January 23, 2015

The Honorable Eric Lipman
Minnesota Office of Administrative Hearings
600 North Robert Street
P.O. Box 64620
St. Paul, MN 55164-0620

RE: 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. PL6668/CN-13-473
OAH Docket No. 8-2500-31260

Dear Judge Lipman:

The Minnesota Pollution Control Agency (MPCA) submits the following comments for consideration by the Administrative Law Judge (Judge) in making recommendations to the Public Utilities Commission (Commission) in this matter. The MPCA's comments provide information addressing several of the criteria set forth in Minn. Rule 7853.0130 for making a determination on a certificate of need for the Sandpiper Pipeline Project (SA-Applicant) proposed by North Dakota Pipeline Company ("NDPC" or "Applicant"). The MPCA respectfully requests that if a determination of need is reached in this proceeding, the certificate of need be conditionally granted contingent upon suitable modification of SA-Applicant to protect and avoid high quality natural and environmental resources, and the inclusion in the Route Proceeding, Docket No. CN-13-474, of SA-03 and any other System Alternative that meets the identified need, pursuant to the Commission's authority under Minn. Rule 7853.0800. The MPCA will gladly provide additional information or comments that the Judge may find helpful in the course of this proceeding.

A. The MPCA's comments address four of the criteria required under Minn. Rule 7853.0130 for a determination on a certificate of need.

Minn. Rule 7853.0100 requires evaluation of all applicable and pertinent factors listed under each of the criteria set forth in Rule 7853.0130 and a specific written finding with respect to each of the criteria. Minn. Rule 7853.0130 states that a certificate of need shall be granted if all the listed determinations can be made. However, if one or more of those determinations cannot be met, a certificate of need may be denied, or conditionally granted subject to modification, under Minn. Rule 7853.0800.

The MPCA is providing comments that address the determinations required under Rule 7853.0130.B (2); 7835.0130.B (3); 7853.0130.C (2); and 7853.0130.C (3), which state:

- 7853.0130.B. a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record by parties or persons other than the applicant, considering: . . .
  (2) the cost of the proposed facility and the cost of energy to be supplied by the proposed facility compared to the costs of reasonable alternatives and the cost of energy that would be supplied by reasonable alternatives;
  (3) the effect of the proposed facility upon the natural and socioeconomic environments compared to the effects of reasonable alternatives; and . . . .

- 7853.0130.C. the consequences to society of granting the certificate of need are more favorable than the consequences of denying the certificate, considering: . . .
  (2) the effects of the proposed facility, or a suitable modification of it, upon the natural and socioeconomic environments compared to the effect of not building the facility;
  (3) the effects of the proposed facility or a suitable modification of it, in inducing future development.

The MPCA comments will address each of the criteria mentioned above and associated listed factors.

B. SA-03 is a reasonable and prudent alternative to the Applicant's facility (SA-Applicant), since the respective costs of SA-Applicant and SA-03 and of oil to be supplied by SA-Applicant and by SA-03 are not significantly different. Minn. Rule 7853.0130.B(2).

Financial impacts and comparative costs are among the factors to be evaluated in determining whether the criteria in Minn. Rule 7853.0130.B are met. Since MPCA submitted its comments dated August 21, 2014 to the Public Utilities Commission,[1] additional relevant testimony have been submitted in this docket. This included the direct testimony of economist Adam Heinen of the Department of Commerce (Doc. ID 201411-104761-03 ("Heinen Direct"). Mr. Heinen stated his expert opinion that System Alternative SA-03, as proposed by the MPCA, would meet the need of the project if as also proposed by MPCA, the Clearbrook terminal location was moved westward to the Crookston area or another location closer to the North Dakota border. (Heinen Direct, p. 75,) Mr. Heinen also indicated that moving the terminal location could increase the cost of constructing the pipeline, and discussed Applicant's estimate of the cost increase. (Heinen Direct, 75-76). Mr. Heinen then stated in his opinion that any apparent higher costs of SA-03 based on Applicant's analysis were insignificant and unlikely to impact retail prices and that the Applicant had not shown that SA-03 was an unreasonable alternative to meet the need of the proposed project. (Heinen Direct, pp. 77-78)

[1] See PUC Docket Filing 20148-102458-02 and 20148-102458-04

Mr. Heinen reinforced his direct testimony when he filed rebuttal testimony addressing SA-03. Mr. Heinen affirmed that SA-03 appeared to be a reasonable alternative to meet the need for this project. (Heinen Rebuttal, p. 7) (Doc. No. 20151-105968-01). This testimony supports the finding that under Minn. Rule 7853.0130.B(2), based on comparative cost, SA-03 is at least a reasonable and prudent alternative. However, comparative effects on natural environments, i.e., potential environmental and natural resource impacts as discussed in the following sections, appear to make SA-03 "a more reasonable and prudent alternative" under Minn. Rule 7853.0130.B(3).

In addition to direct costs of construction and operation, the costs considered under Rule 7853.0130.B(2) should include an evaluation of whether a system alternative such as SA-03 is a more reasonable alternative to SA-Applicant because of a reduced risk of a costly spill to a sensitive environmental area. An Alternative that avoids or impacts fewer sensitive ecosystems and water bodies than SA-Applicant will have a smaller likelihood of incurring significant response costs. As documented by the U.S. Environmental Agency (USEPA), it costs considerably more to restore or rehabilitate water quality than to protect it.[2] The areas of the state traversed by the SA-Applicant have waters and watersheds that are currently subject to protection in the state's "Watershed Restoration and Protection Strategy" program, [3] financed through the Clean Water Fund and aided by significant volunteer participation of Minnesota citizens. By keeping these waters as clean as possible before they become impaired, extensive costs of restoring waters to state standards can be avoided. Location of oil pipelines in these areas place their pristine waters at risk, and also place potentially millions of dollars in state and federal funds allocated for protection of these areas at risk.

When evaluating spill response costs, the following factors would make one corridor a better choice than another in minimizing the potential for costly spills or accidental discharges: fewer crossings of flowing water; fewer adjacent water bodies; quality of those waters; presence of especially sensitive areas or habitats or species or uses; better access to downstream oiled areas; tighter soils; and closer and more equipped and prepared responders. The MPCA applies these factors in comparing SA-Applicant with SA-03 and other alternatives in the next section of our comments.

C. SA-Applicant presents significantly greater risks of potential environmental impacts and encroaches on higher quality natural resources than SA- 03 and several other system alternatives. Minn. Rule 7853.0130.B(3). The effects of SA-Applicant on the natural environment support a determination in favor of other alternatives. Minn. Rule 7853.0130.C(2) and C(3).

[2] See http://water.epa.gov/polwaste/nps/watershed/upload/economic_benefits_factsheet3.pdf (incorporated by reference) .

[3] See (http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/watershed-approach/index.html)

Environmental risks are posed by all aspects of pipeline construction and operation, including post-spill recovery and restoration activities. The primary and most significant risks are associated with the long-term effects upon environmental and natural features that will be permanently altered, eliminated, or otherwise impacted by the presence of a pipeline, as well as the potential impacts of the release of crude oil as the result of a spill event during the potential 40 years or more that the pipeline will be operational. Those risks include environmental damages such as loss of wildlife, contamination of drinking water, destruction of fisheries, loss of habitat, and alteration of ecological systems. (For a discussion of the behavior and cleanup of oil spilled to surface water, soil, and groundwater, see Appendix A to the MPCA's comments.)

During these proceedings, the MPCA has commented extensively on the environmental concerns regarding the route proposed by Applicant in comparison to alternative routes and system alternatives. MPCA's prior comments can be found in Document Nos. 20146-100780-01, 20148-102458-02 and 20148-102458-04, each incorporated by reference. These prior comments have addressed such specific items as access to potential release sites in surface waters, potential to impact ground water, wild rice, the state's highest-quality surface water systems, wildlife habitat, low income populations, watersheds currently being assessed for restoration and protection strategies, fisheries, economies, and numerous other parameters.

In these comments, the MPCA concluded that with respect to protection of the highest-quality natural resources in the state, the SA-Applicant route presents significantly greater risks of potential impacts to environment and natural resources than several of the system alternatives, including SA-03. Although all proposed routes and system alternatives have the potential to impact some natural resources, the Applicant's proposed route encroaches on higher quality resources, superior wildlife habitat, more vulnerable ground water, and more resources unique to the state of Minnesota than do many of the proposed system alternatives. Several examples of the greater potential for harmful environmental impacts of SA-Applicant compared to other alternatives are highlighted in the following pages.

The relevance of other system alternatives depends upon whether the need for the project is determined based upon a narrower and more localized view or upon a larger regional view. While SA-03 has been identified as a reasonable and prudent project alternative as a general matter, it serves as such an alternative from both a localized and regional view. However, if need is determined based on a larger regional view of need, several other system alternatives may also be reasonable and prudent alternatives to meet that regional need. Consequently, the MPCA also addresses the comparative impacts of other System Alternatives and SA-Applicant to inform a determination of need from a regional perspective.

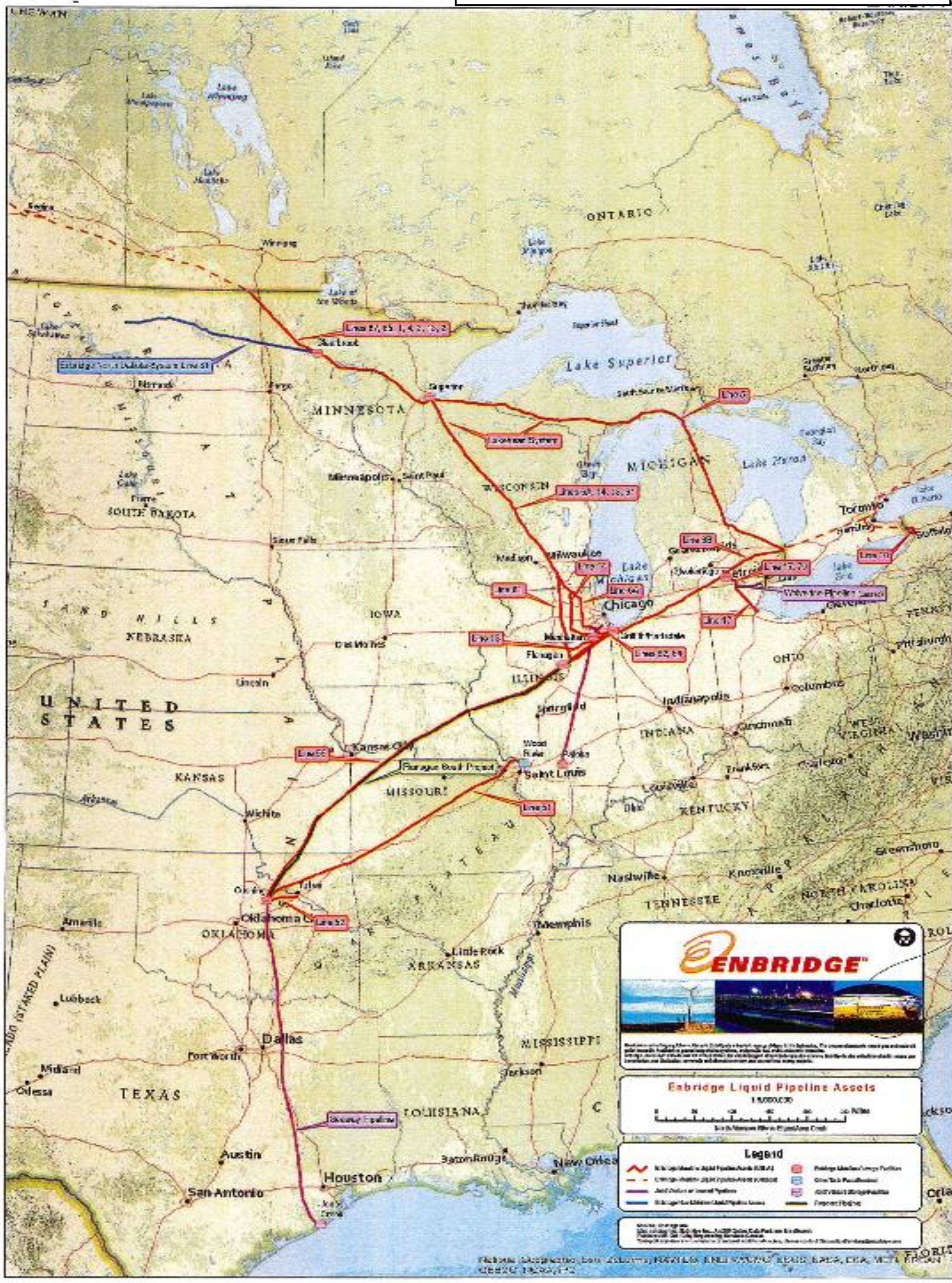
The broader objective of the proposed project is transporting oil to markets in the Midwest and along the eastern and gulf coasts, not to transport oil through the state of Minnesota with termination in Superior Wisconsin. [4] Oil that is to be transported to Superior, Wisconsin through the proposed pipeline will continue through Wisconsin to Chicago (or Wisconsin and Michigan if routed to Sarnia, Ontario). Oil that would be transported via one of the southern system alternatives, such as SA-04, and on to the Chicago area would have to be transported through Iowa before reaching Illinois. In either case, Chicago appears to be a common destination for most if not all of the oil that is proposed to be moved through Minnesota.

Information regarding the existence of contractual agreements obtained when Applicant held an "open season" has been offered as the underlying basis for a determination of need.[5] The Applicant has suggested that the facility as proposed (SA-Applicant) is necessary in order to assure those contractual agreements are filled and that alternatives such as SA-03 would negatively affect the cost of fulfilling those agreements. This proceeding will determine whether the Applicant's open season agreements establish the need for siting a pipeline through Northern Minnesota instead of along a southern alternate route. If the underlying actual and predominate need of the project is to get Bakken oil to Midwest regional markets in Wisconsin, Michigan, or Illinois, that need can be achieved by several of the system alternatives. The foregoing is generally and specifically supported by the direct and rebuttal testimony of Applicant's witness Neil Earnest (Document ID Nos. 20148-102134-03, Earnest Direct Testimony, and 20151-105934-01, Earnest Rebuttal Testimony). See Figure 1, which is an overview of Applicant's regional infrastructure and corresponding destinations.

[4] Applicant testimony acknowledges that the project's intended destination is not Superior, Wisconsin but refineries in the Midwest. Applicant witness Earnest, in rebuttal, indicates that oil from this project is not only competing with alternative modes of transportation to refineries in Chicago, Patoka, and Cushing. The oil is also competing with all of the other crude oil choices available to the refineries in the Midwest. Enbridge rebuttal at pp 5-6. "Accordingly, all else equal, higher Sandpiper transportation costs to the Midwestern markets acts to decrease the volume of Bakken crude oil that can be expected to be processed in the Midwest, and to lower the utilization of the pipeline." (Earnest Rebuttal, 6) 20151-105934-01

[5] Heinen Direct, pp. 6-7. The nature and content of these open season transportation service agreements are confidential. The MPCA has not examined the nature or substance of these agreements or their duration. Mr. Heinen also indicates in his testimony that he does not know the ultimate destination of that oil.

Figure 1


ONTARIO
Winnipeg
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Fargo
MINNESOTA
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Saint Paul
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IOWA
Des Moines
Lincoln
UNITED STATES
Milwaukee
Chicago
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ILLINOIS
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ARKANSAS
Lubbock
Dallas
Fort Worth
Midland
Odessa
TEXAS
MISSISSIPPI
Jackson
LOUISIANA
Austin
Baton Rouge
Houston
San Antonio
ENBRIDGE
Enbridge Liquid Pipeline Assets
Legend

Comparative Evaluation of Environmental Effects

The comparative long term environmental and eco-system impacts and the potential impact of spills must be carefully evaluated for each system alternative in determining the need for a pipeline project. Permanent harm to sensitive eco-systems, habitats, and species may occur following construction of a new pipeline. In addition, long-term impacts from a spill can be much more damaging in areas containing features such as environmentally sensitive areas and those with limited access. As discussed below, these long-term environmental and eco-system impacts should be accorded great weight in the determination of need for a pipeline project. Further, in associated routing proceedings, these impacts must be subjected to even more rigorous and detailed environmental review when evaluating alternative routes. It is not sufficient under Rule 7853.0130 to determine that the location for the proposed project is suitable or reasonable. Rather, the location should be one that best minimizes the risk to human populations and environmental and natural resources.

1. Adverse Impacts to High Quality Surface waters are Greater under SA-Applicant.

SA-Applicant traverses a greater number of high quality water bodies than does SA-03 and presents higher risk of environmental impacts from a spill or release of crude oil along its route corridor. Based on watershed health scores as determined by the Minnesota Department of Natural Resources in its Watershed Health Assessment Framework, MPCA documented that the adverse impacts to overall water quality from construction and operation, as well as spill cleanup and response, of Applicant's Alternative were more harmful than alternatives including SA-03, SA-04, and SA-05. See MPCA Comment letter dated August 21, 2014 , Document ID Nos. 20148-102458-02 and 20148-102458-0420148-04, page 5).

The MPCA provides these additional comments to assist in proper interpretation of the information on surface waters in the Department of Commerce environmental analysis "Comparison of Environmental Effects of Reasonable Alternatives" (DOC study) submitted on December 19, 2014, (ID 201412-105567-01) and in evaluating the criteria and factors based on that information. For example, on its face, the DOC study may be misinterpreted as indicating that SA-03 is a worse alternative than SA-Applicant in affecting impaired waters. The DOC study concluded that there were 50 impaired waters crossed by the Sandpiper route, and 98 impaired waters crossed by SA-03 (DOC Study, 72, 90). Under the Clean Water Act ("CWA"), an impaired water is any water body (e.g., lakes, rivers, streams, wetlands) that is too polluted or otherwise degraded to meet the applicable water quality standards set by states, territories, or authorized tribes. Water quality and water quality standards will vary throughout the state depending on the region of the state in which the waters reside. "Impaired" waters are not the same across the state. For a water body to be deemed impaired in southern or western Minnesota (western corn belt plains or Red River valley ecoregions), it typically will have a greater degree of contamination or degradation than would be required for a water body in the central hardwood forest ecoregion of Minnesota traversed by the applicant's preferred route (Sandpiper) to be deemed impaired. Thus, waters that are listed as impaired along the SA-Applicant route are likely to be higher quality (having a lower contamination level) than a water listed as impaired in the southern part of the state, and might not be listed as impaired at all along the SA-03 route. Waters in northern Minnesota are generally of better water quality or more pristine.

2. Significant Environmental Damage Would Occur From a Release at or near a Water Crossing Extending up to at least a Distance of 10 Miles from the Point of Release. SA-Applicant Has Many Areas of Limited Access, Increasing the Risk of Extended Impact to Surface Waters.

The most significant potential impact to a surface water from a crude oil pipeline crossing is the environmental destruction that would occur in the event of a release at or near the water crossing. According to a third party risk assessment document developed as part of the Keystone XL EIS[6], Exponent states: "A distance of at least 10 miles downstream from the proposed centerline of the pipeline should be used for the identification of sensitive areas and for identifying CPSs(contributory pipeline segments) during the final design phase of the Project." The 10 mile estimate is fair, given the potential for flowing water to carry a release of oil, especially in remote areas such as those found throughout the proposed Sandpiper route. Considering that the 2010 Enbridge spill into Talmadge Creek and the Kalamazoo River caused significant damage approximately 35 miles from the spill site, a ten mile estimate of damages is conservative and reasonable. See Stolen testimony, Document ID 201411-104748-02, page 24.

Damage to aquatic systems from an oil release can occur either as a result of physical effects such as smothering of organisms, or toxic contamination due to the chemical compositions of the oil. An oil spill in an aquatic ecosystem could cause, among numerous other impacts, death of waterfowl, other bird species, amphibians, reptiles, aquatic mammals, microorganisms, plankton, fish, pets and livestock living adjacent to waters, stunted growth of surviving species, loss of vegetation, destruction of soils, long-term reduction of dissolved oxygen, human health damage, damage to air quality, property value loss, and destruction of drinking water resources. This does not include damages that would occur during the cleanup process, especially in areas with limited, restricted or no access.

3. Potential Damages During Pipeline Construction and Testing Are Greater for SA-Applicant than other Alternatives.

Damages to surface waters as a result of construction activities can and do occur. Flowing water can also carry these effects a long distance from their origin, as noted above. MPCA has observed and documented significant sediment discharges to surface water on pipeline

[6] See http://keystonepipeline-xl.state.gov/documents/organization/221278.pdf, page XV, "Recommendations",

projects as a result of failing to install sufficient sediment and erosion controls on hillsides adjacent to surface waters. The failure to account for spring time subsidence of soils as a result of winter construction is common; frozen soils that are dug up and replaced into trenches thaw and subside in warmer spring temperatures, causing the soils to sink over the pipeline and form a ditch. These ditches act as conduits for melt water or rain water, and as they do not have sediment controls installed, tend to erode significantly as water runs through them. It is common for these subsidence ditches to terminate in water bodies, causing sedimentation and habitat damage (MPCA Comment Letter dated April 4, 2014, -Document ID 20144-98170-01, page 8).

Damage to surface water resources during hydrostatic testing discharges has occurred recently in the state. During these tests, segments of pipeline are filled with a significant volume of pressurized water, often millions of gallons, to test the integrity of the pipe. The water is then released in a manner that should minimize environmental impact. During the Alberta Clipper/Southern lights diluent project, Enbridge exceeded agreed-upon maximum discharge rates on 15 of its hydrostatic testing discharge operations. At two of these sites (adjacent to the Mississippi River and adjacent to the Clearwater River), the exceedances were enough to cause significant erosion and sediment discharge to surface waters. These cases were referred to the U.S. Environmental Protection Agency and eventually settled by the U.S. Department of Justice in 2013 with Enbridge paying a $425,000 penalty. During these hydrostatic testing operations, as much as 4,000 gallons of water per minute can be discharged from valves. This water is general required to be discharged to an upland area or a dewatering device, but when discharged rates are exceeded, or sometimes even when they are not, the pressurized water can erode soils and carry those eroded soils to surface waters, causing turbidity or smothering of aquatic habitat.

The placement of the new terminal construction west of the proposed Clearbrook location as suggested by MPCA in SA-03 will assure that future pipelines are located west and south of these pristine areas, thus avoiding the resources that the state is spending millions of dollars to protect. Meanwhile, the continued expansion of the Clearbrook facility that will coincide with construction in the SA-Applicant location will mean continued impact and potential impact to the highest value (pristine) waters in our state as a result of future pipeline construction.

4. Threats to Groundwater and Potential Drinking Water Supplies from SA-Applicant are Difficult to Assess, but Appear to Pose More Significant Risks than the System Alternatives, including SA-03.

Highly detailed topographical data for the state of Minnesota (called “LIDAR” data)) illustrates that the Sandpiper route (SA-Applicant) traverses territory with greater topographical contrast than does the SA-03 route. Much of the topography along the SA-Applicant route in Minnesota is the result of the deposit of glacial till from thousands of years ago. The composition of this till is often dependent on how the till was deposited. A term used to describe these soils is “moraine,” or a mass of rocks and sediment carried down and deposited by a glacier, typically as ridges at its edges or extremity.

What is most important to understand about the soils along the SA-Applicant route is that the complexity of moraines in the area creates a significant degree of localized changes in groundwater movement that are very difficult to predict, as opposed to some of the flatter lands to the west and south, such as those traversed by SA-03, SA-04, or SA-05. Typically, ground water through this till along the SA-Applicant route will move laterally and toward a water body, so it is important that significantly more data is gathered from this route before the possible movement of oil in the event of a release can be predicted and response plans developed. It would be very difficult, if not impossible, to accurately assess the potential for ground water contamination based solely on the examination of GIS layers. However, it can be predicted that the damage to groundwater, potentially used as a source of drinking water, as well as the connected soils could take decades to repair, if the damage could be repaired at all. Additional impacts could include damage to agricultural areas (inability to grow crops) and damage to surface waters, wildlife and habitat from oil carried through underground conduits to those areas.

The LIDAR data strongly suggests an increased potential for impacts to drinking water from SA-Applicant than from SA-03 and some other system alternatives. However, more in-depth study will need to be done in the routing phase in order to make an informed comparison and either confirm or negate what the LIDAR data suggests as a factual conclusion.

5. SA-Applicant Threatens a Greater Percentage of Wild Rice and Native Forests than any of the Proposed Alternatives, including SA-03.

Wild rice, in addition to being an important economic consideration in Minnesota, is also an extremely important cultural resource, as well as an essential food source for humans and wildlife. It requires very specific conditions and good water quality, both of which are provided by north central Minnesota lakes. The Sandpiper pipeline would encroach on some of the richest wild rice territory in the state of Minnesota. Further, MPCA staff has identified 10 wild rice locations along the Sandpiper route for which there is no access from pipeline to the location of the wild rice. By comparison, SA-03 has two such areas. As shown in Figure 2, SA-Applicant (in green) would threaten significantly more of the state wild rice crop than any system alternative.

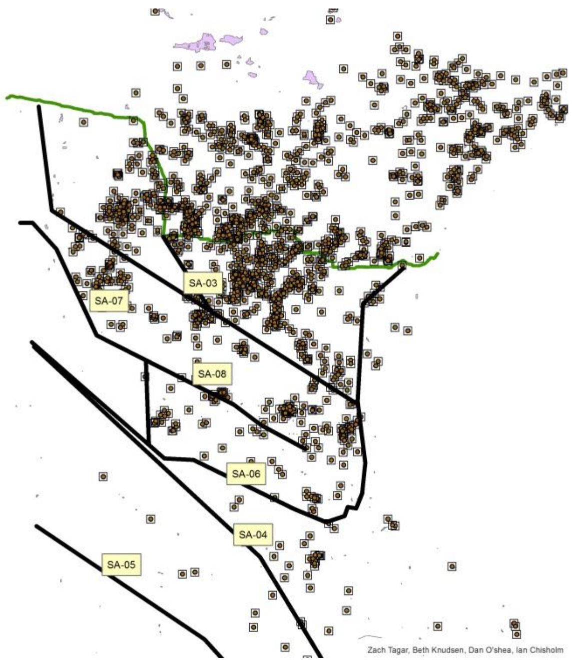

FIGURE 2 -- Wild Rice stands in Minnesota. The Sandpiper route (in green) would threaten more of the state's wild rice stands than any of the proposed system alternatives.

6. SA-Applicant Has a Greater Potential for Impact on Ecoregions than other Alternatives, including SA-03.

As accurately indicated in the DOC study, the majority of SA-03 crosses land that has been converted to agriculture or developed; this is true even when one considers only the portion of the system alternative within the state of Minnesota. Analysis of a GIS map of land cover in Minnesota (Figure 3 below) is helpful to indicate the land cover that would be crossed by SA-Applicant and the Alternatives. When the location of SA-Applicant, and other Alternatives are superimposed on Figure 3, it demonstrates that SA-03 skirts large areas of hay, grassland, pasture, and cultivated crop with infrequent passes through forested areas and wetland. By contrast, the SA-Applicant route crosses a significant amount of forested lands and wetlands, encroaching on significant agricultural land only west of Clearbrook and in the Park Rapids area. SA-Applicant can be seen to skirt far more forest and wetland areas than either system alternative SA-03, SA-04, or more southern alternatives.

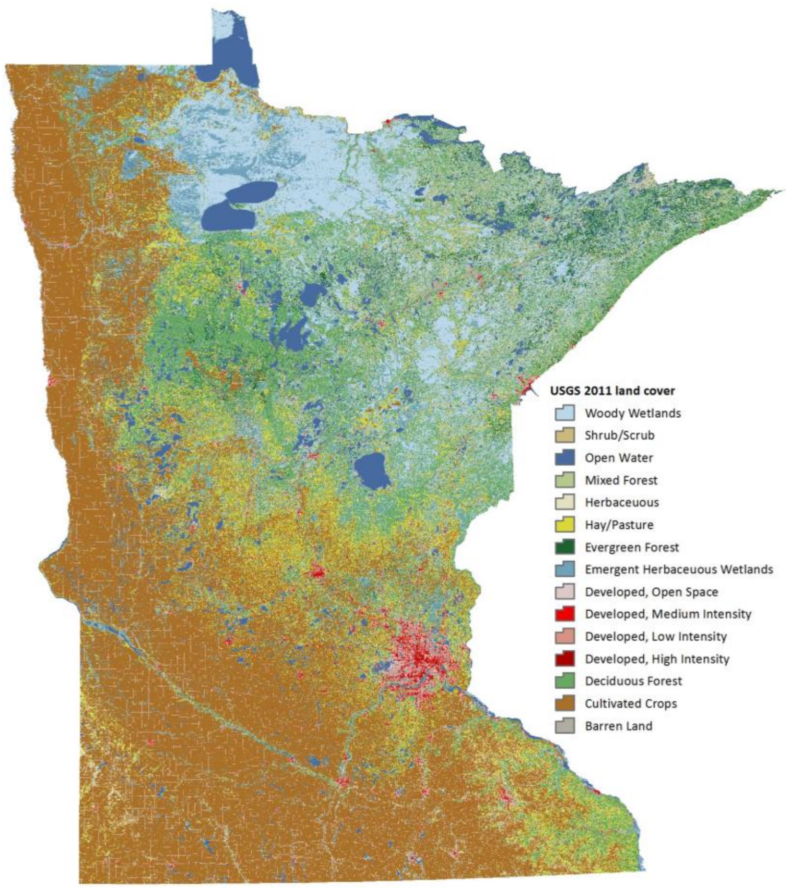

FIGURE 3-- The legend on the left indicates what land cover types are represented by what colors.

Forested areas, particularly larger, unfragmented expanses of forest, are necessary for a number of species of wildlife to survive. Many species of song birds, for example, need deep woods for nesting to avoid "edge species," or species that are more tolerant of human disturbance, because certain edge species such as cowbirds can parasitize their nests and cause mortality to their young. Other species, such as certain reptiles and amphibians, are very habitat specific and cannot easily disperse if that habitat is damaged, such as when a pipeline is placed through that habitat, altering vegetation, soils, and hydrology. Sensitive species of animals and plants require very specific, balanced conditions which can be permanently altered when a pipeline corridor is opened. Long term disturbance and fragmentation of these areas as a result of pipeline construction and siting will have negative impacts on these ecosystems and the wildlife dependent on these conditions.

In addition, an oil spill or release in these areas could result in toxic conditions in soils and vegetation which could kill wildlife. Vegetation would die off either as a result of direct exposure to oil, as a result of altering corridor topography or soil composition during construction activities or clean up after a spill. It is important to note that Enbridge has promised to separate topsoil only if asked to do so by landowners. It is equally important to separate and replace topsoil in forested, remote environments to maintain the integrity of those systems and mitigate some of the potential long-term impacts of pipeline construction.

Impacts to agriculture and pastureland can also occur, and have. However, farms typically do not provide habitat for large numbers of sensitive species or plants or animals that cannot exist elsewhere, and oil movement is likely to be reduced to some extent in flatter terrains with less water movement. Although financial impacts to the landowner and company responsible for the oil release may be greater than in some natural areas, actual environmental damage is apt to be less, and more easily mitigated.

7. SA-Applicant Has More Locations with Poor Access in the Event of a Release than SA-03 or other Alternatives.

As indicated in the June 24, 2014 letter by the MPCA (Document ID 20146-100780-01), access to potential leak sites in the State of Minnesota is of significantly greater concern along the SA-Applicant route than on any of the proposed system alternatives. MPCA staff identified 28 sites along the Sandpiper route for which access would be difficult or impossible within 250 feet of a 2000 foot downstream flow if oil were to be released in certain water bodies. By comparison, seven such areas were located on the SA-03 route, and none on SA-04.

A primary rule of thumb when planning for response to an oil leak is that a release in soil is better than a release in water, and a release in stagnant water is better than a release in flowing water. (For a more detailed discussion of the factors involved in oil spills and responses, see Appendix A to the MPCA comments.) In the Enbridge 2010 Kalamazoo River oil spill, oil caused environmental damage a reported 35 miles downstream from the original release site. The MPCA analysis was limited in scope and only took into account access within 2000 feet of a possible spill. The agency has not evaluated or assessed how much farther oil could travel in some of the identified locations along SA-Applicant's route before containment of a spill could be implemented if the leak were discovered in a timely manner. According to the aforementioned Exponent risk assessment for the Keystone XL pipeline, a small leak from a hole of 1/32 inch in diameter in a pipeline could remain undetected for several months, even with the most up-to-date leak detection technology in place. The same leak could release up to 28 barrels of oil per day, at 42 gallons per barrel. Thus, even a very small, virtually undetectable leak in a remote area, such as those located along much of the proposed Sandpiper route, could cause significant environmental damage such as that described under heading C.3 of this letter without being detected in remote areas, and limited access may also reduce the chance that a citizen may observe and report a leak too small for detection by technology.

The creation of access in remote locations where none exists can create its own problems, including damage to habitat, creation of a source of long-term erosion, fragmentation, aesthetic issues, alteration of hydrology, and other issues. The best way to avoid these concerns is to avoid or reduce the number of crossings of flowing water bodies, or those where access is limited.

From a perspective of minimizing risk of major environmental incidents due to inability to access potential leak sites in Minnesota, the proposed Sandpiper route fares more poorly than any of the proposed system alternatives.

8. SA-03 and Other System Alternatives Follow Existing Corridors to a Greater Extent than does SA-Applicant.

System Alternatives SA-03, SA-04, and SA-05 all follow specific, already existing pipeline corridors. Assuming that all have already passed at least some degree of environmental scrutiny and have been adjusted in critical areas to avoid key resources, a route in these corridors can also likely avoid critical areas and resources. It is important to consider that for these routes, there is no need to "estimate" possible impacts by using an inclusive buffer of a random width to determine quantities of resources that "might" be impacted if one imagines the width of the pipeline corridor to be several miles wide. Instead, one can make a fairly accurate determination of what the impacts or potential impacts of these routes would be based on a width of a few hundred feet. These proposed routes are not "crayon drawings" on a map, but represent actual in-the-ground infrastructure. Precise numbers of water body crossings, mineral extraction sites, forests, wetlands, population densities, cultural resources sites, access areas, and potential downstream carry of released oil all can be determined with relatively little effort by state agencies with access to the required location data. What cannot be determined without more detailed study because of limitations in ArcMap(GIS) capabilities is the quality of those resources. MPCA and Minnesota Department of Natural Resources (DNR) staff can provide general overviews of how the resources in those areas compare to the resources in the northern or forested parts of the state, but on the ground site-by-site analysis is required.

Some of the proposed system alternatives follow highway corridors to some extent, and thus specific placement of the lines is more difficult to guarantee and resource data would be difficult to assess at this stage without more specific information. However, a required consideration for pipeline routing as stated in MN. R. 7852.1900, subp. 3. F., is the use of existing rights-of-way and right-of-way sharing or paralleling. With that in mind, since SA-03, SA-04, and SA-05 all follow specific existing corridors, while SA-Applicant does not in its entirety, then all three system alternatives could be brought forward for further review if they are determined to meet the need for the project, provided that this criteria is considered worthy of sufficient weight in the process.

Conclusion.

SA-03 is a reasonable and prudent alternative to meet the need that may be demonstrated in this proceeding with fewer potential impacts to the highest quality surface waters and other natural resources in the state of Minnesota than SA-Applicant. Further, if the project need is to transport oil from the Bakken fields of North Dakota to markets in the Midwest, system alternatives SA-04 and SA-05 must also be considered as candidates to meet that need, as they present fewer potential impacts to the natural environment of Minnesota and surrounding states than SA-Applicant.

If a determination of need is reached in this proceeding, the MPCA respectfully requests that the certificate of need be conditionally granted contingent upon suitable modification of SA-Applicant as necessary to protect and avoid high quality natural and environmental resource and the inclusion in the Route Proceeding, Docket No. CN-13-474, of SA-03 along with any other System Alternative that meets the identified need, pursuant to the Commission's authority under Minn. Rule 7853.0800.

Thank you for consideration of these comments.

Sincerely,

William Sierks

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APPENDIX A

BEHAVIOR AND CLEANUP OF OIL SPILLED TO SURFACE WATER, SOIL, AND GROUNDWATER

Presented below is general description of behavior and cleanup of oil spilled to surface water, soil, and groundwater.

Behavior of Oil in Surface Water

Many factors contribute to the spread and spill response efforts of an oil spill to surface waters, including weather, wave action and the chemical and physical properties of the oil. Oil that reaches surface water spreads on the surface of the water. If the water is flowing, the oil will be carried along. Additionally, wind will spread oil on water. By these forces thick layers of oil will spread and become thinner, more extensive layers. Oil spills may range from thickness measured in feet to a micron-thick rainbow of oil.

Some of the oil on water will evaporate. For example, Bakken oil is more volatile than many other crude oils. The evaporation of the "light end" portion of the oil increases the risk of ignition and exposure of responders to the toxic volatile components in the oil. Some of the oil on the water's surface will sink, especially as it mixes with sediment and as it loses the light ends through evaporation. Alberta oil sands crude is more prone to sinking than are many other crude oils. Sunken oil may move with water and/or may sink into bottom sediment. It may later release from bottom sediment if disturbed or with changes in temperature or current. Oil that sinks is especially challenging and tactics for finding and recovering sunken deposits of oil are not well developed. Removal of oiled sediment creates significant damage on its own. Some of the oil on water will dissolve into the water. Benzene, a toxic component of all crude oil, is among the most soluble components of crude and refined oils. Oil in moving waters will form emulsifications, called oil mousse, which is difficult to recover. Crude oils and refined oils will also have varying levels of hydrogen sulfide and other gases and constituents that are potentially toxic to humans and water life. In addition, oil spilled in surface water will coat and kill emergent vegetation, wildlife, shoreline, structures, and vessels.

Most aspects of response to an oil spill to surface water are made more difficult and less effective in winter ice and snow conditions. This is especially so if oil gets under ice, or if the ice is not safe for holding up responders and equipment. Sometimes oil on frozen ground or oil on top of competent ice makes for easier oil recovery.

Often a point is reached where the environmental damage caused by attempting to recover spread out and dispersed oil outweighs the damage of the oil. Consequently, oil spill response strategy is to contain spilled oil before it gets away.

Spill Response to Protect Surface Water

Every oil spill recovery tactic requires speedy deployment of specialized equipment by specially trained responders. The tactics of recovery of oil from surface water include:

- Reaching the location of the spill, and reaching downstream oiled or potentially oiled locations. Access along a railroad track or pipeline right-of-way to the spill site sometimes is easy. But getting access to oil that has gotten away from the spill site down river or into fringing wetlands is often very difficult.
- Stopping the flow of oil from the land into the water. Each tactic requires access, and much equipment and specialized training.
- Capturing and containing oil downstream of the spill site. This is usually attempted with floating "containment booms" (floating 50 foot long plastic tubes chained together) to hold the oil. Placing containment booms require access and boats, booms and ropes, anchors, buoys, and specialized training. This equipment is seldom nearby. Containment booms are limited in the amount of oil they will hold back. Containment booms lose effectiveness in water with currents or shallow water. Containment also typically becomes less effective the further downstream oil travels and the more dispersed oil has become. Downstream capture and containment depends on the currents, weather, shoreline type, and access. The best-prepared companies have examined and prioritized potential down-stream containment sites in their response planning before the spill.
- Skimming, sorbing, or pumping oil from the water's surface. A skimmer is a vacuum or sorbing device that pulls the floating oil layer off of the water. Sorbents are natural or man-made materials that absorb oil but not water. The oiled sorbent must then be recovered from the water for disposal. Vacuum trucks can pump oil from oil pools or thick layers of oil on water. Skimming, sorbing, and pumping oil requires access to the oil location and equipment and tanks to store recovered oil for eventual disposal.
- Down-stream, ahead-of-oil protection of shorelines and sensitive features. Containment boom can be deployed at some sensitive locations before the oil arrives to deflect oil further down-stream. Protection measures require careful selection of sites to be protected, since equipment and time does not allow

protection of all areas. In the best of cases, sensitive areas have been examined and prioritized in response planning before the spill.

- Mopping up oil that has been stranded on shorelines, wetlands, marinas, structures, etc. This can be done with sorbents, power washers, oil-lifting chemicals, excavation, etc. This is very labor-intensive work requiring equipment, access, and specialized training. Some mopping-up methods can damage or destroy environmental features, for example excavating beaches, steam cleaning rocky shores, or moving people and boats through wetlands.
- Sampling water, sediment, shoreline, vegetation, etc. to assess where oil or oil components remain in the environment and whether additional recovery is possible and warranted.
- Recovering residual oil from sediments, shorelines, wetlands, and other places as possible.
- Monitoring the ongoing effects of residual oil and of recovery operations.

Even a very aggressive and effective spill response will not recover all spilled oil from a surface water.

Behavior of Oil on the Ground, And In Groundwater

As oil spilled onto the ground sinks into the ground, some oil will be retained by soil. So a small spill may be absorbed into soil and may never reach groundwater directly. But whether or not oil reaches groundwater, the oil retained on or in the soil will serve as a continuing source of groundwater contamination as infiltrating precipitation passes through it. Some soils such as clay have small or non-connected pore spaces such that oil will not readily pass through it, while soils like sands and gravels have large interconnected pore spaces through which oil will pass readily and quickly. The speed of travel is also dependent on the viscosity of the substance. Some oils are very “liquid,” passing through soil quickly; other oils are thick, and those thick oils move through soil pores slowly.

“Groundwater” happens at the depth below the surface when the pore spaces between soil particles are filled with water instead of air. The depth of groundwater is highly variable in Minnesota from a few feet to one hundred or more feet. Groundwater moves, typically slowly, towards connections with surface water, wells, or other discharge points. Some fractured rock formations will allow oil plumes to move very quickly and very far.

When oil meets groundwater, the oil will mostly float near the surface of the groundwater, smearing the soils in that interface. The floating oil is termed “free product.” It will spread out in a floating layer in the direction of groundwater flow. Some of this floating oil will dissolve into groundwater forming a "plume." Some will evaporate and rise towards the surface. Some will remain sorbed onto soil.

Spill Response to Protect Groundwater

Once groundwater has become contaminated, the response strategies include understanding the direction, speed, and other characteristics of the groundwater. These response strategies use a variety of tools, including pre-existing information, soil borings, groundwater monitoring wells and geophysical methods. Classic physical strategies to protect groundwater from spills include:

- Pumping spilled oil from the ground's surface before it sinks into the soil;
- Digging oil-saturated soils so that the oil won't continue sinking into groundwater;
- Using high capacity blowers into the soil to suck the oil off the soil or groundwater as a vapor;
- Installing skimmers and pumps into the free product oil floating on the groundwater surface to pump out free product, and;
- Pumping groundwater to draw floating and dissolved oil to the surface for treatment.

Unfortunately, even a very aggressive and effective spill response will not recover all spilled oil from the ground. In those cases, if oil reaches groundwater, strategies for mitigating contaminated groundwater include:

- Ongoing groundwater pumping and treatment;
- Well replacement or treatment of a contaminated well;
- Adding restrictions on drilling new wells in the area;
- Adding oxygen and other materials to enhance natural degradation of oil;
- Ongoing monitoring to track contaminated groundwater behavior, and;
- Monitoring natural attenuation and biodegradation.

So, a spill of oil onto tight soils, with prompt recovery of oil from the ground's surface, and prompt excavation of contaminated soils is more effectively cleaned up and less damaging than is a spill of oil onto permeable soils, or areas with shallow groundwater. Especially concerning are spills of large volumes of oil on permeable soils near wellheads.

Biodegradation of Oil

It is well understood that oil that cannot be retrieved after a spill will eventually biodegrade over a period of years or decades. The rate at which biodegradation occurs in surface water, ground water, or soil is variable and contingent on many factors including oil concentration, soil types, temperatures, adequate oxygen and moisture. Oil-specific chemical and physical properties influence biodegradation. Some refined oils have additives or other non-biodegradable components.

Dissolved oil at the front and side of the plume will typically be attacked by indigenous microbes. A steady-state will eventually be reached as the microbial biodegradation at the forward edge of the plume keeps up with the oncoming oil in the oncoming groundwater. As oil content of the plume is exhausted, this biodegradation consumes the most or all of the spilled oil and the plume shrinks. This process is called natural attenuation. Understanding natural attenuation is important in a spill response, but natural attenuation is never accepted as the sole response to any spill. Plumes of oil contamination in groundwater are typically measured in hundreds of feet or fractions of a mile from the spill. A plume's life may be only some years, or may be very long.

Synopsis of A Few Oil Pipeline Spills in Minnesota

The largest pipeline spill in Minnesota in recent decades was a 1.7 million gallon crude oil spill from Lakehead (now called Enbridge pipeline number 3 in Grand Rapids in March of 1991. Pumping and extensive excavations of wetland was done to recover most of the oil. About 300,000 gallons escaped to the Prairie River. Luckily, most of that oil flowed onto the river's ice surface, and was recovered by an aggressive and effective company response. If the spill had gone beneath the ice, or had it been in a different season, it would have been far more challenging to recover and would have caused much surface water and downstream damage.

In 2002, the Lakehead (now called Enbridge) pipeline number 3 leaked approximately 250,000 gallons of crude oil into wet land near Cohasset in 2002. An oil burn was done because of concern with impending rain pushing oil to the nearby Mississippi River. Remaining oil was pumped and excavated from the wet land and extensive land restoration done over several years.

In 2009 near Staples, Minnesota Pipe Line Company was reinforcing or replacing sections of pipe. A device placed on the line to temporarily reroute the line failed during the night, and approximately 210,000 gallons of crude oil was lost. It pooled at the surface and no surface water was nearby. An aggressive excavation was immediately begun. Many thousands of cubic yards of soil were removed and disposed off-site. A passive sump system was left in place for a few years at the deepest point of impact. The contamination did not migrate off site due to the significant excavation effort.

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