waterfowl during early spring if it becomes snow free before surrounding habitats, which has been demonstrated during the early spring melt, when early vegetation emergence near roadways and the buried portion of the Trans Alaska Pipeline in Northern Alaska attracts waterfowl, shorebirds, and ptarmigan (Trans Alaska Pipeline System Owners 2001)."	The DEIS does not appropriately summarize the findings of the referenced TransAlaska Pipeline System Owners, 2001. The majority of the TransAlaska Pipeline is aboveground, not below ground. The Dalton Highway was constructed to allow for maintenance of the pipeline. During spring, snowmelt starts to occur on the edges of the graveled and maintained Dalton Highway because the dust shadow created by use of the highway along the edge causes early green up; not along the edges of the aboveground pipeline right-of-way. The APR would be vegetated during operation of the pipeline. Furthermore, the area in reference occurs in the arctic tundra ecosystem where there are no trees; not within the temperate forest ecosystem of northern Minnesota. Both the ecological and climatological conditions are very different and it's unlikely the same effect would occur along the APR. Enbridge recommends that comparison to the TransAlaska Pipeline System Owners, 2001 is not applicable and should be removed from the FEIS analysis.	1568-93

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5	282	Table 5.2.4-12 Loss of habitat or reduction of wildlife habitat quality from construction activities and vegetation clearing (Applicant's preferred route): Temporary to permanent/minor to major impacts from clearing of the right-of-way • 4,917 acres of habitat, primarily forest and forested wetland	According to table 5.2.3-8, the APR would impact 2,202 acres of forest (cumulative of evergreen, deciduous, mixed, and woody wetlands) out of a total of 5,617 acres, which approximately 39% of vegetation impacted by the entire route. This same table indicates that 3,160 acres (56%) of the APR consists of herbaceous or barren communities (grassland, hay/pasture, crops, emergent herbaceous wetlands, barren land). In fact, according to table 5.2.3-8, the APR would impact 2,734 acres of hay/pasture and cultivated crops land (49%), which is more than forested land; however, table 5.2.4-12 presents the APR impacts to loss of wildlife habitat associated with vegetation clearing primarily forested vegetation when contrasted with SA-04, which would primarily impact agricultural lands. This is erroneous and should be revised throughout in this table, throughout section 5.2.4, and anywhere else it appears in this FEIS.	1568-94
5	284	Section 5.2.4.4.1, Table 5.2.4-12, first row: Aquatic habitat loss or reduction of aquatic habitat quality from maintenance activities, integrity digs, or small leaks and spills (SA-04): Short-term to long-term/ minor to major impacts • 636 stream crossings	Should state that impacts are "Long-term/major thermal effects (where streambanks are cleared of forested or woody vegetation)" similar to APR.	1568-95
5	297	Section 5.2.5.1.1, Federally Listed Species, third paragraph: "USACE is currently preparing a Biological Assessment for the Line 3 Replacement Project in response to Enbridge's application for a CWA 404 Individual Permit."	While Enbridge anticipates the ACOE will submit an applicant prepared Biological Assessment to the U.S. Fish and Wildlife Service, an BA may not be necessary if there are no adverse impacts on federally listed species except for the northern long-eared bat. With agency concurrence, Section 7 consultation for the northern long-eared bat may be managed through a streamlined consultation form associated with the species' 4d rule. Amend this discussion to clarify that a Biological Assessment may not be needed if Section 7 consultation for the northern long-eared bat may be managed through a streamlined consultation form associated with the species' 4d rule.	1568-96
5	297	Section 5.2.5.1.1, Federally Listed Species, third paragraph: "As part of the EIS preparation process, the federal lead agency must consult with USFWS under Section 7 of the ESA to examine potential effects in order to ensure that the proposed project is not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat."	The federal lead agencies must consult with the USFWS if a federally listed species or designated critical habitat may be adversely affected under ESA. The Section 7 process and requirement do not hinge on the EIS preparation process. Revise this discussion to clarify the relationship between the Section 7 process and the EIS preparation process.	1568-97
5	300-301	Section 5.2.5.1.2, Methodology, Federally Listed Species, bullet list after second paragraph: This list of surveys reports does not include the 2014 Northern Long-eared Bat Mist-net and Telemetry Survey. The Minnesota Protected Mussel Desktop Habitat Assessment should not be included as a survey report for federally listed species.	Add 2014 Northern Long-Eared Bat Mist-Net and Telemetry Survey Report to this list. Omit Minnesota Protected Mussel Desktop Habitat Assessment (Merjent 2014c) from the bulleted list.	1568-98

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5	304	Section 5.2.5.2.1: "Four federally listed threatened and endangered species may occur within the ROI for the Applicant's preferred route. The Canada lynx (Lynx canadensis) and the gray wolf (Canis lupus), and the rusty patch bumble bee (Bombus affinis) could be present within the ROI of the Applicant's preferred route, and the northern long-eared bat (Myotis septentrionalis) has been documented within the ROI of the Applicant's preferred route (Table 5.2.5-3)."	We suggest the following language to replace this paragraph: Federally listed threatened and endangered species that may occur within the North Dakota and Minnesota counties crossed by the APR and that may be affected by construction and operation include three mammals – Canada lynx (Lynx canadensis), gray wolf (Canis lupus), and northern long-eared bat (Myotis septentrionalis); one bird – whooping crane (Grus americana); three invertebrates – Dakota skipper (Hesperia dacotae), Poweshiek skipperling (Oarisma poweshiek), and rusty patched bumble bee (Bombus affinis); and one plant – western prairie fringed orchid (Platanthera praeclara).	1568-99
5	304 and 305	Section 5.2.5.2.1: Table 5.2.5-3 and associated sections do not include Cass County as part of the range of the rusty patched bumble bee along the APR.	Update the range of the rusty patched bumble bee along the APR to include Cass County in Table 5.2.5-3 and associated text sections.	1568-100
5	305	Section 5.2.5.2.1, State Listed Species, Endangered and Threatened Species: "The following state-listed endangered or threatened animals have been documented within the ROI of the Applicant's preferred route: northern long-eared bat (Myotis septentrionalis), wood turtle (Glyptemys insculpta), pugnose shiner (Notropis anogenus), and fluted shell (Lasmigona costata) (Table 5.2.5-4)."	The northern long-eared bat (Mytois septentrionalis) is listed as a special concern species in MN and should not be included in this list. Clarify why the northern long-eared bat is included in this list (e.g., because it is listed in WI) or remove this species from the list.	1568-101
5	306	Section 5.2.5.2.1, State Listed Species, Endangered and Threatened Species, Table 5.2.5-4, Known Occurrences of State-Protected Animal Species within the Region of Interest for the Applicant's Preferred Route	Remove all references to Illinois in the state/status column; this information is not relevant to the APR. Subsequently, confirm occurrence numbers are accurate with the removal of Illinois.	1568-102
5	316	Section 5.2.5.2.2, State-Listed Species, Table 5.2.5-6, Known Occurrences of State-Protected Animals within the Region of Interest and Permanent Right-of-Way for the Existing Line 3 Pipeline: Sources: Minnesota DNR 2016e; Wisconsin DNR 2016; Merjent 2016b	Merjent Minnesota Protected Flora Survey Report data would not apply to the existing Line 3 route, nor is reference shown correctly (the reference should be Merjent, 2016c).	1568-103
5	318	Section 5.2.5.2.2, State-Listed Species, Table 5.2.5-7. Known Occurrences of State-Protected Plants along the Existing Line 3 Pipeline: Sources: Minnesota DNR 2016e; Wisconsin DNR 2016; North Dakota GFP 2016; Merjent 2016b.	Merjent Minnesota Protected Flora Survey Report data would not apply to the existing Line 3 route. Remove this report from the list of data sources.	1568-104
5	336	Section 5.2.5.3.1, Federally Listed Species, Construction Impacts: "Construction of a pipeline likely would displace a few gray wolves and alter used habitats, especially if packs currently use the existing pipeline rights-of-way in the area as travel corridors. If dens are present in the vicinity of the construction work area, construction-related disturbance could reduce pup survival. In addition, wolf-vehicle collisions continue to be a major contributor to wolf mortality."	Construction activities may temporarily displace individual gray wolves and temporarily alter used habitats; however, no short-term or long-term adverse impacts are anticipated related to displacement of individuals or alteration of habitat. Wolves are adapted to a variety of habitats. Given the restricted speeds of construction vehicles on the right of way, wolf-vehicle collisions are not expected during construction.	1568-105
5	337	Section 5.2.5.3.1, Federally Listed Species, Construction Impacts: "A total of 14 roosts, including 9 maternity roost trees, were identified (2 trees in Carlton County and 7 in Cass County) (Merjent 2015d)."	As a result of survey for northern long-eared bats: A total of 39 roosts were identified (5 in Aitkin County, 14 in Cass County, 18 in Carlton County, 1 in Crow Wing County, and 1 in Hubbard County). Revise the total number of roosts presented in this statement.	1568-106

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5	338	Section 5.2.5.3.1, Federally Listed Species, Construction Impacts, Page 338, third full paragraph: "Potentially suitable Dakota skipper and Poweshiek skipperling habitat was documented at three locations along the route in Polk County, and potentially suitable habitat for Poweshiek skipperling was documented at two locations in Pennington County, Minnesota. Suitable habitats were found in small, isolated pockets that ranged in size from 0.4 to 1.8 acres. Presence/absence surveys were conducted in 2015 at a subset of USFWS selected locations identified in the 2013/2014 habitat assessment. Sites were selected based on habitat quality and size (Merjent 2015a). Surveys did not identify the presence of Dakota skipper or Poweshiek skipperling at the three suitable habitat locations in Pennington and Polk counties (Merjent 2015a). Presence/absence surveys have not been performed based on the revised 2016 habitat assessment (Merjent 2016a). While it is possible that the Dakota skipper and Poweshiek skipperling could occur within the ROI, based on the results of the habitat survey and earlier presence/absence survey, it is unlikely that these prairie-dependent insects would be affected by construction activities."	Three potentially suitable habitat areas for Poweshiek skipperling were documented along the APR during habitat assessments in 2013-2015, one in Polk County and two in Pennington County; these three sites ranged in size from 0.38 to 1.83 acres. Follow-up presence/absence surveys at these three sites in 2015 did not document Poweshiek skipperling. Presence/absence surveys were conducted at all potentially suitable habitat along the APR, not at a subset of USFWS-selected locations. The Applicant did not identify any potentially suitable habitat for the Poweshiek skipperling during 2016 desktop analysis. No adverse impacts on Poweshiek skipperling are expected along the APR. Revise this discussion to correctly state the Powershiek skipperling survey results and potential impacts.	1568-107
5	338	Section 5.2.5.3.1, Federally Listed Species, Construction Impacts, Page 338, second and fourth full paragraphs: "If present, the Dakota skipper, Poweshiek skipperling, and rusty patched bumble bee could be affected by construction activities that disturb native vegetation. These activities would disrupt egg laying and foraging during spring and summer, and could crush dormant larvae during fall and winter. These prairie-dependent insects depend on high-quality native grasslands and tallgrass prairies to provide food from flower pollen and nectar. Vegetation clearing and replacement with non-native ground covers could injure or kill these butterflies and bees, and remove forage plants." "The Applicant's preferred route would not cross any current high use areas for rusty patched bumble bee, and construction is not likely to directly or indirectly affect any individuals or current high use areas. The Applicant's preferred route crosses through current potential low use areas where rusty patched bumble bees may disperse from current high use areas or where their occurrence is uncertain. The rusty patched bumble bee may benefit from opportunities to conserve the species within the dispersal area, and USFWS may recommend surveys."	The rusty-patched bumble bee is not dependent on high quality prairie or native species and is not present in a larval form in fall and winter. The APR does not cross high potential zones for the rusty-patched bumble bee. Individual rusty-patched bumble bees may use areas outside of the high potential zones for foraging and dispersal; however, impacts on dispersing individuals are discountable due to the low probability of individuals occurring in the vicinity of project activities. No adverse impacts on rusty-patched bumble bee are expected along the APR.	1568-108

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5	339	Section 5.2.5.3.1, Federally Listed Species, Construction Impacts, Summary: "Given the limited distribution within the ROI of Kirtland's warbler, piping plover, whooping crane, Poweshiek skipperling, and rusty patched bumble bee, construction impacts likely would be temporary to short term and negligible. Dakota skippers could be affected by construction at one site, potentially resulting in short-term minor impacts on suitable habitat. However, the potential destruction of some Dakota skippers could require development of additional avoidance and conservation measures. Effects on federally listed plants are not likely because of the scarcity of appropriate habitat and/or species presence."	No impacts are expected on the Dakota skipper, Poweshiek skipperling, and western prairie fringed orchid because surveys have shown that potentially suitable habitat areas along the APR are unoccupied. The APR does not cross high potential zones of the rusty patched bumble bee; impacts on individuals outside of the high potential zone are unlikely and discountable. Revise this discussion to correct these points.	1568-109
5	340	Section 5.2.5.3.1, Federally Listed Species, Operations Impacts: "The use of all-terrain vehicles and snow machines along the permanent right-of-way also could reduce wolf habitat suitability. In addition, wolf-vehicle collisions continue to be a major contributor to wolf mortality. Based on the highly mobile nature of wolves, the transient nature of the disturbance, and wolves' use of a variety of habitats, the operations-related impacts on wolves would be temporary and minor over the life of the Project."	Wolves are adapted to a variety of habitats. Given the restricted speeds of construction vehicles on the right-of-way and the maximum speed of all terrain vehicles, wolf-vehicle collisions are not expected during the Applicant's operations or if the right-of-way is used by the public for all terrain vehicle trails. Adverse impacts on the gray wolf along the APR are not expected during operations. The potential for impacts on the gray wolf are overstated in this discussion.	1568-110
5	340	Section 5.2.5.3.1, Federally Listed Species, Operations Impacts: "Operations impacts on the northern long-eared bat could include continued habitat loss or alteration and disturbance from noise and activity at aboveground facilities during pipeline inspection overflights or ground surveillance and during right-of-way maintenance activities. Human activities during operations typically would occur during daylight hours; therefore, operations activities would not interrupt foraging activities. However, each incident would result in a temporary minor impact that would occur periodically over the life of the Project. Operation of pipeline pump stations would increase nearby noise levels over existing ambient levels. As described in Section 6.2.2, however, sound level increases would comply with Minnesota Noise Standards and would decrease over distance. Pump station footprints would be devoid of trees; while bats could forage in the vicinity, they would not roost at the pump stations. Unless a roost site is near a pump station, the effect on long-eared bats from operation of pump stations is expected to be permanent and negligible."	Continued habitat loss would not occur during operations. Trees and limbs growing in the right-of-way would be cleared every 5 years and would not reach a diameter suitable for northern long-eared bat roosting (3 inches diameter at breast height). Noise related to the operations of pipeline pump stations would be ongoing; northern long-eared bats roosting nearby would either acclimate to the noise or select roost trees farther from the pump station. Given the abundance of habitat near the pump stations where the Applicant documented northern long-eared bats and the species' use of a variety of roost tree species and sizes, alternate roost trees would not be limiting. Impacts on the northern long-eared bat due to inspection overflights, ground surveillance, and right-of-way maintenance may result in temporary displacement of individuals due to intermittent noise. Adverse impacts on the northern long-eared bat along the APR are not expected during operations.	1568-111

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5	340	Section 5.2.5.3.1, Federally Listed Species, Operations Impacts: "As described for construction, Dakota skipper and Poweshiek skipperling are unlikely to occur along the Applicant's preferred route. Operations activities, especially periodic mowing to prevent growth of trees and shrubs, could affect adults, eggs, caterpillars, or larvae directly if the species come in direct contact with equipment, personnel, or chemicals. These effects could include death, reduced reproduction, or displacement. Although these species could be present along the route, based on the results of the habitat survey and presence/absence survey, it is unlikely that these prairie-dependent insects would be affected by operations activities. Consequently, impacts would be at most negligible but permanent. One site with suitable habitat and Dakota skipper presence was identified during surveys. Impacts on this site and the Dakota skipper during operation would be permanent and minor."	The Applicant surveyed for Dakota skipper and Poweshiek skipperling based on protocols approved by the USFWS. No individuals were documented in the environmental survey corridor, which encompasses the right-of-way. The probability of the Applicant's vehicles that are conducting operations or maintenance colliding with a dispersing adult is vey low and discountable.	1568-112
5	341	Section 5.2.5.3.1, Applicant's preferred route, Federally Listed Species, Operations Impacts, Summary: "The Canada lynx could experience permanent minor impacts associated with operations and maintenance activities. The gray wolf, due to its transient nature, would experience temporary minor impacts. Impacts on northern long-eared bats would be permanent and negligible, and operations-related impacts on the Dakota skipper at the one suitable habitat site would be minor and permanent. Given the limited distribution and habitat types that could be used by Kirtland's warbler, piping plover, Poweshiek skipperling, and rusty patched bumble bee, operations impacts would be permanent and negligible. Migrant whooping cranes would not be affected by pipeline operation, nor would operations affect federally listed plants because of the scarcity of appropriate habitat and species presence."	Impacts associated with the Applicant's operations and maintenance activities on the Canada lynx, gray wolf, northern long-eared bat, and whooping crane along the APR would be limited to noise and presence of humans and equipment associated with inspection overflights, ground surveillance, and maintenance activities. Impacts on individuals of these four species would be limited to temporarily displacement or disturbance; no permanent or adverse impacts are expected. No adverse impacts are expected on Dakota skipper, Poweshiek skipperling, or western prairie fringed orchid because the Applicant did not document individuals of these species during surveys in the environmental survey corridor, which encompasses the permanent right-of-way. No adverse impacts are anticipated on the rusty-patched bumble bee because the APR does not intersect with the species' high potential zones. The probability of the Applicant's vehicles that are conducting operations or maintenance colliding with a dispersing adult Dakota skipper, Poweshiek skipperling, or rusty-attached bumble bee is very low and discountable.	1568-113
5	349	Section 5.2.5.3.1, Table 5.2.5-15: This table, and other similar tables, should be footnoted to indicate that the construction work area includes the permanent right-of-way so that the reader is aware that the "Con" and "Op" impacts are not additive and should not be summed to conclude total impacts.	Add the following footnote to Table 5.2.5-15 and other similar tables: "The construction work area includes the permanent right-of-way; as such, "Con" and "Op" impacts are not additive and should not be summed to conclude total impacts."	1568-114

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5	412	Section 5.2.6.2, Federal Land, last sentence in paragraph: "When multiple federal properties that are operated by more than one federal agency or bureau would be crossed by a project, an application would be filed with BLM."	Amend this statement to: "BLM is authorized to grant a right-of-way or permit for projects "where the surface of the Federal lands involved is administered by the Secretary or by two or more Federal agencies". 30 USC § 185(c). Under the Mineral Leasing Act, "Federal lands" means all lands owned by the United States except lands in the National Park System, lands held in trust for the Indian or Indian tribe, and lands on the Outer Continental Shelf."	1568-115
5	413	Section 5.2.6.2.1, Federal Land: "The Applicant's preferred route would cross approximately 5 acres of federal land. In North Dakota, the Applicant's preferred route would cross: • Pembina County Waterfowl Production Area..."	Enbridge has confirmed that the APR would not cross the Pembina WPA. Correct this discrepancy throughout the document. For example (but not limited to), in Sections 5.2.6.2.1, 5.2.6.3.1, and 5.3.2.2.1.	1568-116
5	413	Section 5.2.6.2.1, Federal Land, second bullet, North Country National Scenic Trail, sixth sentence: "In 2015, the House Committee on Natural Resources passed a bill granting the secretary of DOI the power to negotiate rights-of-way for gas pipelines through national park lands."	Because the Line 3 Replacement is an oil pipeline, this statement is not relevant to should be removed.	1568-117
5	414	Section 5.2.6.2.1, State Land, Page 414, second full paragraph: "Although not directly affected by pipeline construction or standard operations, the Applicant's preferred route would pass directly east of Itasca State Park, and an existing road that passes through the park would be used as an access road. This state park is one of Minnesota's flagship state parks, with over 500,000 annual visits. The park was established in 1891 to preserve remnant stands of virgin pine and to protect the basin that is the source of the Mississippi River."	The temporary construction workspace for the APR is located approximately 960 feet from the boundary of the Itasca State Park (the centerline of the APR is approximately 1,083 feet from the park boundary). The access road that would have crossed Itasca State Park has been dropped from the Project design. Revise this paragraph to reflect this change.	1568-118
5	418	Section 5.2.6.2.3, County Land: "While it is likely that SA-04 would cross county land, data had not been obtained at the time of this assessment."	Confirm that this data will be provided in the FEIS.	1568-119
5	422	Section 5.2.6.4.1, first paragraph, last sentence: "Construction of the Applicant's preferred route would have the largest impact in terms of total land area on state-owned land (i.e., forests) in Minnesota, whereas the SA-04 route would have the largest total impact on federally owned land (mostly within an NWR in North Dakota)."	Revise this statement to say, "...mostly associated with a WMA in North Dakota"	1568-120
5	427	Neither the Applicant's preferred route nor the CN Alternatives would pass through any air quality nonattainment or maintenance areas, except for a portion of the truck route from the Gretna pump station to the Superior terminal that goes through Duluth, Minnesota.	CN Alternative SA-04 would pass through Will County, IL which is designated as an ozone non-attainment area.	1568-121

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5	428	Section 5.2.7.1.1, Air Quality Permitting Requirements: "For the Applicant's preferred route, all pump stations use electric drive motors and do not emit air pollutants."	Although all pump stations use electric drive motors that do not directly emit air pollutants, the piping components (valves, connectors, pump seals, etc.), sump tanks, and pig traps at pump stations do emit volatile organic compounds ("VOCs"). Enbridge recommends revising the text in Section 5.2.7.1.1 to state: "For the Applicant's preferred route, all pump stations use electric drive motors that do not emit air pollutants, the piping components (valves, connectors, pump seals, etc.), sump tanks, and pig traps at pump stations do emit volatile organic compounds ("VOCs")."	1568-122
5	433	Section 5.2.7.3.1: Stored Carbon Releases	The acres of trees logged does not match with the totals in Table 5.3.1-3. Confirm the area of trees logged. The same references are also used in Chapter 6.	1568-123
5	435	Section 5.2.7.3.1, Operations Impacts, first paragraph, third sentence: "The external floating roof storage tanks at the existing Clearbrook terminal are subject to New Source Performance Standards (NSPS) in 40 CFR 60 Subpart Kb"	Only 4 of the 9 Clearbrook tanks are subject to NSPS Kb. The five remaining tanks were built prior to the effective date of the regulation and therefore are not subject to NSPS Kb.	1568-124
5	437	5.2.7.3.1: Indirect Greenhouse Gas Emissions	Enbridge estimated the projected pump station power consumption to be 533,199 megawatt-hours (MWh) per year. The DEIS indirect GHG emissions are calculated based on 533,249 MWh per year.	1568-125
5	439	Section 5.2.7.3.1, Operations Impacts, Table 5.2.7-9, Social Cost of Carbon (Fossil GHG Emissions) for the Applicant's Preferred Route (in 2007 dollars)	The Social Cost of Carbon (SCC) is a value meant to inform cost-benefit analyses. A cost-benefit analysis has not been completed for other environmental impacts discussed in the DEIS. For this reason, Enbridge believes that the SCC analysis is not appropriate and should be removed from FEIS analysis. For comparison - CEQ NEPA GHG guidance did not call for a SCC calculation in the impact assessment.	1568-126
5	440	Section 5.2.7.3.1, Operations Impacts, Life-Cycle Emission Estimates: "A life-cycle analysis for GHGs tracks the total production of GHGs from their extraction from the earth to the end-use combustion of refined petroleum products or byproducts."	Clarify whether or not this analysis is related to a particular agency requirement and if the analysis is appropriate here. For example, if the analysis is using a 30-year projection, and most of the GHG emissions are indirect from electricity generation, then more sophisticated projections of U.S. electricity supply over the next 30 years in these regions should be used, rather than using static eGRID values for average GHG intensity of power. Including a SCC cost of $280 billion further complicates the analysis. For comparison, the CEQ NEPA GHG guidance does not recommend a life-cycle assessment of GHGs.	1568-127

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5	445	Section 5.2.7.3.3, System Alternative SA-04: "In general, the air quality impacts associated with construction and operation of SA-04 would be similar to those described above for the Applicant's preferred route."	Emissions from SA-04 would be more that twice that of the APR. As noted in Schedule 7 to Mr. Barry Simonson's Direct Testimony, the addition of seven crude oil storage tanks would significantly increase the amount of volatile organic compounds ("VOCs"), greenhouse gases ("GHGs"), criteria pollutants, and hazardous air pollutants ("HAPs") emitted during operations. The eight additional pump stations would require more power, and their operation would generate more indirect emissions, such as GHGs, Sulfur Dioxide ("SO2") and nitrogen oxides ("NOx"), as compared to the Preferred Route. This SA would result in the consumption of 1,703 gigawatt hours per year ("GWh/yr") to power the pump stations, approximately two times greater as compared to the Preferred Route. SA-04-L3 would also increase emissions of carbon dioxide equivalent (CO2e), SO2, and NOx by 90 percent as compared to the APR.	1568-128
5	445	5.2.7.3.3: Stored Carbon Releases	The acres of trees logged does not match with the totals in Table 5.3.1-3. Confirm the area of trees logged.	1568-129
5	456	Table 5.2.7-20: Why does the table not include emissions for the no-build option - Continued use of existing Line 3?	Emissions from existing Line 3 should be included in the table.	1568-130
5	469	Section 5.3.1.2.1, Table 5.3.1-5: Active Mineral Areas Crossed by the Applicant's Preferred Route (Acres)	Revise the title of this table to, "Active Mineral Leases within ROI of APR"	1568-131
5	469	Section 5.3.1.2.1, Table 5.3.1-6: Land with Potential Sand and Gravel Resources Crossed by the Applicant's Preferred Route (Acres)	Revise the title of this table to, "Land with Potential Sand and Gravel Resources within ROI of APR"	1568-132
5	470	Section 5.3.1.2.3, Table 5.3.1-7: Agricultural Land Crossed by System Alternative SA-04 (acres)	Provide a footnote in this table that clarifies that impacts presented for SA-04 do not include ATWS, access roads, or aboveground facilities.	1568-133
5	474	Section 5.3.1.3.1, Disturbance and Loss of Land used for Mining: "The only active mining lease along the Applicant's preferred route is in Minnesota, where less than 1 acre of land with active mineral leases would be crossed by the Applicant's preferred route"	Revise this statement to say, "...where less than 1 acre of land with active mineral leases is within the ROI of the APR."	1568-134
5	477	Section 5.3.1.3.3, Disturbance and Loss of Land Used for Mining, second sentence: "Approximately 31 acres of land with known oil and gas resources occurs within the ROI for SA-04 in North Dakota and 0.4 acre of land with active coal mining is located in the ROI for SA-04 in Iowa, along with 2,393 acres of land with potential sand and gravel resources."	Section 5.3.1.2.3 indicates that there are 0.4 acre of land with active coal mining operations located in the construction work area for SA-04; however, the impacts discussion does not address how active mining activities may be disrupted and no quantification of the value of that disruption is included.	1568-135
5	485	Section 5.3.1.4.1, Table 5.3.1-11, Summary of Potential Impacts on Commodity Production for the Applicant's Preferred Route and Certificate of Need Alternatives	Provide a footnote in this table that clarifies SA-04 impacts do not include ATWS, access roads, or aboveground facilities.	1568-136

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5	490	Recreational land and waterbodies within the ROI for the Applicant's preferred route and CN Alternatives were identified using GIS datasets and layers in the following federal- and state-level data sources: • Protected Areas Database of the United States (PAD-US), • DNR water trails, • DNR snowmobile trails, • DNR state-designated trails, • DNR hunter walking trails, and • State-designated trout streams.	Non-Minnesota state data sets are missing for analysis of SA-04.	1568-137
5	502	Section 5.3.2.3.1, Construction Impacts, State-Designated Water Trails and Trout Streams, fourth paragraph, second sentence: "Crossing methods for King Creek, Spring Brook, Blackhoof River, and the unnamed stream are unknown."	This statement is incorrect; the crossing methods for these waterbodies are provided in Appendix G of the DEIS.	1568-138
5	534	Section 5.3.3.3: Impact Assessment	The impact assessment does not include a discussion of the specific estimated length of time for pipeline construction (12 months per Section 6b of the EAW). Inclusion of this detail would provide rationale for quantification of duration of impacts during construction.	1568-139
5	535	Section 5.3.3.3.1, Construction Impacts, Non-Local Workforce, fourth paragraph, last sentence: "Population increases of more than 10 percent would be considered a major impact."	Include a table, or otherwise specify which counties or areas along the route where a 10% increase in population would occur.	1568-140
5	535	Section 5.3.3.3.1, Construction Impacts, Non-Local Workforce, last paragraph: "Overall, impacts related to the non-local workforce are expected to be minor and temporary but they could be major and temporary at times under some worst-case scenarios, such as when two spreads are located within the same county or if a high number of workers are accompanied by their families."	Revise this paragraph to describe what types of impacts would constitute a "worst-case scenario" or major impact.	1568-141
5	535	5.3.3.3.1: "While it is likely that Enbridge would use some local workers, it was assumed as a conservative estimate that all workers would be non-local and would need to re-locate to the area during construction."	Population impacts assume that all workers will be non-local and that all will bring families. Given the short duration of construction, it is highly unlikely that even a small portion of the non-local workforce would relocate with their families, therefore the population impacts may be overstated.	1568-142
5	545	Section 5.3.3.4.1, Table 5.3.3-15: The table indicates that 15 populated areas would be crossed by the APR.	The information in Table 5.3.3-15 disagrees with the text on page 536 which says that 16 populated areas would be crossed. Correct this discrepancy.	1568-143
5	547	Section 5.3.3.4.1, Table 5.3.3-15: The table says operation of the APR would have permanent/negligible impacts on traffic in populated areas.	Section 5.3.3.3.1 (pg. 5-537) does not discuss impacts associated with traffic during operations for the APR. Correct this discrepancy.	1568-144

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5	551	Section 5.3.4.1.2, page 551, first partial paragraph, second sentence: "Output from a national IMPLAN model (an economic input-output model) and the number of miles of pipeline per county were used to allocate the potential change in state income taxes from the alternatives and allocated to each county in the ROI." First full paragraph, fourth sentence: "For the rail and truck transport alternatives, assumptions related to construction expenditures provided in Chapter 4 were used as inputs into IMPLAN."	The IMPLAN model and report referenced throughout this section should be included as an appendix and included in the references.	1568-145
5	551	Section 5.3.4.2.1, Applicant's Preferred Route, Employment and Income, Tax Revenues	Revise the way that impacts are identified in this section to clarify that they are "positive" impacts. It is misleading to not include "positive" with the magnitude of impacts, particularly in the summary table.	1568-146
5	561	5.3.4.3.1: Text states that APR is expected to require up to 4,800 workers across 7 spreads.	Section 5.3.3 states that it will be a maximum of 4,200 workers across 7 spreads (600 workers per spread). Information provided by Enbridge states there will be an estimated 500-600 per spread, therefore the estimate of 4,200 should be used in Section 5.3.4.3.1.	1568-147
5	561	Section 5.3.4.3.1 Applicant's Preferred Route (from Neche to Superior), Construction Impacts	This section does not refer to or use the "Report on the Economic Impacts Analysis for the Line 3 Replacement Project" by Lichty and Carey from January 2017 that was provided by the Applicant as part of direct testimony filed January 31, 2017. Recommend that this report should be included in the analysis of construction impacts in this section.	1568-148
5	577	Section 5.4, Cultural Resources	The significance and/or National Register of Historic Places (NRHP) eligibility of identified resources is not addressed in the discussion of impacts. Since 2014, Enbridge has worked with the State Historic Preservation Office and the USACE to assess site significance and NRHP eligibility, as well as determinations of effect for identified resources along the APR. Inclusion of site significance and NRHP eligibility is particularly important in Section 5.4.3.1 where the DEIS states that 16 archaeological sites could be "directly" affected without an accompanying discussion of the significance or NRHP eligibility of these resources. This gives a false sense of the impacts on these resources and does not acknowledge Enbridge's work with SHPO and the USACE. Enbridge recommends that any discussion of impacts on identified cultural resources includes a discussion of significance and NRHP eligibility. For example (but not limited to), see Sections 5.4.3.1.1 and 5.4.4.1, and Table 5.4.2-2.	1568-149
5	585	Section 5.4.1.2, Page 585, third paragraph: "Additionally, surveys for archaeological resources were completed for the Applicant's preferred route in Minnesota, the information from which is included in this analysis. Surveys were not completed for historic resources in Minnesota."	Enbridge recently completed historic structures surveys and will submit the final report to the DOC when complete. Revise this statement to clarify that historic structures surveys have been completed and the results and recommendations are forthcoming.	1568-150

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6	10	6.2 Human Settlement	Tribal lands should be included in the discussion of impacts to human settlements as a stakeholder and landowner along some of the proposed RAs.	1568-151
6	77	Section 6.2.3.1.2: The DEIS states, "Guidance by the U.S. Forest Service (USFS) and the Service's Scenic Management System (SMS) was used as a basis for understanding the quality of, location of, and potential impacts on aesthetic resources."	The SMS is a federal land management standard that should only be applied to public lands, such as National Forests. Clarify in the FEIS where and how the SMS was used to assess visual impacts on public lands. In addition, the FEIS should remove reference to use of SMS on non-public lands as these standards should not be applied to these areas.	1568-152
6	79	6.2.3.2.1: According to table 6.2.1-2, the APR would impact 1,789 acres of forested land and 2,467 acres of agricultural land, which is more than forested land; however, this section repeatedly indicates that the APR would impact primarily forested land.	Correct discrepancy.	1568-153
6	81, 88	6.2.3.2.2: Table 6.2.3-4 lists Crane Meadows National Wildlife Refuge as affected by RA-03AM.	Enbridge has confirmed that RA-03AM would not cross the Crane Meadows Wildlife Refuge. Correct this discrepancy throughout the FEIS.	1568-154
6	120	Section 6.2.5.2.1, Table 6.2.5-1: Indicates 319 road crossings; however, the EAW states that the APR would cross 281 roads.	Verify the number of road crossings and update Table 6.2.5-1 accordingly.	1568-155
6	190	Section 6.3.1.2.1, Methodology, last paragraph before Section 6.3.1.2.2: "Broader regional indicators of surface water quality were also reviewed to identify regional differences in existing conditions and extent of impacts. Due to unavailability of data from other states, this analysis was limited to Minnesota. These broad regional issues in Minnesota were evaluated by buffering GIS shapefiles the Applicant's preferred route and CN alternatives by one half mile and identifying intersections of features indicative of surface water quality, including trout streams, wild rice lakes, Lakes of Biological Significance (high and outstanding) and tullibee (cisco) lakes. Intersections of the same stream over 1 mile apart were counted as separate intersections."	It appears that this paragraph was carried over from chapter 5. Remove this paragraph as it does not apply to the RA analysis.	1568-156
6	276	Section 6.3.1.3.1, Regulatory Context, General Wetlands, second paragraph, starting at second sentence: "Permitting for route alternative RA-03AM would require obtaining a CWA Section 401 certification from Iowa DNR and Illinois DNR. Adherence to state-specific general construction and stormwater permit conditions, buffer laws, and other state and local resource protection measures also would be required, which would serve as a duplicative mechanism for oversight and protection of jurisdictional wetland resources."	These statements do not apply to RA-03AM and should be removed from this section.	1568-157
6	280	Section 6.3.1.3.2, Wetland Types, Applicant's preferred route, Table 6.3.1.3-1: Estimated Acreages of Wetlands Crossed by the Applicant's Preferred Route in Minnesota (acres)	Clarify what the differences are between the construction and operation and total construction and operation columns; footnotes a and b are identical and, therefore, do not provide the necessary clarification. Also, if this is for the entire APR then the numbers are incorrect.	1568-158

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6	296	The introduction to Section 6.3.1.3.3 states that "Wetland impacts specific to the Applicant's preferred route in Minnesota and the route alternatives between Clearbrook and Carlton are described below." However, impacts on calcareous fens are included in the impact analysis even though the calcareous fens occur between Neche and Clearbrook, which is acknowledged on pg. 6-281. Note that this analysis is only included for the APR and not mentioned under the RAs that traverse the same route between Neche and Clearbrook. In fact, page 6-294 states that: "No impacts on calcareous fens would be associated with the RA-03AM route, as none were identified during the calcareous fen data review within the construction work area or permanent right-of-way for the route."	Remove the discussion on calcareous fen impacts under Section 6.3.1.3.3 for the APR because the fens occur between Neche and Clearbrook and not Clearbrook and Carlton.	1568-159
6	324	Section 6.3.2.2.1: The fourth bullet on page 324 states, "Coarse-textured soils are common." However, Table 6.3.2-1 indicates that only 42.5 miles (or 12.5%) of the APR would cross coarse-textured soils.	Revise the language in the fourth bullet to say, "Coarse-textured soils are not common."	1568-160
6	324	Section 6.3.2.2.1, Table 6.3.2-1, Sensitive Soils along the Applicant's Preferred Route in Minnesota (miles)	Relative percentages of the soil characteristics for the APR presented in this table do not match those presented in table 10b-2 of the EAW. Specifically: 1.) Compaction-prone soils: DEIS = 24.1 miles (6%), EAW = 20% 2.) Highly water erodible soils: DEIS = 0 miles (0%), EAW = 16% 3.) Highly wind erodible soils: DEIS = 106.9 miles (31.5%), EAW = 65% 4.) Coarse-textured soils: DEIS = 42.5 miles (12.5%), EAW analyzed soils with revegetation concerns = 36% Verify the information presented in Table 6.3.2-1 and justify the reason for differences between the information presented in the DEIS and the information provided in the EAW.	1568-161
6	331	Section 6.3.2.3.1, Operations Impacts, Permanent Loss of Soil Cover: "Construction of permanent access roads and associated facilities would require permanent removal of soil, to be replaced with materials such as cement and gravel. Loss of soil cover would total 278 acres for access roads and 67 acres for other permanent facilities along the Applicant's preferred route in Minnesota."	This statement is incorrect based on the data filed in the EAW. According to the EAW, the total permanent acreage of soil impacts for access roads would total 3.5 acres (though 274.2 acres would be temporarily impacted) and there would be an additional 40.9 total acres of permanent impacts at facilities, mainline valves, and cathodic beds combined. This section overstates the permanent impacts to soils. Verify the information presented in this paragraph and justify the reason for differences between the information presented in the DEIS and the information provided in the EAW.	1568-162

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6	334	Section 6.3.2.3.2, Route Alternative RA-03AM, Page 334, first full paragraph: "One key difference in potential impacts between RA-03AM and the other routes is the potential for subsidence or sinkhole formation from the presence of karst conditions along the RA-03AM route. As previously stated, the probability and severity of the potential impact of subsidence or sinkhole formation on the integrity of the pipeline or associated facilities depend on the nature of the bedrock, the groundwater, the timing of the occurrence, and the specific engineering design of the facilities. Such a determination is beyond the scope of this analysis."	It may not be possible to predict sinkhole formation, but an analysis of the potential impacts to karst terrain associated with construction, and indirect impacts to groundwater, unique vegetation, and wildlife habitat are possible.	1568-163
6	337	Section 6.3.2.4.1, Page 337, third full paragraph, second paragraph: "The extent of permanent soil conversion to an impervious surface for all route alternatives would be expected to comparable to the Applicant's preferred route (283 acres)..." This is repeated in table 6.3.2-3 on page 6-339.	The acreage of impervious surfaces associated with the APR is incorrect; in the EAW submitted with testimony it is 28.7 acres. This number should be corrected in all instances where it appears.	1568-164
6	485	Section 6.3.5.1.2: The DEIS does not provide details regarding WAN scoring in the text on pages 485 or 491 nor is it defined in Figure 6.3.5-1.	Provide a definition of WAN scoring to support these discussions.	1568-165
6	486	Section 6.3.5.2.1, Table 6.3.5-1, Potential Occurrences of Federally Protected Species within the Region of Interest for the Applicant's Preferred Route	There are no federally listed mussels with the potential to occur along the APR. Only the Great Lakes Distance Population Segment of the Gray Wolf occurs in Minnesota. The whooping crane does not occur in Minnesota. The information presented in Table 6.3.5-1 is inconsistent with the text in this section. Correct all discrepancies.	1568-166
6	496	Section 6.3.5.2.2, Route Alternative RA-03AM, State-Listed Species, Table 6.3.5-6, Known Occurrences of State-Protected Animals and Plants within the Region of Interest for Route Alternative RA-03AM: Sources: Minnesota DNR 2016a, 2017a; Merjent 2016a.	The citation in Table 6.3.5-6, Merjent 2016a (Enbridge 2013–2016 Minnesota Protected Flora Field Survey Report), is incorrect as no field surveys were conducted for RA-03AM. See also page 501 (Table 6.3.5-10, RA-06). Correct these discrepancies.	1568-167
6	512	Section 6.3.5.3.1, Federally Listed Species: "The Canada lynx, gray wolf, northern long-eared bat, whooping crane (Grus americana), Dakota skipper, Poweshiek skipperling, rusty patched bumble bee, and western prairie fringe orchid have the potential to occur within the ROI for the Applicant's preferred route (Table 6.3.5-1). Of these species, the Canada lynx, gray wolf, northern long-eared bat, and rusty patched bumble bee potentially occur between Clearbrook and Carlton (Table 6.3.5-1)."	Omit the statement that indicates that the whooping crane occurs in Minnesota.	1568-168
6	565	Section 6.3.5.4.2, Table 6.3.5-45, Summary of Potential Impacts on Unique Natural Resources for the Applicant's Preferred Route and Route Alternatives between Clearbrook and Carlton: Major/permanent impacts • 6 species No Impact • 2 species	The information in Table 6.3.5-45 disagrees with information presented in Table 6.3.5-21, which states that there would be no impact on 4 plant species between Clearbrook and Carlton. Verify the number of plant species and correct this discrepancy.	1568-169

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6	616	Section 6.4, Cultural Resources	The significance and/or National Register of Historic Places (NRHP) eligibility of identified resources is not addressed in the discussion of impacts. Enbridge recommends that any discussion of impacts on identified cultural resources includes a discussion of significance and NRHP eligibility and fully describes and addresses the Applicant's efforts to coordinate with the applicable agencies. For example (but not limited to), see Sections 6.4.1, 6.4.2.1.1, and 6.4.4.1. Also, refer to comment on Section 5, Page 577, Section 5.4 in row 234.	1568-170
6	644	Section 6.5.1.2.1, Table 6.5.1-4: Total Market Value of Forested Land in the construction zone does not match corresponding number (MN subtotal) presented in table 5.3.1-4.	Verify the total market value of forested land in the construction zone and correct the discrepancy between Tables 6.5.1-4 and 5.3.1-4.	1568-171
6	706	Section 6.5.3.2.1: In the text, the DEIS states that 14 populated areas are located along the route, then in the same sentence states that 13 populated areas are located along the route. Later, in section 6.5.3.3.1 (pg. 712) the DEIS states that 13 populated areas are in proximity to the APR.	Verify the number of populated areas and update the text accordingly.	1568-172
6	711	Section 6.5.3.3: Impact Assessment	This section does not describe the specific estimated length of time for pipeline construction (12 months per Section 6b of the EAW). Inclusion of this detail would provide rationale for quantification of duration of impacts during construction.	1568-173
6	712	Section 6.5.3.3.1, Construction Impacts, Non-Local Workforce: The DEIS states, "Overall, impacts related to the influx of non-local workforce are expected to be minor and temporary, but could be major and temporary for those counties with low population density if a large number of workers bring their families and if construction spreads operate in proximity to each other."	Revise this paragraph to describe what types of impacts would constitute a "worst-case scenario" or major impact.	1568-174
6	722	Section 6.5.4: Employment, Income, and Tax Revenues	This section does not refer to or use the "Report on the Economic Impacts Analysis for the Line 3 Replacement Project" by Lichty and Carey from January 2017 that was provided by the Applicant as direct testimony. Recommend that this report should be included in the analysis of construction impacts in this section.	1568-175
6	722	Section 6.5.4 Employment, Income, and Tax Revenues	Revise the way that impacts are identified in this section to clarify that they are "positive" impacts. It is misleading to not include "positive" with the magnitude of impacts, particularly in the summary table.	1568-176
6	723	Section 6.5.4.1.2, Methodology, Page 723, fourth paragraph, second sentence: "Output from a national IMPLAN model (an economic input-output model) and the number of miles of pipeline per county were used to allocate the potential change in income taxes appropriated from the State of Minnesota to each county in the ROI for the Applicant's preferred route and route alternatives."	The IMPLAN model and report referenced through out this section should be included as an appendix and included in the references.	1568-177

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7	5	Section 7.2, Natural Resources, Wetlands: "Potential impacts on wetlands generally occur during construction; however, unlike most construction impacts, impacts on wetlands are usually long term or permanent because of the soil types associated with them."	This statement is inconsistent with the conclusions in Chapters 5 and 6; excerpt from pg. 5-121: "In general, wetland construction impacts that do not result from placement of fill in wetlands would be returned to preconstruction contours and wetland conditions. Wetland habitats containing large mature woody growth would reestablish in temporary construction work areas within 3 to 50 years, depending on the vegetation community and vegetation structure (Jacobson 2006, Wenzel et al. 2012). In areas where the disturbance to [emergent wetland] vegetation is minimal and the root structures, preconstruction wetland contours, and wetland hydrology are maintained, the impacts would be short-term and minor." Correct the inconsistency in section 7.2, Natural Resources, Wetlands.	1568-178
7	19	Section 7.3.5, RSA-White Elk Lake, Natural Environment, Wildlife: "RSA-White Elk Lake avoids documented maternity roost tree or hibernacula entrance locations for the northern long-eared bat along the Applicant's preferred route"	Based on MN NHI data, there are no northern long-eared bat hibernacula within 5 miles of the APR or the White Elk Lake alternative. Remove reference to "hibernacula entrance".	1568-179
7	24	Section 7.3.6, RSA-21, page 24, first full paragraph: "RSA-21 avoids impacts on wild rice waters along the Sandy River, specifically, Davis Lake, Steamboat Lake, Flowage Lake, Sandy River Lake, and Big Sandy Lake."	This statement is misleading because the APR would not impact Davis Lake, Steamboat Lake, Flowage Lake, Sandy River Lake, or Big Sandy Lake. Revise this statement to clarify that neither RSA-21 or the APR would impact these wild rice waterbodies.	1568-180
7	26	Section 7.3.7, RSA-22, first paragraph, fourth sentence: "The purpose of this RSA is to avoid important habitat in the Big Sandy Lake watershed as well as Grayling Marsh WMA, McGregor WMA, Lawler WMA, and Salo Marsh WMA."	This statement is misleading because the APR would not cross the McGregor WMA or the Salo Marsh WMA. Remove the McGregor and Salo WMAs from the list in this statement.	1568-181
7	33	"It passes through land previously proposed by U.S. Steel (Keetac) as a compensatory wetland mitigation site; however, geospatial data from Minnesota DNR do not identify a mitigation bank easement in this location."	Enbridge has confirmed with U.S. Steel that a recorded wetland mitigation bank easement exists at this location, making this a non-viable route.	1568-182
7	45	Section 7.3.14, RSA-35, Economics, Agriculture: "While both RSA-35 and the Applicant's preferred route cross peat lands, the RSA is located within peat lands for a greater portion of its length."	Enbridge did not provide an analysis of impacts on peat lands in the EAW and is unable to recreate the analysis. We recommend that the data source used to analyze potential impacts on peat lands be provided in the FEIS so that this analysis can be verified.	1568-183
7	70	Section 7.3.24, RSA-53, first paragraph, last sentence: "Table 7.3-24 highlights the differences between RSA-53 and the Applicant's preferred route."	This statement is inaccurate, as no comparison of the APR and RSA-53 is presented in Table 7.3-24 or in Chapter 7. Revise this statement to say that Table 7.3-24 presents the impacts associated with RSA-53.	1568-184
9	9	Section 9.2.3.3.3 includes "[m]emoranda of understanding between the tribes and the U.S. Forest Service (Chippewa National Forest) for co-management of forest lands.	This section is titled "Formal Tribal Government Acts on Line 3 Replacement Project." It should be clarified that the cited memoranda do not relate to the Project.	1568-185

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9	11	Section 9.3.4, last sentence: "Commerce Department staff collected information about significant cultural and spiritual sites across northern Minnesota to develop a map for use in this chapter, which illustrates the rich history and value the land holds for American Indians in Minnesota (see Appendix P)."	This statement should clarify to which map it is referring. Additionally, to the extent the Department has collected information in order to develop a map, such information should be included in the FEIS.	1568-186
9	13	Section 9.4.1, fourth paragraph: "Preservation of cultural resources is governed by the following laws: . . . ."	Some of these laws do govern preservation, but many govern management. Enbridge suggests revising to state: "Preservation and management of cultural resources are governed by the following laws: . . . ."	1568-187
9	20	Section 9.4.4.1.1 includes a bullet point list of potentially affected resources that includes national wildlife refuges.	Clarify that the APR will not impact any national wildlife refuges.	1568-188
9	21	Section 9.4.6, third paragraph, identifies various waterfowl habitat, including Upper Rice Lake.	Clarify that the APR does not cross many of these areas and that Enbridge has proposed RSA-05 to avoid the Eastern Rice Lake Watershed.	1568-189
9	22	Section 9.4.8, first paragraph, discusses Lower Rice Lake.	Clarify that Enbridge has proposed RSA-05 specifically to avoid the watershed that contains Lower Rice Lake.	1568-190
9	25	Section 9.5.1, seventh paragraph: "The Applicant's preferred route would result in impacts on 8 acres of wild rice lakes (Table 6.3.1.2-6)."	This statement should be revised to provide the actual acreage of crossing and clarify that the referenced table refers to wild rice lakes within a 750-foot wide corridor.	1568-191
9	26	Section 9.5.3, first paragraph, states that Enbridge proposes to fill the existing Line 3 with inert gas.	Enbridge does not plan to fill the existing Line 3 with inert gas. This statement should be removed.	1568-192
9	29	The reference, Brave Heart, M.Y.H. 2011. Welcome to Takini's historical trauma. Http://historicaltrauma.com, is not an active link.	A revised reference should be provided, or the reference should be removed.	1568-193
10		Chapter 10, when describing various trajectory, fate, and effects issues describes the analyses, including modeling, as though oil has already been released into the environment.	Where this Chapter is addressing the analyses done for hypothetical scenarios, it should describe the analyses accordingly, rather than as historical events, changing words such as "have" and "has" to "would" or "could."	1568-194
10	1, 8	Chapter 10 analyzes the behavior of spills that are labeled small, medium, large, and catastrophic.	The term "catastrophic" is not a descriptor of relative volume, but rather imports a more emotional component. A descriptor more closely tied to volume, such as "very large" should be used in place of "catastrophic." This better aligns with Minn. R. 4410.2300's directive to use "objective" language in the EIS.	1568-195

Chapter	Page	DEIS Text	Revisions and Suggestions	
10	11 n.9	The DEIS uses information from the Alberta Energy Regulator (AER) Report as a source that contributes to overall estimates of pipeline failure probabilities. At footnote 9, the DEIS explains that the AER Report caveats its use for extrapolation of incident data to larger pipelines. The DEIS then says that use of the AER data "could result in overestimation of Line 3 Replacement pipeline failure probabilities; however, this potential bias would be consistent across all pipeline route comparisons."	As set forth in the AER Report, most pipelines in Alberta are relatively small (6 inches in diameter or less). Only 2% of AER's regulated pipelines are 20 inches in diameter or more. As a result, the utility of the data is marginal on its face. If there were any question, the AER Report answers it as follows: "It is not appropriate to compare data on incidents related to small-diameter oilfield production pipelines to incidents related primarily to larger-diameter pipelines." (Report 2013-B: Pipeline Performance in Alberta, 1990-2012, p. iv.) Although the DEIS recognizes this problem, it nevertheless uses the report explaining that any potential bias showing higher failure probabilities than are appropriate would be consistent across the alternatives. The fact that the bias would be consistent for the alternatives does not solve the problem. This source should be eliminated or the DEIS should better explain why its use is appropriate.	1568-196
10	13	The DEIS notes that the AER Report observed that 5 percent of overall Alberta incidents were major ruptures. The DEIS uses this to scale the Stantec Report's AFF values "to produce higher (more conservative) AFF values that more realistically apply across a wider range of spill sizes."	As noted in the previous comment, the data sources used to justify increasing the failure probabilities expressly states that using the data is not appropriate when considering incidents related to large pipelines. Accordingly, this source should be eliminated or the DEIS should better explain why its use is appropriate. If, as the AER Report says, the AER Report data is not appropriate for use in this EIS, the major rupture AFF values from the Stantec Report, without scaling, should be used.	1568-197
10	13 n. 12	The DEIS adopts a third-party damage value from the AER Report.	See previous comments regarding AER Report's applicability to this EIS.	1568-198
10	13, n.14	The equipment failure rate is reported as 5x10-05 failures per mile year.	Clarity could be provided here by indicating whether that equipment failure rate includes failures from pump stations, meter stations, and tank farms. Additional clarity could be provided by stating whether that equipment failure rate is applied evenly along the length of all portion of pipeline segments in uplands areas or whether it was concentrated in areas where stations were located.	1568-199
10	14	Two sets of failure frequency rates are provided. The first set is broken down by landform. The second set of failure rates is broken down by spill magnitude.	Additional clarity could be provided here by: (1) explaining the basis for the derivation of the second set of failure rates, showing calculations as appropriate; (2) confirming that only the first set of failure rates were used as the basis of the analysis; and (3) if the second set of failure rates were used in the analysis, stating how they were used.	1568-200
10	17	Table 10.2-2 provides annual failure probabilities and recurrence intervals for the designated range of spill sizes for the APR and CN Alternative SA-04. The basis for the estimates is cited as DOS 2017, Table B-2.	The annual failure probability values reported in this table, particularly for large spills and for pipeline diameters that are representative of that proposed for L3R, appear to be larger than the values reported in the cited reference. It could be helpful if an explanation for that were provided.	1568-201

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
10	18	Section 10.2.4.1.2 reports that "[t]he primary risks of an accidental release incident are corrosion, manufacturing, defects, and damages from third-party excavation or from natural forces. The amount of oil flowing in the pipeline does not affect any of these risks." Similarly, section 10.2.4.1.3 reports the following: "Because the primary risks of an accidental release incident are corrosion, manufacturing defects, and damage from third-party excavation or from natural forces, the increased flow in the Superior to Illinois segment does not increase the risk of a spill for other pipeline alternatives and therefore is not considered in the calculation of risk for the other pipeline alternatives."	These excerpts could be more accurate, if they were changed to discuss "causes" of accidental releases rather than "risks," and "probabilities" of any of those "causes" causing an event (here, a release) rather than increasing or decreasing the "risk" of a release.	1568-202
10	20	Table 10.2-4 provides estimated annual probabilities of failure for the APR and CN Alternative SA-04.	It could be helpful if the text identifies which failure frequency values were used as the basis for these estimates (e.g., the failure rates presented in Table 10.2-2; the first set of failure rates presented on page 10-14; the second set of failure rates presented on page 10-14).	1568-203
10	23-24	The DEIS reports various failure frequency probabilities, but does not consistently provide the unit of measurement.	The DEIS should include the unit of measurement in each instance.	1568-204
10	25	"The proposed Project would transport two types of crude oil: light and heavy crude oil. . . ."	The proposed Project will carry many different blends of crude oil, not simply "light crude oil" and "heavy crude oil." Light crude oil and heavy crude oil are general characterizations, or bookends, of the types of oil that the Project will carry.	1568-205
10	26	"Typical dilbit has an API gravity slightly higher than 10 degrees, which means it is less dense than water and will float (Environment Canada 2013)."	API gravities for fresh dilbits is greater than 20, which is different than "slightly higher than 10."	1568-206
10	26-27	"The components of diluents are commonly found in other crude oils; however, bitumen additionally contains several potentially toxic metals, stable and persistent resins, and asphaltenes."	These are not unique constituents of diluted bitumen; other conventional crude oils may also contain any or all of these constituents.	1568-207
10	27	"Dispersion is the entrainment of oil droplets in the water column (i.e., the spreading of oil vertically in the water)."	Dispersion is the process by which turbulence ("sub-scale" currents that mix whole oil or the dissolved fraction in three dimensions) spreads oil components throughout the water column. Entrainment is the process by which large scale turbulence (e.g surface breaking waves) can force whole oil droplets into the water column. Spreading of oil is the result of gravity on whole oil floating on the surface of the water, by which the radius of floating oil expands.	1568-208
10	27	"It is enhanced by the turbulence or mixing energy of a waterbody, which is increased by rain events, wind and tidal currents."	There are not tidal currents present in the waterbodies at issue on this project.	
10	27	"Oil can also be dispersed through adhesion to particular matter (e.g. organic matter, silt, and clay) suspended in the water column."	Adhesion is the opposite of dispersal. Adhesion will keep things in an area as they drop out of the water column, while dispersion is something that spreads things further.	1568-209
				1568-210

Chapter	Page	DEIS Text	Revisions and Suggestions	
10	32	"Because dilbit contains a higher concentration of higher-molecular-weight hydrocarbons compared to light oils, it is not as prone to evaporation and is, therefore, more persistent in terrestrial environments."	It is the higher concentrations of asphaltenes and resins, not "higher-molecular-weight hydrocarbons," which are responsible for greater persistence.	1568-211
10	33	"Dilbit has a similar density to water and, therefore, has greater potential for formation of tarballs and also has greater tendency to submerge in comparison to lighter crude oils."	Dilbit has a density less than 0.94 g/cm, which isn't any closer to that of water than any other heavy crude oil. Further, tarball formation is not density dependent. It is dependent on the residual oil and composition following weathering (e.g., asphaltenes, resins, waxes).	1568-212
10	33	"In general, lighter crude oils are more susceptible to dissolve in water, whereas heavier crude oils have a greater tendency to form tarballs."	This conclusion is too simplistic, and is neither supported nor correct.	1568-213
10	33	In describing the study site near Bemidji, the DEIS does not mention that the site was intentionally left alone following initial cleanup so that it could be studied.	Rather than conveying that the site continues to be a source of contaminants as though cleanup efforts were fully performed and the outcome was nevertheless unavoided, the DEIS should explain that cleanup efforts were halted by agreement with governmental authorities.	1568-214
10	34	The DEIS indicates that "Enbridge commissioned a modeling analysis for seven hypothetical crude oil releases from pipeline locations. . . ."	The DEIS should mention here that, although Enbridge funded the work, the scope of work was determined through substantial consultation with the authors of the DEIS.	1568-215
10	36	"The spill volumes were estimated based on a 15 minute shutdown response and backflow of oil in the line based on distance between shut off valves and topography."	The spill volumes were estimated based on a 13 minute (10 minutes for response and three minutes of pumping out during valve closure) shutdown response and gravitational draindown (not backflow) of oil in the line.	1568-216
10	36	Table 10.3-1 reports the maximum distance traveled for the seven study sites.	Certain of the numbers in the report do not appear to be accurate. Specifically, the following numbers, taken from the Stantec Report, appear to be the accurate numbers: Study Site 3 - 12.8 and 8.1 miles; Study Site 5 - 19.2 miles for Cold Lake Blend; Study Site 6 - 17.8 and 17.9 miles; Study Site 7 - 31.2 and 32.3 miles. Further, because the modeling was done to provide a range of results, it would be useful to provide the results of the other flow scenarios (average flow and low flow) in addition to the maximum flow that is presented. If the average flow and low flow data points are not presented, the reason they are excluded should be provided to the reader.	1568-217
10	37	"Two different crude oil types, a light Bakken crude oil and heavier Cold Lake Blend, were evaluated under three flow conditions. . . ."	Three, not two, different types of crude oil were modeled. The modeled crude oils were: a light Bakken crude oil, a Cold Lake Blend, and a Cold Lake Winter Blend.	1568-218
10	37 n.22	"As described in Section 10.3, dispersion is the entrainment of oil droplets in the water column (i.e., the spreading of oil vertically in water). . . ."	The process described is not "dispersion," but rather entrainment and dissolution. Dispersion is mixing with the water column. Entrainment is the process by which oil is forced into water by wave action. Dissolution is the diffusion of water-soluble components out of oil and into water.	1568-219

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
10	38 and Tables	There are 13 Biological AOIs listed on page 10-38. The tables reporting data on Biological AOIs (e.g., Table 10.4-8 (p. 10-55), Table 10.4-17 (pp. 10-63 and 10-64)) present information on only 10 of the 13 listed Biological AOIs. The resources that are not included in the tables are native prairies, trout streams, and fens.	The tables should be updated to be consistent with the Biological AOIs list or the FEIS should explain why the three resources were not included in the tables.	1568-220
10	38 and Tables	The Commodity Production AOIs that are listed on page 10-38 include marginal cropland, national forests, other forest land and state forests. Prime farmland, farmland of statewide importance, and mining land are not included in the list and are also not included in the tables in Chapter 10 (e.g., Table 10.4-9 (p. 10-57) and Table 10.4-18 (p. 10-65)). Chapter 5, by comparison, does use prime farmland and farmland of statewide importance.	Prime farmland, farmland of statewide importance, and mining land resources could be added when considering Commodity Production AOIs.	1568-221
10	42	"Longer-term health effects of oil spills are not well documented, but various components of crude oil are known or suspected carcinogens, and spills have been shown to have limited correlation to cancer (International Agency for Research on Cancer 1989)."	The cited report does not conclude there is a correlation between accidental crude oil releases and cancer in humans. In fact, the report concludes there is inadequate evidence for the carcinogenity in humans of crude oil. In the absence of such support, a statement linking accidentally released crude oil to cancer in humans is not appropriate.	1568-222
10	46	The DEIS describes a process of the bioaccumulation of hydrocarbons "up the food chain."	There is no substantive evidence for food-chain bioaccumulation of hydrocarbons "up the food chain." Yes, animals may absorb hydrocarbons if they ingest them, but, unlike PCBs, they do not get magnified up the food chain.	1568-223
10	54	The ROI of SA-04 does not contain any of the Minnesota recorded biological AOIs; however, the biological AOIs evaluated are Minnesota-specific and comparable data were not available from other states.	Although other states do not have Minnesota-specific data resources, they do have comparable data resources that could be used, and are in fact used elsewhere in the DEIS. See, e.g., Table 5.3.1-11.	1568-224
10	58	The DEIS describes a report by De Jong (1980) of a 1974 crude oil release in Moose Jaw, Saskatchewan. The DEIS cites this report when discussing reduced crop yields for areas directly affected by the release.	This release and the report that followed are not representative of typical conditions. Specifically, this was an atypical release in which the released oil spread in the subsoil and the soil was not amenable to conventional remediation. The report itself states that the "usual reclamation procedures of improving aeration by cultivation and ensuring an adequate nutrient supply . . . were only partly applicable." The use of only one report, which was of an atypical scenario, should be considered and additional language provided as necessary to explain the scenario relative to anticipated impacts in the event of an accidental release in the areas through which the Project pipeline may pass. Page 8.929 of the Assessment of Accidental Releases: Technical Report (Stantec 2017), identifies the De Jong study, but also several others, when discussing generalized recovery rates for terrestrial soil and vegetation.	1568-225

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
10	CN and RP Alternatives Tables	The tables appear to contain entries that should be consistent, because the same route is being studied, but the entries do not appear to be entirely consistent. For example, tables appear to show differences in entries between the APR and RAs from the ND/MN border to Clearbrook, but that section of the route in the APR and RAs is the same. See, e.g., Tables 10.4-22, 10.4-25, 10-4.27, 10.4-28, 10.4-32, 10.4-35, and 10.4-36	The data in the tables should be confirmed and, where appropriate, additional explanations provided to explain any apparent discrepancies.	1568-226
10	66	The description of the area studied for analysis of Route Alternatives may be incorrect inasmuch as all RAs start at Clearbrook, MN.	The narrative should be confirmed.	1568-227
10	111	In this section, the DEIS compares failure probability estimates among the APR and CN Alternatives. It provides estimates of release frequency, but omits any discussion of the size of spills being discussed.	Providing average release frequencies, or failure probabilities, without consideration of the different return periods applicable for different size releases conveys only part of the story.	1568-228
10	Summary Tables	The tables appear to contain certain inconsistent entries. For example, Table 10.7-3 and Table 10.7-4 roll-up the CN alternatives analysis, and identify 170,027.6 acres of total AOI for the APR. Table 10.7-5 and Table 10.7-6 roll-up the RP alternatives and identify 243,607.9 acres of total AOI for the APR. It appears these numbers should be the same, but they are not. As another example, Table 10.7-4 and Table 10.7-6 present a sum total by acreages. However, certain entries in the table are not acreages, but rather other units.	The data in the tables should be confirmed and, where appropriate, additional explanations provided to explain any apparent discrepancies and/or additional tables should be used.	1568-229
11		Although this chapter references data from the American Community Survey, there is no corresponding reference that would direct a reader to the data tables within the U.S. Census Bureau that were used for the analysis	References to the data and tables should be added.	1568-230
12	6	The DEIS states in multiple areas that the project could constructed as early as spring 2018 and bases its cumulative impacts discussion on this time period.	Given the current MPUC regulatory schedule, it is unlikely that construction of the Line 3 Replacement Project will begin in Spring 2018. Enbridge plans to begin construction as soon as all applicable regulatory approvals have been obtained.	1568-231
12	11	The DEIS notes that LaSalle Creek will be crossed via HDD.	LaSalle Creek is proposed as a dry crossing. The crossing method should be updated here.	1568-232
12	12	The DEIS states that field surveys would be required to confirm the presence of rare species where the APR overlaps the environmentally relevant area of the MPL-Laporte 115-kV transmission line.	Field surveys for sensitive flora were conducted in this area between 2013 and 2016, and no threatened or endangered plant species were found.	1568-233
12	39	The DEIS states: "In addition, based on the discussion of tribal resources in Chapter 9, any of the routes, route segments, and system alternatives would have a long-term detrimental effect on tribal members."	No system alternatives are analyzed in Chapter 9. There is only the comment that, "From this perspective, any route, route segment, or system alternative would have a long-term detrimental effect on tribal members and tribal resources." This statement is also inconsistent with the mitigation measures discussed in Chapter 9.	1568-234

Enbridge Energy's DEIS Comments
Attachment A

Chapter	Page	DEIS Text	Revisions and Suggestions	
12	38	The lead-in heading for this section is on page 33 of the DEIS and states: "This Section Considers Direct and Indirect Effects of Greenhouse Gases on the Environment in Minnesota", however, there is a discussion of whooping cranes on 12-38 that talks about salinity levels in marsh habitat, which cites a reference that talks specifically about salinity in coastal marsh habitat in Texas (USFWS 2011).	Recommend striking the whooping crane reference on page 12-38 since whooping cranes impacts in Texas are not relevant to this discussion.	1568-235
Appendix G	0	Several of the crossing methods in Appendix G, Table G-2 are listed as Not Available (NA).	Enbridge recommends that Table G-2 be updated with the information presented in Paul Eberth's Direct Testimony, Schedule 2, Appendix H filed January 31, 2017 (Waterbody Crossing Table). This table provides crossing methods for all waterbodies crossed by the APR in Minnesota based on field-verified waterbodies and will provide clarification for waterbodies with an "NA" crossing method. Also note that there are errors in the text of the DEIS that indicate waterbody crossing methods that are different from what is presented in Appendix G. For example, Appendix G indicates that LaSalle Creek would be crossed with a dry crossing technique (which is correct); however Section 5.2.4.3.1 on page 5-256 and page 12-11 indicate that LaSalle Creek would be crossed by HDD. Review DEIS text for accuracy and consistency with Appendix G.	1568-236
Appendix M	0	Appendix M: Illinois DNR, 2016 citation.	Provide the full reference for this citation (missing from the reference section).	1568-237

Levi, Andrew (COMM)

From: Brusven, Christina <CBrusven@fredlaw.com>
Sent: Monday, July 10, 2017 3:46 PM
To: MN_COMM_Pipeline Comments
Cc: James D Watts (james.watts@enbridge.com); Tracy McAnally (Tracy.McAnally@enbridge.com)
Subject: MPUC Docket Nos. PL9/CN-14-916 and PPL-15-137 - Enbridge Energy, Limited Partnership's DEIS Comments
Attachments: Enbridge Energy, Limited Partnership DEIS Comments and Attachments B - F-c.pdf; Enbridge Energy, Limited Partnership Cover Letter, Affidavit of Service, and Service Lists-c.pdf

Ms. MacAlister,

Attached please find Enbridge Energy's DEIS Comments dated July 10, 2017 and Attachments B-F. We have also efiled the comments and attachments in MPUC Docket Nos. PL9/CN-14-916 and PPL-15-137. Please let me know if you have any questions.

Regards,

Christy Brusven
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Fredrikson & BYRON, P.A.

July 10, 2017

VIA EMAIL AND ELECTRONIC FILING

Jamie MacAlister, Planning Director
Minnesota Department of Commerce
85 7th Place East Suite 500
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Pipeline.Comments@state.mn.us

Re: In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement – Phase 3 Project in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/CN-14-916; OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement Project in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/PPL-15-137; OAH Docket No. 65-2500-33377

Dear Ms. MacAlister:

Enbridge Energy, Limited Partnership ("Enbridge") provides the enclosed comments on the Draft Environmental Impact Statement for the Line 3 Replacement Project ("DEIS"). These comments supplement and incorporate Enbridge's Attachment A, filed on July 5, 2017, at eDockets Document ID 20177-133536-01.

These comments have also been e-filed today through www.edockets.state.mn.us and a copy of the filing is being served upon the persons on the Official Service List of record.

Sincerely,

/s/ *Christina K. Brusven*

Christina K. Brusven
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61701449_1.docx

AFFIDAVIT OF SERVICE

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement – Phase 3 Project in Minnesota from the North Dakota Border to the Wisconsin Border

MPUC Docket No. PL-9/CN-14-916;
OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement Project in Minnesota from the North Dakota Border to the Wisconsin Border

MPUC Docket No. PL-9/PPL-15-137;
OAH Docket No. 65-2500-33377

STATE OF MINNESOTA)
) SS.
COUNTY OF HENNEPIN)

Kristen A. Swenson, of the City of Minneapolis, the County of Hennepin, State of Minnesota, being duly sworn on oath, deposes and states that on the 10th day of July, 2017, she e-filed with the Minnesota Public Utilities Commission the following:

1. Letter to Minnesota Department of Commerce;
2. Enbridge Energy, Limited Partnership's DEIS Comments, including Attachments B-F; and,
3. Affidavit of Service.

A copy has also been served in accordance with the attached service list of record.

Kristen A Swenson
Kristen A. Swenson

Subscribed and sworn to before me
this 10th day of July, 2017

Roxanne M. Gangl
Notary Public

ROXANNE M. GANGL
NOTARY PUBLIC - MINNESOTA
My Commission Expires
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ENBRIDGE ENERGY, LIMITED PARTNERSHIP'S DEIS COMMENTS

1.0 INTRODUCTION

The Draft Environmental Impact Statement for the Line 3 Project (DEIS) published on May 15, 2017 provides extensive evaluation and discussion of the potential benefits, impacts, and mitigation measures for the Line 3 Replacement Project (the Project) and alternatives being considered by the Minnesota Public Utilities Commission (Commission or MPUC). The DEIS addresses the issues identified in the Commission's December 5, 2016 Final Scoping Decision Document (FSDD), as well as the content required under Minn. R. 4410.2300. Accordingly, Enbridge Energy, Limited Partnership (Enbridge) has focused these comments on corrections, clarifications, and additions that the Minnesota Department of Commerce, Energy Environmental Review and Analysis staff (DOC-EERA) may want to consider in preparing the final EIS (FEIS) to best inform the Commission, parties, public and other agencies during the permitting processes.

Enbridge has organized these DEIS comments to first suggest general or overarching clarifications to the terminologies and methodologies used in the DEIS and then to provide specific comments on the content of each chapter.

Enbridge has also created several attachments to further organize its comments and aid reviewers in addressing the comments. These attachments include:

- Attachment A – On July 5, 2017, Enbridge submitted Initial Comments, including a table marked as Attachment A, that contained suggested discrete changes to certain data and/or information provided in the DEIS. Attachment A is also incorporated by reference into these comments.[1]

- Attachment B – Table Summarizing the Regions of Interest (ROIs) by Resource and Alternative. As discussed in Section 2.1. below, Enbridge recommends this table be included in the FEIS to provide readers a comprehensive reference to the differences in the ROIs used to analyze each resource and alternative.

- Attachment C – Additional SA-04 Analysis. As discussed in Sections 3.4.2 and 3.5.1, Enbridge has provided additional analysis regarding SA-04 that could be included in the FEIS to provide additional information about potential impacts in other states.

[1] Enbridge's Initial DEIS Comments and Attachment A are available on eDockets under Document ID No. 20177-133536-02.

- Attachment D – MLP Due Diligence Process for Screening Pipeline Maintenance Locations for Possible Contamination. This document describes the process Enbridge uses to screen integrity dig sites for possible contamination.

- Attachment E – Enbridge's Contaminated Sites Management Contractor Plan – Wisconsin - Segment 18 Project. This document is an example of the type of contaminated sites management plan Enbridge will develop for the Project.

- Attachment F – Enbridge's Information Requests to White Earth Band of Ojibwe (WEBO), Mille Lacs Band of Ojibwe (MLBO), and Honor the Earth, and Honor the Earth's Responses to Enbridge's Information Requests.

2.0 OVERARCHING COMMENTS

2.1 REGIONS OF INTEREST (ROI)

The DEIS identifies "regions of interest" or "ROIs" for each alternative in an effort to gain a broader understanding of the resources present in surrounding areas (as well as areas potentially directly impacted by construction of an alternative). As explained briefly on page 5-2 of the DEIS, the ROIs varied in geographic size depending on the resources and alternatives evaluated. While it makes some sense to look at a broader geographic area for certain resources, Enbridge thinks it would improve the overall usability of the document if all of the ROIs considered across the DEIS were presented in one consolidated location, along with an explanation of the factual basis for each. ROIs could also be quantified in all cases; for example, pages 5-44 and 5-45 identify surface water ROIs as "the area immediately downstream" of flowing surface water crossings and the area "in the immediate vicinity" of non-flowing water crossings.

In addition, some ROIs vary from alternative to alternative, even for the same resource. For example, on pages 5-44 and 5-45 of the DEIS, DOC-EERA indicates that the ROI used to analyze impacts on surface waters includes the construction work area for each surface water crossed, as well as the area immediately downstream from the crossing for flowing surface waters, and in the immediate vicinity for crossings of non-flowing surface waters. However, on page 5-46, DOC-EERA buffered the Applicant's Preferred Route (APR) and Certificate of Need (CN) Alternatives by one-half mile to identify intersections of features indicative of surface water quality, including trout streams, wild rice lakes, Lakes of Biological Significance, and Tullibee (cisco) Lakes.

Attachment B contains a table summarizing the ROIs used for each resource and set of alternatives. Enbridge asks DOC-EERA to consider including a similar table in the FEIS and augmenting it with a description of how ROIs were selected and utilized. This information will better allow readers to understand the scope of the analyses throughout the document.

2.2 TERMINOLOGY RELATED TO POTENTIAL IMPACTS

A substantial portion of DEIS is dedicated to identification and quantification of features potentially impacted by construction and operation of the APR and alternatives. When presenting these data, the DEIS frequently uses terms or phrases such as:

- crossed by the pipeline;
- intersects;
- within the construction work area of the pipeline;
- within the operations area; and
- within the ROI.

DOC-EERA may want to consider clarifying its use of these statements. For example, a statement that reads, "The Applicant's preferred route intersects the highest number of wild rice lakes (17) compared to the CN Alternatives," (see page 5-64) gives the reader the impression that the centerline or workspace associated with the APR literally crosses 17 wild rice lakes. Figures ES-5 and ES-10 of the DEIS also present data indicating that there are approximately 15-17 wild rice lakes "crossed" by the APR. Closer examination of the data reveals that, in fact, the ROI (in this case 0.5 miles from the proposed centerline) *contains* 17 wild rice lakes (see discussion on page 5-51 where the DEIS more clearly states that five wild rice waterbodies would be crossed by the APR and could be affected by construction and operation, and that 15 wild rice waterbodies occur within 0.5 mile of the APR).[2] Accordingly, the statement would read as follows: "There are 17 wild rice lakes contained within the ROI of the Applicant's preferred route." For additional examples, please see Enbridge's Attachment A submitted on July 5, 2017. Enbridge suggests DOC-EERA review each of the figure titles, table titles, and statements summarizing "features crossed" or similar language and revise them where necessary to reflect whether the APR or alternative actually intersects (or crosses) the resource or if, in fact, the resources are instead within an ROI.

2.3 WISCONSIN DATA

The DEIS notes in a variety of places (e.g., Chapter 5, page 18) that data related to the "Wisconsin portion of the route was not made available." This information is publicly available. Enbridge recommends utilizing the *Final Environmental Impact Statement for Enbridge Sandpiper Pipeline and Line 3 Replacement Projects* (WI DNR, 2016), which is available at: http://dnr.wi.gov/topic/EIA/Enbridge.html.

[2] *See also,* Attachment A seeking clarification on whether 17 or 15 wild rice lakes are within the ROI for the APR.

3.0 COMMENTS BY CHAPTER

3.1 EXECUTIVE SUMMARY

Given the overall length of the document, the Executive Summary serves an important purpose, as it may be the only portion of the FEIS read by some members of the public. Accordingly, Enbridge suggests that the Executive Summary be revised to provide a more comprehensive summary of the document's contents.

The format of the DEIS Executive Summary follows a question/answer format that does not follow the applicable CN or Route Permit decision criteria and highlights only select resources and impacts. For example, the DEIS reports that two of the "major issues" asked under the CN analysis are "What are the impacts of the CN Alternatives on high quality water resources?" and "Will the proposed Project damage forests and wildlife habitat in northern Minnesota more than the alternatives?" It appears as if the focus of these "major issues" considered only specific Minnesota resources, with a particular focus on northern Minnesota. While Enbridge agrees that the impacts on water resources, forests and wildlife habitats are appropriate resources evaluated in the DEIS, there is nothing in the CN decision criteria (or the Minnesota Environmental Policy Act (MEPA) more generally) that suggests these resources and specific geographies are more important than others.

To provide a more comprehensive and balanced summary of the EIS content, Enbridge suggests that the Executive Summary in the FEIS provide a comprehensive, balanced summary of the entire document by chapter. Enbridge also suggests that the summaries focus on qualitative aspects of the EIS and that quantitative analysis be included only where it is material to an objective comparative evaluation of the Project and alternative. This format is more typical of other EIS documents prepared for the Commission and allows decision makers, as well as the public, to objectively view the data and form their own opinions as to the relative merits of the content in their decision making.[3] It is also consistent with MEPA statutes and rules that provide that an EIS should be written so that it is "analytic rather than encyclopedic"[4] and uses "plain and objective language."[5] 2603-1

Given that mitigation measures are addressed as subsections in most chapters, the Executive Summary should also reflect that potential impacts of pipeline construction and operation can be mitigated by compliance with regulatory requirements, permit conditions, and Enbridge's mitigation plans. The DEIS commonly makes this conclusion when considering impacts to 2603-2

[3] *See, e.g.,* Great Northern Transmission Line Project: FEIS, Volume 1: Impact Analysis, MPUC Docket No. E015/TL-14-21, at S-1 – S-61 (October 2015).

[4] Minn. Stat. § 116D.04, subd. 2a.

[5] Minn. R. 4410.2300.

2603-2 Cont'd

specific resources in the chapters that follow; however, these conclusions are not presented in the Executive Summary.

Finally, the Executive Summary should be revised to correct factual inaccuracies and statements that are inconsistent with the full discussion of the topic contained elsewhere within the EIS. Enbridge has provided a list of suggested corrections to the Executive Summary in Attachment A submitted on July 5, 2017.

3.2 CHAPTER 2 – PROJECT DESCRIPTION

2603-3

3.2.1 STARTING POINT FOR PROJECT

Page 2-1 of the DEIS correctly states that, in the U.S., the Line 3 Replacement Project begins at the Joliette Valve. However, multiple places throughout the remainder of the DEIS, including Chapter 5 in particular, appear to include impacts and other descriptions for the Project that begin in Neche, a town in North Dakota on the Canada/U.S. border. For example, section 5.2.1.2.1 notes that the APR would cross the Pembina River Nationwide Rivers Inventory segment; however, the Pembina River is located approximately seven miles northwest of where the Project begins. As Enbridge discussed in its CN Application, the 15.3-mile segment from the Canadian border to the Joliette Valve in Pembina County, North Dakota, has already been replaced.[6] Therefore, Enbridge recommends that, when discussing potential impacts in North Dakota, the FEIS begin its analysis at the Joliette Valve or expressly note that construction is already complete upstream of the valve site.

3.2.2 POTENTIAL CONNECTED ACTIONS – TRANSMISSION LINES

2603-4

Section 2.10 of the DEIS describes the four high voltage transmission lines that are planned to be constructed to bring power to the new proposed pump stations serving the Project. Page 2-44 states that "the environmental review documents that have already been prepared for these proposed connected actions are incorporated by reference into this EIS." Incorporation by reference is allowed under Minn. R. 4410.2400. However, the rule also requires that the content of the incorporated material must be briefly described. Enbridge believes it would be prudent to, at a minimum, include a reference to the eDocket numbers of the related permitting records and to provide a brief discussion of the status of those dockets and environmental review documents. As noted on pages 44 and 45 of Schedule 2 to Mr. Paul Eberth's Direct Testimony filed January 31, 2017, three of the transmission lines are subject to MPUC approval:

- Clover-Potato Lake Transmission Line – ET2/TL-15-689;
- Bull Moose Transmission Line – ET2/TL-15-628; and
- Palisade Transmission Line – ET2/TL-15-423.

[6] CN Application at 1-8.

2603-4 Cont'd

The fourth, Cromwell Transmission Line, is less than 1,500 feet in length and will be permitted locally.

Enbridge also notes that page 2-44 of the DEIS anticipates that additional information related to these transmission lines would be included in Chapter 12, including "additional information on these connected activities and their impacts, including a map of their locations." It does not appear that such information was included in Chapter 12 of the DEIS. The FEIS should include this additional information regarding the connected transmission lines.

3.3 CHAPTER 3 – REGULATORY FRAMEWORK

3.3.1 MINNESOTA FOCUS

2603-5

Chapter 3 opens with a statement that the chapter addresses regulations for constructing and operating oil pipelines in Minnesota.[7] Accordingly, the remainder of the chapter and related tables focus on only those permits applicable in Minnesota. While this may be an appropriate scope for this chapter, DOC-EERA may want to consider revising this chapter to note the substantial additional permitting activity that would be required in other states, including North Dakota, Iowa, Illinois, and potentially South Dakota, for SA-04. Enbridge suggests that the FEIS includes at least some high-level information, either in Chapter 3 or Chapter 5, describing the additional permitting that would be required for SA-04.

3.3.2 WETLAND PERMITTING

2603-6

Throughout the DEIS, but particularly in Chapter 3, there are several references to wetland permitting that DOC-EERA may want to consider clarifying.[8]

In accordance with the Minnesota Wetland Conservation Act (WCA) Federal Approvals Exemption for Utilities (Approvals Exemption), local government unit approval of a WCA replacement plan for the Project is not required for wetland impacts resulting from the construction, maintenance, or repair of the pipeline and associated facilities, so long as (1) all affected wetlands are either jurisdictional under the Federal Clean Water Act or the applicant agrees to proceed with the federal review using a preliminary jurisdictional determination, which assumes that all affected aquatic resources, including wetlands, are jurisdictional under the Clean Water Act; (2) the applicant receives a signed individual permit or other applicable permit instrument from the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act; and (3) Approvals Exemption notification and review procedures between the COE, the Board of Water and Soil Resources (BWSR), and the Minnesota Department of Natural Resources (DNR) are followed. While WCA local government units do not approve wetland crossing methods under the Approvals Exemption, they do have

[7] DEIS at 3-1.

[8] *See, e.g.,* DEIS at Table 3.6-1 and 3-15.

2603-6
Cont'd

the opportunity to provide comments to the COE in response to the public notice on the COE permit.

The Approvals Exemption does not change the requirement to provide compensatory wetland mitigation under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act for Project impacts to waters and wetlands. Because Enbridge has asked the COE to conduct its Section 404 permit review under a preliminary jurisdictional determination, Enbridge has agreed to provide wetland mitigation for all affected aquatic resources, without formal jurisdictional determinations for each affected water or wetland.

Enbridge proposes to use COE-approved wetland mitigation banks to compensate for temporary and permanent unavoidable wetland impacts and replace the functions lost as a result of the Project. Enbridge will provide compensatory mitigation for permanent wetland losses associated with construction of pump stations and valves. Enbridge proposes to restore all temporarily affected wetlands to pre-construction elevations and contours. Enbridge will also provide compensatory mitigation for resulting permanent conversion and temporal loss of wetland function, including the conversion of forested and scrub-shrub wetlands to a herbaceous wetland in the Project's permanently maintained right-of-way and the temporary conversion of forested and scrub-shrub wetlands in the construction corridor. Enbridge will continue to work with the COE during permit review to determine the appropriate compensation ratios for Project wetland impacts.

DOC-EERA may also want to consider several clarifications that relate to wetland permitting for the APR, as currently presented in DEIS Sections 3.6.1.1, 3.6.3.7 and 3.6.4:

The COE must issue a permit to cross navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899 and an individual permit under Section 404 of the Clean Water Act to discharge dredged and fill material into waters of the United States, including wetlands, for the Project. The Project's COE permit will require the Minnesota Pollution Control Agency (MPCA) to grant (or waive) water quality certification under Section 401 of the Clean Water Act. A Section 401 water quality certification is not a permit. Its purpose is to allow MPCA to review the proposed activity to determine if it complies with applicable water quality standards and to identify any conditions needed to ensure compliance. If MPCA finds that the Project satisfies applicable water quality standards, it will issue its Section 401 water quality certification and the certification and its conditions will then become part of the COE Section 404 permit for the Project.

The COE must also grant Enbridge permission under Section 14 of the Rivers and Harbors Act of 1899, codified 33 U.S.C. Section 408 (Section 408), to allow the Project to cross federal easements at the Sandy Lake Dam and Reservoir and at the Lost River.

3.4 CHAPTER 4 – ALTERNATIVES TO THE PROPOSED PROJECT

3.4.1 PURPOSE AND NEED

2603-7

As stated in Schedule 7 of Mr. Barry Simonson's Direct Testimony filed January 31, 2017, SA-04 does not meet the Project's stated purpose and need. It cannot serve as a replacement to the existing Line 3 because it does not connect to existing Enbridge pipelines or facilities at Clearbrook, Minnesota, or Superior, Wisconsin. Enbridge has previously indicated that it would not build SA-04, and SA-04 is not consistent with the Project's purpose and need. Minnesota Rule 4410.2300 states that, "[a]n alternative may be excluded from analysis in the EIS if it would not meet the underlying need for or purpose of the project." However, given that SA-04 was included in the FSDD, Enbridge offers additional information regarding SA-04 that could be included in the FEIS to further inform the Commission's decision on the CN alternative.

3.4.2 DESCRIPTION OF SA-04

2603-8

Section 4.2.5 of the DEIS provides a description of SA-04, including a description of additional pump stations and mainline valves that would be required.[9] The DEIS makes no mention of the additional facilities that would be required at the end point of SA-04 at Joliet, Illinois (although VOC emissions for an SA-04 terminal are included in Chapter 5). These facilities are necessary because, unlike the APR, which connects to existing facilities (including storage tanks and other crude oil pipelines) at Clearbrook, Minnesota, and Superior, Wisconsin, there are no existing crude oil facilities at Joliet with which SA-04 can interconnect.

Accordingly, Schedule 7 to Mr. Barry Simonson's Direct Testimony filed January 31, 2017, states that SA-04 would require the construction of a new crude oil storage terminal at the termination of SA-04 in Joliet, Illinois.[10] This terminal would require approximately seven new storage tanks and associated electrical and mechanical facilities, such as substations and pumping units. The new terminal would result in approximately 55 acres of permanent disturbance.

Additionally, the discussion in Chapter 4 and the data provided in Appendix M do not include analyses or mention of access roads, ATWS, aboveground facilities, terminals, blasting locations, HDDs, or water appropriation for SA-04.

Including these facilities and their related impacts in Chapters 4, 5, and 12 of the FEIS may be beneficial. See Attachment C for types of resource issues and impacts that Enbridge thinks could be included in the FEIS. To the extent DOC-EERA lacks sufficient data to fully analyze these impacts, a discussion of why the data was not discussed could be included, consistent with Minn. R. 4410.2500.

[9] DEIS at 4-8.

[10] Schedule 7 to Simonson Direct Testimony at 9.

2603-9

3.5 CHAPTER 5 – EXISTING CONDITIONS, IMPACTS AND MITIGATION – CERTIFICATE OF NEED

3.5.1 DESCRIPTION OF SA-04

The Project description for SA-04 in Chapter 5 is similar to the description in section 4.2.5. Accordingly, the comments above regarding that description apply to the description in Chapter 5 as well. Including a fuller description of SA-04 would allow for more accurate estimation of the magnitude, extent, and potentially the duration of impacts associated with SA-04 on certain resources. In particular, the construction of the new terminal should be included in the SA-04 description and subsequent impacts analysis.

Construction of a new terminal at Joliet, Illinois, would require approximately 55 acres of disturbance. The end point for SA-04 is situated within the Illinois and Michigan Canal National Heritage Corridor and abuts the Midewin National Tallgrass Prairie. This area is very developed and congested. As a result, siting the 55-acre terminal within this area would be difficult and, if that could be accomplished, it could result in direct and/or indirect impacts to the Illinois and Michigan Canal National Heritage Corridor and/or the Midewin National Tallgrass Prairie. See Attachment C for additional discussion.

3.5.2 LIFE-CYCLE GREENHOUSE GAS EMISSIONS CALCULATIONS

2603-10

Section 5.2.7.3 of the DEIS contains a life-cycle greenhouse gas (GHG) impact analysis for the APR.[11] The framework for this analysis appears consistent with the direction provided in Section 4.4.9 of the FSDD.

Enbridge requests that DOC-EERA confirm the calculations and inputs used to present the annual life-cycle GHG emissions for the Line 3 Replacement (760,000 bpd WCSB Heavy) - No displacement scenario included in Table 5.2.7-11.[12] The table currently concludes that this scenario would result in 273.5 million tons of C02e per year. The DEIS text supporting Table 5.2.7-11 notes that "[p]ost-Project life-cycle GHG emissions were calculated assuming a worst case throughput of 760,000 bpd of WCSB heavy crude," presumably relying on the 632 kg CO2-e/barrel of crude oil for Heavy WCSB listed in Table 5.2.7-10.[13] Enbridge was unable to recreate this calculation using this methodology.

It appears that DOC-EERA calculated the annual life cycle-GHG emissions for the Line 3 Replacement (760,000 bpd WCSB Heavy) – No displacement scenario using 894.43 kg CO2-

[11] DEIS at 5-439 – 5-443.

[12] Enbridge also notes that the title to Table 5.2.7-11 may need to be revised to better reflect the data presented.

[13] DEIS at 5-442.

2603-10 Cont'd

e/barrel of crude oil, not 632 kg CO2-e/barrel for the WCSB crude type as is presented in Table 5.2.7-10. Using 632 kg CO2-e/barrel as is presented in 5.2.7-10 would result in 193.3 million tons of CO2-e per year, not 273.5 as is presented in 5.2.7-11. This change would then result in changes in the Incremental Annual Life-Cycle GHG Emissions and Social Cost of Carbon calculations for the Line 3 Replacement scenario in columns three and four of Table 5.2.7-11, respectively. The Incremental Annual Life-Cycle GHG Emissions calculation would change from 193 million tons CO2-e to 113 million tons CO2-e and the Social Cost of Carbon would change from 287 billion dollars to 169 billion dollars.

The GHG life-cycle discussion in Section 5.2.7 of the DEIS also would need to be updated accordingly.

3.6 CHAPTER 6 – EXISTING CONDITIONS, IMPACTS, AND MITIGATION – ROUTE PERMIT

2603-11

In this subsection, Enbridge provides additional information that DOC-EERA may want to include in the FEIS with respect to analyzing the Project and the alternatives. Enbridge provided this information for the Route Alternatives (RAs) in Schedule 7 of Mr. Simonson's Direct Testimony filed January 31, 2017. In Table 1, below, Enbridge provides variations and other considerations included in Enbridge's testimony but not found in the DEIS.

Table 1 - Line 3 Replacement Project
Draft Environmental Impact Statement
Variations and Other Considerations Not Included in the Route Alternatives Analysis

Route Alternative (RA)	Variations and Other Considerations
RA-06	• RA-06 would cross 12.9 miles of the Fond du Lac Reservation; the APR avoids all tribal reservations. Absent agreement from the Tribe, Enbridge is unable to secure land rights and/or other approvals necessary to construct and operate the pipeline across the Reservation. • RA-06 would pass directly through the City of Keewatin, Minnesota, which would require construction in close proximity to homes and businesses. • RA-06 would require construction through the active Keetac mine near Keewatin, which would present construction concerns due to consolidated and fractured rock, active blasting from mining, and coordination with active mining operations and heavy mine equipment traffic. Construction and operation of the Project would impact the operation of the mine, and Enbridge would need to reach an agreement with the mine operator. • RA-06 would cross an area of northern Minnesota that lacks existing electrical transmission lines and temporary housing for construction. • RA-06 would require the construction of approximately three new pump stations that would need new transmission lines; these pump stations also would result in additional permanent land disturbance.

Table 1 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Alternatives Analysis	
Route Alternative (RA)	Variations and Other Considerations

RA-07	• Safety is Enbridge's first and foremost consideration. Line 3 is positioned in the middle of the Enbridge Mainline System right-of-way, which is a multi-pipeline corridor containing seven crude oil pipelines west of Clearbrook and six crude oil pipelines east of Clearbrook. The spacing between pipelines typically ranges between 10-15 feet on the north side of Line 3 and between 15-20 feet on the south side of Line 3. Enbridge has a strong and mature safety program and strict work rules when conducting operations near its pipelines. To replace Line 3 in the same trench, Enbridge would need to excavate, expose, cut, handle, remove, and then replace the existing pipeline. Because this process would take place between multiple operating pipelines and within a very restricted workspace, there would be an increased risk of damaging an operating pipeline through accidental contact with equipment, overloads on the surface above the pipelines, cave-ins, and adjacent pipe movement due to the varying depths of cover, among other risks.
	  • Enbridge would need to operate heavy equipment and place spoil (soil removed from the trench) directly on top of operating pipelines during construction. This work would create the risk of overstressing the operating pipelines or posing the threat of accidental strikes from backfilling equipment.
	  • There are 12 locations west of Clearbrook where Enbridge's Line 67 and Line 65 pipelines cross back and forth under Line 3 to avoid special environmental features and minimize impacts to human settlements. Likewise, the same situation occurs east of Clearbrook where Line 67 and Line 13 cross back and forth 20 times under Line 3 to avoid similar environmental and human impacts. In total, the back and forth crossing of Line 3 by other pipelines occurs 32 times. Therefore, Enbridge would need to disturb these crossings to replace the existing pipeline in trench and then duplicate the crossings. This would increase the difficulty of constructing the new line in the same trench.
	• RA-07 would cross 55.4 miles of the Leech Lake and Fond du Lac Reservations; the APR avoids all reservations. Absent agreement from the Tribes, Enbridge is unable to secure land rights and/or other approvals necessary to construct and operate the pipeline across the Reservations. The Leech Lake Band of Ojibwe has previously filed comments with the Commission regarding constructing across its Reservation. See letters dated October 25, 2013, and January 2, 2017, in Schedule 6 of Mr. Eberth's Direct Testimony.
	• RA-07 would cross the southwestern boundary and either cross or be located in close proximity to the eastern boundary of the St. Regis Paper Company federal Superfund site in the town of Cass Lake, Minnesota. The administrative boundary of the Superfund site is irregular but lies generally south of an existing Burlington Northern Santa Fe railroad right-of-way and east of State Highway 371. The site is bounded to the south and east by a wooded parcel owned by the U.S. Forest Service and beyond

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Table 1 - Line 3 Replacement Project
Draft Environmental Impact Statement
Variations and Other Considerations Not Included in the Route Alternatives Analysis

Route Alternative (RA)	Variations and Other Considerations
RA-07	by a lake, Pike's Bay, which would constrain workspace in this area. Both the southwestern and eastern portion of the Superfund site are where the U.S. Environmental Protection Agency has previously recommended placement of an engineered cap and groundwater extraction wells. RA-07 would impact operation and monitoring activities at the Superfund site. • RA-07 would cross 13 cities, including Leonard, Wilton, Bemidji, Cass Lake, Bena, Zemple, Cohasset, Ball Club, Warba, Grand Rapids, Coleraine, Floodwood, and Big Lake, Minnesota. In contrast, the APR would only cross Mahtowa. RA-07 contains 207 High Consequence Areas (HCAs) within the 750-foot-wide route width, whereas the APR contains 49 HCAs within the 750-foot-wide route width. • Landowners along the existing Line 3 right-of-way would be impacted by the prolonged presence of construction crews and construction activity and would have limited or no access to the construction right-of-way for the duration of construction. The length of the construction process may result in multiple years of crop loss in agricultural areas, and the presence of an open trench would impact the ability to move farming equipment and livestock across the construction right-of-way. • The extended construction operation would also result in more road use and increased traffic throughout the construction process. • Although RA-07 was proposed to be constructed in an existing, previously disturbed right-of-way, the total construction workspace area would need to be increased for several reasons. Depending on the engineering specifications and environmental factors associated with the adjacent pipelines, such as depth of cover, pipe design, operating pressure, soil types, and ground conditions, the operating pipelines would need to be protected from damage through placement of equipment bridges, additional fill, and mats. This increase in workspace would increase the overall disturbance to all environmental features. • In-trench replacement also poses greater environmental impacts at wetland and waterbody crossings. It would take an extended period of time to remove existing pipe at wetland and waterbody crossings because Enbridge would need to use specialized construction techniques within a limited workspace. In addition, installing new pipeline at these same crossings with open trench methods would further increase the duration of wetland and waterbody crossings, which would increase impacts resulting from sedimentation and aquatic life disturbance, among others. • Enbridge's Environmental Protection Plan (EPP) normally restricts having an open trench to no more than three days. In-trench replacement of Line 3 would result in the trench being open for protracted periods, and in some cases significantly longer than three days, because Enbridge would need to first remove a section of the pipe and then replace it. During that time, changing weather conditions such as frost and rain could severely weaken the trench wall and contribute to trench cave-in, and rain could fill the trench with water. Both circumstances would prevent pipe installation and could result in an even longer period of open trench. Trench cave-ins would

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Table 1 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Alternatives Analysis	
Route Alternative (RA)	Variations and Other Considerations
	result in more time and activity to reconstruct the trench so that pipe may be installed, and collected rainwater/groundwater would need to be discharged out of the trench before installation could occur. • In-trench replacement would result in interruption of service for shippers on the Enbridge Mainline System, as the existing Line 3 would need to be taken out of service for approximately 16 months to allow for removal and replacement.
RA-08	• RA-08 would cross 55.9 miles of the Leech Lake and Fond du Lac Reservations, while the APR would avoid all tribal reservations. Absent agreement from the Tribes, Enbridge is unable to secure land rights and/or other approvals necessary to construct and operate the pipeline across these Reservations. The Leech Lake Band of Ojibwe has previously filed comments with the Commission regarding the regulatory feasibility of constructing a pipeline across the Reservation. See letters dated October 25, 2013, and January 2, 2017, in Schedule 6 of Mr. Eberth's Direct Testimony. • RA-08 is routed along the "GLG Alternative" that was studied in the U.S. Department of State's 2009 Final Environmental Impact Statement for Enbridge's Alberta Clipper (Line 67) Project (Alberta Clipper FEIS). In the Alberta Clipper FEIS, the U.S. Department of State concluded that there were concerns with this route alignment, stating that, "[i]t should be noted that both the CNF [Chippewa National Forest] and LLBO [Leech Lake Band of Ojibwe] have expressed serious concerns about the GLG Alternative. The CNF has indicated that the GLG Alternative would result in substantially greater impact on its Experimental Forest. In addition, LLBO opposes consideration of the GLG Alternative due to increased impacts to sensitive forestland and wetland resources." (U.S. Department of State, 2009). • RA-08 would cross 10 cities, including Bemidji, Zemple, Cohasset, Ball Club, Warba, Floodwood, La Prairie, Grand Rapids, Coleraine, and Big Lake, Minnesota. By comparison, the corresponding APR segment would only cross the city of Mahtowa. RA-08 would be within 750 feet of five additional structures, one school, one church, and one additional cemetery. RA-08 contains 176 HCAs within the 750-foot-wide route width, whereas the APR contains 35 HCAs. • RA-08 would require new easements for 964 parcels.
RA-03AM	• The APR provides a shorter, more direct route from Clearbrook to Superior. Because RA-03AM is approximately 54 miles longer than the APR, it would result in an increase in total acres disturbed and total environmental and human resources impacted during construction of the Project. • RA-03AM is a substantial deviation from the APR. RA-03AM would require new easements on 1,094 parcels. There are 397 more houses within a 750-foot-wide route width over RA-03AM. Numerous homes, garages, and commercial properties would need to be removed to construct RA-03AM. • RA-03AM would cross nine cities, including Staples, Little Falls, Milaca, Mora, and Hinckley, Minnesota. Enbridge would need to install RA-03AM between public

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Table 1 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Alternatives Analysis	
Route Alternative (RA)	Variations and Other Considerations
	venues and businesses in congested and developed areas with constricted workspaces. Thirteen additional structures, three airports, one school, and two cemeteries are located within a 750-foot-wide route width over RA-03AM. • RA-03AM would cross Grand National Golf Course, at Grand Casino Hinckley. Much of the course would need to be closed during construction and restoration. • RA-03AM would cross U.S. Highway 169 and Minnesota State Highway 23 in the town of Milaca and the Mississippi River at Little Falls, Minnesota. These crossings would need to be completed using the HDD method; however, there would not be sufficient room on either end of the drill for the pipe pull back string assembly areas. Enbridge would need 3.7 acres of additional workspace to complete the major road crossings and 4.6 acres of additional workspace for the Mississippi River crossing.

3.7 CHAPTER 7 – ROUTE SEGMENT ALTERNATIVES

2603-12

Enbridge offers additional information concerning landowners and construction that DOC-EERA may want to consider for inclusion in the FEIS. Enbridge provided this information for the RSAs in Schedule 7 of Mr. Simonson's Direct Testimony filed January 31, 2017. Enbridge provides below, in Table 2, additional information for DOC-EERA and the resource agencies' consideration on information contained in Enbridge's testimony but not found in the DEIS. Table 2 includes only those RSAs where there was a potentially meaningful variation between the DEIS and Enbridge's prior testimony.

Table 2 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Segment Alternatives Analysis	
Route Segment Alternative (RSA)	Variations and Other Considerations
RSA-15	• RSA-15 would cross 0.5 mile of a U.S. Fish and Wildlife Service (USFWS) easement, while the APR would cross none. USFWS easements often require a compatible use review because some easements prohibit pipeline construction. • RSA-15 would result in a more complicated crossing of the Fishhook River. The alternative alignment would not allow for the use of an HDD (as proposed for the APR), and would therefore require additional wetland

2603-12
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**Table 2 - Line 3 Replacement Project
Draft Environmental Impact Statement
Variations and Other Considerations Not Included in the
Route Segment Alternatives Analysis**

Route Segment Alternative (RSA)	Variations and Other Considerations
	impacts to accommodate the workspace required to complete the crossing using an alternative method. • RSA-15 would increase impacts to farmers north of State Highway 87 that utilize center pivot irrigation systems by restricting these farmers from watering significant portions of their fields during construction. • Many portions of RSA-15 are placed in the middle of highways or county roads, as well as run underneath overhead power lines and next to a large substation. These are not constructible routes. Therefore, RSA-15 would need to be moved to either side of the highway, potentially placing the pipeline across driveways or possibly across homes or other structures, increasing impacts to landowners.
RSA-White Elk Lake	• RSA-White Elk Lake would cross 3.4 more miles of Hill River State Forest land than the APR. • RSA-White Elk Lake is routed adjacent to the Blind Lake Connector All-Terrain Vehicle (ATV) Trail for 2.0 miles; the APR would cross this trail once. Constructing adjacent to the trail would remove the trail from use during the construction season and would permanently remove trees from alongside the trail, effectively widening the trail and creating visual impacts on future trail users. • RSA-White Elk Lake introduces engineering constraints to the hydraulic operations of the pipeline because the western portion of the RSA traverses in the opposite direction of flow. This introduces additional stresses upon the pipeline, which would affect pipeline design and potentially operability and maintenance. • Enbridge has proposed an alternate RSA (RSA-Blandin) that is shorter, crosses less state forest land, reduces impact to the Blind Lake ATV trail, avoids hydraulic connectivity to White Elk Lake, and does not introduce pipeline operation concerns.
RSA-21	• The crossing of the Mississippi and the Willow Rivers would present significant construction challenges on RSA-21. While the APR also crosses both of these features, the length required to travel around the crossings at the locations along RSA-21 is greater than the proposed crossings on the APR. For RSA-21, the move around distance for crews at the Mississippi and Willow River crossings would be approximately 23 miles and 10 miles in length, respectively. With move around distances of this magnitude, a one-

2603-12
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Table 2 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Segment Alternatives Analysis	
Route Segment Alternative (RSA)	Variations and Other Considerations
	to two-day delay to each crew would occur, adding an additional two to three weeks to the overall construction schedule. Increasing the amount of time required to complete waterbody crossings would not align with best management practices outlined in Enbridge's EPP. • RSA-21 would require new easements for 182 parcels. A majority of these parcels are administered by the MDNR or are within the jurisdictional boundaries of state forests; the remainder of lands crossed is administered by Aitkin or Carlton County or are owned by private landowners.
RSA-22	• RSA-22 would cross 12.9 miles of the Fond du Lac Reservation; the APR does not cross it. Absent agreement from the Tribe, Enbridge is unable to secure land rights and/or other approvals necessary to construct and operate the pipeline across the Reservation. • RSA-22 would add two new Aquatic Management Area (AMA) crossings – the Clearwater River and Little Otter Creek AMAs. • RSA-22 would require new easements for 277 parcels. Approximately 20.1 miles of the 64.7-mile long RSA are administered by the MDNR (31.1 percent) and 30.2 miles are within the jurisdictional boundaries of state forests (46.7 percent); the remainder of lands crossed is administered by Aitkin or Carlton County, private landowners, or the Fond du Lac Reservation. • The purpose of this RSA is to avoid important habitat in the Big Sandy Lake watershed as well as Grayling Marsh Wildlife Management Area (WMA), McGregor WMA, Lawler WMA, and Salo Marsh WMA; the APR avoids two of the four WMAs noted: McGregor and Salo Marsh.
RSA-27	• The Soo Line Trail easement is approximately 100 feet wide. Installing pipelines requires space for spoil, the ditch, the pipe, and a travel lane for equipment, all adjacent to each other during the construction process. The idea of installing the pipe directly underneath the trail and not impacting the land outside of the trail easement is not realistic. To accomplish this, the trail would have to be completely cleared, graded down, and leveled off, which would not be feasible in the wetland areas that line the Soo Line Trail. Should the pipeline be placed immediately adjacent to the trail, only one side of the right-of-way would be usable and the trail in many areas would be permanently impacted via grading and/or cutting down of the trail. • As the trail was a former railroad grade, existing access from public roads is very limited. The need for access would result in several new permanent

2603-12
Cont'd

Table 2 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Segment Alternatives Analysis	
Route Segment Alternative (RSA)	Variations and Other Considerations
	access roads and adjacent landowner impacts. • RSA-27 would cross the town of McGregor and require new easements for 82 parcels. Additionally, RSA-27 contains 24 HCAs within the 750-foot-wide route width whereas the APR contains none. In nearly all locations along the RSA, the construction footprint would extend beyond the 100-foot-wide easement of the Soo Line Trail, creating impacts to new landowners.
RSA-28	• RSA-28 would cross the Keetac wetland mitigation site. Through landowner communication Enbridge confirmed the presence of a wetland mitigation site, where normally the purpose is to restore wetland habitat. Typically, wetland mitigation sites have either deed restrictions or conservations easements associated with them that prevent pipeline construction. The APR would completely avoid the wetland mitigation site.
RSA-33	• RSA-33 follows the edge of a property owned by a peat-farming operation. Depending on future plans of the peat farm owners, RSA-33 could impact the peat farming operation.
RSA-35	• RSA-35 would pose a more challenging crossing of State Highway 65 because a large waterbody on the east side of the highway would not accommodate a trenchless highway crossing technique. Open-cutting the highway would also be difficult to successfully complete given the water to the east of the highway and the apparent saturated conditions on the west. Safety risks would increase during construction due to working within a congested right-of-way in close proximity to a private residence.
RSA-42	• The route along RSA-42 was studied by Enbridge early in the routing process and, though portions of the route were promising, Enbridge engineers identified multiple areas of significant concern. For example, RSA-42 would be constructed adjacent to and parallel to the Moose Horn River for approximately 1.3 miles through an area of shallow bedrock and saturated wetlands, which would create difficult construction conditions because of anticipated soft soils in the river floodway. In addition, the crossings of the Moose Horn River are at a poor angle; construction would likely result in extensive disturbance to a large portion of the banks of the river and would make it difficult to achieve depth of cover. Typically, crossing of streams and rivers is held to as close to 90 degrees as possible to avoid this type of issue. • RSA-42 would cross Interstate 35 at an angle greater than 45 degrees, which can result in greater direct impacts to the roadway and a longer, more

2603-12
Cont'd

Table 2 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Segment Alternatives Analysis	
Route Segment Alternative (RSA)	Variations and Other Considerations
	difficult crossing with higher risk of failure. Road crossings should be as close to 90 degrees as possible to minimize direct impacts to the feature being crossed. The APR allows for a preferable crossing angle at Interstate 35.
RSA-43	• RSA-43 has the same crossing of Interstate 35 as RSA-42 and, therefore, the same concerns. The crossing of Interstate 35 is at an angle greater than 45 degrees, which can result in greater direct impacts to the roadway and a longer, more difficult crossing with higher risk of failure. Road crossings should be as close to 90 degrees as possible to minimize direct impacts to the feature being crossed. The APR allows for a preferable crossing angle at Interstate 35. • There are no houses within 750 feet of the APR, but one house is directly crossed by the centerline of RSA-43.
RSA-45	• RSA-45 would require construction through an active gravel pit, presenting pipeline integrity concerns due to heavy equipment traffic and pit operation. Constructing in an active gravel pit would result in difficulties maintaining the depth of cover over the pipeline, as mandated by law, and potentially compromise the safety of the pipeline. • RSA-45 has the same crossing of Interstate 35 as RSA-42 and RSA-43, leading to the same crossing concerns. The crossing is at an angle greater than 45 degrees which can result in greater direct impacts to the roadway and a longer, more difficult crossing with higher risk of failure. Road crossings should be as close to 90 degrees as possible to minimize direct impacts to the feature being crossed. The APR allows for a preferable crossing angle at Interstate 35.
RSA-46	• Enbridge could not construct the RSA as proposed because of a radio tower with guy wires that extends through RSA-46.
RSA-51	• Enbridge has addressed the commenter's concerns that prompted this alternative. Enbridge has made route modifications to avoid the commenter's residence since the comment suggesting this RSA was submitted, and these modifications are reflected in the APR.
RSA-52	• Enbridge has addressed the commenter's concerns that prompted this alternative. Enbridge has made route modifications to avoid the commenter's residence since the comment suggesting this RSA was submitted, and these modifications are reflected in the APR.
RSA-53	• RSA-53 would only be viable in the event RA-07 or RA-08 were approved.

2603-12 Cont'd

Table 2 - Line 3 Replacement Project Draft Environmental Impact Statement Variations and Other Considerations Not Included in the Route Segment Alternatives Analysis	
Route Segment Alternative (RSA)	Variations and Other Considerations
	Absent agreement from the Leech Lake Band of Ojibwe, Enbridge is unable to secure land rights and/or other approvals necessary to construct and operate the pipeline across the Leech Lake Reservation. The Leech Lake Band of Ojibwe has previously filed comments with the Commission regarding constructing across the Reservation. See letters dated October 25, 2013, and January 2, 2017, in Schedule 6 of Mr. Eberth's Direct Testimony • RSA-53 would cross five canals/ditches, one of which is classified as a Minnesota PWI stream (the East Savanna River), which drains into the St. Louis River. • Because RSA-53 can only be accessed from RA-07 or RA-08 and would need to connect to RSA-21 or RSA-22, Enbridge notes that all the same human and environmental impacts and constructability constraints of those respective RAs and RSAs would still occur.

3.8 CHAPTER 8 – EXISTING LINE 3 ABANDONMENT AND REMOVAL

2603-13

3.8.1 PIPELINE REMOVAL IMPACTS

Mr. Barry Simonson's Direct Testimony filed on January 31, 2017, at lines 714-824, provides a detailed list of activities required to remove the pipeline. DOC-EERA may want to consider incorporating such activities into the FEIS to provide additional information on potential removal impacts.

For example, the DEIS states that soil material needed to fill the trench could be "recovered from areas directly adjacent to the pipeline right-of-way." However, Enbridge could not or would not recover fill material from areas adjacent to the pipeline right-of-way for many reasons, primarily because it would effectively reduce the depth of cover of the other active pipelines that share that right-of-way, increasing future risk of damage to those lines. Enbridge estimates that approximately 360,000 cubic yards of fill would need to be hauled in, resulting in over 55,000 one-way dump truck trips.[14] Similarly, the DEIS notes that sheet piling would be required to isolate areas of the pipeline from existing pipelines in the corridor, particularly in wetlands and wet soils; however, it may be worth noting that, due to the extensive need for

[14] Compare DEIS at 8-11 with Simonson Direct Testimony at ln. 803-806.

2603-13 Cont'd

these structures under a removal scenario, the amount of steel required for the sheet piling exceeds that used to make the replacement pipeline.[15]

In addition, where the DEIS discusses Environmental Justice impacts related to deactivation in place versus removal, it notes the potential negative effects on communities related to abandonment in place and the benefits of removal. However, it does not discuss that deactivation in place avoids the types of ground disturbing activities identified as potential impacts for construction of the replacement pipeline (despite the fact that ground related removal impacts are potentially greater); nor does the DEIS identify that removal increases the risk of strikes on adjacent lines, hence the likelihood of a release as compared to deactivation in place. Therefore, DOC-EERA may want to consider clarifying the fact that removal of pipe can have greater construction-related impacts on surrounding resources, including Environmental Justice.

3.8.2 CUMULATIVE IMPACTS OF REMOVAL PLUS CONSTRUCTION OF ALTERNATIVES OTHER THAN RA-07

2603-14

In addition to expanding the discussion regarding removal impacts, as described above, the FEIS could acknowledge the potential cumulative effects that would result if an alternative other than RA-07 were approved *and* the existing Line 3 were removed. As noted above and in Section 4.3.4.3 of the DEIS, removal of the pipeline is similar to, and results in a wider area of disturbance than, construction of a new or replacement pipeline. Thus, removal impacts would be cumulative to those for construction of the replacement pipeline, roughly doubling the overall impacts in most cases. Further discussion regarding the total area potentially disturbed by removal is included in Barry Simonson's Direct Testimony filed January 31, 2017, at lines 825-842.

3.8.3 CONTAMINATED SITES MANAGEMENT PLAN

2603-15

Section 8.3.1.1.1 of the DEIS discusses the potential for impacts from "past and present contamination outside of existing Line 3." As a threshold matter, no release, regardless of size, is acceptable to Enbridge. The primary driver for the Project is to replace the existing Line 3 pipeline with a modern pipe to improve the overall safety and reliability of the Enbridge Mainline System and to prevent issues before they occur. That said, Enbridge continues to safely operate Line 3 today, and carefully monitors the pipeline to prevent accidental releases. The term "anomaly" is not synonymous with "hole." Rather, "anomaly" is the technical term used to reference a number of pipeline characteristics, including physical objects, imperfections, and defects that must be closely evaluated, monitored, and in some cases repaired, to ensure they do not result in accidental releases from the pipeline in the future.[16] Enbridge screens for contaminated soils at integrity dig locations following its standard protocol

[15] Compare DEIS at 8-12 with Simonson Direct Testimony at ln. 765-772.

[16] *See, e.g.,* Kennett Direct at ln. 109-111.

2603-15 Cont'd

contained in the MLP Due Diligence Process for Screening Pipeline Maintenance Locations for Possible Contamination included as Attachment D.

As noted in Section 8.3.1.1.1, Enbridge will use a Contaminated Sites Management Plan to address any contaminated soils discovered during construction of the Project and deactivation of existing Line 3.[17] Attachment E provides Enbridge's Contaminated Sites Management Contractor Plan – Wisconsin – Segment 18 Project, the Wisconsin portion of the Line 3 Replacement Program currently under construction. As described in this plan, if contaminated soils are discovered, Enbridge will take the necessary steps to clean up and remediate these areas. Specific plans in Minnesota will be developed for construction and deactivation, as parts of the plans are based on site specific conditions.

3.8.4 SUBSIDENCE

2603-16

Section 8.3.1.3 of the DEIS discusses the potential for impacts from subsidence, and in several places characterizes potential impacts from subsidence as "significant."[18] As summarized on pages 53-59 of Appendix B of the DEIS, Enbridge has engaged in extensive engineering analysis to assess this risk and has developed mitigation measures to minimize risks associated with potential subsidence. Further discussion or cross reference to this material could be added to the FEIS to further describe the magnitude of potential impacts in light of the planned mitigation.

3.9 CHAPTER 9 – TRIBAL RESOURCES

2603-17

3.9.1 METHODOLOGY

Chapter 9 states that "[t]he goal of this chapter is to provide an alternative, qualitative measure of the impact of [the Project] on American Indians." Within the DEIS, a qualitative discussion is useful to provide additional context to the quantitative analysis found elsewhere in the DEIS, and Enbridge appreciates that DOC-EERA has made extensive efforts to both gather and respond to input from Indian tribes.[19] Enbridge provides these comments regarding the chapter's methodology to ensure the FEIS also reflects the applicable regulatory framework and consistently describes and integrates the resource analyses found elsewhere in the DEIS. Here, Enbridge suggests instances where the broader policy discussion in the DEIS can be paired with Project or alternative-specific analysis, as well.

[17] *See, also*, Simonson Direct at ln. 871-877.

[18] *See., e.g.,* DEIS at 8-8 and 8-9.

[19] The terminology used in this chapter varies, and Enbridge uses this phrase for consistency with federal regulations. *See* 36 C.F.R. pt. 800.

2603-18

3.9.1.1 Certificate of Need Alternatives Analysis

Enbridge notes that Chapter 9 does not include an analysis of the alternatives considered in Chapter 5, including SA-04. SA-04 traverses a different geographic region than the APR, RAs, and RSAs, and would thus potentially result in impacts on different communities and resources. Enbridge recommends that the FEIS include an analysis of the publicly-available data regarding SA-04 and the other alternatives identified in Chapter 5 and include further explanation, consistent with Minn. R. 4410.2500, as to why additional data was not gathered.

3.9.1.2 Citation of Sources

2603-19

Chapter 9 "employs a methodology that frames the discussion to reflect American Indian perceptions of the environment and the impacts associated with constructing a pipeline through an area of traditional, cultural, spiritual, and natural resource significance."[20] Enbridge appreciates DOC-EERA's efforts to gather this information and these perspectives and proposes some clarifications to make the sources and perspectives included in this chapter more transparent to a reader.

There are many statements in this chapter that are not attributed to a source. As a result, it is not clear whether those statements represent the views or perspectives of Indian tribal governments, individual tribal members, or DOC-EERA. Enbridge understands that some of the statements in this chapter may be from the interviews conducted by DOC-EERA to obtain Indian tribes' traditional knowledge. To the extent any statements are from these interviews, they should be quoted, and a reference to the interview should be added. If a statement in this chapter is not from an interview, a citation to that source should be added, as well.

In addition, DOC-EERA may wish to consider whether the written references used for this chapter are reliable, relevant, and accurately referenced. For example:

- This chapter relies heavily upon a report prepared at the direction of Honor the Earth, a party to these proceedings opposed to the Project, titled *Geographic Information System (GIS) Mapping Analysis of Potential Community Vulnerabilities: The Proposed Sandpiper Pipeline in Northern Minnesota* (the TASC Report).[21] This is problematic for multiple reasons: (1) the TASC Report purports to study the Sandpiper Pipeline Project, not

[20] DEIS at 9-1.

[21] DEIS at 9-31. This chapter frequently speaks of "American Indian" or "Native American" perspectives, cultures, or worldview. In these instances, it is unclear whether the chapter is referring to American Indians in general or specifically to the Indian tribes in Minnesota. It would be helpful for this chapter to make this distinction.

2603-19
Cont'd

this Project;[22] (2) the methodology and sources used to prepare the TASC Report have not been provided, and it appears that at least the source data provided to its preparers is not accurate and up-to-date;[23] and (3) Honor the Earth has not provided any specific information concerning the sites or locations the TASC Report states that Honor the Earth had identified, despite requests to do so.[24] The TASC Report may be helpful in identifying resource types of concern, but given these issues, it should not be relied upon for specific legal or factual statements concerning the Project. Alternatively, if the TASC Report is the only source available to support a statement, the FEIS could so indicate.

- The chapter references the Great Lakes Indian Fish & Wildlife Commission's (GLIFWC) *Treaty Hunting Regulation Summary 1837 and 1842 Ceded Territories of Michigan, Wisconsin and Minnesota* for support for the statement that "[t]raditional terrestrial game and waterfowl hunting grounds are habitat for a variety of subsistence resources. . . ."[25] However, the chapter does not acknowledge that this GLIFWC publication contains specific information concerning the scope of treaty hunting regulations in Minnesota, nor is this specific information incorporated into the chapter.[26]

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[22] *See* Attachment F (Honor the Earth Responses to Enbridge Information Requests) at No. 1(b) ("[T]his report was developed with information relating only to Sandpiper pipeline the addition of Line 3 and the use of Line 3 in this corridor should not be assumed to be the same as that of the Sandpiper pipeline.").

[23] *See* Attachment F (Honor the Earth Responses to Enbridge Information Requests) at No. 1(c).

[24] *See* Attachment F (Honor the Earth Responses to Enbridge Information Requests) at No. 1(b) ("Please be aware that any information related to tribally important sites will not be released to you due in part to the fact that at Standing Rock Reservation when sites were identified, that the next day they were bulldozed and destroyed. Should Enbridge want access to this information the tribe would require Enbridge secure a bond of $500,000.00 to $1,000,000.00 per site to insure a similar action does not occur with these important sites."). Despite Honor the Earth's response, however, MLBO did provide information in response to similar information requests. *See* Section 3.9.2.5 herein.

[25] DEIS at 9-21.

[26] *See* GLIFWC, *Treaty Hunting Regulation Summary 1837 and 1842 Ceded Territories of Michigan, Wisconsin and Minnesota* (explaining rules for hunting on private lands in 1837 and 1842 Ceded Territories).

2603-19 Cont'd

- The DEIS does not explain how Figures 9-1 and 9-2 were developed, nor does it provide references.

3.9.1.3 Analysis of Alternatives

2603-20

This chapter's analysis of alternatives is sufficient, but Enbridge suggests that, consistent with analyses of other resources studied in the DEIS, this chapter include additional information about tribal resources along each alternative. Although this chapter states that it is "not possible to determine which alternative is better when each alternative affects tribal resources, tribal identity, and tribal health,"[27] that type of statement does not accurately reflect the rest of this chapter or the DEIS. Enbridge first notes that the quoted statement is not consistent with the following summary in this chapter:

> The Applicant's preferred route and RA-03AM would not cross reservation lands; however, they would cross ceded lands on which tribes exercise their treaty rights to access tribal resources. The other route alternatives (RA-06, RA-07, and RA-08) cross reservations, as well as ceded lands. Overall, route alternatives RA-07 and RA-08 would have the greatest impact on tribal resources, as they cross two reservations and various ceded lands. RA-06 could also have some minor to major impacts on tribal resources within the Fond du Lac reservation.
>
> The two routes that would have the fewest impacts on tribal resources would be RA-03AM and the Applicant's preferred route, as neither crosses reservation land. Direct impacts from construction could occur on tribal resources; however, most of these are considered temporary to short term and minor. Indirect impacts could occur on tribal members from temporary restrictions during construction of the Applicant's preferred route on non-reservation lands used by the tribe for hunting, fishing, or farming operations.[28]

Further, the DEIS as a whole already contains analysis of the resources discussed generally in this chapter, and this chapter should be consistent with that analysis.[29]

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[27] DEIS at 9-28. This statement seems to have been drawn primarily from unsourced statements.

[28] DEIS at 9-26 – 9-27.

[29] *See* Section 3.9.3.1 herein.

2603-21

3.9.1.4 ROI and Specific Resources

This chapter states that, "[f]or the purposes of this chapter, the concept of region of interest does not apply. To use an artificial distance from the center of a pipeline route alternative is antithetical to understanding tribal concepts of resource importance and use."[30] Enbridge understands that this assertion is consistent with the chapter's qualitative focus. However, DOC-EERA may want to consider also including the identification of an ROI in the FEIS. Also, it appears that the focus of the analysis includes only Minnesota, with a particular focus on northern Minnesota. Understanding the areas that are not included in the analysis is also important context for readers. Likewise, this chapter does not appear to identify any particular locations of traditional land uses or other specific geographic areas of concern. To the extent such information was not provided to DOC-EERA through its tribal consultations and public comment, Enbridge believes that DOC-EERA may want to clarify that for readers. In so doing, DOC-EERA should apply the criteria in Minn. R. 4410.2500 for addressing certain incomplete or unavailable information in an environmental impact statement and include the information required by applicable rules.[31]

3.9.2 AVOIDANCE

2603-22

To provide a more complete picture to the Commission and the public, additional information should be added to acknowledge the ways that the Project has been designed, routed, and modified to avoid impacts to the resources generally discussed in this chapter.

3.9.2.1 Initial Routing

This chapter could acknowledge that the APR was initially routed to avoid impacts to the Leech Lake Reservation and Fond du Lac Reservation. Enbridge notes that LLBO has informed the Commission that the Commission does not have the authority to route the Project across the Leech Lake Reservation.[32] However, this chapter does not sufficiently acknowledge LLBO's statements. Additional routing efforts to avoid impacts to natural resources are described in

[30] DEIS at 9-11.

[31] Minn. R. 4410.2500. In addition, this chapter does not define the term "tribal resources," other than to state these are ". . . resources important to American tribes." DEIS at 9-12. However, this chapter's qualitative analysis does not use this phrase consistently. Further, the text refers to resources on reservation lands; at other times, it refers to resources on ceded lands but does not indicate whether these lands are private or public.

[32] *See* Letter from Levi Brown to Daniel Wolf (Jan. 1, 2017); Letter from Steven Howard to Tracy Smetana (Oct. 25, 2013) (noting that a route through the Leech Lake Reservation is a "legal impossibility").

2603-22 Cont'd

more detail in the Route Permit Application and in Mr. Paul Eberth's Direct Testimony filed January 31, 2017.[33]

3.9.2.2 RSA-05

2603-23

The FEIS should also clarify that Enbridge has requested that the Commission approve RSA-05. Enbridge proposed this route segment alternative to avoid crossing lands within the boundaries of the Eastern Wild Rice Watershed and remove any hydrologic connection to Lower Rice Lake. WEBO has stated that Lower Rice Lake is an important wild rice lake for tribal members and is located within that watershed.[34] Including this information would serve as a useful example that, where specific concerns are identified and shared with state regulators or Enbridge, further avoidance and mitigation measures can be employed.

3.9.2.3 Surveys

2603-24

This chapter already has some discussion of Project surveys. DOC-EERA may also consider providing additional context concerning the archaeological resource surveys conducted for the Project, as well as an explanation of the purpose and methodology of those surveys.[35] Specifically, since 2013, Enbridge has been engaged in archaeological and historic above ground resource inventories, as well as National Register of Historic Places (NRHP) eligibility evaluations, where construction activities related to the Project will occur. Inventory has taken place within the environmental survey corridor per Minnesota State Historic Preservation Office (SHPO) guidelines and, where appropriate, additional investigation was completed in locations adjacent to the environmental survey corridor so that Enbridge could modify workspace requirements to avoid impacts to eligible or not-evaluated archaeological sites or historic structures.

These studies have been conducted in a manner consistent with cultural resources best practices, while also recognizing pending state and federal regulatory actions. Enbridge submitted Project documentation for technical review to the SHPO. Enbridge further shared Project survey reports with the SHPO, DOC-EERA, and the COE. Enbridge incorporated the results of the SHPO review to help guide further investigations ahead of state and federal regulatory action, as well as to avoid potential impacts to historic properties during project planning and construction.[36]

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[33] *See* Pipeline Routing Permit Application at Chapter 6.0; Direct Testimony of Paul Eberth at ln. 675-738.

[34] Direct Testimony of Barry Simonson, Schedule 7 at 49 of 197.

[35] *See* DEIS at §§ 5.4 and 6.4.

[36] The APR avoids impacting the NRHP-eligible history properties identified by Enbridge in its surveys. Additional information concerning these surveys and their results was provided by Enbridge in the Direct Testimony of Dr. Christopher Bergman filed on January 31, 2017.

2603-25

3.9.2.4 U.S. Army Corps of Engineers Section 106 Tribal Consultation Process

To provide the Commission and the public with a more complete picture of the consultation that has occurred for the Project, the FEIS could acknowledge that the COE has a lengthy and ongoing tribal consultation process pursuant to its responsibilities under Section 106 of the National Historic Preservation Act.

3.9.2.5 Information Requests

2603-26

Finally, Enbridge understands that, as this chapter recognizes, Indian tribes have special knowledge and expertise in identifying and evaluating resources of traditional religious and cultural importance. Recognizing this, and as recommended by the TASC Report,[37] in December 2016, Enbridge reached out to WEBO, MLBO, and Honor the Earth for further information regarding specific locations of traditional land uses.[38] Because of the sensitivity of this information, Enbridge noted that the information may be subject to the governing Protective Orders. Honor the Earth refused to provide any specific information in response to the requests; WEBO has yet to respond. MLBO provided GIS data in response to the requests. Enbridge specifically requested agreements, whether oral or written, allowing tribal members to hunt, fish, rice, gather, or conduct other traditional practices on properties outside the boundaries of the applicable Reservation.[39] To date, Enbridge has not received any information or documents concerning this request.

3.9.3 IMPACTS

3.9.3.1 Consistency with Rest of DEIS

2603-27

Enbridge understands that this chapter provides a qualitative discussion and appreciates DOC-EERA's effort to provide this context. However, MEPA's goal is to provide "a thorough but succinct discussion of potentially significant adverse or beneficial effects."[40] To the extent that this chapter identifies and discusses impacts to specific resources, Enbridge suggests the following improvements to acknowledge that the DEIS already includes a consideration of the resources generally discussed in this chapter. Specifically, it may be useful for this chapter to

[37] TASC Report at 11-12.

[38] Similar requests to FDL are currently outstanding.

[39] *See* Attachment F (Enbridge Information Request to WEBO) at No. 6; *id.* (Enbridge Information Request to MLBO) at No. 7.

[40] Minn. R. 4410.2300(H).

include a table with cross-references to where resource-specific discussions are found elsewhere in the DEIS:[41]

2603-27 Cont'd

Resource/Issue	Chapter 5	Chapter 6
Water	5.2.1 – Water Resources	6.3.1 – Water Resources
Hunting	5.2.4 – Fish and Wildlife 5.3.2 – Recreation and Tourism	6.3.4 – Fish and Wildlife 6.5.2 – Recreation and Tourism
Fishing	5.2.4 – Fish and Wildlife 5.3.2 – Recreation and Tourism	6.3.4 – Fish and Wildlife 6.5.2 – Recreation and Tourism
Wild Rice	5.2.1.2 – Surface Water	6.3.1.2 – Surface Water
Spiritual Practices	Chapter 5 does not reference spiritual practices. To the extent additional information was provided to DOC-EERA, it should be included. If additional information was not provided, DOC-EERA should state so.	6.2.3.3.2 (with respect to RA-06, RA-07, and RA-08)
Medicinal & Traditional Plants & Food	5.2.3 – Vegetation	6.3.3 – Vegetation
Health	5.2.1.1 – Groundwater 5.2.7 – Air Quality	6.2.5 – Transportation and Public Services 6.3.1.1 – Groundwater 6.3.7 – Air Quality
Birds	5.2.4 – Fish and Wildlife 5.3.2 – Recreation and Tourism	6.3.4 – Fish and Wildlife 6.5.2 – Recreation and Tourism
Land Ownership	5.2.6 – Public Lands	6.3.6 – Public Lands
Invasive Species	5.2.3 – Vegetation	6.3.3 – Vegetation
Climate Change	5.2.7 – Air Quality	6.3.7 – Air Quality
Archaeological & Historic Resources	5.4 – Cultural Resources	6.4 – Cultural Resources

Further, for ease of reference for the public and the Commission, Enbridge suggests that this chapter include a reference to Chapter 7 of the Assessment of Accidental Releases: Technical

2603-28

[41] In addition, Chapter 7 of the DEIS has further resource-specific analyses with respect to the RSAs.

2603-28 Cont'd

Report[42] (AAR), which includes a discussion of the potential impacts of an oil release on the resources generally discussed in this chapter. For example, the following table contains cross-references between the resources generally discussed in this chapter and the resources discussed in Chapter 7 of the AAR:

Resource/Issue	AAR Section(s)
Water	7.1.2.2 – Groundwater 7.1.2.3 – Lakes 7.1.2.4 – Rivers 7.1.2.6 – Shoreline and Riparian Bank 7.1.2.7 – Wetlands
Hunting	7.1.3.7 – Semi-Aquatic Mammals
Fishing	7.1.3.3 – Fish
Wild Rice	7.1.2.7.1.3 – Marshes 7.1.3.4 – Aquatic Plants 7.1.4.2 – Land Resource Use
Medicinal & Traditional Plants & Food	7.1.3.1 – Terrestrial Vegetation
Health	7.1.2.1 – Air/Atmosphere 7.1.4.1 – Human Health
Birds	7.1.3.6 – Birds
Land Use	7.1.2.8 – Soils 7.1.4.2 – Land Resource Use

2603-29

Further, Chapter 7 of the AAR contains a specific and detailed analysis of the potential environmental impacts on a variety of resources (including many of those resources discussed in this chapter) from releases at seven representative locations. Summaries of the analysis are included in Tables 7-50 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to Mosquito Creek), 7-56 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to the Mississippi River at Ball Club), 7-62 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to Sandy River), 7-68 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to Shell River), 7-74 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to the Red River), 7-80 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to the Mississippi River at Palisade), and 7-86 (Environmental Effects Summary Table for Pipeline Crude Oil Releases to the Mississippi River at Little Falls).

2603-30

As discussed further in Section 3.3 of the AAR, these seven representative sites were selected in coordination with DOC-EERA, MDNR, MPCA, Minnesota Department of Agriculture, Cardno Entrix, the COE, Enbridge, Stantec, Dynamic Risk, and RPS to inform decision-makers about the

[42] Stantec Environmental Services, Inc., RPS/ASA, and Dynamic Risk Assessment Systems, Inc. *Assessment of Accidental Releases: Technical Report, Line 3 Replacement Project* (Jan. 13, 2017), *available at* https://mn.gov/commerce/energyfacilities/line3/.

2603-30 Cont'd

potential effects in certain environments. The cross-reference table (Table 3-3) in Section 3.3.5 of the AAR allows readers to find specific waterbody crossings of interest and determine which of the seven representative modeled locations best matches the area of interest. Accordingly, this table can be used to identify potential impacts for particular waterbodies that are of interest to tribes.

The FEIS should also identify and briefly discuss any major differences of opinion concerning the Project's significant impacts on the environment.[43] To the extent that some of the impacts discussed in this chapter are inconsistent with the discussion of impacts elsewhere in the DEIS, those discussions may qualify as major differences of opinion and could be identified as such.

3.9.3.2 Context Concerning Ceded Territories and Treaty Rights

2603-31

Section 9.2.3 contains a broad overview of "treaties and reserved rights."[44] It includes a general description of ceded lands in Minnesota and the 1837 and 1854 treaties, the 1855 treaty, and the 1863 treaty. There are selected quotations from one or more treaties that appear to be helpful in providing historic context. However, Enbridge also believes that these quotations may not be sufficiently detailed or comprehensive to understand the important differences among treaties related to potential usufructuary rights. For example, while all of these are treaties of cession, not all of the cited treaties may reserve the right to hunt, fish, or gather on the ceded lands. These differences may be significant for this chapter; to the extent the treaties do or do not provide for usufructuary rights, the tribal interests will differ.[45] For additional context, the FEIS could also include a clarification that 80% of the tracts crossed by the APR are privately-owned and that 94% of those private landowners have granted voluntary

[43] Minn. R. 4410.2300 (H).

[44] DEIS at 9-6-9-9. As WEBO has previously noted, determinations concerning the scope of treaty rights in northern Minnesota are not within the Commission's jurisdiction. *E.g.*, White Earth Band of Ojibwe's Reply to Applicant's Response in Opposition Dated September 3, 2015, *In the Matter of the Application of North Dakota Pipeline Company LLC for a Certificate of Need for the Sandpiper Pipeline Project in Minnesota*, MPUC Docket No. PL-6668/CN-13-473 (Sept. 9, 2015) at 2 ("If an adjudication of an issue regarding the 1855 Treaty is necessary, only those entities and institutions with the jurisdictional authority to make that determination may do so – namely, the parties to the Treaty and the Federal Courts.").

[45] Enbridge also notes that the DEIS states that "[t]reaty-reserved hunting, fishing, and gathering rights on off-reservation lands are akin to easements running with the burdened lands, and include easements to access hunting, fishing, and gathering sites." DEIS at 9-6. Enbridge disagrees with this analogy. *See* GLIFWC, *Treaty Hunting Regulation Summary* quoted in footnote 46, *infra*.

2603-31 Cont'd

easements for the Project.[46] Similarly, this chapter could provide additional context concerning the scope of the Project in comparison to the cited treaty areas. For example, according to the 1854 Treaty Authority, the 1854 Treaty area encompasses approximately 5.5 million acres; the permanent right-of-way within the APR (including access roads) will consist of less than 700 of those acres.[47]

3.9.4 MITIGATION

2603-32

The mitigation discussion in Chapter 9 should be updated for consistency internally and with the rest of the DEIS. For example, the statement that "any route, route segment, or system alternative would have a long-term detrimental effect on tribal members and tribal resources"[48] is not consistent with the statement that "[d]irect impacts from construction could occur on tribal resources; however, most of these are considered temporary to short term and minor. Indirect impacts could occur on tribal members from temporary restrictions during construction. . . ."[49] Again, to the extent that this may qualify as a major difference of opinion between Indian tribes or tribal members and DOC-EERA, or is derived from comments that reflect such a difference of opinion, it could be identified as such.

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[46] *See* GLIFWC, *Treaty Hunting Regulation Summary 1837 and 1842 Ceded Territories of Michigan, Wisconsin and Minnesota* (explaining rules for hunting on private lands in 1837 and 1842 Ceded Territories):

> You may hunt only on private lands that are enrolled in Minnesota's tree growth tax program or in Wisconsin's forest cropland/managed forest tax law program. Note:
>
> 1. These are the only private lands where you may hunt under your Band's treaty regulations. Landowner consent regarding other private lands does not change this.
>
> 2. You should avoid trespassing on private lands even if you are attempting to retrieve animals that you first shot on public land or on other private land where you may hunt.
>
> 3. State authorities might prosecute you in state court if you are trespassing or if you are hunting on any other private land without a state license. State prosecution will not prevent prosecution in tribal court under your Band's regulations.

See also Direct Testimony of John McKay at ln. 113, filed on January 31, 2017.

[47] *E.g.*, 1854 Treaty Authority, *The Right to Hunt and Fish Therein: Understanding Chippewa Treaty Rights in Minnesota's 1854 Ceded Territory* (2017) at 5, *available at* http://www.1854treatyauthority.org/images/The-Right-to-Hunt-and-Fish-Therein.final.pdf.

[48] DEIS at 9-28.

[49] DEIS at 9-26 – 9-27.

2603-33

Further, the assertion that impacts "are difficult, if not impossible, to mitigate,"[50] is not consistent with this chapter's references. For example, Section 9.5.4 states that "[m]itigation of impacts due to construction and operation are detailed in Chapter 6 and represent the measures Enbridge proposes."[51] Similarly, as with its discussion of impacts, this chapter should more comprehensively acknowledge the mitigation measures identified elsewhere in the DEIS. Alternatively, DOC-EERA should indicate how it envisions identifying appropriate mitigation prior to or during construction.

2603-34

In addition, to provide additional context, it may be helpful to provide the Commission and the public with examples of other infrastructure projects in northern Minnesota. For example, this chapter includes a reference to the Bemidji-Grand Rapids 230 kV Transmission Line Project's FEIS, but does not include any context around that project or the impacts and mitigation measures identified in its FEIS related to the resources discussed in this chapter. Such context might be useful for the public and the Commission.

2603-35

Similarly, this chapter does not acknowledge that the Enbridge Mainline System currently operates in the area of RA-07 and RA-08, with the most recent pipeline in this corridor being constructed in 2009 following a federal environmental impact statement. The Project will cross many of these same environments and resources, and much of that area is previously disturbed. To the extent DOC-EERA was provided with specific information concerning impacts of that ongoing operation on the resources generally discussed in this chapter, that information should be identified; if no such information was provided, that should also be noted. Further, Enbridge notes that it successfully installed the approximately 600-mile Flanagan South Pipeline between 2012 and 2014, which in part crossed a culturally-rich area of Oklahoma; this project benefited from coordination with over 20 Indian tribes, three of which were local to the pipeline corridor, that would have potentially been affected by that project.

3.10 CHAPTER 10 – ACCIDENTAL CRUDE OIL RELEASES

3.10.1 INTRODUCTORY COMMENTS

Chapter 10 of the DEIS contains a large amount of detailed information on crude oil releases and a comparative analysis of the likelihood of releases among alternatives to the project (e.g., rail or truck transport), as well as the APR and alternative routes. It also provides a comparative analysis of environmentally sensitive areas in proximity to the APR and alternatives, as well as downstream on watercourses along the APR and alternate routes. Two supplementary reports – the AAR and the Line 3 Replacement Project: Assessment of Potential Pinhole Release, Stantec and Barr Engineering 2017 (Pinhole Report) – were also incorporated in the DEIS by reference.

[50] DEIS at 9-27.

[51] DEIS at 9-26.

Enbridge thinks that all of the FSDD's required elements of the assessment of accidental crude oil releases have been addressed by a combination of the DEIS, the AAR, and the Pinhole Report. The AAR for spills addresses:

- the approach used to assess the potential risk (considering both likelihood and consequence) of a large volume release of crude oil, including the selection of seven representative sites along the APR and RAs for detailed analyses of release likelihood and environmental effects;
- an analysis of potential hazards to pipeline integrity;
- site-specific estimates of the likelihood of a large volume release of oil at each of the seven representative sites;
- descriptions of the fate (i.e., behavior) of crude oil when released in the environment;
- predictive modeling of the trajectory (i.e., movement) and fate of a large volume release of crude oil at each representative site for a range of oil types, and over three different seasons, to provide an anticipated range of movement and behavior;
- an analysis (quantification) of the potential for a large volume release of crude oil at each representative site to affect HCAs, environmentally sensitive areas, and other areas of interest;
- a discussion on the potential environmental effects of crude oil exposure for a range of ecological and human receptors, as well as an analysis of the potential environmental effects at each of the seven representative locations; and
- a discussion on the potential for ecological and human receptors to recover from exposure to crude oil.

The Pinhole Report describes the potential for a pinhole release to occur, the characteristics of the release, and the potential consequences that may occur. Specifically, the report provides:

- an assessment of the potential characteristics of pinhole releases, including anticipated frequency, potential causes, size, rate of release, maximum release volume, and likely detection methods;
- the fate and transport of released hydrocarbons in the environment from a pinhole leak (e.g., factors affecting migration, movement in the unsaturated zone, movement in the saturated zone, and fate and transport of dissolved hydrocarbons in groundwater);
- an assessment of susceptibility of groundwater based upon the typical hydrogeologic regimes that will be traversed by the Project; and
- the ability of groundwater to recover from the effects of release, including an understanding of how emergency response, remediation, cleanup, natural processes, and restoration can promote recovery.

Enbridge offers the following additional information for DOC-EERA's consideration.

2603-36

3.10.2 THE RELATIONSHIP BETWEEN THE DEIS, THE AAR, AND PINHOLE REPORT

The body of the DEIS often summarizes and/or paraphrases information, data, or text found in the AAR document, or at least appears to do so, without attribution to a specific location within the source document. For example, the DEIS states that "[a]gency staff and the consultants selected seven sites for in-depth analysis based on (1) their distribution across the Applicant's preferred route and route alternatives, and (2) how well they represented the diversity of characteristics that were identified as significant during public scoping."[52] While this sentence is true, it does not provide readers with a complete understanding of the substantial, collaborative efforts undertaken to identify, screen, and finally select the seven representative sites from many possible locations. The AAR provides substantial details, through text, graphics, and tables, about the approach to the assessment, the types of issues that DOC-EERA and others wanted addressed via the modeling, and the framework used to screen potential modeling sites. Enbridge thus recommends incorporating citations to the appropriate and specific portion(s) of the AAR and the Pinhole Report, or by paraphrasing or summarizing portions of the AAR or Pinhole Report in Chapter 10 where they are presently used as the source document, in order to provide a more complete understanding of the work that was done, the results, and/or the conclusions. Enbridge also recommends noting that the site selection criteria used in the AAR (Chapter 3) involved both engineering and environmental and socio-economic considerations, so that the representative sites selected for study would:

- be located so that the modeled release could enter a watercourse, either directly or by traveling over land to the water;
- be located where shut-off valves would not overly restrict the volume of crude oil that could be released;
- include sites along the APR and the alternatives;
- be representative of the geographic and environmental conditions and land uses along the APR to facilitate evaluation of the range of potential human and environmental impacts;
- include a range of watercourse types (e.g., size, flow, energy level) and waterbodies, including wetlands;
- support evaluation of potential effects to environmentally sensitive resources (e.g., spawning grounds for fish, wild rice lakes, or other sensitive habitats);
- represent areas of expressed concern by Native American tribes, the general public, and/or state and federal agencies; and
- support evaluation of potential effects to traditional use, other human use, or infrastructure (e.g., potable water intakes or treatment facilities).

[52] DEIS at 10-9.

2603-36 Cont'd

Furthermore, it should be noted that the site selection process:

- purposely focused on the possibility of large volume releases of crude oil into water, as opposed to releases on land, as a conservative choice with respect to the trajectory, fate, and potential effects of released oil. Specifically, crude oil releases on land often result in only small areas of land (i.e., a few acres) becoming affected by released oil, whereas releases to water can travel longer distances and potentially affect a broader range of environmental and human receptors;
- looked at every water crossing along the APR or the RAs (nearly 1,000 locations) as potential study locations;
- considered input and comments from regulatory agencies and public comments;
- initially identified a total of 27 candidate sites for modeling;
- then involved further analysis of the candidate sites based on their attributes, including location, geomorphology, ecological land classification, location of sensitive resources or habitats, watercourse characteristics, and potential human uses; and
- resulted in a well-reasoned, well-studied conclusion that the seven representative locations for detailed modeling were appropriate to capture the range of geographic and environmental conditions that may be present along the APR and alternatives throughout the State of Minnesota.

3.10.3 THE POTENTIAL TRAJECTORY, FATE, AND EFFECTS OF AN ACCIDENTAL RELEASE OF OIL

No two releases of oil are the same with respect to crude oil trajectories, fates, and environmental effects, which is why modeling is an important and valuable tool for guiding regulatory and public consideration. With respect to the modeling that was done pursuant to the FSDD, there are two points that could be clarified in the body of the FEIS to promote a common understanding of the work that was done:

> (1) modeling the variety of scenarios that were conducted in the AAR (multiple release locations, volumes of oil, oil types, and seasonal conditions), as well as additional analyses done for the DEIS, provides insight as to the range of potential trajectory, behavior, ultimate fate, and potential environmental effects that could follow a release; and
>
> (2) the fates processes must be correctly defined and discussed throughout the FEIS to foster a sound understanding of these matters by all parties.

The AAR provides information that could be used to make the clarifications.

First, Section 3.0 of the AAR, entitled *Framing the Site Selection Process and Modeling*, provides information on why modeling was done, and the questions that modeling was intended to address. It also describes why certain modeling tools were chosen; how representative modeling sites were selected for modeling (e.g., consideration of many potential locations for

2603-37

2603-37 Cont'd

modeling and use of a set of criteria to select the final representative sites); and how the findings from each of these modeling sites can be applied to other similar locales (based on consideration of topography, land use, and watercourse types). The section also discusses the many parties (including agencies and the public) and interests that were involved in making the decisions that were then carried forward in the modeling and effects assessment.

2603-38

Second, Section 5.0 of the AAR, titled *Modeling of Oil Releases*, provides an overview of the crude oil release modeling done pursuant to the FSDD. Section 5.1 describes the modeling tools and how they were used. Additional information on releases, specifically, the processes at work in the event of a release, is set forth in Sections 5.1.2.1 and 5.1.2.2. These processes are scientifically well understood and provide a common basis for considering the trajectory, fate, and potential effects of an accidental release in light of the variability that may be present in any given release scenario.

3.10.4 SPECIFIC POINTS OF CLARIFICATION

2603-39

3.10.4.1 Trajectory and Fate Processes

In the event that crude oil is released into the environment, it is physically and chemically altered over time through various processes, including, but not limited to dissolution, emulsification, evaporation and volatilization, photo-degradation, microbial-degradation, and other fates processes, which include "degradation and weathering." These processes are described beginning at page 5.139 of the AAR.

In addition, DOC-EERA may want to consider clarifying the trajectory and fate processes discussed in the DEIS consistent with the following:[53]

- ***Dispersion*** - Dispersion is the process by which turbulence ("sub-scale" currents that mix oil in three dimensions) spreads oil components on the surface and within the water column. Entrainment is the process by which waves break over surface oil and carry oil droplets within the water column. Adhesion, which the text describes as a method of dispersion, is actually the opposite of dispersion. Dispersion spreads things out further, whereas adhesion will keep things in an area as they bind to surfaces and/or drop out of the water column.

- ***Dissolution*** - Dissolution occurs not only when water-soluble components dissolve from a surface slick, but also as a result of entrainment.

- ***Emulsification*** - The description of emulsification accurately says that "[e]mulsions are not prone to other types of weathering. . . ." It would be helpful to add that at the time

[53] AAR, at 5.140.

2603-39 Cont'd

of the mousse formation, they have already weathered to a point that they are in their more persistent state.

- ***Photodegradation*** - The description of photodegradation indicates that the process only affects lighter hydrocarbons and lighter crude oils. However, all hydrocarbons in floating oil are degraded by photodegradation. During this process, they become more soluble.

These changes should be incorporated in the FEIS where these fate process terms are used or described (e.g., DEIS at 10-37, n. 22-23).

3.10.4.2 The Range of Crude Oil Proposed to be Transported in the Pipeline

2603-40

The physical and chemical properties of the crude oil are the primary influences in determining how a release spreads, how long it lasts in the environment, and what the potential effects may be.

The FEIS should accurately identify that Project will carry many different blends of crude oil, not simply "light crude oil" and "heavy crude oil." While those classifications are helpful in understanding the bookends of what may travel through the pipeline, only identifying those classifications may lead to misunderstanding of the fate processes discussed in Section 10 and more fully discussed in the AAR. The FEIS should also accurately and fully convey, at least at a general level, that not only do the physiochemical properties of light crude oil and heavy crude oil differ, but also that the properties are different among different light crude oils and different heavy crude oils.

Moreover, because the Project will carry diluted bitumen, or dilbit, it is also important to understand what dilbit is and what it is not. In the second paragraph of section 10.3.1.1.2 on page 10-26, the DEIS explains that, after diluent is added to bitumen, the resulting dilbit is "similar in appearance to other heavy crude oils." However, it should be noted in the FEIS that the similarities are not just in appearance, but in physicochemical properties (e.g., viscosity, surface tension) as well.

3.10.4.3 The Potential for Sinking Oil

2603-41

Section 10.3.1.1.2 of the DEIS contains a discussion of how heavy crude oils and dilbit may behave in water. It states, with respect to dilbit, that "[o]nce the lighter components of dilbit volatilize, the remaining heavy fraction may sink, making cleanup difficult. This is particularly true in turbulent water conditions." Then, the release of dilbit in Marshall, Michigan, is used as an example in the DEIS. Most studies have demonstrated that dilbit does not reach a point where it sinks in water on its own. Instead, what is required is interaction with total suspended

2603-41 Cont'd

solids (TSS) in the water column to make the droplets of dilbit more dense than water. For example, the National Academies of Sciences, Engineering and Medicine (NAS 2016) report on spills of diluted bitumen from pipelines notes that no sinking or submergence of diluted bitumen was observed following a release to Burrard Inlet, in Burnaby, British Columbia in 2007, or following a release at Mayflower, Arkansas, in 2013.[54] Work done by Elliot Taylor of Polaris Applied Sciences, Randy Belore of SL Ross, Bruce Hollebone of Environment Canada, and several others demonstrates this as well. Further, the DEIS itself recognizes that neither crude oil nor dilbit, on its own, simply sinks. At Section 10.3.2.2, the DEIS says that evidence from previous releases "has shown that dilbit floats on water until its density is altered by weathering or the entrainment of sediment." Accordingly, this section should not simply convey in such a broad fashion that heavy crude oil simply sinks on its own in water. In addition, it is important to note that all oils (e.g. light, medium, heavy, dilbit) have the potential to sink out of the water column following interaction with TSS.

Elsewhere, in Section 10.3.2.2, the DEIS describes that "[a]s the time after a release increases, multiple processes act to entrain oil and its constituents into the water column. . . ." This statement is not entirely accurate. Just as oil does not simply sink on its own, so does it not simply entrain into the water column over the passage of time. Rather, entrainment is a function of turbulent processes, such as waves, rapids, riffles, and waterfalls. This statement would be more accurate if it read as follows: "As the time after a release increases, so does the opportunity for multiple turbulent processes (e.g., wind-induced waves, rapids, riffles, and waterfalls) to act to entrain oil and its constituents into the water column. . . ." By making that more accurate statement in the FEIS, the reader will also have a more accurate and complete framework for understanding oil's fate in water.

3.10.4.4 Heavy Crude Oil Release on Land

Section 10.3.1.1.2 of the DEIS, on page 10-27, describes the fate of heavy crude oil accidentally released on land. DOC-EERA may want to consider including the following clarifications in the FEIS (clarifications in underlines):

2603-42

> In the event of a land surface release, the dispersion of dilbit through soils would be slower than for other crude oils, including heavy crude oils with similar viscosities; light and medium crude

[54] *Spills of Diluted Bitumen from Pipelines: A Comparative Study of Environmental Fate, Effects, and Response*. Committee on the Effects of Diluted Bitumen on the Environment; Board on Chemical Sciences and Technology; Division on Earth and Life Studies; National Academies of Sciences, Engineering, and Medicine. at 145, National Academies of Sciences, Engineering and Medicine (NAS). 2016.

2603-42 Cont'd

oils would penetrate soils the fastest (Tsaprailis 2014). Immediately upon release, dilbit behaves much like heavy crude oil; however, weathering, temperature, and dispersion alter its properties, causing it to behave more like the original bitumen. In fact, all oils behave like a heavier version of themselves as they weather. As the diluent components volatilize, the heavier components of dilbit remain and the viscosity, which is a measure of a fluid's resistance to shear forces, increases. Although viscosity is not a measure of an oil's stickiness, higher viscosity does result in the potential for thicker oil on the water surface and upon adhesion to other surfaces (e.g., shorelines, land cover, etc.), and increasing viscosity results in slower spreading and greater adherence to soil particles. Heavy crude oils may lose up to 10 percent of their initial volume following a spill due to evaporation in the first few days (National Research Council 2003). In contrast, light crude oils may lose up to 50-90 percent of their initial volume in the first few days due to evaporation. Dilbit has been shown to lose between 11.7 and 15.9 percent of its mass within the first 6 hours of a release (Environment Canada 2013).

3.10.4.5 Primary Drivers of Trajectory of Oil on Land

2603-43

At times, the DEIS suggests that wind or water erosion (section 10.3.1.3.2) or soil type, oil viscosity, and depth to the water table (section 10.3.2.1) may be meaningful for oil trajectory on land. While those suggestions are correct, Enbridge thinks that DOC-EERA may want to consider clearly indicating that, on land, slope and land cover type are the major drivers of oil trajectory.[55]

3.10.5 DESCRIPTION OF MODELING WORK AND CONCLUSIONS

2603-44

The FSDD required that a substantial amount and range modeling be performed in order to inform the DEIS. DOC-EERA and other agencies played a substantial part in providing the framework for leading professionals to perform sophisticated analyses, ostensibly for the purpose of bolstering the utility of the EIS process. DOC-EERA may want to consider more thoroughly referencing the release modeling work presented in the AAR.

[55] *See* Ch. 5 AAR.

Sections 5.1.1 and 5.1.2 of the AAR explain what the OILMAPLand and SIMAP models are, how they work, and what they do and do not do. For example, the definition of SIMAP in the DEIS suggests that the only difference between it and OILMAPLand is the addition of the third dimension. In fact, there are a number of differences, including that SIMAP includes a large number of additional fate processes and employs a pseudocomponent approach rather than a whole oil approach.

Further, Enbridge offers the following language that DOC-EERA may want to consider including in the final paragraph of section 10.3.3.1:

> Several release scenarios were modeled for each of the seven sites. Unmitigated large volume releases of crude oil, characterized by no emergency response, were simulated to provide a conservative, "worst-case" scenario at the hypothetical release locations (Stantec et al. 2017). Three different crude oil types were modeled: a light Bakken crude oil and heavier Cold Lake Blend, and a heavier Cold Lake Winter Blend (during wintertime conditions). The models included three river flow conditions (spring high flow, summer and fall average/moderate flow, and winter low flow) at the seven sites at one-minute time steps over the 24-hour model duration. Outputs from the modeling were provided for different time intervals (6, 12, 18, and 24 hours). The spill volumes were estimated based on a 13 minute shutdown response (10 minutes for response and three minutes of pumping out during valve closure) and gravitational draindown based on the distance between shut off valves, as well as topography.

It may also be helpful if the body of the FEIS more fully described the purpose of the study work that was done and present additional modeling results. The purpose of the study was to bound extent (i.e., multiple oil types, representative locations, seasonal variations, etc.). By understanding the purpose of the study, the reader may better understand that, while maximum distance traveled under high flow is relevant, results in other flow conditions and environmental conditions are relevant as well.

Enbridge also recommends that DOC-EERA consider the following clarifications to language contained in Section 10.3.3.2:

2603-45 Cont'd

- Dissolved hydrocarbon concentrations tended to be greater in more turbulent, high-energy systems due to ~~dispersion~~ entrainment and dissolution. (Explanation: entrainment and dissolution are the causal fate processes, not dispersion.)

- During low-flow conditions (winter), downstream extents were primarily dependent on river flow ~~and oil density~~. (Explanation: Oil density did not define the extent for low-flow conditions, the reduced flow did. The further downstream transport of the heavier Cold Lake Winter Blend occurs because it took longer to rise to the surface.)

In addition, DOC-EERA may want to consider revising Table 10.3-1 to present information for average flow or low flow scenarios. Discussing the flow rate may also be helpful in understanding the context for the maximum distance traveled outputs. Summaries of the OILMAPLand and SIMAP modeling results that were called for in the FSDD are presented at pages 6.243-.245 and 6.348-.349 of the AAR. In addition, DOC-EERA may want to consider clarifying the fact that the 24-hour unmitigated release scenario is conservative and unlikely to occur in light of Enbridge's emergency response preparedness.

3.10.6 POTENTIAL IMPACTS ASSOCIATED WITH AN ACCIDENTAL RELEASE

2603-46

The FSDD requires that the potential impacts associated with an accidental release be assessed. The AAR addresses these issues in detail (Chapter 7, "Assessment of Environmental Effects of Oil Releases"). The DEIS includes a general description of the potential environmental effects of exposure to crude oil on the biophysical environment (pages 10-43 through 10-48), as well as the human environment (pages 10-41 to 10-42 for socio-economic effects, including public health; and pages 10-48 to 10-49).

3.10.6.1 Potential Impacts

In the AAR, effects of exposure to oil on the biophysical and human environment were assessed in several ways. First, the observed and expected effects of crude oil on certain ecological and human receptors, including how crude oil behaves (i.e., its fate) in terrestrial, atmospheric, and freshwater environments and associated biological resources were discussed in detail (Section 7.1). Summaries of potential effects were also provided in sections 9.5.1 through 9.5.5.

This discussion of potential environmental effects in Section 7.1 of the AAR was followed by a detailed assessment of expected environmental effects for each of seven modeling sites that are representative of most of the predominant ecological units, major hydrological features, watercourse widths, and watercourse features along the preferred and alternative routes in Minnesota (Sections 7.2 to 7.8). A summary table of potential environmental effects for each of the seven representative sites was provided, including a comparison of the effects of

2603-46 Cont'd

exposure to crude oil versus exposure to diluted bitumen. Furthermore, a summary of potential environmental effects, based on the modeling for the seven representative sites, was provided in Section 7.9.

Readers of the FEIS may benefit if the body of the FEIS were to provide a summary of major conclusions of the environmental effects assessment in the AAR, or the body of the FEIS could include references to the above-noted AAR sections.

2603-47

3.10.6.2 Recovery of Biophysical and Human Receptors

Section 8.0 of the AAR addressed how the recovery of abiotic and biotic ecosystem components occurs after a crude oil release using case studies and a literature review. Timeframes for recovery by different receptors are discussed, as are factors that can affect these timeframes (i.e., environmental conditions within the affected area, the types of environmental media and receptors affected, the severity and areal extent of the release, and the speed and efficacy of emergency response and cleanup). Enbridge recommends that the body of the FEIS provide a summary of the major findings on recovery, as described in Section 8.0 of the AAR, or that the FEIS reference this section of the AAR.

3.11 CHAPTER 11 – ENVIRONMENTAL JUSTICE

2603-48

3.11.1 OVERALL

Because of the similarities between this chapter and Chapter 9, many of the comments Enbridge made with respect to Chapter 9 are also relevant here. Additional information specific to this chapter is provided below for DOC-EERA's consideration in preparing the FEIS.

3.11.2 METHODOLOGY CLARIFICATIONS

The ROI for the Environmental Justice analysis of the APR and each route alternative includes the census tracts intersected by each route, and these tracts were then compared to the remaining census tracts in each county crossed by a route. To the extent this is not an accurate characterization of the ROI and DOC-EERA's analysis, Enbridge suggests that DOC-EERA provide additional clarification concerning the ROI in the FEIS.

Second, the DEIS states:

> While Minnesota PCA generally uses a metric of 40 percent of population below 185 percent of poverty to establish EJ status, this analysis uses a difference of 10 percentage points or more to establish the "meaningfully greater" measure consistent with the comparison of minority populations.

2603-48 Cont'd

DOC-EERA may want to provide an explanation of why it chose to use a different metric than that generally used by MPCA, why that choice was justified, and to what extent the choice of this different metric renders this analysis incomparable to Environmental Justice analyses performed for other projects in Minnesota.

2603-49

In addition, DOC-EERA may want to consider adding the following table to provide a reader with concise information on the conclusions of this chapter as it relates to the APR and alternatives:[56]

System Alternative/Route	Census Tracts Crossed with a Meaningfully Higher Minority Population	Census Tracts Crossed with a Meaningfully Greater Proportion of the Population with Income Less than 185 Percent of the Poverty Level	Acres of Reservation Lands Crossed
APR	1	0	0
RA-03AM	1	[*DEIS does not specify. Enbridge suggests adding this information.*]	0
RA-06	2	[*DEIS does not specify. Enbridge suggests adding this information.*]	78.7 (Fond du Lac)
RA-07	4	1	258.8 (Leech Lake) 78.7 (Fond du Lac)
RA-08	4	1	260.8 (Leech Lake) 78.1 (Fond du Lac)
SA-04	TBD	TBD	TBD

2603-50

Enbridge further suggests that this chapter be revised to add additional detail where available. For instance, this chapter states that the APR and "RA-03AM do not cross any reservation lands, but would cross *within miles of* the White Earth Reservation and Fond du Lac Reservation."[57] This data is available (*e.g.*, the APR travels within 3.1 miles of the boundaries of the White Earth Reservation and 1.9 miles of the Fond du Lac Reservation) and should be specifically included instead of the general statement.

2603-51

Moreover, this chapter should more consistently cite sources for its statements, and those sources should be relevant. As Enbridge noted with respect to Chapter 9, if a statement is from an interview conducted by DOC-EERA, that statement should be set off with quotations, and a

[56] To the extent similar information is available for the rail and truck alternatives identified in Chapter 5, Enbridge suggests including this information and/or providing an explanation consistent with Minn. R. 4410.2500.

[57] DEIS at 11-7 (emphasis added).

2603-51 Cont'd

citation to the transcript should be provided. If a statement is from a source listed in Section 11.6, that source should be indicated.

2603-52

Further, as noted above in Section 3.9.2.1, above, some of the sources used for this chapter may not be relevant. For example, DOC-EERA cites *Human & Sex Trafficking: Trends and Responses Across Indian County* for the statement that "[i]ncreases in sex trafficking, particularly among Native populations, are well documented."[58] DOC-EERA should be aware that this publication does not include any analysis specific to the Project, pipeline construction, or energy infrastructure. It likewise contains no analysis that would lead any reasonable decision-maker to conclude that the highly-skilled workforce that will construct the Project would engage in these types of activities. In addition, as Enbridge noted with respect to Chapter 9, the TASC Report is not a reliable resource for assessing what specific resources could be impacted by the Project.[59]

3.11.3 DISCUSSION OF PROJECT IMPACTS

2603-53

Enbridge suggests that the economic benefits of the Project also be noted in this chapter.[60]

Also, as with Chapter 9, DOC-EERA may want to consider making this chapter's discussion of impacts (both from construction and operation) and mitigation consistent with and refer to the resource-specific discussions in other parts of the DEIS.[61] For example, to the extent this chapter mentions resources or issues not considered in the rest of the DEIS, DOC-EERA may want to consider the following: (1) include additional analysis in the FEIS; or (2) provide an explanation pursuant to Minn. R. 4410.2500. For example, this chapter specifically mentions walleye and trout fisheries, deer, elk, ducks, and geese.[62] To the extent construction and operations impacts on these resources are discussed elsewhere in the DEIS, those discussions could be referenced or incorporated here. If those resources are not discussed elsewhere, DOC-EERA could include additional analysis in Chapter 11 or explain the absence of such analysis.

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[58] DEIS at 11-10.

[59] *See* Section 3.9.1.2 herein.

[60] *See* Dr. Lichty Direct Testimony, filed January 31, 2017.

[61] *See* Section 3.9.3.1 herein.

[62] DEIS at 11-9.

2603-54

3.12 CHAPTER 12 – CUMULATIVE POTENTIAL EFFECTS

3.12.1 PAST, PRESENT AND REASONABLE FORESEEABLE ACTIONS

3.12.1.1 Transmission Lines

As noted in Section 3.2.2 above, the FEIS should include additional information regarding the four high voltage transmission lines that will be constructed to bring power to the new pump stations. Page 2-44 of the DEIS anticipates that this information would include "additional information on these connected activities and their impacts, including a map of their locations."

2603-55

3.12.1.2 SA-04 - Projects in Other States

Chapter 12 of the DEIS discusses potential impacts from three reasonably foreseeable projects located within several miles of SA-04, including the Line 67 Expansion Project, Valley Expansion Pipeline Project and Fargo-Moorhead Area Flood Risk Management Project. Each of these projects is within or closely borders Minnesota. Although SA-04 is 795 miles in length and crosses two additional states, reasonably foreseeable projects in Iowa or Illinois were not included. To the extent that no additional projects are identified in the FEIS, DOC-EERA may want to include a statement in the FEIS as to why such information was not included.

3.12.1.3 Deactivation

2603-56

Chapter 8 of the DEIS discusses deactivation of Enbridge's existing Line 3, including the possibility of permanently deactivating the pipeline in place, removing the line, or removing the line and replacing it in the same trench. Enbridge's proposal is to deactivate the pipeline in place. As described more fully in the Applications and Schedule 6 of Mr. Barry Simonson's Direct Testimony filed January 2017, deactivation in place results in minimal ground disturbing activities, including purging, cleaning, and segmenting the line, potentially removing small sections of the line in specific locations. Because these activities are reasonably foreseeable projects in the vicinity of the proposal, DOC-EERA may want to consider referencing the Chapter 8 discussion in Chapter 12.

4.0 CONCLUSION

Enbridge appreciates the extensive time and effort put into the DEIS by agency staff. The Line 3 Replacement Project is an important project for ensuring the future safety, adequacy and reliability of Minnesota's energy infrastructure. Enbridge respectfully requests that these comments be considered for inclusion in the FEIS so that the Commission has the accurate and complete information available as it considers Enbridge's Certificate of Need and Route Permit Applications.

Line 3 Replacement Project
Draft Environmental Impact Statement
Summary of Regions of Interest for Human and Environmental Analysis in Chapter 5

Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Natural Environment							
Groundwater	**Construction Region of Interest ("ROI")**						
	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the pipeline corridor and a 1,000 foot buffer on either side of the centerline.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the pipeline corridor and a 1,000 foot buffer on either side of the centerline.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the pipeline corridor and a 1,000 foot buffer on either side of the centerline.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the rail corridor and a 1,000 foot buffer on either side of the corridor.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the road corridor and a 1,000 foot buffer on either side of the corridor.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the pipeline, rail or truck corridor and a 1,000 foot buffer on either side of the centerline.	The ROI for the analysis of potential impacts on groundwater during construction generally consists of the pipeline, rail or truck corridor and a 1,000 foot buffer on either side of the centerline.
	Operations ROI						
	Operations impacts for APR were based on the permanent right-of-way ("ROW").	Operations impacts for SA-04 were based on overlaying a standard 50 foot permanent ROW.	Operations impacts for existing Line 3 were based on the permanent ROW.	Potential impacts on groundwater associated with transportation by rail operations were assessed qualitatively.	Potential impacts on groundwater associated with transportation by truck operations were assessed qualitatively.	Operations impacts for existing Line 3 were based on the permanent ROW; potential impacts on groundwater associated with transportation by truck operations were assessed qualitatively.	Operations impacts for existing Line 3 were based on the permanent ROW; potential impacts on groundwater associated with transportation by rail operations were assessed qualitatively.
Surface Water	**Construction ROI**						
	The ROI for the assessment of construction impacts on surface waters includes the construction work area for each surface water crossed by the APR in MN (typically 120' wide), as well as the area immediately downstream from the crossing for flowing surface waters, and in the immediate vicinity for crossings of non-flowing surface waters such as lakes.	The ROI for the assessment of construction impacts on surface waters includes the construction work area for each surface water crossed by SA-04 in MN (typically 120' wide), as well as the area immediately downstream from the crossing for flowing surface waters, and in the immediate vicinity for crossings of non-flowing surface waters such as lakes.	The ROI includes surface waters crossed by the existing Line 3 and wild-rice waterbodies within 0.5 mile of existing Line 3.	The ROI for the assessment of construction impacts on surface waters were evaluated based on locations of surface waters at or near the rail route described in Chapter 4.	The ROI for the assessment of construction impacts on surface waters were evaluated based on locations of surface waters at or near the truck route described in Chapter 4.	The ROI includes surface waters crossed by the existing Line 3 and wild-rice waterbodies within 0.5 mile of existing Line 3 and locations of surface waters at or near the truck route described in Chapter 4.	The ROI includes surface waters crossed by the existing Line 3 and wild-rice waterbodies within 0.5 mile of existing Line 3 and locations of surface waters at or near the rail route described in Chapter 4.
	Operations ROI						
	The ROI was based on the location of the 50 foot permanent ROW centered on the pipeline for APR, as well as areas immediately downstream of flowing surface waters and in the immediate vicinity of non-flowing surface waters.	The ROI was based on the location of the 50 foot permanent ROW centered on the pipeline for SA-04, as well as areas immediately downstream of flowing surface waters and in the immediate vicinity of non-flowing surface waters.	The ROI was based on the location of the permanent ROW for that pipeline and assumes integrity digs typically would be limited to that permanent ROW.	Potential impacts on groundwater associated with transportation by rail operations were assessed qualitatively.	Potential impacts on groundwater associated with transportation by truck operations were assessed qualitatively.	Operations impacts for existing Line 3 were based on the permanent ROW; potential impacts on groundwater associated with transportation by truck operations were assessed qualitatively.	Operations impacts for existing Line 3 were based on the permanent ROW; potential impacts on groundwater associated with transportation by rail operations were assessed qualitatively.

Line 3 Replacement Project
Draft Environmental Impact Statement
Summary of Regions of Interest for Human and Environmental Analysis in Chapter 5

Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Wetland	**Construction ROI**						
	Potential wetland impacts were evaluated by overlaying the footprints of the construction work area, additional temporary workspace ("ATWS"), access roads, pipe yards, permanent ROW, mainline valve ("MLV") pads and driveways, and pump stations on identified wetland maps.	Potential wetland impacts were evaluated by overlaying the 120 foot construction right-of-way ("CROW") centered on centerline.	The potential wetland impacts of continued use of existing Line 3 were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of the rail corridor were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of the truck corridor were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of continued use of the existing Line 3 with truck alternative were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of continued use of the existing Line 3 with truck alternative were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.
	Operations ROI						
	Comparisons of operations impacts were based on the Enbridge provided footprint for APR permanent ROW.	Comparisons of operations impacts were based on a 50 foot permanent ROW for SA-04.	The potential wetland impacts of continued use of existing Line 3 were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of rail were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of truck were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of continued use of existing Line 3 supplemented by truck were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.	The potential wetland impacts of continued use of existing Line 3 supplemented by rail were qualitatively assessed based on publicly available wetland information, potential locations for new facilities and potential transportation routes.
Floodplains	**The same ROI was used for both construction and operations impacts analysis on floodplains**						
	The ROI was the footprint of the APR that included the ROW, construction work area, facilities, and access roads (where available) overlain in GIS with Federal Emergency Management Administration ("FEMA") flood maps.	The ROI was the footprint of SA-04 that included the ROW, construction work area, facilities, and access roads (where available) overlain in GIS with FEMA flood maps.	Impacts for the continued use of Existing Line 3 include miles of special flood hazard areas crossed by the existing Line 3.	The ROI was the footprint of the rail route that included ROW, construction work area, facilities, and access roads (where available) overlain in GIS with FEMA flood maps.	The ROI was the footprint of the truck route that included ROW, construction work area, facilities, and access roads (where available) overlain in GIS with FEMA flood maps.	Impacts for the continued use of Existing Line 3 include miles of special flood hazard areas crossed by the existing Line 3 and footprint of the truck route that included ROW, construction work area, facilities, and access roads (where available) overlain in GIS with FEMA flood maps.	Impacts for the continued use of Existing Line 3 include miles of special flood hazard areas crossed by the existing Line 3 footprint of the rail route that included ROW, construction work area, facilities, and access roads (where available) overlain in GIS with FEMA flood maps.

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Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Geology/Soils	**The same ROI was used for both construction and operations impacts analysis on geology/soils**						
	The ROI included the temporary construction work areas, permanent ROW, temporary and permanent access roads, and locations of facilities outside the permanent ROW such as pump stations.	The ROI included a 120 foot CROW and 50 foot permanent ROW centered over the centerline.	The ROI included impacts within the permanent ROW for the mainline corridor.	The ROI included potential locations of offloading facilities and new or expanded roads.	The ROI included potential locations of offloading facilities and new or expanded rail lines.	The ROI included impacts within the permanent ROW for the mainline corridor and potential locations of offloading facilities and new or expanded roads.	The ROI included impacts within the permanent ROW for the mainline corridor and potential locations of offloading facilities and new or expanded rail lines.
Vegetation	**Construction ROI**						
	The ROI for the assessment of construction impacts on vegetation includes the APR construction work area, ATWS, access roads, pipe yards, pipeline permanent right-of-way, valve pads and driveways, and pump stations.	Construction impacts for SA-04 were estimated by overlaying a standardized 120-foot-wide construction work area centered on the SA-04 route.	Construction impacts for continued use of the existing Line 3 pipeline are qualitatively addressed for integrity digs and subsequent pipeline repair and address the potential for these actions to occur in various vegetation cover classes, rare plant communities and noxious weed infestations.	Construction-related impacts were qualitatively reviewed based on the descriptions of potential locations for new facilities, the descriptions of potential transportation routes, and available vegetation information for these areas.	Construction-related impacts were qualitatively reviewed based on the descriptions of potential locations for new facilities, the descriptions of potential transportation routes, and available vegetation information for these areas.	Construction impacts are qualitatively addressed for integrity digs and subsequent pipeline repair and address the potential for these actions to occur in various vegetation cover classes, rare plant communities and noxious weed infestations. Construction-related truck impacts were qualitatively reviewed based on the descriptions of potential locations for new facilities, the descriptions of potential transportation routes, and available vegetation information for these areas.	Construction impacts are qualitatively addressed for integrity digs and subsequent pipeline repair and address the potential for these actions to occur in various vegetation cover classes, rare plant communities and noxious weed infestations. Construction-related rail impacts were qualitatively reviewed based on the descriptions of potential locations for new facilities, the descriptions of potential transportation routes, and available vegetation information for these areas.
	Operations ROI						
	The ROI was based on the location of the 50 foot permanent ROW centered on the pipeline for APR.	Operations impacts for SA-04 were estimated by overlaying a standardized 50-foot-wide permanent ROW centered on the SA-04 route.	Operations impacts for continued use of the existing Line 3 were evaluated based on the existing permanent ROW for that pipeline.	Operations impacts for these alternatives were qualitatively evaluated using broad-scale spatial analysis and assumptions about the potential routes for train transport.	Operations impacts for these alternatives were qualitatively evaluated using broad-scale spatial analysis and assumptions about the potential routes for truck transport.	Operations impacts for continued use of the existing Line 3 were evaluated based on the existing permanent right-of-way for that pipeline and qualitatively evaluated using broad-scale spatial analysis and assumptions about the potential routes for truck transport.	Operations impacts for continued use of the existing Line 3 were evaluated based on the existing permanent right-of-way for that pipeline and qualitatively evaluated using broad-scale spatial analysis and assumptions about the potential routes for train transport.

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Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
	The same ROI was used for both construction and operations impacts analysis on fish and wildlife						
Fish and Wildlife	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of the APR. **Invasive species:** Locations were identified within 1 mile of the APR.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of SA-04. **Invasive species:** Locations were identified within 1 mile of SA-04.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of existing Line 3. **Invasive species:** Locations were identified within 1 mile of existing Line 3.	The ROI evaluated areas where the new structures and railways likely would be constructed and in areas adjacent to those sites.	The ROI evaluated areas where the new structures and roadways likely would be constructed and in areas adjacent to those sites.	**Direct impacts**: The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of existing Line 3. **Invasive species:** Locations were identified within 1 mile of existing Line 3. **Truck:** The ROI evaluated areas where the new structures and truck routes likely would be constructed and in areas adjacent to those sites.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts**: The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of existing Line 3. **Invasive species:** Locations were identified within 1 mile of existing Line 3. **Rail:** The ROI evaluated areas where the new structures and rail routes likely would be constructed and in areas adjacent to those sites.

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Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Unique Natural Resources	**The same ROI was used for both construction and operations impacts analysis on unique natural resources**						
	The ROI for APR in MN was the 50 foot permanent ROW, 120 foot CROW and to a distance of one mile on both sides of the permanent ROW. **For State-listed species**: The pipeline alternatives evaluated an area within a distance of 0.5 mile from the centerline, which is the area that could be directly or indirectly impacted by construction and operation.	The ROI for SA-04 in MN was a 50 foot permanent ROW, 120 foot CROW and to a distance of one mile on both sides of the permanent ROW. The ROI for SA-04 in ND, SD, IA, IL and WI was maintained at the county level. The ROI is reduced in MN to provide a more detailed and specific review, which is possible due to National Heritage Information Systems ("NHIS") data within the state. **For State-listed species:** The pipeline alternatives evaluated an area within a distance of 0.5 mile from centerline, which is the area that could be directly or indirectly impacted by construction and operation.	The ROI was the construction and operations footprint for existing Line 3. **For State-listed species:** The ROI evaluated an area within a distance of 0.5 mile from the centerline, which is the area that could be directly or indirectly impacted by construction and operation.	The ROI was 1 mile distance on either side of the centerline of the rail routes.	The ROI was 1 mile distance on either side of the centerline of the truck routes.	The ROI was the construction and operations footprint for existing Line 3. **For State-listed species:** The ROI evaluated an area within a distance of 0.5 mile from the centerline, which is the area that could be directly or indirectly impacted by construction and operation. **Truck:** The ROI was 1 mile distance on either side of the centerline of the truck routes.	The ROI was the construction and operations footprint for existing Line 3. **For State-listed species:** The ROI evaluated an area within a distance of 0.5 mile from the centerline, which is the area that could be directly or indirectly impacted by construction and operation. **Rail:** The ROI was 1 mile distance on either side of the centerline of the truck routes.
Public Lands	**The same ROI was used for both construction and operations impacts analysis on public lands**						
	The ROI was the construction and operations footprint for the APR.	The ROI was the construction and operations footprint for SA-04.	The ROI was the construction and operations footprint for existing Line 3.	The ROI was the construction and operations footprint for the rail route.	The ROI was the construction and operations footprint for the truck route.	The ROI was the construction and operations footprint for existing Line 3 supplemented by the truck route.	The ROI was the construction and operations footprint for existing Line 3 supplemented by the rail route.
Air Quality	**The same ROI was used for both construction and operations impacts analysis on air quality**						
	The ROI consisted of the airsheds through which the APR route passes.	The ROI consisted of the airsheds through which the SA-04 route passes.	The ROI consisted of the airsheds through which the existing Line 3 route passes.	The ROI consisted of the airsheds through which the rail route passes.	The ROI consisted of the airsheds through which the truck route passes.	The ROI consisted of the airsheds through which the existing Line 3 with truck route passes.	The ROI consisted of the airsheds through which the existing Line 3 with rail route passes.

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Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Socioeconomics							
Commodity Production	**The same ROI was used for both construction and operations impacts analysis on commodity production**						
	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by the APR. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by SA-04. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by existing Line 3. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by rail. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by truck. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by existing Line 3 with truck. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by existing Line 3 with rail. This includes the permanent ROW and "broader construction work area".
Recreation and Tourism	**The same ROI was used for both construction and operations impacts analysis on recreation and tourism**						
	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the APR passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which SA-04 passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which existing Line 3 passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the rail route passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the truck route passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the existing Line 3 with truck route passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the existing Line 3 with rail route passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.
Population	**The same ROI was used for both construction and operations impacts analysis on population**						
	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the Existing Line 3 near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the rail route near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the truck route near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the existing Line 3 with truck route near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the Project. 2. Impacts associated with construction and operation of the existing Line 3 with rail route near densely populated areas.

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Resource	APR	SA-04	Existing Line 3	Rail	Truck	Existing Line 3 with Truck	Existing Line 3 with Rail
Employment, Income and Tax Revenue	**The same ROI was used for both construction and operations impacts analysis on employment, income and tax revenue**						
	The ROI consists of the counties crossed by the APR.	The ROI consists of the counties crossed by SA-04.	The ROI consists of the counties crossed by Existing Line 3.	The ROI consists of the counties crossed by the rail route.	The ROI consists of the counties crossed by the truck route.	The ROI consists of the counties crossed by the Existing Line 3 and truck route.	The ROI consists of the counties crossed by the Existing Line 3 and rail route.
Cultural Resources							
Cultural Resources	**The same ROI was used for both construction and operations impacts analysis on cultural resources**						
	The ROI includes the construction work area, permanent ROW, ATWS, access roads, and above-ground facilities, including 0.5 mile on either side of the pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI for rail included archaeological resources and historic resources that are within 0.5 mile of the offloading facility locations at Clearbrook and Superior.	The ROI for truck included archaeological resources and historic resources that are within 0.5 mile of the offloading facility locations at Clearbrook and Superior.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the pipeline for archaeological resources and 1 mile on either side for historic resources and archaeological resources and historic resources that are within 0.5 mile of the offloading facility locations at Clearbrook and Superior.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the pipeline for archaeological resources and 1 mile on either side for historic resources and archaeological resources and historic resources that are within 0.5 mile of the offloading facility locations at Clearbrook and Superior.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Human Settlement					
Planning and Zoning	**The same ROI was used for both construction and operations impacts analysis on planning and zoning**				
	Region of Interest ("ROI") consists of counties and watershed districts crossed by the APR in MN. The assessment of compatibility with current land use plans is focused on the land disturbed for construction and the land within the permanent ROW.	ROI consists of counties and watershed districts crossed by RA-06. The assessment of compatibility with current land use plans is focused on the land disturbed for construction and the land within the permanent ROW.	ROI consists of counties and watershed districts crossed by RA-07. The assessment of compatibility with current land use plans is focused on the land disturbed for construction and the land within the permanent ROW.	ROI consists of counties and watershed districts crossed by RA-08. The assessment of compatibility with current land use plans is focused on the land disturbed for construction and the land within the permanent ROW.	ROI consists of counties and watershed districts crossed by RA-03AM. The assessment of compatibility with current land use plans is focused on the land disturbed for construction and the land within the permanent ROW.
Noise and Vibration	**Construction ROI**				
	The ROI for the APR includes the sensitive receptors located near the proposed construction work areas that may be affected by construction-related activities and equipment.	The ROI for RA-06 includes the sensitive receptors located near the proposed construction work areas that may be affected by construction-related activities and equipment.	The ROI for RA-07 includes the sensitive receptors located near the proposed construction work areas that may be affected by construction-related activities and equipment.	The ROI for RA-08 includes the sensitive receptors located near the proposed construction work areas that may be affected by construction-related activities and equipment.	The ROI for RA-03AM includes the sensitive receptors located near the proposed construction work areas that may be affected by construction-related activities and equipment.
	Operations ROI				
	The ROI for the APR includes the sensitive receptors located near the proposed pump stations that may be affected by noise from pump station operations.	The ROI for RA-06 includes the sensitive receptors located near the proposed pump stations that may be affected by noise from pump station operations.	The ROI for RA-07 includes the sensitive receptors located near the proposed pump stations that may be affected by noise from pump station operations.	The ROI for RA-08 includes the sensitive receptors located near the proposed pump stations that may be affected by noise from pump station operations.	The ROI for RA-03AM includes the sensitive receptors located near the proposed pump stations that may be affected by noise from pump station operations.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Aesthetics/ Visual	**The same ROI was used for both construction and operations impacts analysis on aesthetics/visual**				
	The ROI for the APR includes all areas of high use and high user concern within the viewshed of a route or aboveground facility. The viewshed was considered to be the immediate foreground (or 300 feet) from the end of the construction work area and within 0.25 miles of aboveground facilities.	The ROI for RA-06 includes all areas of high use and high user concern within the viewshed of a route or aboveground facility. The viewshed was considered to be the immediate foreground (or 300 feet) from the end of the construction work area and within 0.25 miles of aboveground facilities.	The ROI for RA-07 includes all areas of high use and high user concern within the viewshed of a route or aboveground facility. The viewshed was considered to be the immediate foreground (or 300 feet) from the end of the construction work area and within 0.25 miles of aboveground facilities.	The ROI for RA-08 includes all areas of high use and high user concern within the viewshed of a route or aboveground facility. The viewshed was considered to be the immediate foreground (or 300 feet) from the end of the construction work area and within 0.25 miles of aboveground facilities.	The ROI for RA-03AM includes all areas of high use and high user concern within the viewshed of a route or aboveground facility. The viewshed was considered to be the immediate foreground (or 300 feet) from the end of the construction work area and within 0.25 miles of aboveground facilities.
Housing	**The same ROI was used for both construction and operations impacts analysis on housing**				
	The ROI for the APR extends 50 feet beyond the construction work area. The ROI for existing home value consisted of the counties crossed by the APR in MN. Studies considered in the literature included a range of properties up to 1 mile away from a permanent ROW.	The ROI for the RA-06 extends 50 feet beyond the construction work area. The ROI for existing home value consisted of the counties crossed by RA-06. Studies considered in the literature included a range of properties up to 1 mile away from a permanent ROW.	The ROI for the RA-07 extends 50 feet beyond the construction work area. The ROI for existing home value consisted of the counties crossed by RA-07. Studies considered in the literature included a range of properties up to 1 mile away from a permanent ROW.	The ROI for the RA-08 extends 50 feet beyond the construction work area. The ROI for existing home value consisted of the counties crossed by RA-08. Studies considered in the literature included a range of properties up to 1 mile away from a permanent ROW.	The ROI for the RA-03AM extends 50 feet beyond the construction work area. The ROI for existing home value consisted of the counties crossed by RA-03AM. Studies considered in the literature included a range of properties up to 1 mile away from a permanent ROW.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Transportation and Public Services	**The same ROI was used for both construction and operations impacts analysis on transportation and public services**				
	Roads, Railroads and Utilities: The ROI for impact assessment on roads, railroads and utilities consists of the actual crossing locations of the infrastructure crossed the APR in MN. **Airports:** The ROI for the APR in MN for regional airports consists of airports within 20,000 feet of the construction work area and aboveground facilities. **Local Traffic:** The ROI for impacts of construction traffic on local traffic is all major roads crossed by the APR in MN. **Emergency Services:** ROI for addressing Impacts on emergency services was the counties crossed by the APR in MN. **Public Services:** The ROI for public services included all counties crossed by the APR in MN except Clearwater County.	**Roads, Railroads and Utilities**: The ROI for impact assessment on roads, railroads and utilities consists of the actual crossing locations of the infrastructure crossed RA-06. **Airports:** The ROI for RA-06 for regional airports consists of airports within 20,000 feet of the construction work area and aboveground facilities. **Local Traffic:** The ROI for impacts of construction traffic on local traffic is all major roads crossed by RA-06. **Emergency Services:** ROI for addressing Impacts on emergency services was the counties crossed by RA-06. **Public Services:** The ROI for public services included all counties crossed by RA-06 except Clearwater County.	**Roads, Railroads and Utilities**: The ROI for impact assessment on roads, railroads and utilities consists of the actual crossing locations of the infrastructure crossed RA-07. **Airports:** The ROI for RA-07 for regional airports consists of airports within 20,000 feet of the construction work area and aboveground facilities. **Local Traffic:** The ROI for impacts of construction traffic on local traffic is all major roads crossed by RA-07. **Emergency Services:** ROI for addressing Impacts on emergency services was the counties crossed by RA-07. **Public Services:** The ROI for public services included all counties crossed by RA-07 except Clearwater County.	**Roads, Railroads and Utilities**: The ROI for impact assessment on roads, railroads and utilities consists of the actual crossing locations of the infrastructure crossed RA-08. **Airports:** The ROI for RA-08 for regional airports consists of airports within 20,000 feet of the construction work area and aboveground facilities. **Local Traffic:** The ROI for impacts of construction traffic on local traffic is all major roads crossed by RA-08. **Emergency Services:** ROI for addressing Impacts on emergency services was the counties crossed by RA-08. **Public Services:** The ROI for public services included all counties crossed by RA-08 except Clearwater County.	**Roads, Railroads and Utilities**: The ROI for impact assessment on roads, railroads and utilities consists of the actual crossing locations of the infrastructure crossed RA-03AM. **Airports:** The ROI for RA-03AM for regional airports consists of airports within 20,000 feet of the construction work area and aboveground facilities. **Local Traffic:** The ROI for impacts of construction traffic on local traffic is all major roads crossed by RA-03AM. **Emergency Services:** ROI for addressing Impacts on emergency services was the counties crossed by RA-03AM. **Public Services:** The ROI for public services included all counties crossed by RA-03AM except Clearwater County.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Natural Resources					
Water Resources	**Construction ROI**				
	The ROI consisted of the pipeline corridor and a 1,000 buffer on either side of the APR in MN.	The ROI consisted of the pipeline corridor and a 1,000 buffer on either side of RA-06.	The ROI consisted of the pipeline corridor and a 1,000 buffer on either side of RA-07.	The ROI consisted of the pipeline corridor and a 1,000 buffer on either side of RA-08.	The ROI consisted of the pipeline corridor and a 1,000 buffer on either side of RA-03AM.
	Operations ROI				
	The ROI for the APR in MN is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-06 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-07 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-08 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-03AM is a 50-ft permanent ROW centered on the pipeline centerline.
Geology and Soils	**Construction ROI**				
	The ROI for the APR in MN is the CROW, ATWS, access roads, pipe yards, permanent ROW, valve pads and driveways and pump stations.	The ROI for RA-06 is an 120-ft CROW centered on the pipeline centerline.	The ROI for RA-07 is a 205-ft CROW centered on the pipeline centerline.	The ROI for RA-08 is an 120-ft CROW centered on the pipeline centerline.	The ROI for RA-03AM is an 120-ft CROW centered on the pipeline centerline.
	Operations ROI				
	The ROI for the APR in MN is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-06 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-07 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-08 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-03AM is a 50-ft permanent ROW centered on the pipeline centerline.
Vegetation	**Construction ROI**				
	The ROI for the APR in MN is the CROW, ATWS, access roads, pipe yards, permanent ROW, valve pads and driveways and pump stations.	The ROI for RA-06 is an 120-ft CROW centered on the pipeline centerline.	The ROI for RA-07 is an 205-ft CROW centered on the pipeline centerline.	The ROI for RA-08 is an 120-ft CROW centered on the pipeline centerline.	The ROI for RA-03AM is an 120-ft CROW centered on the pipeline centerline.
	Operations ROI				
	The ROI for the APR in MN is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-06 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-07 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-08 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-03AM is a 50-ft permanent ROW centered on the pipeline centerline.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Fish and Wildlife	**The same ROI was used for both construction and operations impacts analysis on fish and wildlife**				
	Direct impacts: The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of the APR in MN. **Invasive species:** Locations were identified within 1 mile of the APR in MN.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of RA-06. **Invasive species:** Locations were identified within 1 mile of RA-06.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of RA-07. **Invasive species:** Locations were identified within 1 mile of RA-07.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of RA-08. **Invasive species:** Locations were identified within 1 mile of RA-08.	**Direct impacts:** The assessment of potential direct impacts focused on the areas directly affected by construction and operation activities. **Indirect impacts:** The ROI for this evaluation encompassed the area that could be affected, including indirectly, by construction and operation within 0.5 mile from the centerline of RA-03AM. **Invasive species:** Locations were identified within 1 mile of RA-03AM.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Unique Natural Resources	**Construction ROI**				
	Federally Listed Species: The evaluation encompassed the area within a distance of 1 mile from the APR centerline in MN. **State Listed Species:** Included an area within a distance of 0.5 mile from the APR centerline in MN. Comparisons of construction impacts were based on the Applicant-provided construction work area for the APR in MN.	**Federally Listed Species:** The evaluation encompassed the area within a distance of 1 mile from the RA-06 centerline. **State Listed Species:** Included an area within a distance of 0.5 mile from the RA-06 centerline. Comparisons of construction impacts were based on an 120-ft CROW centered of the RA-06 pipeline centerline.	**Federally Listed Species:** The evaluation encompassed the area within a distance of 1 mile from the RA-07 centerline. **State Listed Species:** Included an area within a distance of 0.5 mile from the RA-07 centerline. Comparisons of construction impacts were based on an 205-ft CROW centered of the RA-07 pipeline centerline.	**Federally Listed Species:** The evaluation encompassed the area within a distance of 1 mile from the RA-08 centerline. **State Listed Species:** Included an area within a distance of 0.5 mile from the RA-08 centerline. Comparisons of construction impacts were based on an 120-ft CROW centered of the RA-08 pipeline centerline.	**Federally Listed Species:** The evaluation encompassed the area within a distance of 1 mile from the RA-03AM centerline. **State Listed Species:** Included an area within a distance of 0.5 mile from the RA-03AM centerline. Comparisons of construction impacts were based on an 120-ft CROW centered of the RA-03AM pipeline centerline.
	Operations ROI				
	The ROI for the APR in MN is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-06 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-07 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-08 is a 50-ft permanent ROW centered on the pipeline centerline.	The ROI for RA-03AM is a 50-ft permanent ROW centered on the pipeline centerline.
Public Lands	**The same ROI was used for both construction and operations impacts analysis on public lands**				
	The ROI included the construction and operations footprints for the APR in MN.	The ROI included the construction and operations footprints for RA-06.	The ROI included the construction and operations footprints for RA-07.	The ROI included the construction and operations footprints for RA-07.	The ROI included the construction and operations footprints for RA-03AM.
Air Quality	**The same ROI was used for both construction and operations impacts analysis on air quality**				
	The ROI consisted of the airsheds through which the APR passes.	The ROI consisted of the airsheds through which the RA-06 passes.	The ROI consisted of the airsheds through which the RA-07 passes.	The ROI consisted of the airsheds through which the RA-08 passes.	The ROI consisted of the airsheds through which the RA-03AM passes.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Socioeconomics					
Commodity Production	**The same ROI was used for both construction and operations impacts analysis on commodity production**				
	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by the APR in MN. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by RA-06. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by RA-07. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by RA-08. This includes the permanent ROW and "broader construction work area".	The ROI consists of all land currently used in the production of agricultural, timber or mineral products - or land with the potential to be used for these purposes - that could be disturbed or removed from production by RA-03AM. This includes the permanent ROW and "broader construction work area".
Recreation and Tourism	**The same ROI was used for both construction and operations impacts analysis on recreation and tourism**				
	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which the APR passes in MN to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which RA-06 passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which RA-07 passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which RA-08 passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.	The ROI is twofold: 1. It narrowly focuses on the public recreational lands and recreational waterbodies directly crossed by construction and operation areas. 2. It broadly includes the counties through which RA-03AM passes to assess whether the Project-related changes would affect county-level recreational visitation and subsequently the local recreation-based economy.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
Population	**The same ROI was used for both construction and operations impacts analysis on population**				
	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near the APR in MN. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near RA-06. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near RA-07. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near RA-08. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.	The ROI has two components: 1. Impacts associated with the non-local workforce re-locating to communities near RA-03AM. 2. Impacts associated with construction and operation of the pipeline near densely populated areas.
Employment, Income and Tax Revenue	**The same ROI was used for both construction and operations impacts analysis on employment, income and tax revenue**				
	The ROI consists of the counties crossed by the APR in MN.	The ROI consists of the counties crossed by RA-06.	The ROI consists of the counties crossed by RA-07.	The ROI consists of the counties crossed by RA-08.	The ROI consists of the counties crossed by RA-03AM.
Cultural Resources					
Cultural Resources	**The same ROI was used for both construction and operations impacts analysis on cultural resources**				
	The ROI includes the construction work area, permanent ROW, ATWS, access roads, and above-ground facilities, including 0.5 mile on either side of the APR pipeline in MN for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the RA-06 pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the RA-07 pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the RA-08 pipeline for archaeological resources and 1 mile on either side for historic resources.	The ROI includes the construction work area and permanent ROW, including 0.5 mile on either side of the RA-03AM pipeline for archaeological resources and 1 mile on either side for historic resources.
Cost Comparison					
Cost Comparison	**Construction ROI (Operations ROI: N/A)**				
	Information supplied by Enbridge for the cost of the APR was used to determine a per-mile cost for the pipeline.	The APR per-mile cost was applied to the length of RA-06 to derive comparative costs.	The APR per-mile cost was applied to the length of RA-07 to derive comparative costs.	The APR per-mile cost was applied to the length of RA-08 to derive comparative costs.	The APR per-mile cost was applied to the length of RA-03AM to derive comparative costs.

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Resource	APR	RA-06	RA-07	RA-08	RA-03AM
ROW Sharing/Paralleling					
ROW Sharing/ Paralleling	**Construction ROI (Operations ROI: N/A)**				
	The permanent ROW for the APR was overlain on maps of existing infrastructure corridors using GIS to determine the portions of the route that would share, parallel, or be located independently of existing oil and gas pipelines, electric transmission lines, railroads, and highways.	The permanent ROW for RA-06 was overlain on maps of existing infrastructure corridors using GIS to determine the portions of the route that would share, parallel, or be located independently of existing oil and gas pipelines, electric transmission lines, railroads, and highways.	The permanent ROW for RA-07 was overlain on maps of existing infrastructure corridors using GIS to determine the portions of the route that would share, parallel, or be located independently of existing oil and gas pipelines, electric transmission lines, railroads, and highways.	The permanent ROW for RA-08 was overlain on maps of existing infrastructure corridors using GIS to determine the portions of the route that would share, parallel, or be located independently of existing oil and gas pipelines, electric transmission lines, railroads, and highways.	The permanent ROW for RA-03AM was overlain on maps of existing infrastructure corridors using GIS to determine the portions of the route that would share, parallel, or be located independently of existing oil and gas pipelines, electric transmission lines, railroads, and highways.

SA-04 IMPACT ANALYSIS

The presentation of SA-04 impacts in the DEIS focuses on Minnesota-based resources, utilizing a number of Minnesota agency-specific databases to analyze impacts on unique and sensitive resources with some discussion of potentially impacted resources outside of Minnesota. In this Attachment C, Enbridge has provided additional information regarding the magnitude, extent, and duration of impacts associated with SA-04 in other states. Schedule 7 of Mr. Simonson's Direct Testimony, filed January 30, 2017, which presents additional information on potential impacts and considerations associated with SA-04, may also be useful in this analysis.

Geology and Soils

Blasting locations are not currently included in the Chapter 5 analysis for SA-04, and could be approximated based on SSURGO shallow bedrock data. It is likely that blasting or other form of rock removal would be required wherever SSURGO data indicate shallow bedrock (less than five feet of soil surface). Rocky soils with a high prevalence of rock fragments of large diameter may also require blasting or other form of rock removal. Section 5.2.2.2.3 of the DEIS indicates that SA-04 would encounter shallow bedrock.

The DEIS identified karst conditions along alternatives SA-04 and RA-03AM. Karst conditions do not exist along the APR and the type of bedrock along the APR is not prone to formation of karst conditions. Groundwater pollution, differential settling, and formation of sinkholes are issues associated with constructing infrastructure in karst conditions.

Specifications for constructing in areas with karst are not as readily available as recommendations are to identify the areas and avoid building in these areas. Indicators of karst conditions are often the presence of sinkholes, blind valleys, karst windows and springs on the land surface above underground karst (MDNR, 2017). Karst conditions can also develop in areas with few or none of these land surface features; therefore, the absence of these features does not imply the absence of karst. Geophysical surveys, subsurface investigation, and remote sensing methods can also be used to better determine locations of subsurface cavities where karst is present and where sinkholes may develop (Missouri Department of Conservation, 2017). Building individual structures in karst areas may be accomplished by grouting karst features below proposed structures, however, grouting karst features will likely alter hydrologic regimes, which can cause formation of additional karst features (Maryland Geological Survey, 2017). Sinkhole formation in karst areas can also be caused by construction-related activities such as altered drainage, water impoundments, dewatering, blasting, and ground disturbance and vibration. Sinkhole formation is not readily predictable. Sinkholes may form in areas of Minnesota that are susceptible to karst with no prior indications or warning, as exemplified by the development of a sinkhole in Woodbury on October 5, 2005, that quickly drained a stormwater retention basin (Barr and Alexander, 2007).

The primary geologic impact that could affect a proposed pipeline and aboveground facilities in karst sensitive areas is the sudden development of a sinkhole that damages the facilities and

poses a safety risk. Other subsidence features could develop gradually over time, but would not pose an immediate risk to the proposed facilities.

The Iowa Geological Survey and Iowa Department of Natural Resources host a Natural Resources Geographic Information Systems Library (https://programs.iowadnr.gov/nrgislibx/) with a few publicly-available environmental data sets that could be reviewed to identify potential SA-04 related impacts. Datasets include:

Geologic:

1. Potential Karst Geology of Iowa (GRID format)
2. Current and Historic Sinkhole and Depression locations in Iowa
3. Current Sinkhole Boundaries in Iowa

Based on Enbridge's review of these data, SA-04 would be routed within one mile of 260 sinkhole depressions, of which at least five are located within the 120-foot construction workspace.

The DEIS also states that impacts to karst features and associated groundwater (see below) would be mitigated by applying Enbridge's mitigation measures and best management practices (BMPs) designed for the APR. However, because the APR does not cross karst terrain, Enbridge's current mitigation measures do not contemplate crossing karst terrain. Because mitigation measures in karst terrain must be specific, Enbridge's mitigation measures and BMPs designed for the APR would not be sufficient to protect karst resources on SA-04.

To illustrate the complicated construction issues contemplated by SA-04 crossing karst terrain, Enbridge suggests that DOC-EERA consider the Mountain Valley Pipeline (MVP), and the Atlantic Coast Pipeline Project (ACP) – two proposed natural gas pipelines crossing karst terrain in West Virginia and Virginia. Project planning for these projects included rerouting and avoidance of the karst features due to potential issues that can arise during construction. For those features that could not be avoided, the MVP and ACP applicants prepared Karst Mitigation Plans to address karst features encountered during construction and to further reduce the potential to initiate sinkhole development during construction and operation of the facilities. Mitigation measures potentially include, but are not necessarily limited to, the following:

- conducting a preconstruction geophysical survey to obtain more information on subsurface conditions;
- deploying a karst specialist during construction activities to confirm, monitor, and assist in limiting potential negative impacts on existing karst features;
- conducting a preconstruction inspection of the right-of-way to confirm, identify, and assess surface karst features;

- monitoring features identified during the preconstruction inspection, features that are intercepted during construction, and features that form during construction;
- characterizing and documenting the following features intercepted during construction: soil subsidence, rock collapse, sediment filling, sinking or losing streams, springs, seeps, flooding, and caves or void space;
- depending on site-specific conditions, implementing a reroute of the pipeline or installing thicker-walled pipe;
- karst point features, as well as a 300-foot buffer around each, would be clearly marked in the field with signs and/or highly visible flagging in all work areas (within and off the right-of-way, including discharge areas) until construction related ground disturbing activities are completed;
- in the event that a subsurface void opens or is intersected, or a new sinkhole forms within the construction work area, work in that area would stop and the void would be isolated from the rest of the work area;
- if karst features are encountered during construction that require stabilization or mitigation, the pipeline company and its contractors would consult with and incorporate recommendations from the appropriate federal and state agencies to ensure pipeline integrity and protection of the aquatic resource and subterranean habitat – these procedures would generally involve backfilling of the feature with sand, gravel, rock, or grout, or combinations thereof, with the overarching goal of preventing further collapse and raveling of surface material while maintaining infiltration of recharge waters to the aquifer);
- implementing surface water and erosion control measures, including diversion, detention, or collection and transportation, to prevent construction-influenced surface water from free flowing into karst features;
- preventing the disposal of materials into karst features that could harm water quality;
- placing excavated spoil on the up-slope side of the excavation in the vicinity of karst features;
- implementing a Spill Control, Control, and Countermeasures Plan, including flagged buffers for re-fueling and parking in the vicinity of karst features;
- avoiding blasting in karst terrain; and
- avoiding the discharge of hydrostatic test water or other project related water in karst areas.

FERC released the final EIS for MVP on June 23, 2017 (available here: https://www.ferc.gov/industries/gas/enviro/eis/2017/06-23-17-FEIS.asp), and the draft EIS for ACP was published on December 30, 2016 (available here: https://www.ferc.gov/industries/gas/enviro/eis/2016/12-30-16-DEIS.asp). The final EIS for ACP is scheduled for release on July 21, 2017.

Groundwater

Groundwater in karst aquifers is vulnerable to impacts from spills due to the following characteristics of water flow (Kentucky Geological Survey https://www.uky.edu/KGS/water/general/karst/gwvulnerability.htm):

- recharge to karst aquifers bypasses the filtering capability of soil through macropores and swallow holes;
- groundwater flows through conduits so that there is little opportunity for filtration or sorption of contaminants onto aquifer material;
- the movement of pollutants cannot be directly observed as in a surface-flowing stream;
- flow paths may take routes that are not apparent from the topography or slope of the land;
- flow velocities in karst aquifers are extremely fast compared to velocities in granular aquifers, allowing little time to warn downstream users following a reported spill; and
- flow is in converging conduits; therefore, pollutants are not diluted through dispersal.

Soil overlying a karst aquifer provides some filtration of contaminants from in-flowing water and the filtering capacity is dependent on soil type, depth to bedrock, and piping features that develop in soil due to the presence of karst features in underlying bedrock.

In addition, as stated in section 5.2.1.1.2 of the DEIS, on page 5-19, karst landforms are "highly vulnerable to contamination and structural changes with ground disturbance; including sinkhole formation and alteration of groundwater flow"; therefore, the impacts associated with SA-04 on groundwater quality from construction-related impacts are likely to be more substantial than the APR.

Vegetation

Section 5.2.3.3.3 of the DEIS describes that the SA-04 construction footprint would impact approximately 265 acres of grassland/herbaceous and emergent herbaceous wetland vegetation cover based on the 2011 National Land Cover Database data (Homer et al., 2015).

Table 5.2.3-17 indicates approximately 1.5 acres of mesic prairie rare native plant communities would be impacted in Minnesota, but that SA-04 would not impact native prairie communities in North Dakota, Iowa, or Illinois. However, table M-3 identifies several native prairie and grassland species with NHI occurrences within the SA-04 construction workspace, including blue sage, buffalo grass, false mallow, plains sedge, and plains wild indigo in Illinois, indicating that there are likely additional rare plant communities impacted by SA-04.

Because SA-04 would cross the Dakota Tallgrass Prairie Wildlife Management Area in Richland, North Dakota (see figure 1), it is probable that there would be impacts to rare grassland / prairie communities and species in North Dakota. The DOC-EERA could confirm that the data from the North Dakota NHI review (cited as NDGFP, 2016) have been incorporated into tables M-1 through M-3, as there are no species from North Dakota indicated within the construction workspace, operations right-of-way, or within 0.5 mile of the either the APR or any CN Alternatives. The DEIS indicates that SA-04 would impact 794 acres of the Dakota Tallgrass Prairie Wildlife Management Area (WMA) in table 5.2.4-11 of section 5.2.4.3.3. The Dakota Tallgrass Prairie WMA is a unit of the U.S. Fish and Wildlife Refuge System and was established in 2000 specifically to preserve quality tallgrass prairie habitat in southeastern North Dakota and eastern South Dakota to help maintain biodiversity and to slow habitat fragmentation (FWS, 2013).

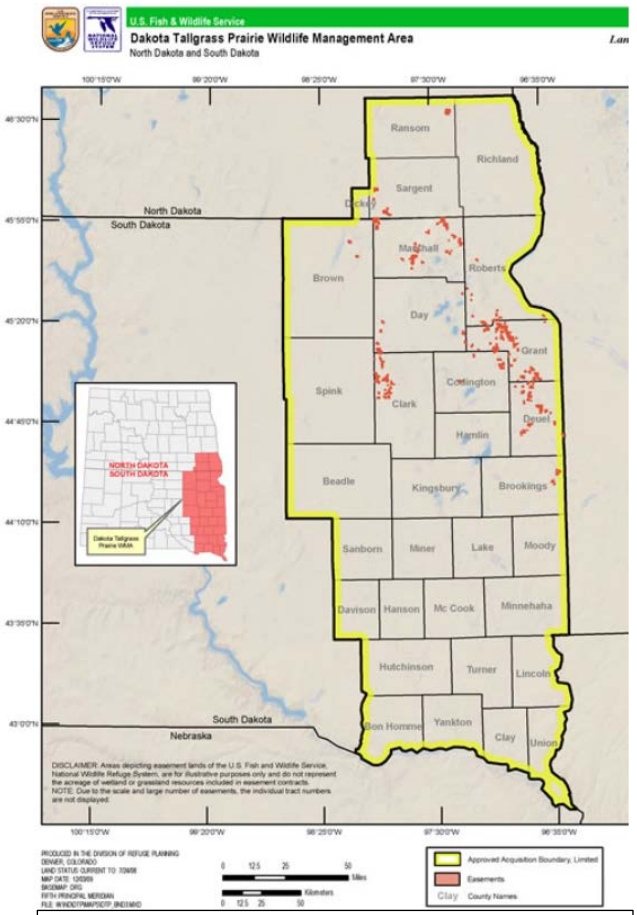

Figure 1. Dakota Tallgrass Prairie Wildlife Management Area (Source: FWS, 2013)

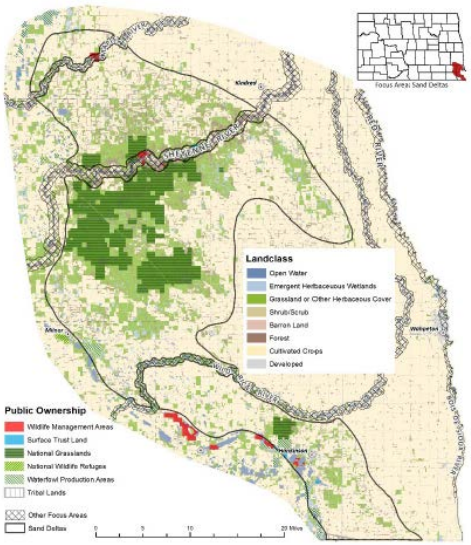

Figure 2. North Dakota State Wildlife Action Plan - Sand Deltas and Beach Ridges Focus Area (Source: Dyke et al., 2015)

Tallgrass, mixed, and shortgrass prairies are among the most endangered ecosystems in the U.S., and tallgrass prairies are considered a globally endangered resource. Historically, prairies covered approximately one-third of the land surface in the contiguous U.S.; native prairies now cover less than three percent of their original acreage (Martin and Peloquin, 2005). In North

Dakota, it is estimated that only three percent of the remaining native prairie is unplowed (Dyke et al., 2015). The remaining prairie patches are considered small, fragmented, and isolated, and prairie remnants are considered limited and in danger of further degradation (Martin and Peloquin, 2005).

Tallgrass prairie was historically found primarily in the eastern quarter of North Dakota along the Red River Valley, and has been largely converted to agricultural lands. The area crossed by SA-04 is also identified as the Sand Deltas and Beach Ridges focus area for native tallgrass prairie preservation and conservation of associated wildlife in the North Dakota Wildlife Action Plan (WAP) (Dyke et al., 2015) (see figure 2).

This section also does not acknowledge potential impacts to rare and unique vegetation communities within the Midewin National Tallgrass Prairie in Joliet, Illinois, where SA-04 would terminate. Administered by the U.S. Forest Service, the Midewin National Tallgrass Prairie is the largest island in the archipelago of protected areas that collectively comprise the Chicago Wilderness. Although seriously degraded in many places, "it represents by far the best chance in the region to reassemble the full array of species and natural processes typical of the tallgrass prairies, including the reintroduction of bison." The Nature Conservancy ranks Illinois' prairies as "globally imperiled," because most have been eliminated through conversion to other land uses. Midewin is a particularly critical piece of the state's remnant prairie because of its size, its biodiversity, and the concentrated efforts at restoration (National Forest Foundation, undated).

Acknowledging and including additional information and discussion of the impacts associated with SA-04 on the vegetation and wildlife communities found within the Dakota Tallgrass Prairie WMA, Midewin National Tallgrass Prairie, the North Dakota WAP Sand Deltas and Beach Ridges focus area, and other rare prairie / grassland communities in the vegetation, fish and wildlife, unique natural resources, and land use sections of the SA-04 impact analysis could increase the regulators' and public's ability to critically analyze SA-04.

Fish and Wildlife

Further discussion of SA-04 impacts on the federal and state conservation areas could be provided. SA-04 would cross the Upper Mississippi National Wildlife Refuge (NWR), which was established in 1924 as a refuge for fish, wildlife, and plants, and a breeding place for migratory birds. The refuge is designated as a Wetland of International Importance (Ramsar) and a Globally Important Bird Area.

As noted in the discussion above, SA-04 would cross the Dakota Tallgrass Prairie WMA, which was established to protect rich diversity of plant and animal species supported by tallgrass prairie habitat: at least 300 species of plants, 113 species of butterflies, 35 species of reptiles and amphibians, 60 species of mammals, and 260 species of birds. Two hundred and thirty-seven species of rare plants and animals are documented in the area. Thirteen species are under consideration or listed as threatened and endangered, such as the western prairie fringed-orchid, piping plover, and Topeka shiner (FWS, 2013b).

Although the DEIS provides the results of habitat fragmentation analysis in northern Minnesota forested landscapes, an equivalent analysis is not provided for prairie habitat crossed by SA-04. Grassland dependent-species are sensitive to the quality of the habitat, including its structural characteristics and floristic richness (Environment Canada, 2013). Many invertebrate species (e.g., skippers, skipperlings) have particular larval host and foraging plant requirements. Some species are also sensitive to soil conditions, including soil moisture, humidity, pH, surface temperature, and compaction (e.g., Dakota skipper) (Cochrane and Delphey, 2002). To encourage restoration of native grasslands, additional BMPs, such as managing growth of woody vegetation, and seeding with native grass and forb species to enhance restoration would likely be required. The timing of clearing and regular right-of-way maintenance would also need to be considered to avoid the nesting season for ground-nesting birds. Use of pesticides and insecticides to control invasive and noxious weeds would also need to be limited to avoid adverse impacts to invertebrate species and their host plants (WDNR, 1999). As is acknowledged in on page 5-364 of the DEIS, "impacts on prairie soils from construction would be long term and could require a substantial amount of recovery time, which could affect any prairie-dependent plants [and wildlife species] present."

Unique Natural Resources

Federally Listed Species

Dakota skipper and Poweshiek Skipperling are identified as having the potential to occur along SA-04 per table 5.2.5-8, and have been documented within the Dakota Tallgrass Prairie WMA (FWS, 2013). As noted previously, SA-04 would impact 794 acres of this WMA, which is likely to provide suitable habitat for both these Endangered Species Act-listed species. Based on this information, impacts associated with the construction of SA-04 to these species are likely to be much more substantial in magnitude, extent, and duration than temporary to short-term and minor as described in this section of the DEIS. In addition, the western prairie fringed-orchid may also occur in this WMA (FWS, 2013b).

Species of Greatest Conservation Need (SGCN)

<u>Methodology – GAP Analysis Program Species Models</u>

Based on section 5.2.5.1.2, DOC-EERA implemented the following process to identify SGCN species and habitat quality occurring within APR's and CN Alternatives' construction workspaces:

1. Used IPaC to select Birds of Conservation Concern within 1 mile of APR and CN Alternatives (Table M-5);
2. Compiled state-protected or rare species lists crossed by APR and CN;
3. Compared compiled state species list with GAP ranges available on U.S. Geological Survey (USGS) GAP (2016) to identify species with the potential to occur within the regions crossed by the APR and CN Alternatives; and

4. Combined the selected GAP species distribution models to identify habitat used by one or more of the identified species within the ROI (0.5 mile) to characterize habitat use and species richness within the ROI.

The DOC-EERA could consider clarifying which data were used to compile state protected or rare species lists: 1) NHI occurrences within the ROI (0.5 mile), construction workspaces, or other buffer distance; 2) county level state lists; and/or 3) SGCN by crossed habitat types provided in state WAPs. Enbridge also notes that South Dakota is included in table M-4; however, based on the SA-04 project description provided in Chapter 4, SA-04 would not cross South Dakota. Enbridge understands that, to the extent SA-04 is intended to parallel the existing Alliance natural gas pipeline, it would cross a small portion of South Dakota. Enbridge suggests DOC-EERA clarify whether SA-04 crosses South Dakota.

The USGS GAP Species Viewer (USGS GAP, 2016) cited by DOC-EERA was used to identify species with range and distribution crossing APR and SA-04. This tool only includes a small percentage of all species. As stated on the USGS GAP Species Viewer (2016) website, this program is a work in progress that currently includes over 2,000 species within the U.S. Section 5.2.5.1.2 states that GAP Analysis Program Species Models were only available for 47 bird species, 15 mammal species, and 21 reptiles for the APR and CN Alternatives; for comparison, there are 423 SGCN identified in the Illinois WAP (2016) alone, and there are over 2,000 wildlife species in the state of Minnesota (as stated on page 5-298 of the DEIS). Also, the GAP Analysis Program Species Models were not analyzed for aquatic or invertebrate SGCN.

There are a few species identified in table M-5 as Illinois SGCN, but that are not identified as SGCN in appendix 1 of the Illinois WAP (IDNR, 2016) (e.g., American pygmy shrew). In contrast, there are several Illinois SGCN that have the potential to occur in the campaigns (e.g., farmland and prairie, green cities) crossed by SA-04 (see Illinois specific discussion below) that are not included in table M-5 (e.g., marsh rice rat, Franklin's ground squirrel, Blanchard's cricket frog, spotted salamander). Upon review of the USGS GAP Species Viewer, it appears these species were not included because range / distribution information for these species is not currently available.

Because the majority of SGCN with the potential to occur on SA-04 are not available on the USGS GAP Species Viewer, DOC-EERA could remove the SGCN GAP Analysis Program Species Models completely from the FEIS, and instead provide a qualitative and, where available, quantitative, discussion of the sensitive wildlife habitats crossed by SA-04 in North Dakota, Illinois, and Iowa based on readily available state agency resources, such as the state WAPs. These discussions could be similar in nature to the Minnesota's Wildlife Action Network and Minnesota Biological Survey Sites of Biodiversity Significance discussions that are provided for the APR and CN Alternatives; as such, these discussions could consider habitat quality, species richness, and focal species and areas as defined by each state's WAP.

In the following sections, Enbridge provides highlights from the North Dakota, Iowa, and Illinois state WAPs and/or other state-agency data that Enbridge would recommend reviewing for

inclusion in the FEIS. Some of the information provided below could also be appropriate in the Vegetation and Fish and Wildlife sections of the SA-04 Impact Analysis.

North Dakota

The North Dakota WAP (Dyke et al., 2015) identifies several focus areas that are the priority for conservation actions that would be crossed by SA-04, including the Sand Deltas (see Vegetation discussion above), and the Red River and tributaries (see figures 3 and 4). As discussed in Schedule 7 of Mr. Simonson's Direct Testimony, SA-04 is routed within five miles of the Red River for approximately 102 miles and would cross approximately 119 tributaries to the Red River, including the Pembina River (MPs ND 1.4 and ND 1.7), Tongue River (MP ND 12.1), Park River (MP ND 43.3), Forest River (MP ND 53.9), Turtle River (MP ND 69.1), Goose River, (MP ND 120), Elm River (MP ND 132.1), Rush River (MN ND 149.8), Maple River (MP ND 154.7), and Wild Rice River (MPs ND 185.6 and ND 213) (see appendix G of DEIS). Key species of conservation priority within the Red River Basin include the bald eagle, red-headed woodpecker, black-billed cuckoo, river otter, northern long-eared bat, big brown bat, gray fox, and several species of fish and mussels (Dyke et al., 2015). Mussel surveys conducted in 2011 found healthy mussel populations in eastern North Dakota, including in the Maple River and Goose River, which are both crossed by SA-04. The Maple River had nine mussel species across 11 sites sampled, and the Goose River had eight mussel species in its various branches (NGFD, 2011).

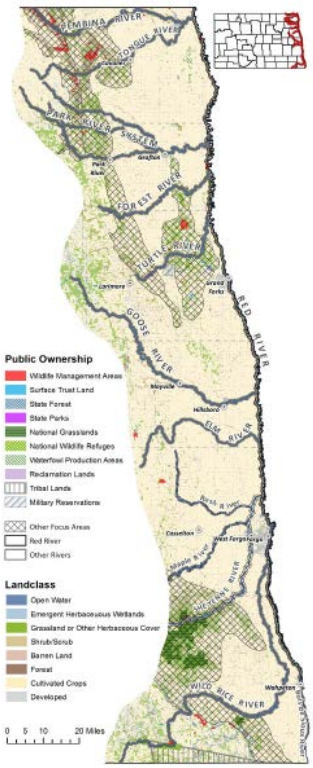

Figure 3. North Dakota State Wildlife Action Plan – Red River and Tributaries Focus Area (Source: Dyke et al., 2015)

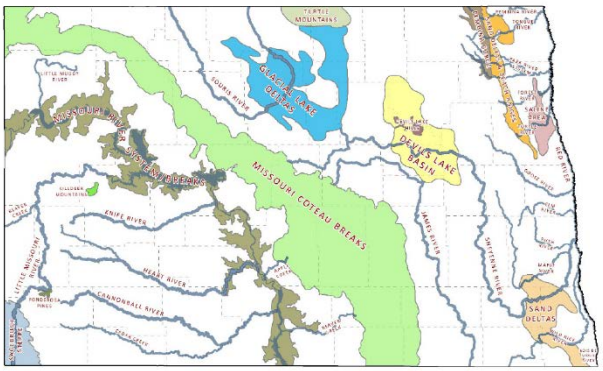

Figure 4. North Dakota State Wildlife Management Plan Focus Areas (Source: Dyke et al., 2015)

Iowa

The Iowa Geological Survey and Iowa Department of Natural Resources hosts a Natural Resources Geographic Information Systems Library (https://programs.iowadnr.gov/nrgislibx/) with a few publicly available environmental data sets that could be reviewed to identify potential SA-04 related impacts. Datasets include:

1. GAP Predicted Distributions for hundreds of amphibians, reptiles, birds, fish, and mammal species within the state of Iowa; and
2. Coldwater Streams Supporting Trout Habitat in Iowa.

Based on Enbridge's review of these data, SA-04 would cross Beaver Creek in Mitchell County, which is a coldwater stream supporting trout habitat; however, Beaver Creek is not identified in Appendix G of the DEIS. DOC-EERA may want to review these data and update the analysis of trout streams impacts accordingly.

Illinois

The 2015 Illinois WAP (IDNR, 2016) identifies campaigns and establishes conservation actions and strategies for each campaign to address the "most widespread and the most urgent issues affecting wildlife, which live in similar habitats or are responding to similar threats, in an efficient, effective, and comprehensive manner." Focal species, including SGCN, stresses and threats to wildlife and habitat, conservation actions, and management resources are established for each campaign. The Illinois WAP also establishes focal areas by campaign to target conservation actions. SA-04 would cross the following campaigns and focal areas:

Farmland and Prairie: This campaign focuses on the conservation, restoration, and management of grassland and shrubland habitats to benefit SGCN and other associated wildlife. The vast majority of native prairie has been lost in Illinois. The Illinois Department of Natural Resources (IDNR) indicates that protecting these remnant areas and the species found there is important to preserve the legacy of Illinois native prairies as well as the value of these sites to researchers to better understand the interactions and diversity of native flora and fauna found in native prairie (IDNR, 2016). The highest priority site, which is a key area to meet the conservation goals of the Farmland and Prairie Campaign, is the Midewin Tallgrass National Prairie. Depending on the location of the SA-04 terminal in Joliet, Illinois, SA-04 could directly impact or abut and possibly indirectly impact the Midewin Tallgrass National Prairie. SA-04 would also be located within less than 0.5 mile of Goose Lake Prairie State Natural Area and Des Plaines State Fish and Wildlife Area. The Kankakee River Sands Area is a high priority area that would also be crossed by SA-04.

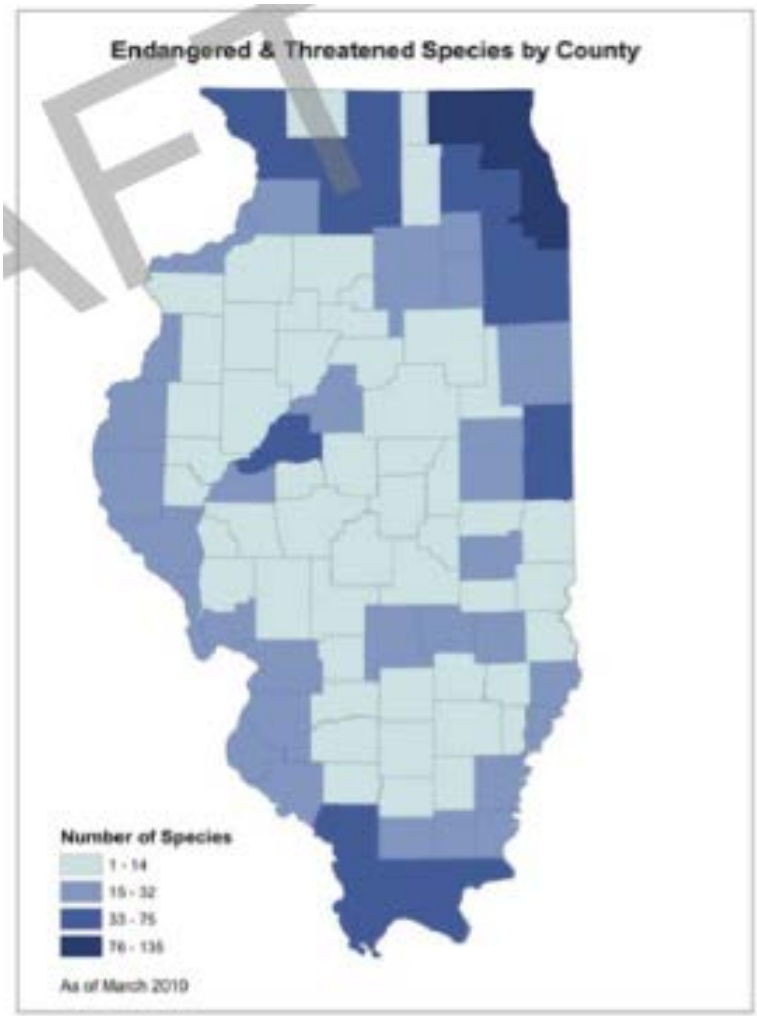

Figure 5. Illinois Endangered and Threatened Species by County (Source: IDNR, 2016)

Green Cities: The Green Cities Campaign of the Illinois WAP advances habitat conservation and

restoration in support of wildlife species within the state's developed metropolitan areas. Beyond benefits to wildlife, the IDNR notes that it has been repeatedly documented over the last decade that the integration of nature and wildlife habitat into, or back into, the cities and communities has multiple benefits to the social, economic, and human health of the urban citizen. Illinois' Metropolitan Areas support significant populations of SGCN, which include species identified by the Illinois Endangered Species Protection Board as Threatened or Endangered Species (see figure 5). These Illinois Metropolitan Areas also include a significant number of Illinois Nature Preserves and Illinois Natural Area Inventory sites, fall within designated IWAP Conservation Opportunity Areas, and Important Bird Areas. The goals and actions identified within the Green Cities/Metropolitan Areas Campaign are critically important to supporting SGCN and the habitats upon which they depend. Collectively, these Metropolitan Areas provide valuable statewide linkages for migratory species that are listed as SGCN (IDNR, 2016). SA-04 would cross both the Quad Cities Metropolitan Area and Chicago Metropolitan Area (see figure 6), which include the following priority areas:

1. The Midewin National Tallgrass Prairie is within the Chicago Metropolitan Area in Will County. Midewin is the first tallgrass prairie to be established under federal control. Encompassing over 19,000 acres, it is the largest tallgrass prairie complex in the state, and is second only to Prairie Ridge State Natural Area in the number of nesting area-sensitive grassland bird species (IDNR, 2016).
2. IDNR is working to maintain and restore mesic oak woodland communities along the Des Plaines River and Fox River to benefit the blue spotted salamander, red-headed woodpecker, and other species that inhabit this community type. SA-04 crosses both the Fox River and Des Plaines River. Portions of both the Fox River and Des Plaines rivers also provide suitable habitat for the Iowa darter. The mottled sculpin can also be found in tributaries to the Fox River (IDNR, 2016).

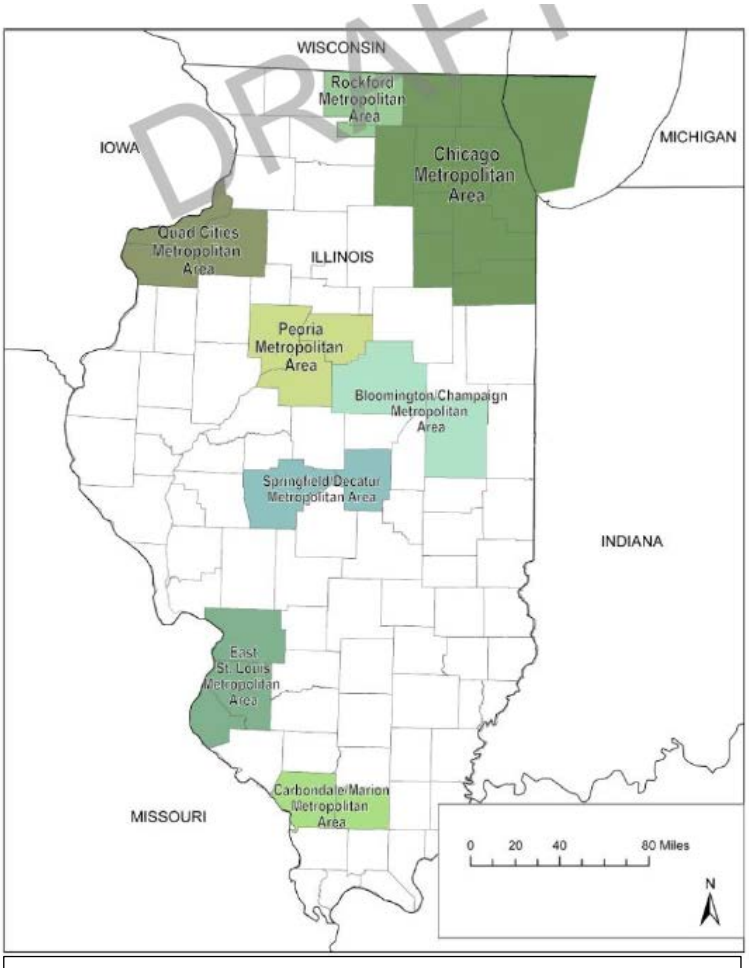

Figure 6. Illinois WAP Metropolitan / Urban Focus Area (Source: IDNR, 2016)

Streams: The Streams Campaign focuses on maintaining robust communities of native wildlife and improving the capacity of lands and waterbodies to support populations of aquatic SGCN through restoration, enhancement, and protection (see Figure 7). Over 200

species of fish, 80 species of mussels, and 70 species of freshwater snails are known to have resided in Illinois waters along with numerous crayfish, frogs, salamanders, snakes, turtles, waterfowl, and hundreds of species of aquatic insects. Based on 2011 monitoring data, aquatic life use was fully supported in 60.8% of stream miles and 92.2% of standing waters that were assessed in Illinois (IDNR, 2016). Bol et al. (2007) developed a multi-taxa rating system to categorize the integrity and diversity of aquatic biota and identify stream reaches with biological significance in Illinois. Over 1,000 stream segments were rated in Bol et al. (2007) with 13% characterized as Class A for diversity and nine percent as Class A for biotic integrity. One hundred twenty-two stream segments (nine percent of all stream segments rated) were identified as biologically significant (see Figure 8) (IDNR, 2016) (data available at: http://www.dnr.illinois.gov/conservation/BiologicalStreamratings/Pages/default.aspx).

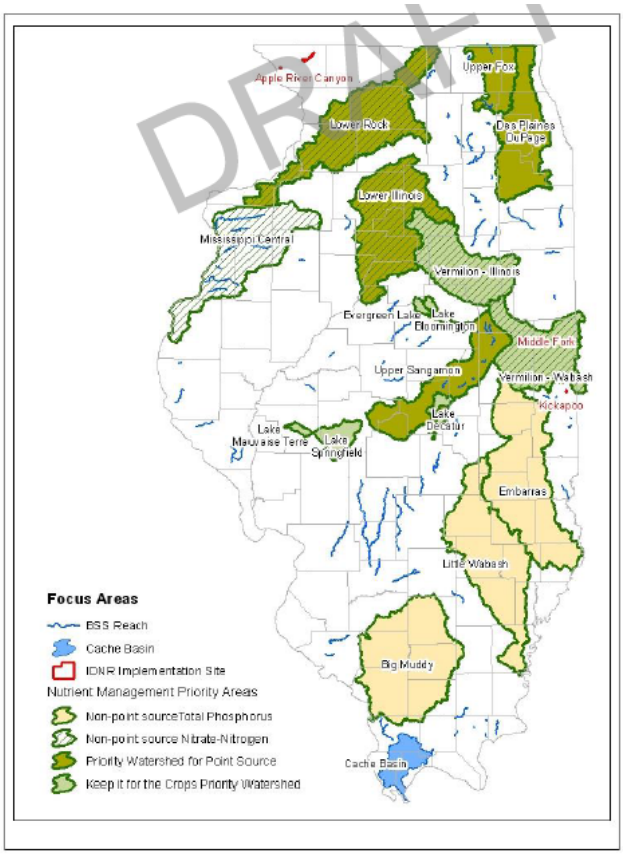

Figure 7. Illinois State Wildlife Management Plan Streams Campaign Focus Areas (Source: IDNR, 2016)

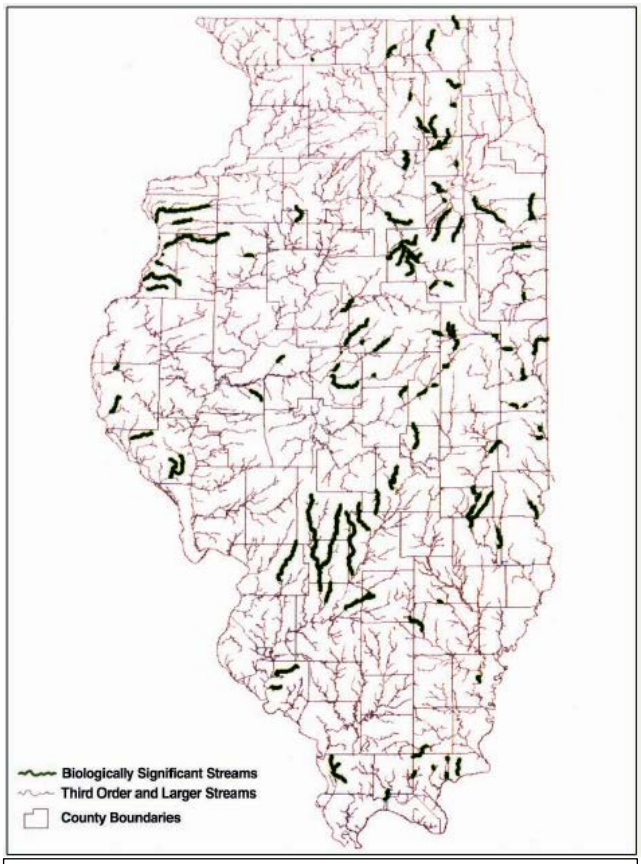

Figure 8. Illinois Biologically Significant Streams (Source: IDNR, 2008)

Wetlands: The Wetlands Campaign focuses on the conservation of wetlands throughout Illinois, but with specific emphasis on priority natural divisions with the greatest wetland resources or potential (Schulthies and Eichholz 2014). Illinois has lost over 90% of its original wetlands (Dahl 2006), with most remaining wetlands clustered in relatively small spatial areas within six natural divisions (IDNR, 2016). SA-04 would cross three of the six natural divisions, which are the focus areas of the Wetland Campaign: Upper Mississippi River and Illinois River

Bottomlands, Illinois River and Mississippi River Sand Areas, and Northeastern Morainal (see figure 9). Focal species found in these focus wetland areas include Blanding's turtle, black-crowned night heron, black tern, Illinois chorus frog, lesser scaup, odonates, short-billed dowitcher, Wilson's snipe, and wood duck.

Appendices 1, 6, 8, and 9 of the Illinois WAP (2016) identify the SGCN species that have the potential to occur in the Farmland and Prairie, Green Cities, Streams, and Wetlands campaigns, respectively.

Conservation Opportunity Areas (COAs): are known locations with significant existing or potential wildlife and habitat resources, where partners are willing to plan, implement, and evaluate conservation actions, where financial and human resources are available, and where conservation is motivated by an agreed-upon conservation purpose and set of objectives are also delineated and described in the Illinois WAP (2016). SA-04 would cross the following COAs (see figure 10):

1. *Upper Mississippi River*: the IDNR and others are working toward reestablishing wetland communities in the Upper Mississippi River to provide habitat to shorebirds, waterbirds, waterfowl, and herptiles; and to improve surface water storage capacity.
2. *Rock River*: the Rock River is a major corridor for migratory waterfowl and neotropical birds. Walleye are native to the upper Rock River, and its tributaries support the mottled sculpin.
3. *Green River*
4. *Lower Fox River*
5. *Midewin Grasslands*
6. *Kanakakee Sands*

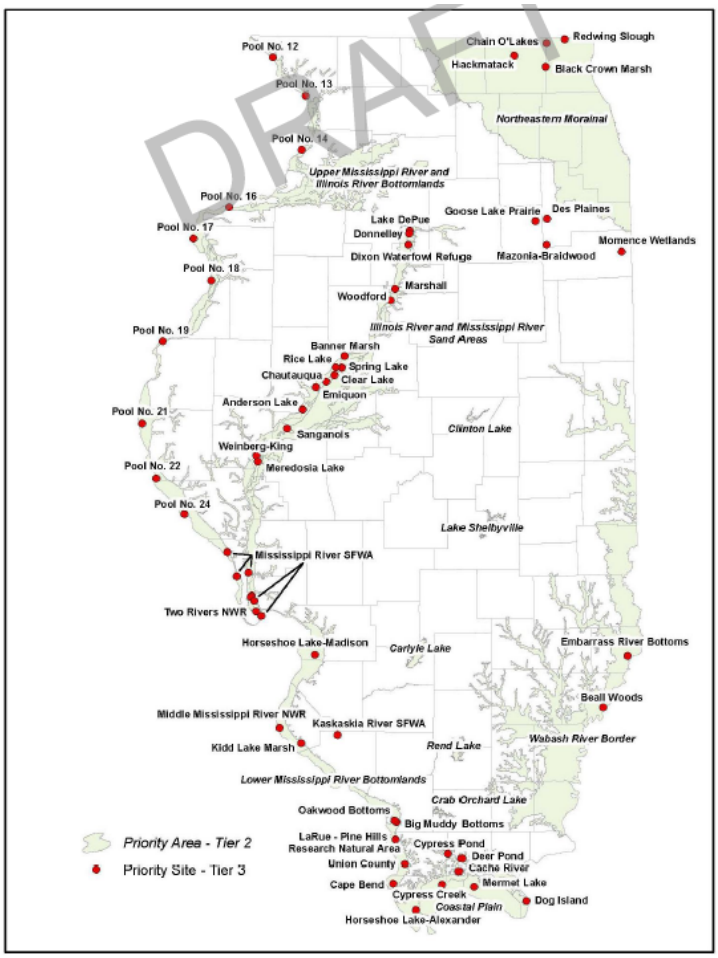

Figure 9. Illinois State Wildlife Management Plan Wetlands Campaign Focus Areas (Source: IDNR, 2016)

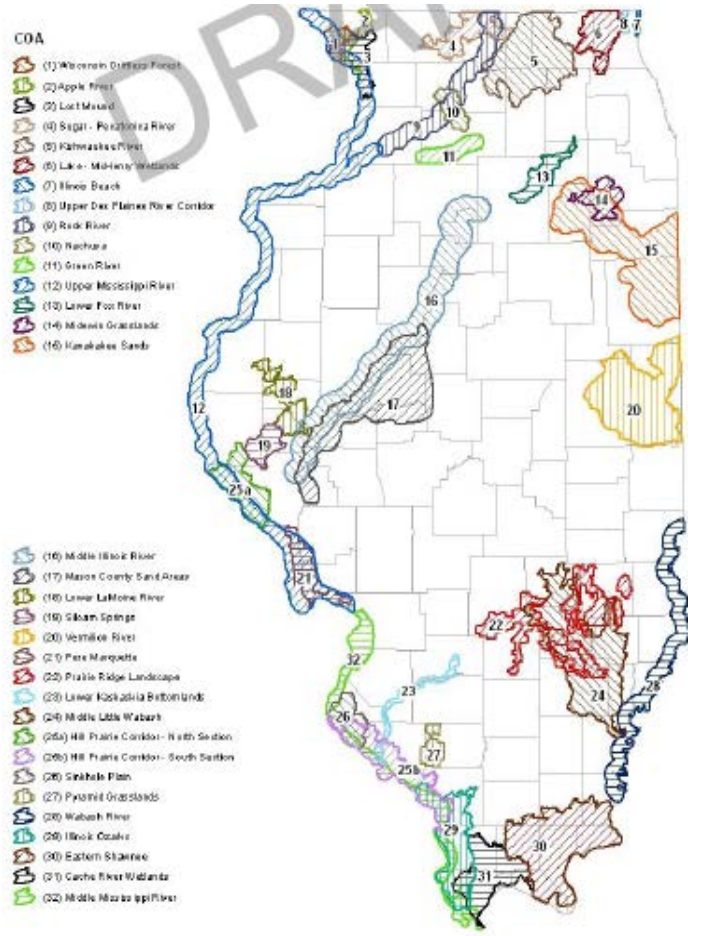

Figure 10. Illinois State Wildlife Management Plan Conservation Opportunity Areas (Source: IDNR, 2016)

Land Use

Iowa

The Iowa Geological Survey and Iowa Department of Natural Resources hosts a Natural Resources Geographic Information Systems Library (https://programs.iowadnr.gov/nrgislibx/) with a few publicly available environmental data sets that should be reviewed to identify potential SA-04 related impacts. Datasets include:

Recreation:

1. Canoe Routes for Major Rivers in the State of Iowa
2. Iowa's State and Federal Scenic Byways
3. Recreational Trails in Iowa

Based on review of these data, the SA-04 centerline and construction workspace would cross the following canoe routes: Little Cedar River (MP IA 501.9), Wapsipinicon River (MP IA 510.4), Little Wapsipinicon River (MPs IA 516.3 and IA 544.2), and Mississippi River (MP IA 672.3).

The SA-04 centerline and construction workspace would also cross the Grant Wood Scenic Byway (Highway 64), Great River Road Scenic Byway (U.S. 67), and Lincoln Highway Scenic Byway in Iowa, and two bike recreational trails maintained by the U.S. DOT.

Illinois

SA-04 would cross the Rock River (MP IL 694.5) in Whiteside County, Illinois. The Rock River Trail is a 320-mile water trail traversing Wisconsin and Illinois designated by the U.S. DOI. Rock River Trail Scenic and Historic Route was established by state legislation, paralleled by the Rock River Trail Bike Route (on- and off-trail with hiking opportunities).

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MLP Due Diligence Process for Screening Pipeline Maintenance Locations for Possible Contamination

Version 2 Dated June 2014

Background: Pipeline maintenance sites can be located in rural, residential, or industrial areas that may contain surface and subsurface contaminants that could pose a risk to site workers, the public, and the environment. Past practices to screen sites for the presence of potential contamination have varied and development of a Standard Operating Procedure (SOP) is necessary. The goal of this SOP is to reduce the potential for pipeline maintenance activities to inadvertently expose workers, the public, or the environment to contaminants present at pipeline maintenance sites.

This SOP is based on the assumption that the ROW is a previously disturbed area that has low potential for the presence of surface or subsurface contaminants that pose a threat to maintenance site workers or the public. In general, due diligence screening of maintenance sites should take into consideration the following potential contaminants that could have been disposed, spread, or spilled on the ROW, including but not limited to:

- Crude oil from past Enbridge spills and releases;
- Petroleum products associated with underground storage tanks;
- Industrial chemicals and products (metals, organic compounds, and pesticides);
- Agricultural chemicals and pesticides; and
- Other contamination.

Standard Operating Procedure:

This SOP is Enbridge Environment's process for addressing potential soil or groundwater contamination at maintenance digs and does not cover the actions of Enbridge Safety or Enbridge Lands. This SOP does not address the contractor's requirements; the contractor must follow the EMP and applicable permits and stop work if any environmental or safety concerns are present or suspected.

Step 1 - Complete Initial Site Screening-

Conduct record search of Enbridge Historic Leaks Database and readily available web- and map-based federal and state databases of potentially contaminated sites (see Appendix A). Identify all sites (both Enbridge historical releases and non-Enbridge sites) within 1,200 feet of the dig site.

Deliverable: Indicate on PERW that database search was completed; indicate which database(s) were searched; and indicate either No Further Action or Further Investigation Warranted. If further action is warranted, summarize for the findings and source(s) for the Enbridge Environment MLP Lead. Provide recommendations for further action that may include the following:

- Additional research
- Contacts with federal, state, local, and/or tribal agencies
- Estimate depth to groundwater and flow direction
- Contacts with land owners (Step 2)
- Site visit (Step 2)
- Screening, Sampling, and/or Analysis (Step 3)

The Enbridge Environment MLP Lead will notify other Enbridge staff as appropriate. The environmental consultant will provide notice to EI prior to site visit.

Step 2 - Conduct Phase 1 Site Visit

A) If no concerns are identified in Step 1, EI will indicate in Phase I report if anything identified during Phase I constitutes environmental concern. See Appendix B for Phase I form containing questions pertaining to potential contamination.

B) If concerns were identified in Step 1, the Phase I team will visually assess the dig site and surrounding area as warranted.

C) If concerns were identified in Step 1 but there is no scheduled Phase I, Enbridge Environment may direct the environmental consultant to conduct a reconnaissance site visit.

D) Results of the visual assessment at the time of the Phase I are documented in the portion of the Phase I inspection report which pertains to potential environmental concerns. The Phase I inspection report is provided to the environmental consultant.

E) The environmental consultant adds results of visual assessment at time of Phase I to field screening memo. Environmental consultant, in consultation with Enbridge Environment MLP Lead, recommends additional investigative work, as appropriate. If no further action is required, the site is cleared for execution with similar language to the following in the clearing email notice. In general, the language for the clearing email referencing the suspected and/or historical contamination should be provided to the Enbridge Environment MLP Lead for review if the suspected origin of the contamination was not the result of an Enbridge release. The language for the clearing email should be provided to the Enbridge Environment MLP Lead for review if the suspected origin of the contamination was the result of an Enbridge release, if warranted.

For example:

If suspected landfill debris, unusual odors, or other visual indications of impacts are encountered during excavation activities, the crew will stop work immediately and contact Construction Management and Enbridge Environment. In the event impacted soil or waste

material is excavated, soil and/or slurry will need to be segregated from clean material at the designated stockpile location. Impacted material should be placed in an area with a lined berm, or within a roll-off container (or equivalent). Enbridge Environment will collect the necessary soil sample(s) for laboratory analyses for waste disposal.

The depth to groundwater is estimated to be 9 to 11 feet below ground surface and is assumed to be contaminated (based on available information from nearby groundwater monitoring wells associated with the adjacent landfill and readily available public information). If dewatering is necessary during excavation activities, the water will need to be containerized. Enbridge Environment will collect the necessary waste water sample(s) for laboratory analyses for waste disposal.

OR

This dig is located approximately 880 feet west of an historical pipeline release location. The leak report indicates the release occurred on May 23, 1988. Approximately 40 barrels were released and 35 were recovered; the contaminated area was 100'x250'. Environment recommends that the CM discuss the presence of the historical release sites in close proximity to the planned dig sites with the local PLM supervisor for this region to obtain any additional information about the sites and notify PLM that historical contamination may be encountered during the digs. If contaminated soils are encountered, stop work immediately and contact Construction Management. Please notify Environment after the immediate notifications.

F) If additional investigation is warranted, the follow up actions should include contacts with the land owner. Enbridge Environment MLP Lead will assist Enbridge Lands in contacting the landowner to request information about past land use on and adjacent to the dig site.

G) If warranted and in consultation with Enbridge Environment MLP Lead, additional record review or agency contact may be conducted.

Step 3 - Develop Site Sampling and Analysis Plan

If warranted, Enbridge Environment will retain a qualified environmental consultant to assist in preparation of a work plan that will be used to guide sampling and analysis, which will be used to determine the degree and extent of contamination at the work area.

The consultant will provide the draft work plan to Enbridge Environment for review and approval. The consultant will proceed with work plan implementation only after receiving written approval from Enbridge Environment.

Step 4 - Conduct Field Sampling and Reporting

Enbridge Environment will implement the work plan. Following the receipt of analytical results, the consultant will prepare a draft report summarizing results and providing recommendations

for further investigation. The draft report will be submitted to Enbridge Environment for review and approval.

Based on the findings of the report, Enbridge Safety will be notified, who will follow their internal procedures for notifications and safety planning.

If no contaminants are found in investigation, the dig site will be cleared for execution with no conditions.

Step 5 - Issue Environmental Clearance

Conditionally clear dig with environmental conditions that are necessary using a site specific explanation similar to that in Step 2. A kick-off meeting will be conducted to review site conditions and precautions prior to Contractor mobilization. Safety and engineering requirements will be communicated by Enbridge Safety and the Project Engineer, respectively.

MLP Due Diligence Process for Screening Pipeline Maintenance Locations for Possible Contamination

Appendix A – Federal and State Contaminated Site Inventories and Databases

Federal

EPA Cleanups in My Community (includes Superfund National Priority List (NPL) sites, RCRA Corrective Actions (CA), Brownfields properties, federal facilities under EPA's cleanup programs, and removals from EPA's epaosc.net site):

http://ofmpub.epa.gov/apex/cimc/f?p=cimc:63:0

Illinois

IEPA Bureau of Land searchable databases:

http://www.epa.state.il.us/land/database.html

Indiana

IDEM Institutional Controls Registry Remediation Sites Report [PDF]:

http://www.in.gov/idem/files/institutional_controls_registry_report.pdf

IDEM Institutional Controls Registry Solid Waste Sites Report [PDF]:

http://www.in.gov/idem/files/institutional_controls_registry_report_sw.pdf

IDEM Voluntary Remediation Program (VRP) Project Site List:

http://www.in.gov/idem/4472.htm

Kansas

KDHE Bureau of Environmental Remediation Identified Sites List Information:

http://kensas.kdhe.state.ks.us/pls/certop/ISL_Public_Search

Michigan

MDEQ Environmental Mapper:

http://www.mcgi.state.mi.us/environmentalmapper/#SetZoomOut

MDEQ Brownfields - USTfields Site Directory:

http://www.deq.state.mi.us/ustfields/

Minnesota

MPCA What's in My Neighborhood? (can be downloaded and used in GIS or Google Earth):

http://www.pca.state.mn.us/index.php/data/wimn-whats-in-my-neighborhood/whats-in-my-neighborhood.html

MDA What's In My Neighborhood? Agricultural Interactive Mapping:

http://www.mda.state.mn.us/chemicals/spills/incidentresponse/disclaimer.aspx

MDA County Spill Report:

http://www.mda.state.mn.us/chemicals/spills/incidentresponse/countyspills.aspx

Missouri

MoDNR Hazardous Waste Program - Brownfields Voluntary Cleanup Program Interactive Mapping System:

http://www.dnr.mo.gov/simplemap/construct.do?config=longtermstewardship

MoDNR Hazardous Waste Program - Hazardous Waste Generators Map:

http://www.dnr.mo.gov/internetmapviewer/makemap.map?lyrs=ws12_tr6_tr5_tr3_tr2_tr1_bo2_wt2_wt18_wt1_aq1_wt17_bo1_na4_&iext=213366+860229+3974406+4509389&activecat=

New York

New York State Department of Environmental Conservation Environmental Remediation Databases:

http://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=1

New York State Department of Environmental Conservation Region 9 - Environmental Remediation Project Information:

http://www.dec.ny.gov/chemical/37554.html

North Dakota

North Dakota Department of Health Underground Storage Tank Registry:
http://www.ndhealth.gov/ehs/foia/UST-LUST-DataExport/ust-data.aspx

North Dakota Department of Health Leaking Underground Storage Tank Registry:

http://www.ndhealth.gov/ehs/foia/UST-LUST-DataExport/lust-data.aspx

Ohio

Ohio EPA Brownfield Inventory Database:

http://epa.ohio.gov/derr/SABR/brown_dtb/brownfieldinventory.aspx

Oklahoma

Oklahoma DEQ Institutional Controls Web Viewer for Brownfields, VCP, SCAP, and Superfund:

http://www.deq.state.ok.us/lpdnew/ICviewer.html

Wisconsin

WDNR RR Sites Map (Barr has a Google Earth kml of this):

http://dnrmaps.wi.gov/sl/?Viewer=RR Sites

WDNR Bureau for Remediation and Redevelopment Tracking System (BRRTS) on the Web (searchable database):

http://dnr.wi.gov/botw/BasicSearchAction.do

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Enbridge Integrity Digs
Preliminary Dig Site Evaluation Form

Pipeline/Milepost: Click here to enter text.

Evaluation date: Click here to enter a date.

Environmental inspector: Click here to enter text.

Girthweld: Click here to enter text.

Site inspector name: Click here to enter text.

State/County: Click here to enter text.

Others present: Click here to enter text.

Evaluation type: Preliminary

Site type: ☐Wetland ☐Pasture ☐Cropland ☐Residential ☐Wooded ☐Roadway ☐Other (specify): Click here to enter text.

Detailed description of access route: Click here to enter text.

Has the access route been confirmed by R.O.W.? ☐Yes ☐No ☐Unknown

Are alternate access routes available? ☐Yes ☐No

If yes, would the alternate route decrease environmental impacts/permitting and/or matting? ☐Yes ☐No ☐Unknown

Will access to work area require cutting trees/brush/branches? ☐Yes ☐No ☐Unknown

If yes, number and size of trees/brush to be removed, dimensions of area to be cleared: Click here to enter text.

If yes, were any nests observed in the trees/brush/branches to be removed? ☐Yes ☐No ☐Unknown

Will the estimated work area exceed one acre? ☐Yes ☐No ☐Unknown

Will additional temporary workspace be needed outside of the permanent easement? ☐Yes ☐No ☐Unknown

If yes, provide details (note if in wetland or upland): Click here to enter text.

Apparent surface water features <500 feet from work area (i.e., lake, river, stream, drain, pond, wetland)? ☐Yes ☐No

If yes, description of surface water features and distance from work site: Click here to enter text.

Will a wetland be impacted? ☐Yes ☐No

If yes, total linear distance of wetlands impacted, in feet: Click here to enter text.

Will a waterway be crossed? ☐Yes ☐No

If yes, stream dimension: Click here to enter text., bank height: Click here to enter text., water depth: Click here to enter text., bankfull width: Click here to enter text.

Will a waterway impacted by excavation? ☐Yes ☐No

If yes, description: Click here to enter text.

**Provide additional details and photos if work will require crossing or working within a waterbody in Michigan or Wisconsin.

Where and what type of erosion and sediment controls appear to be needed? ☐NA Click here to enter text.

Enbridge Integrity Digs
Preliminary Dig Site Evaluation Form

Pipeline/Milepost: Click here to enter text.

Evaluation date: Click here to enter a date.

Special construction methods required (Check all that apply):

☐None
☐Aquadam
☐Permanent fill
☐In-stream work
☐Drain tile
☐Site inundated with water
☐Temporary well points
☐Other: Click here to enter text.

Is dewatering anticipated? ☐Yes ☐No

Is dewatering likely to discharge to surface water? ☐Yes ☐No

Description of probable dewatering plan: Click here to enter text.

Note any plants, animals or nests observed: Click here to enter text.

Were any of the following environmental concerns observed on the ROW or adjoining lands? ☐Yes ☐No If yes, provide photos and details: Click here to enter text.

- Waste piles or evidence of dumping or other waste disposal
- Man-made hills or depressions
- Stressed or dead vegetation, discolored soil or discolored water
- Evidence of any unknown material on ground surface
- Evidence of present or past chemical storage or use
- Evidence of aboveground or underground storage tanks
- Active or closed buildings that suggest current or past industrial activity
- Land use associated with potential contamination (landfills, waste treatment plants, agricultural pesticide storage facilities, storage ponds, septic fields, drains, culverts, etc.)

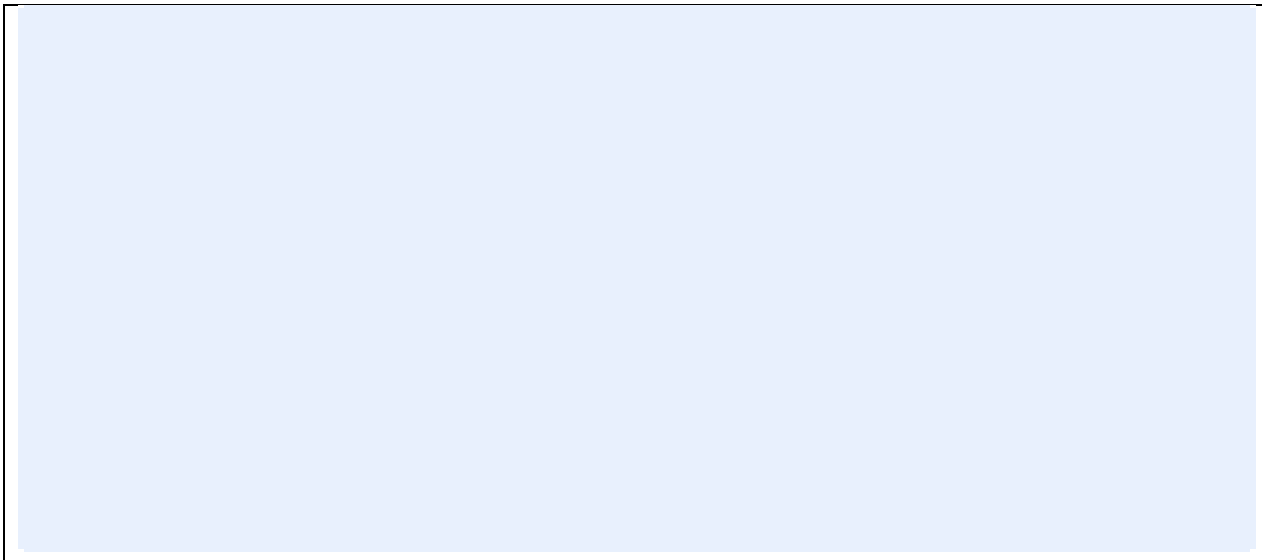
Access route:

Site plan, as described during Phase I, if requested:

Enbridge Integrity Digs
Preliminary Dig Site Evaluation Form

Pipeline/Milepost: Click here to enter text.

Evaluation date: Click here to enter a date.



Enbridge Integrity Digs
Preliminary Dig Site Evaluation Form

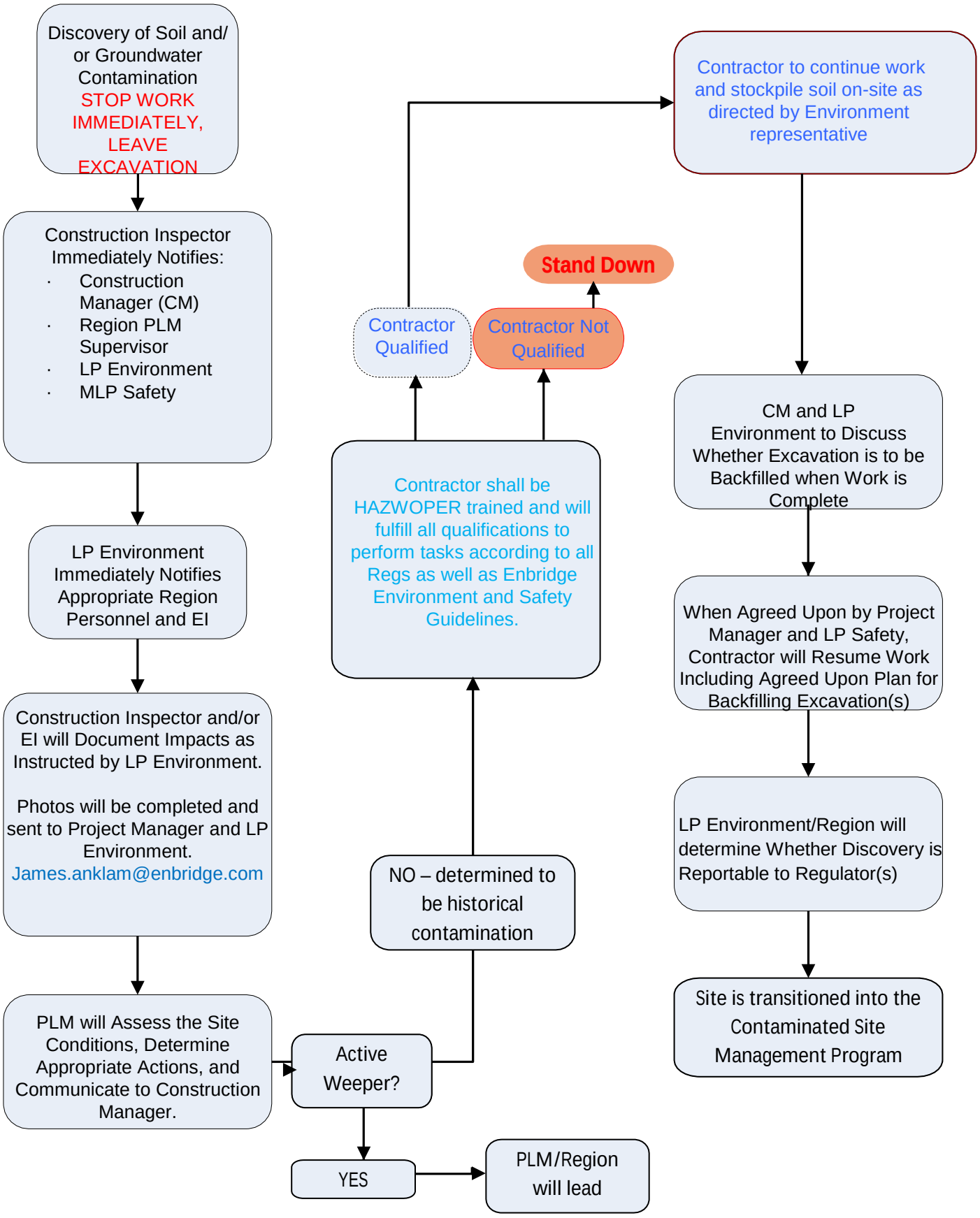
Pipeline/Milepost: Click here to enter text.

Evaluation date: Click here to enter a date.

Include captions for all photos; include direction.

Photo 1: Click here to enter text.	Photo 2: Click here to enter text.
Photo 3: Click here to enter text.	Photo 4: Click here to enter text.
Photo 5: Click here to enter text.	Photo 6: Click here to enter text.

Mainline Projects (MLP) Procedures to Address Discovery of Contamination at an Active Dig Site April 2014



BARR

Contaminated Sites Management Contractor Plan

Wisconsin

Segment 18 Project

Prepared for
Enbridge Energy

June 2017



ENBRIDGE

325 South Lake Avenue, Suite 700
Duluth, MN 55802
218.529.8200
www.barr.com

Contaminated Sites Management Plan

Segment 18 Project Contractor Plan

June 2017

Contents

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1.0 Introduction

This Contaminated Sites Management Contractor Plan (CSMP or Contractor Plan) has been prepared by Enbridge Energy, Limited Partnership (Enbridge) in preparation for the Segment 18 Project (Project) work that will take place in Wisconsin. The purpose of this Contractor Plan is to present guidance to Contractors for managing historically contaminated soil, water, debris or other materials that may be encountered during Project construction in Wisconsin.

The Project will involve replacing the existing Line 3 pipeline with a 34-inch pipe from the Minnesota-Wisconsin border to Enbridge's Superior Terminal facility (Figure 1). The Project pipeline will be constructed with modern construction methods and materials, as depicted in Figure 2. The topsoil in the right-of-way (ROW) will be stripped to a depth of 12 inches and temporarily stockpiled in the work space adjacent and parallel to the proposed pipeline trench. Trenching will be completed to a depth of approximately 6 to 8 feet below grade. Trench soil will be stockpiled separately in the work space to allow the topsoil to be replaced on top after trench backfilling. Dewatering is anticipated to take place extensively along the Project corridor. Both horizontal directional drill (HDD) and hydrovac activities are anticipated to produce slurry mud material which will be managed separately from trench soil.

1.1 Contaminated Material

1.1.1 Construction Related Spills

New spills generated during Project construction will be managed in accordance with the project-specific Spill Prevention, Containment, and Control Plan and Enbridge's Environmental Protection Plan that have been developed as documents separate from this Contractor Plan.

1.1.2 Known Potential Contaminated Sites

Contamination may be caused by petroleum products, agricultural chemicals, asbestos, or other industrial by-products that are present as a result of historical releases whether accidental, unknown or otherwise. Locations where contamination fitting this definition is encountered during the Project will be considered a contaminated site.

Enbridge conducted a review of environmental data to identify sites with potential contamination and/or historical environmental issues along the proposed Project route. The review included a search area corridor constituting 1,200 feet on either side of the route. Sites with known potential to encounter contamination are listed in Table 1 and are displayed in Figure 3.

1.1.3 Identifying Contamination

Contaminated soil, water, or debris will initially be identified by the Construction Contractor. Contamination will be identified by one or more of the following characteristics:

- Petroleum odors in soil or water
- Visual petroleum staining in soil or on vegetation

- Petroleum free product or sheen (e.g., rainbow or bluish colors) on water, soil, or debris surfaces
- Evidence of improper waste disposal such as industrial garbage, scrap materials, used containers, or other by-product type wastes
- Presence of man-made hills, depressions, or waste piles or evidence of dumping or other waste disposal
- Stressed or dead vegetation
- Soil that is discolored compared to adjacent or nearby soils
- Evidence of present or past chemical storage or use, including tanks, drums or containers
- Active or closed buildings and structures that suggest current or past industrial activity
- Evidence of land use associated with potential contamination (landfills, waste treatment plants, agricultural pesticide storage facilities, storage ponds, septic fields, drains, culverts, etc.)

If contamination is identified, an onsite Environmental Consultant may field-screen soil as it is being excavated for organic vapors using a photoionization detector (PID). Soil with a headspace reading greater than 10 parts per million (ppm) or with other evidence of contamination (e.g. chemical odor, discoloration, sheen, free-product) will be considered contaminated.

1.2 Uncontaminated Material

Non-contaminated debris (e.g. common household waste, construction debris, old appliances, etc.) with no apparent signs of contamination may be encountered during construction of the Project. If manmade debris is identified by the construction contractors, it will not be suitable for reuse on the Project as backfill.

The Construction Contractor may encounter natural organic (i.e., biogenic) sheens where the Project crosses wetlands, ditches, or other water-saturated surfaces. A biogenic sheen can often be identified by breaking up the sheen with a stick and observing the sheen behavior. If the sheen remains broken into platelets and fails to re-coalesce quickly, it may be considered natural and not a source of hydrocarbon contamination. If the sheen quickly reforms or exhibits a typical rainbow petroleum-type sheen on the surface of the water, then the material will be considered contaminated.

If there is any doubt as to whether material encountered is contaminated, Enbridge Environment will be contacted to complete additional assessments and to determine appropriate management actions.

2.0 Roles and Responsibilities

The following section provides a summary of roles and responsibilities as they pertain to contaminated site management during the Project.

2.1 General Project Perspective

Enbridge is committed to achieving a high standard of environmental protection and is committed to the proper management of unanticipated environmental conditions, including contamination, encountered during pipeline construction.

Enbridge's expectations for work during the Project include the following:

- conduct all work activities safely and effectively;
- work with all stakeholders together in a constructive fashion to accomplish Project objectives while protecting the interests of all parties; and
- comply with regulatory rules and guidelines.

Multiple parties will be working together to ensure proper installation of the pipelines while maintaining environmental compliance. The parties expected to have a major role in maintaining environmental compliance and proper management of contaminated materials are Enbridge, its Consultants and Contractors, Government Agencies, and other stakeholders.

2.2 Enbridge Major Projects Environmental Staff

Enbridge Major Projects Environmental Staff are included in the attached Contact List (Appendix A). The responsibilities of Enbridge Major Projects Environmental Staff associated with this project include:

- manage environmental permit compliance during Project construction (does not include in-depth management of contaminated sites);
- serve as the interface between the Project Engineering staff, contractors, and the Liquid Pipelines Environmental Staff;
- oversee site-specific management and disposal of debris that may be encountered during construction; and
- track construction progress and advise Enbridge's Liquid Pipelines Environmental Staff if contamination is encountered at any given location.

2.3 Enbridge Liquid Pipelines Environmental Staff

Enbridge Liquid Pipelines Environmental Staff are included in the attached Contact List (Appendix A). The responsibilities of Enbridge Liquid Pipelines Environmental Staff associated with this project include:

- direct activities specifically associated with the CSMP for the entire Project;
- serve as the primary point of contact with regulators when dealing with contaminated sites;
- provide site-specific oversight for CSMP activities conducted where the line is collocated along Enbridge's existing pipeline corridor(s) and facilities;
- work directly with the Environmental Consultant (defined below) to implement the CSMP;
- oversee site-specific management and disposal of contaminated soil or groundwater that may be encountered during construction;
- maintain and update this CSMP, as necessary; and
- provide advance notice to applicable regulatory agencies when Project construction excavation is within one day of a location of a potentially contaminated site.

2.4 Environmental Consultant

Environmental consultant responsibilities associated with this project include:

- conduct a desktop review of databases with information pertaining to known or potentially contaminated sites prior to construction;
- respond to reports of contamination at the direction of the Liquid Pipelines Environmental Staff;
- oversee and coordinate site-specific management and disposal of contaminated materials encountered during construction (with Enbridge Liquid Pipelines Environmental Staff approval);
- document site conditions at contaminated sites prior to construction backfilling using appropriate field screening and analytical sampling methods (including completing Appendix B, Site Investigation Field Sampling and Screening Log);
- maintain a database of contaminated sites encountered during the Project;
- manage records associated with contaminated material management and disposal; and
- prepare site-specific memorandums and a final Project report of findings for sites addressed under the CSMP during Project construction.

2.5 Contractors

2.5.1 Chief Inspector

Chief Inspector responsibilities associated with this project include:

- notify the Enbridge Major Projects Environmental Staff when construction activities involving ground disturbance are two days out from work commencing at known or potentially contaminated site; and

- provide initial notification to Enbridge Environmental Inspector upon discovery of any type of contamination at a site regardless of whether it is previously known or newly discovered.

2.5.2 Environmental Inspector

Environmental inspector responsibilities associated with this project include:

- maintain overall environmental permit compliance during construction activities (does not include comprehensive management of contaminated materials);
- serve as an onsite point of contact in the field during construction and restoration;
- provide an initial assessment and onsite guidance regarding contamination prior to mobilization of the Environmental Consultant; and
- notify Enbridge Major Projects Environmental Staff and complete the attached Contaminated Site Response Form (Appendix B) when contamination or suspected contamination is encountered during construction.

2.5.3 Construction Contractor

Construction Contractor responsibilities associated with this project include:

- continually evaluate the pipeline excavation for unanticipated conditions including potential contamination;
- provide the initial report to the Chief Inspector if contamination is encountered at a site; and
- work with Enbridge Liquid Pipelines Environmental Staff and the Environmental Consultant to arrange for proper removal, temporary storage/containment, and transport of contaminated materials offsite.

2.6 State Regulatory Agency

Enbridge Environmental Staff will work with the Wisconsin Department of Natural Resources (WDNR) as the government agency with jurisdiction over contaminated sites encountered during Project construction. Only representatives from Enbridge will provide notifications and contact with the WDNR unless explicit instructions are given by Enbridge indicating otherwise. The contact information for the WDNR office is provided below:

Wisconsin Department of Natural Resources
Remediation and Redevelopment Program
1701 N. 4th St.
Superior, WI 54880
Phone: (715) 392-7822

3.0 Contractor Response Actions

In the event that contaminated soil, water, or debris is encountered, the Construction Contractor will take the following response actions which are depicted in the Contamination Management Flowchart (Appendix D).

1. **Cease Work**
   - The Construction Contractor will cease work activity in the vicinity of the contamination.

2. **Address Safety**
   - The Construction Contractor will refer to the Project Safety Plan and consult with Enbridge's Project Safety representatives to determine proper health and safety actions.

3. **Notify Enbridge**
   - The Construction Contractor will notify the Chief Inspector who will notify the Environmental Inspector as soon as possible after taking initial safety precautions.
   - The Environmental Inspector will notify Enbridge Liquid Pipeline Environmental Staff and will complete the Environmental Inspector Contaminated Site Response Form (Appendix C) documenting response actions and estimated impacts.
   - Enbridge Liquids Pipeline Environmental Staff will make a determination as to whether the contamination is due to an active/ongoing release or a historical release of contamination.

4. **Prevent Contaminant Migration**
   - Build earthen dams to isolate the contamination
   - Deploy sorbent pads and booms to remove and isolate petroleum contamination

5. **Containerize Contaminated Material**

   The Construction Contractor will segregate contaminated material from clean material to the extent possible. The contaminated material will be clearly labeled with the milepost and date it was removed from the trench. The material will be stored at the job site until disposal at an offsite facility is approved.

   - **Contaminated dry soil** and debris will be placed on plastic sheeting or within a rolloff dumpster and covered with plastic sheeting.
   - **Contaminated water** that needs to be dewatered from the excavation will be pumped into a frac tank or similar container. The Construction Contractor will make reasonable efforts to prevent crude oil from being mixed with containerized water.
   - **Contaminated hydrovac slurry and drilling mud** will be placed into a rolloff dumpster or bermed area lined with plastic and covered with plastic.

- Mud and slurry will be solidified with dry wood pellets, Portland cement, bentonite, or other appropriate absorbent material only at the direction of Enbridge Liquid Pipeline Environment Staff or the Environmental Consultant.

6. Resume Project Construction

7. Manage the Waste

- The Environmental Consultant may need to collect samples from the contaminated material for waste characterization disposal purposes. The typical process for obtaining **approval for contaminated waste disposal takes approximately 1 week** from the date of sample collection.
- The Environmental Consultant will identify proper disposal facility for the contaminated material and provide the Construction Contractor with shipping papers for transportation to the disposal facility.
- The Construction Contractor will arrange for transportation of contaminated material to the proper disposal facility.
- The Construction Contractor will maintain records of shipping and waste disposal and provide copies them to the Environmental Consultant.

Table 2 Contaminated Material Disposal Facilities

Type of Waste	Soil, Debris, and Solidified Mud	Water
Facility	Vonco V Landfill	Western Lake Superior Sanitary District
Address	1100 W Gary St Duluth, MN 55808	2626 Courtland Street Duluth, MN 55806
Phone	218.626.3830	218.722.3336

8. Assist with Environmental Documentation

- Depending on the characteristics of the contamination encountered, the Environmental Consultant may need to collect additional samples from the construction trench bottom and sidewalls **BEFORE backfilling occurs**.
- The Construction Contractor will assist the Environmental Consultant in this effort.

9. Backfill the trench with clean borrow material

- Never backfill with contaminated material.
- Document the source of the backfill material.

Table 1

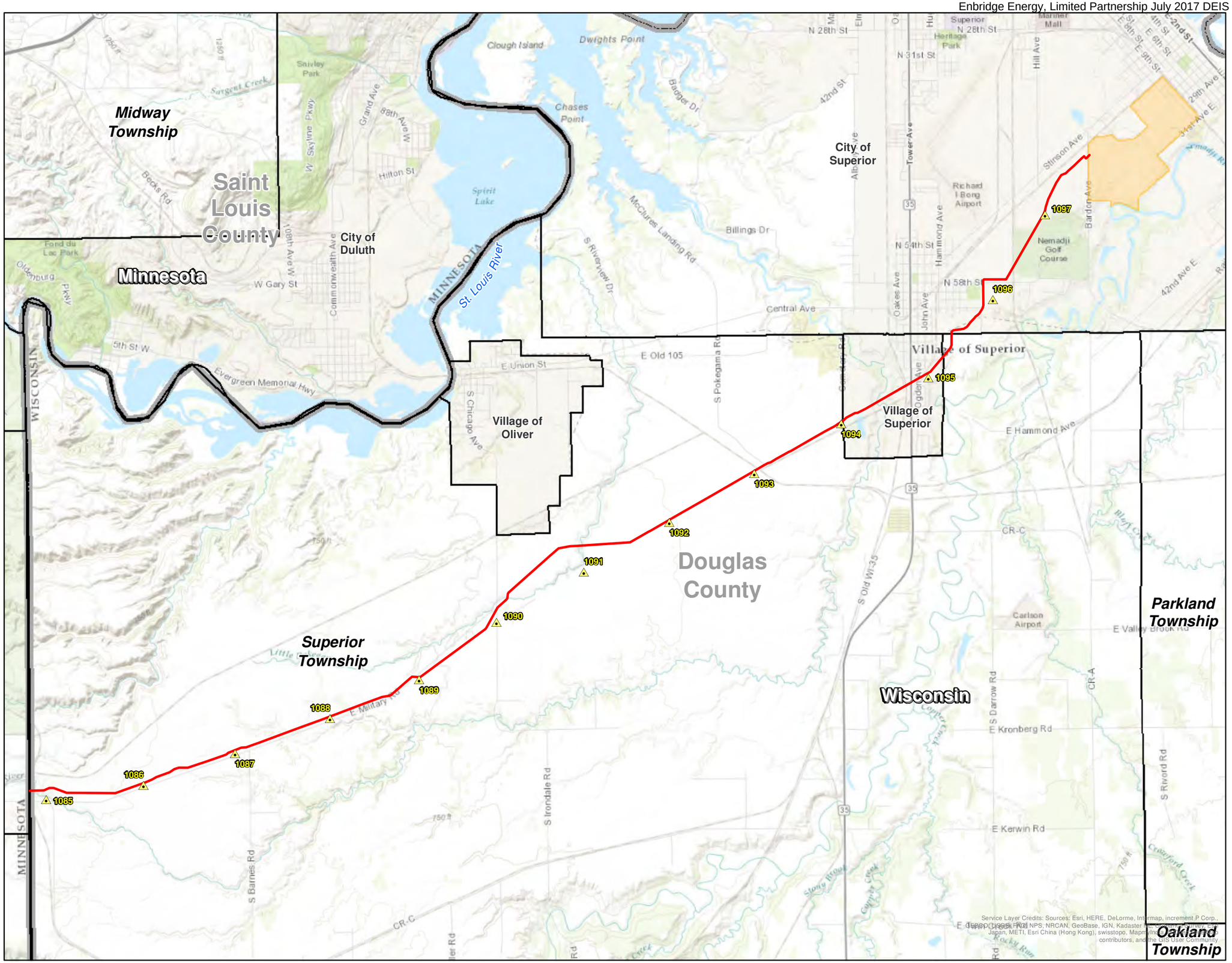
Known Potential Contaminated Sites

Table 1
Known Potential Contaminated Sites
Segment 18 Project, Wisconsin

Site Number	Approximate Milepost	Site Name	Site Type	Agency Status	Distance and Direction to Release (feet)	Latitude	Longitude
1	1092.81	Pokegama Rail Yard	LUST, ERP, SPILLs	LUST - open ERP site - closed Spills - closed	800, NW	46.647287	-92.144596
2	1094.37	Lakehead Kimmes Inc. Landfill	Landfill	Closed	1214, NW	46.655475	-92.112699
3	1094.78	Sweeney Residence	LUST	Closed	950, NW	46.657692	-92.104365
4	1095.37	Kimmes Oil Bulk Plant	LUST, ERP	Closed	1108, NW	46.662181	-92.099909
5	1096.33	Spiering Residence	ERP	Closed	1320, SE	46.669632	-92.081512
6	1096.45	Nemadji Golf Course	LUST	Closed	2059, SE	46.669900	-92.076994
7	1097.34	CP Rail Sinson Yard Former Round House	LUST, ERP	LUST - closed ERP site - open	1056, W	46.684984	-92.076861
8	1097.72	Calumet/Murphy Refinery	ERP, SPILLs	Closed and open	686, NW	46.690196	-92.068495
9	1097.77	Enbridge Tank Farm	Historical Releases, ERP	Closed and open	--	46.687344	-92.066574

Environmental Repair Site (ERP); Leaking Underground Storage Tank (LUST)

Figures



- Approximate Line 3 Replacement (Corridor) Milepost
- Known Contaminated Sites
- Segment 18
- Enbridge Superior Terminal
- State Boundary

0 0.5 1 2

Miles

1 Inch = 1 miles

FIGURE 1

Segment 18 Route- Wisconsin
SEGMENT 18
CSMP
Douglas County, Wisconsin

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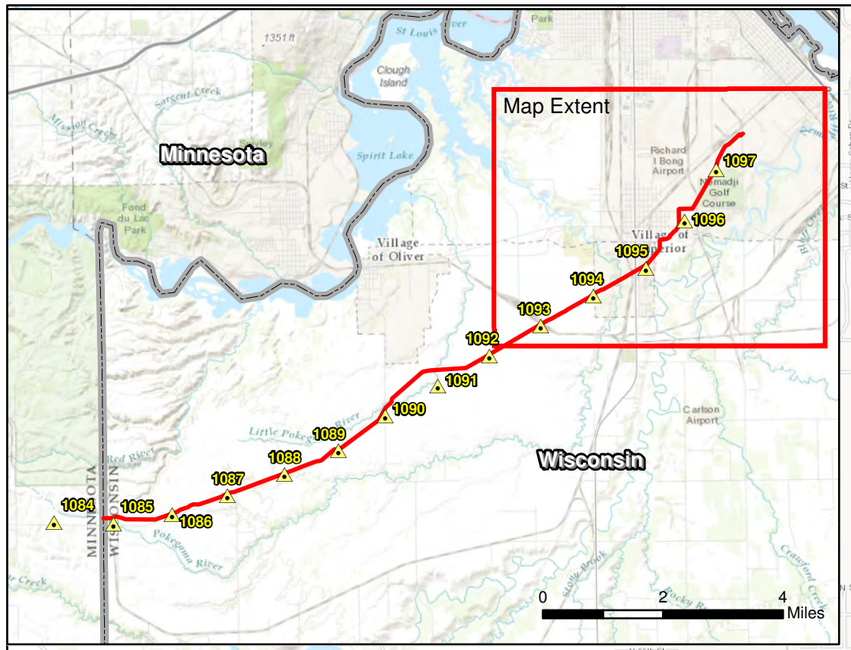
1. Survey and Staking
2. Clearing
3. Front-End Grading
4. ROW Topsoil Stripping
5. Restaking Centerline of Trench
6. Stringing Pipe
7. Field Bending Pipe
8. Line-Up, Initial Weld
9. Fill & Cap, Final Weld
10. As-Built Footage
11. X-Ray Inspection, Weld Repair
12. Coating Field Welds
13a. Trenching (wheel ditcher)
13b. Trenching (backhoe)
13c. Trenching (rock)
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

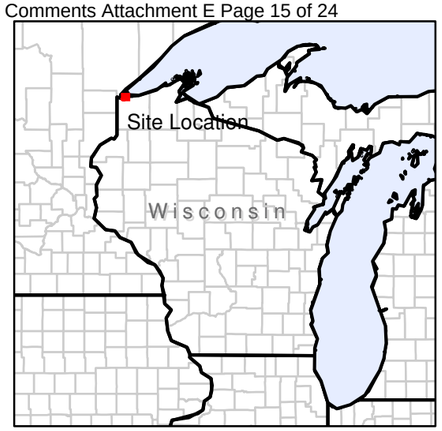
NATURAL RESOURCE GROUP, INC.

Figure 2

TYPICAL PIPELINE CONSTRUCTION SEQUENCE
SEGMENT 18
CSMP
Douglas County, Wisconsin

ENBRIDGE





Approximate Line 3 Replacement (Corridor) Milepost

Known Potential Contaminated Sites

Segment 18

Enbridge Superior Terminal - Site # 9

State Boundary

0 1,250 2,500 5,000
Feet

FIGURE 3

Known Potential Contaminated Sites
SEGMENT 18
CSMP
Douglas County, Wisconsin

ENBRIDGE

2603

Appendix A

Contact List

Appendix A
Contact List
Segment 18 Project, Wisconsin

Contact	Company	Role	Phone (office)	Phone (cell)	Email
Andrew Orthober	Enbridge	Major Projects Environmental Staff, Environmental Analyst, Environmental Projects (U.S.)	218-522-4759	715-817-8723	Andrew.Orthober@enbridge.com
Karl Beaster	Enbridge	Liquid Pipelines Environmental Staff, Sr. Environmental Analyst, LP US Environment Operations	218-464-5623	715-718-1040	Karl.Beaster@enbridge.com
Hans Wronka	Barr Engineering Co.	Environmental Consultant, Senior Environmental Consultant	218-529-8208	218-343-6453	HWronka@barr.com
Emily Jurgens	Barr Engineering Co.	Environmental Consultant, Senior Environmental Consultant	952-832-2894	218-343-6773	EJurgens@barr.com
		Environmental Inspector TBD			
		Environmental Inspector TBD			

Appendix B

Site Investigation Field Sampling and Screening Log

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Enbridge Energy, Segment 18 Date: _____

Milepost:_____ Sampler:_____

Sample Nomenclature *(Location - sample type - #):*

R = Removed **S** = Sidewall **B** = Bottom **Stockpile** = Stockpile

Field Investigation Instrument Record: Photoionization detector with 10.6 eV bulb

	Calibration	Bump Test 1	Bump Test 2
Time			
Zero reading (ppm)			
Span reading (ppm)			
Background (ppm)			

Sample ID	Depth *(FT)*	Time *(military)*	Soil Type *(USCS)*	Color/ Discolor	Odor/ Sheen	Headspace Reading *(ppm)*
Example: Stockpile-1	*4*	*16:30*	*CL*	*Reddish brown*	*Petroleum/ Rainbow*	*275*

SITE SKETCH : *north arrow, scale, excavation extents & depths, impacted areas, sample locations ,borings, wells, structures, utilities, natural features…*

Appendix C

Environmental Inspector Contaminated Site Response Form

Environmental Inspector Contaminated Site Response Form

Name: _____

Date: _____ **Time:** _____

Milepost: _____ **Stationing:** _____

Potential Contamination Observed (check all that apply):

- ☐ Petroleum odors in soil or water
- ☐ Visual petroleum staining in soil or on vegetation
- ☐ Petroleum free product or sheen (e.g., rainbow or bluish colors) on water, soil, or debris surfaces
- ☐ Evidence of improper waste disposal such as industrial garbage, scrap materials, used containers, or other by-product type wastes
- ☐ Presence of man-made hills, depressions, or waste piles or evidence of dumping or other waste disposal
- ☐ Stressed or dead vegetation
- ☐ Soil that is discolored compared to adjacent or nearby soils
- ☐ Evidence of present or past chemical storage or use, including tanks, drums or containers
- ☐ Active or closed buildings and structures that suggest current or past industrial activity
- ☐ Evidence of land use associated with potential contamination (landfills, waste treatment plants, agricultural pesticide storage facilities, storage ponds, septic fields, drains, culverts, etc.)
- ☐ Other (describe)

_____

_____

_____

_____

Response Actions

Has containment cell been constructed and lined with plastic? Yes / No
Containment Cell Dimensions (feet):
Quantity of Contaminated Soil Excavated and Stockpiled (cubic yards):

Estimated Impacts

Estimated Extent of Contaminated Soil (horizontal and vertical, in feet):
Has groundwater or surface water been impacted? Yes/No
Describe water impacts (sheen, free oil, etc.):
Nearest surface waterbody (name and distance):
Are any impacts observed in the nearest surface water body? Describe:

Describe response action activities on reverse.

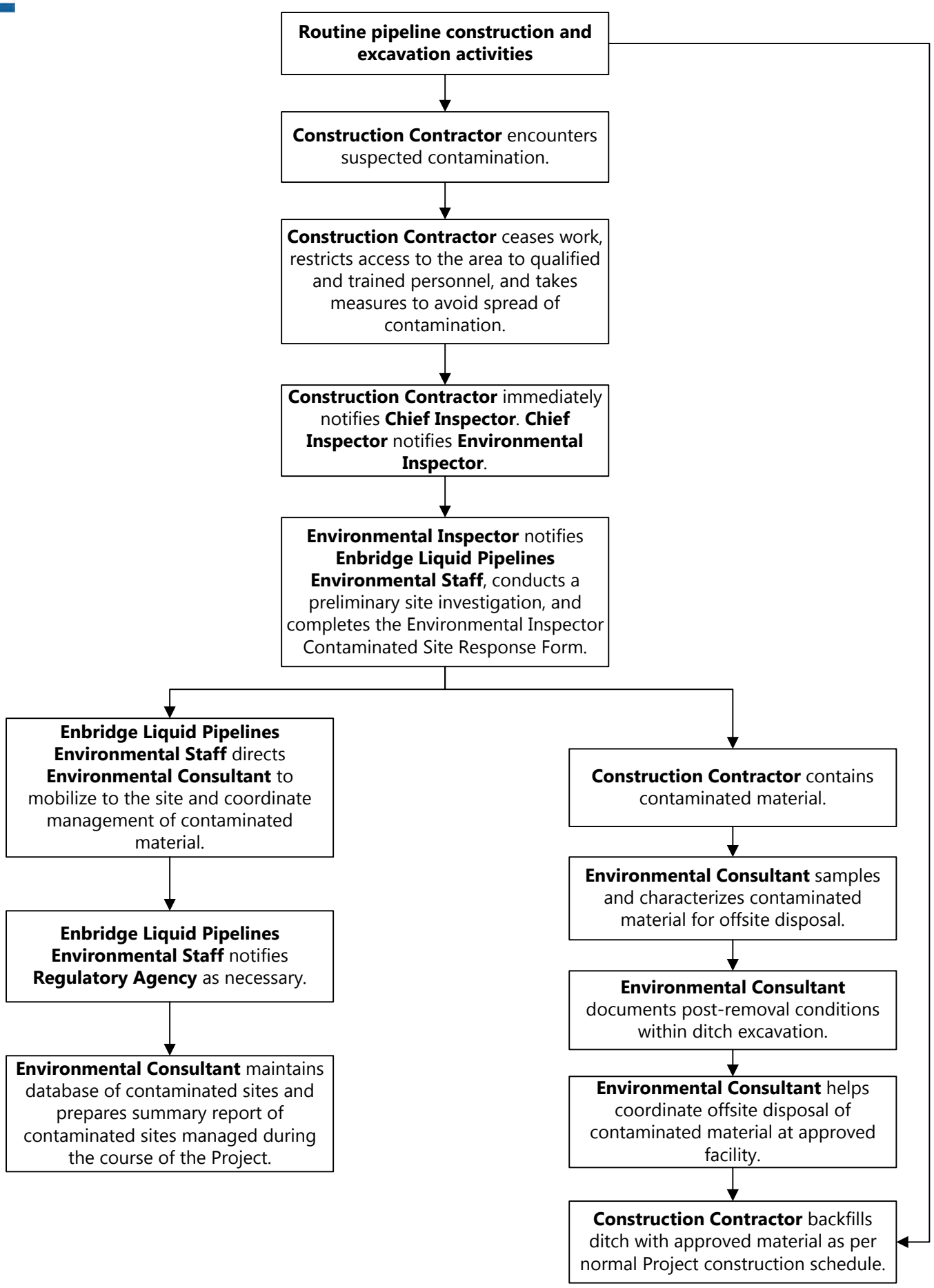
Environmental Inspector Contaminated Site Response Form

Construction Contractor Contaminated Site Response Actions:

Appendix D

Contamination Management Flowchart

Appendix D
Contamination Management Flowchart



Fredrikson & BYRON, P.A.

December 19, 2016

VIA EMAIL

Joseph Plumer
White Earth Band of Ojibwe
P.O. Box 238
White Earth, MN 56591

Re: In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement – Phase 3 Project in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/CN-14-916; OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/PPL-15-137; OAH Docket No. 65-2500-33377

Dear Mr. Plumer:

Attached please find Enbridge Energy, Limited Partnership's Information Requests 1-6 to White Earth Band of Ojibwe, in connection with the above-referenced dockets. We recognize that some of the Information Requests may seek sensitive and/or confidential information subject to the current Protective Order. To the extent required, please contact me at your earliest convenience to coordinate. Please note that your responses will be due on Friday, December 30.

Please let me know if you have any questions regarding the attached.

Sincerely,

/s/ *Christina K. Brusven*

Christina K. Brusven
Attorney at Law
Direct Dial: 612.492.7412
Email: cbrusven@fredlaw.com

60279581_1.docx

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 1
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
1.	Reference: *Geographic Information System (GIS) Mapping Analysis of Potential Community Vulnerabilities: The Proposed Sandpiper Pipeline in Northern Minnesota* (hereinafter, the "Mapping Analysis"), eDockets ID 20166-122153-02. Reference: "Honor the Earth selected 180 sites that serve as important cultural and archeological resources through this process. These resources include locations of burial mounds, cemeteries, sacred sites, medicinal plant and berry harvesting areas, drinking water well/springs and areas that are part of a spiritual or sacred landscape. Additional information regarding the specific importance and details of each site is available through a more in-depth assessment by the White Earth Tribal government which holds the documentation on each site." Mapping Analysis, Maps 5 and 6, pages 11-12. a. Please identify each of the 180 sites referenced on Maps 5-6 and the narrative summary on page 11-12 of the Mapping Analysis. b. For each site identified in response to 1.a., include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. the "documentation on each site" referenced on page 11 of the Mapping Analysis.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 2
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
2.	Reference: White Earth Nation's webpage https://whiteearth.com/programs/index.html@page_id=259&program_id=8.html defines "Cultural Resources" as "prehistoric and historic archaeological or anthropological sites, objects, historic standing structures, sacred and burial locations, and areas where traditional practices resources or cultural properties are used, located or collected. All of these resources are important to the White Earth Band of Minnesota Chippewa." Reference: Environmental Assessment Worksheet ("EAW") Exhibit A (Detailed Route Maps): a. To the extent not already provided in response to Enbridge IR No. 1, please identify any Cultural Resources that intersect or are located within 375 feet on either side of the centerline of the Line 3 Replacement Project Preferred Route west of Clearbrook shown on the detailed route maps attached as Exhibit A to the EAW. b. For each site identified in response to 2.a. include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. any supporting documentation related to the site.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 3
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
3.	Reference: White Earth Nation's webpage https://whiteearth.com/programs/index.html@page_id=259&program_id=8.html defines "Cultural Resources" as "prehistoric and historic archaeological or anthropological sites, objects, historic standing structures, sacred and burial locations, and areas where traditional practices resources or cultural properties are used, located or collected. All of these resources are important to the White Earth Band of Minnesota Chippewa." Reference: Final Scoping Decision Document (eDockets ID 201612-127062-04), Figures 1a, 1b, and 2. a. Please identify any Cultural Resources that intersect or are located within 375 feet on either side of the centerline of the System Alternative, Route Alternatives and Route Segment Alternatives shown on the detailed route maps attached as Appendix A to the EAW. b. For each site identified in response to 3.a. include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. any supporting documentation related to the site.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 4
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
4.	Reference: White Earth Nation's webpage https://whiteearth.com/programs/index.html@page_id=259&program_id=8.html defines "Cultural Resources" as "prehistoric and historic archaeological or anthropological sites, objects, historic standing structures, sacred and burial locations, and areas where traditional practices resources or cultural properties are used, located or collected. All of these resources are important to the White Earth Band of Minnesota Chippewa." Reference: Mapping Analysis, footnote 16, page 6 "Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the National Register of Historic Places (NRHP) based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crats or social institutions of a living community." a. Provide the criteria used by the White Earth Band of Ojibwe to seek designation of a Cultural Resource as a TCP. b. Identify if any Cultural Resource or site provided in response to Enbridge IR Nos. 1, 2, or 3 is designated as a TCP. c. For any TCPs identified in response to 4.b., provide supporting documentation of the TCP designation.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 5
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
5.	Identify the legal boundaries of the White Earth Reservation. Please include a shapefile, official reference maps, or other documentation.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 6
Requested From: White Earth Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
6.	Identify any agreements, whether oral or written, which allow the Tribe or its members to hunt, fish, rice, gather, or conduct other traditional practices on properties located outside the boundaries of the White Earth Reservation. Where available, provide a copy or supporting documentation of the agreement and the location of the property where access has been granted.

Fredrikson & BYRON, P.A.

December 19, 2016

VIA EMAIL

Charles N. Nauen, Esq.
David J. Zoll, Esq.
Lockridge Grindal Nauen P.L.L.P.
100 Washington Avenue South, Suite 2200
Minneapolis, MN 55401

Re: In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/CN-14-916; OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/PPL-15-137; OAH Docket No. 65-2500-33377

Dear Messrs. Nauen and Zoll:

Attached please find Enbridge Energy, Limited Partnership's Information Requests 1-7 to Mille Lacs Band of Ojibwe, in connection with the above-referenced dockets. We recognize that some of the Information Requests may seek sensitive and/or confidential information subject to the current Protective Order. To the extent required, please contact me at your earliest convenience to coordinate. Please note that your responses will be due on Friday, December 30.

Please let me know if you have any questions regarding the attached.

Sincerely,

/s/ *Christina K. Brusven*

Christina K. Brusven
Attorney at Law
Direct Dial: 612.492.7412
Email: cbrusven@fredlaw.com

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Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 1
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
1.	Reference: *Geographic Information System (GIS) Mapping Analysis of Potential Community Vulnerabilities: The Proposed Sandpiper Pipeline in Northern Minnesota* (hereinafter, the "Mapping Analysis"), eDockets ID 20166-122153-02. Reference: "Honor the Earth selected 180 sites that serve as important cultural and archeological resources through this process. These resources include locations of burial mounds, cemeteries, sacred sites, medicinal plant and berry harvesting areas, drinking water well/springs and areas that are part of a spiritual or sacred landscape. Additional information regarding the specific importance and details of each site is available through a more in-depth assessment by the With Earth Tribal government which holds the documentation on each site." Mapping Analysis, Maps 5 and 6, pages 11-12. a. To the extent Mille Lacs Band of Ojibwe has supporting documentation on any of the sites identified on Maps 5 and 6 and/or pages 11-12 of the Mapping Analysis, provide such documentation. b. For each site identified in response to 1.a., include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. the "documentation on each site" referenced on page 11 of the Mapping Analysis.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 2
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
2.	Reference: Final Scoping Decision Document (eDockets ID 201612-127062-04). Provide any definitions and/or criteria used by the Mille Lacs Band of Ojibwe to identify and/or define "Cultural Resources" as that term is used in the Final Scoping Decision Document.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 3
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
3.	Reference: Final Scoping Decision Document (eDockets ID 201612-127062-04), Figures 1a, 1b, and 2. a. Please identify any Cultural Resources that intersect or are located within 375 feet on either side of the centerline of the System Alternative, Route Alternatives and Route Segment Alternatives shown on the detailed route maps attached as Appendix A to the EAW. b. For each site identified in response to 3.a. include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. any supporting documentation related to the site.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 4
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
4.	Reference: Mapping Analysis, footnote 16, page 6 "Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the National Register of Historic Places (NRHP) based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crats or social institutions of a living community." a. Provide the criteria used by the Mille Lacs Band of Ojibwe to seek designation of a Cultural Resources as a TCP. b. Identify if any Cultural Resource or site provided in response to Enbridge IR Nos. 1, 2, 3, or 5 is designated as a TCP. c. For any TCPs identified in response to 4.b., provide supporting documentation of the TCP designation.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 5
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
5.	Reference: Environmental Assessment Worksheet ("EAW") Exhibit A (Detailed Route Maps): a. To the extent not already provided in response to Enbridge IR No. 1, please identify any Cultural Resources that intersect or are located within 375 feet on either side of the centerline of the Line 3 Replacement Project Preferred Route west of Clearbrook shown on the detailed route maps attached as Exhibit A to the EAW. b. For each site identified in response to 5.a. include: i. a description of the site, including whether it is a burial mound, cemetery, sacred site, medicinal plant and berry harvesting area, drinking water well/spring or area that is part of a spiritual or sacred landscape; ii. location of the site, based on current GIS data; and iii. any supporting documentation related to the site.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 6
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
6.	Identify the legal boundaries of the Mille Lacs Reservation. Please include a shapefile, official reference maps, or other documentation.

Enbridge Energy. Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 7
Requested From: Mille Lacs Band of Ojibwe
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
7.	Identify any agreements, whether oral or written, which allow the Tribe or its members to hunt, fish, rice, gather, or conduct other traditional practices on properties located outside the boundaries of the Mille Lacs Reservation. Where available, provide a copy or supporting documentation of the agreement and the location of the property where access has been granted.

Fredrikson & BYRON, P.A.

December 19, 2016

VIA EMAIL

Frank Bibeau, Esq.
Honor the Earth
51124 County Road 118
Deer River, Minnesota 56636

Re: In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need for the Line 3 Replacement in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/CN-14-916; OAH Docket No. 65-2500-32764

In the Matter of the Application of Enbridge Energy, Limited Partnership for a Pipeline Route Permit for the Line 3 Replacement in Minnesota from the North Dakota Border to the Wisconsin Border
MPUC Docket No. PL-9/PPL-15-137; OAH Docket No. 65-2500-33377

Dear Mr. Bibeau:

Attached please find Enbridge Energy, Limited Partnership's Information Requests 1-3 to Honor the Earth, in connection with the above-referenced dockets. Please note that your responses will be due on Friday, December 30.

Please let me know if you have any questions regarding the attached.

Sincerely,

/s/ *Christina K. Brusven*

Christina K. Brusven
Attorney at Law
Direct Dial: 612.492.7412
Email: cbrusven@fredlaw.com

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Enbridge Energy, Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 1
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
1.	Reference: *Geographic Information System (GIS) Mapping Analysis of Potential Community Vulnerabilities: The Proposed Sandpiper Pipeline in Northern Minnesota* (hereinafter, the "Mapping Analysis"), eDockets ID 20166-122153-02. a. Identify the person(s) responsible for preparation of the Mapping Analysis, and describe each person's role in such preparation. b. Provide the shapefiles used to conduct the Mapping Analysis. c. Provide the project centerline used to conduct the Mapping Analysis and a reference to the source for the centerline. d. Provide any and all data, materials, and/or documents used to conduct the Mapping Analysis. e. Identify and describe the methodology used to conduct the Mapping Analysis. f. Identify and describe the criteria used to determine what sites are "of specific tribal interest" on Maps 5 and 6 of the Mapping Analysis, and provide any supporting documentation available. g. Identify and describe the methodology used to create Map 5 of the Mapping Analysis, and identify and provide all supporting documentation, including shapefiles. h. Identify and describe the methodology used to create Map 6 of the Mapping Analysis, and identify and provide all supporting documentation, including shapefiles. i. Identify and provide all data supporting the statement that the "proposed pipeline route would bisect 180 sites of specific tribal interest as identified by Honor the Earth," including but not limited to the location and a description of each site. *See* Mapping Analysis page 23.

Enbridge Energy, Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 2
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
2.	Has Honor the Earth conducted an analysis similar to the Mapping Analysis for the Line 3 Replacement Project? If so, please provide such analysis, as well as: a. Identify the person(s) responsible for preparation of the analysis, and describe each person's role in such preparation. b. Provide the shapefiles used to conduct the analysis. c. Provide the project centerline used to conduct the analysis and a reference to the source for the centerline. d. Provide any and all data, materials, and/or documents used to conduct the analysis. e. Identify and describe the methodology used to conduct the analysis.

Enbridge Energy, Limited Partnership Information Request

Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information Request No. 3
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
3.	Reference: "Those [lakes] that remain provide important economic resources to the Tribal community, including $1 million in annual revenue from Lower Rice Lake and $500,000 from rice lakes in the East Lake community." Mapping Analysis, page 6. a. Provide the source and all documentation supporting the statement above. b. Identify the specific geographic location of the "East Lake community." c. Identify the rice lakes located in the East Lake community. d. For each of the rice lakes in the East Lake community identified in the statement above, provide a break-down of revenue by lake and include all supporting documentation.

Enbridge Energy, Limited Partnership Information Request
Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information

Request No. 1
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

1. Reference: Geographic Information System (GIS) Mapping Analysis of Potential Community Vulnerabilities: The Proposed Sandpiper Pipeline in Northern Minnesota (hereinafter, the "Mapping Analysis"), eDockets ID 20166-122153-02.

a. Identify the person(s) responsible for preparation of the Mapping Analysis, and describe each person's role in such preparation.

i. *Marcus Griswold- produced the mapping using GIS software.*
ii. *Data used in the mapping analysis was gathered from a wide range of information and compiled in the mapping summary. See summary on pages 23 and 24 plus footnotes.*
iii. *The mapping analysis was prepared through an entity called Technical Assistance Services for Communities.*

b. Provide the shapefiles used to conduct the Mapping Analysis.

Please be aware that any information related to tribally important sites will not be released to you due in part to the fact that at Standing Rock Reservation when sites were identified, that the next day they were bulldozer and destroyed. Should Enbridge want access to this information the tribe would require Enbridge secure a bond of $500,000.00 to $1,000,000.00 per site to insure a similar action does not occur with these important sites. In addition this report was developed with information relating only to the Sandpiper pipeline the addition of Line 3 and the use of Line 3 in this corridor should not be assumed to be the same as that of the Sandpiper pipeline.

c. Provide the project centerline used to conduct the Mapping Analysis and a reference to the source for the centerline.

The centerline was obtained from North Dakota Pipeline Company preferred route as identified to the tribal governments.

d. Provide any and all data, materials, and/or documents used to conduct the Mapping Analysis.

(These files would require an agreed upon bond to be in place before any files would be release.)

e. Identify and describe the methodology used to conduct the Mapping Analysis.

The methodology used to conduct the Mapping Analysis were produced by ArcGIS and copyrighted © Ersi. Additional information used in the analysis was gathered from the public domain, published papers, or state of Minnesota reports.

f. Identify and describe the criteria used to determine what sites are "of specific tribal interest" on Maps 5 and 6 of the Mapping Analysis, and provide any supporting documentation available.

The criteria used to determine what sites are "of specific tribal interest" included: a review of archaeological information for Minnesota, consultation with experts working on archaeological sites in Minnesota, review geological information, consultation with tribal historical records, tribal oral history of important sites, and cultural review.

g. Identify and describe the methodology used to create Map 5 of the Mapping Analysis, and identify and provide all supporting documentation, including shapefiles.

The methodology used to create was to Map 5 was a review of archaeological information for Minnesota, consultation with experts working on archaeological sites in Minnesota, review geological

information, consultation with tribal historical records, tribal oral history of important sites, and cultural review. This information was then summarized and using ArcGIS software by Ersi ArcGIS and ArcMap. This software then produced the maps.

h. Identify and describe the methodology used to create Map 6 of the Mapping Analysis, and identify and provide all supporting documentation, including shapefiles.

See responds to "C" and "G".

i. Identify and provide all data supporting the statement that the "proposed pipeline route would bisect 180 sites of specific tribal interest as identified by Honor the Earth," including but not limited to the location and a description of each site. See Mapping Analysis page 23.

See response to "C"

Enbridge Energy, Limited Partnership Information Request
Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information

Request No. 2
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request 2. Has Honor the Earth conducted an analysis similar to the Mapping Analysis for the Line 3 Replacement Project? *No*

If so, please provide such analysis, as well as:

a. Identify the person(s) responsible for preparation of the analysis, and describe each person's role in such preparation. N/A

b. Provide the shapefiles used to conduct the analysis. N/A
c. Provide the project centerline used to conduct the analysis and a reference to the source for the centerline. N/A
d. Provide any and all data, materials, and/or documents used to conduct the analysis. N/A
e. Identify and describe the methodology used to conduct the analysis. N/A

Enbridge Energy, Limited Partnership Information Request
Docket No.: PL-9/CN-14-916 and PPL-15-137
Requested By: Enbridge Energy, Limited Partnership Information

Request No. 3
Requested From: Honor the Earth
Date of Request: December 19, 2016 Response Due Date: December 30, 2016

a. The annual wild rice income figures were present as part of oral testimony at public hearings.
b. Ease Lake is approximately 5 miles south of McGregor on Minnesota Hwy 65 (east of Rice Lake refuge).
c. Any and all lakes in the East Lake area likely have wild rice for many miles round.
d. Not aware of a lake by lake breakdown of revenue.