FRIENDS OF THE HEADWATERS
RESPONSE TO THE MINNESOTA DEPARTMENT OF COMMERCE
LINE 3 DRAFT EIS - Dockets CN-14-916, PPL-15-137
JULY 10, 2017

SECTION I. INTRODUCTION

In reviewing the DEIS, Friends of the Headwaters ("FOH") has concluded that our main concerns are with serious deficiencies in the methods of analysis of impacts and alternatives. If there are serious problems with methods, outcomes will be very different.

It is our conclusion that these faults are so serious and pervasive that the Draft Environmental Impact Study ("DEIS") needs to be redone. It should then undergo another public review of a new DEIS. We note that this was done on the Polymet DEIS—a project that the Minnesota Department of Commerce ("DOC") told the Minnesota Public Utilities Commission ("PUC") was the most similar to the Line 3 review. *(See Attachment: N-1 DOC Letter PUC re FEIS Adequacy.)*

In our comments, we have focused on key problems with methods and used examples to portray these problems. We do not provide a litany of all the problems found in the methods; nor examine all the proposed route or alternatives; the examples we have chosen illustrate the other problems. We also suggest alternative methods when possible.

Since the inception of our organization in 2014, it has been our purpose to not only support a rigorous and scientifically based EIS but also a rigorous examination of alternatives that includes a route carrying the intended oil product to its destination instead of a much longer route through Minnesota and Wisconsin lake country. This is especially important because:

a) The proposed location for the Enbridge Line 3 Expansion and Relocation pipeline is in especially sensitive areas,

b) Minnesota's policy of following existing corridors with future pipelines,

c) Enbridge's aging private infrastructure and possible replacement of other old lines,

d) Because this pipeline and any future pipelines, such as the potential revival of both the Sandpiper and Wisconsin Line 66 pipelines, will be in these sensitive locations for 50 plus years if this route is approved.

e) Such an EIS is absolutely necessary to inform the criteria in the Certificate of Need ("CN") decisions of the PUC.

FOH is submitting other documents that are an essential part of our comments. Our long involvement in the process that preceded the DEIS preparation generated important supporting information to apply to our critique of the DEIS. Some are referenced herein. These date back to the spring of 2014, involve both the Sandpiper and Line 3 projects and must be entered into the DEIS record. *(See attached Index of Attachments.). Digital copies of these documents are attached on a thumb drive in a FedEx submission to the DOC today. Three attachments referenced in our report are included with this document, however. (See Attachments: S-1 Accufacts Report, S-2 Accufacts Kuprewicz CV, U-1 Paul Stolen CV.)*

There is some redundancy in this material for a number of reasons. We attempt to make specific reference to the attached documents in the current comments, but may not always

succeed in doing so. Under Minnesota Environmental Quality Board ("MEQB") rules, however, we believe this is not necessary. Those responding to our comments need to fully examine all the attached in the same manner as these new comments dated today.

Finally, we are aware that some readers of these comments might consider our concerns about oil releases as being overblown. To these we point to the largest *"on land"* oil spill in US history. It occurred in Minnesota near Grand Rapids in 1991. Sheer luck resulted in 40,000 barrels of oil not reaching the nearby Mississippi River. This was twice as big as the oil release in Michigan that has cost over $1.2 billion in clean-up costs.

SECTION II. SUMMARY OF POSITION OF FOH REGARDING DEIS DEFICIENCIES.

The following summarizes FOH reasoning for the finding of DEIS deficiencies. A parallel structure follows providing the details for each item. Below we describe eight sections, starting with *Section III*, of significant information supporting our position that the DEIS is seriously deficient as summarized in this section.

II. A. DEIS content regarding oil releases risks and impacts is deeply flawed.

It is obvious that oil releases into these surface and groundwater-rich locations must be central issues for complying with MEQB rules and the necessary application of DEIS content as it is applied to the CN decision criteria. *(See Section III.)*

II. B. The alternatives analysis is not adequate.

Both federal and state environmental review rules and guidance documents strongly state that the alternatives analysis is "at the heart of the EIS." There are many faults with this part of the DEIS, including ones that are related to our other main positions described in this section of our comments. One thing that stands out is that SA04, an alternative of the DEIS, was not given the same treatment as the other alternatives. *(See Section IV.)*

II. C. The cumulative impact assessment inadequate.

The DEIS is woefully inadequate with respect to this Minnesota Environmental Policy Act ("MEPA") and MEQB rule requirements for addressing cumulative impacts. Minnesota has seen a cumulative growth of pipeline corridors without ever examining the impacts. We also provide reasoning that the Sandpiper pipeline must be examined in the Cumulative Impact section of the DEIS, as well as a possible new large pipeline in Wisconsin for which some planning has already been accomplished. This part of the DEIS is also highly important with respect to the alternatives analysis and CN decision criteria. *(See Section V.)*

II. D. Physical and other construction impacts seriously underestimated.

The DEIS accepted at face value Enbridge's description of the Line 3 project's "footprint" during and after construction. MEQB rules and especially guidance documents make clear that an accurate description of this "footprint" is crucial to understanding the project's impacts. FOH estimates that the acreage figure alone underestimates this impact by at least 40 percent. *(See Section VI.)*

II. E. Near absence of site-specific impact assessment.

Neither the DEIS text itself, nor the two Enbridge funded reports incorporated by reference contain much actual site-specific impact assessment. The Stantec et al report uses detailed models to forecast the fate of released oil for seven selected sites but there is *no assessment of impacts of such pollution to the water bodies affected*. And the route comparisons rely on *data inventories* of environmental features along the various alternatives, but use no *specific impact analysis* to compare alternatives of them. *(See Section VII.)*

II. F. An independent review of multiple factors is necessary.

The DEIS relies on a large degree on Enbridge's analysis of impacts and on Enbridge's description of pipeline installation and operation features without any independent review of these topics. A modern pipeline is a complex and highly engineered system. Complex technological systems are subject to unforeseen failures. The recent May 2017 Federal Final Consent Decree *(Attachment P-1 Enbridge 5.23.17 Federal Consent Decree)* that resulted from the 2010 release of 20,000 barrels of oil from a pipeline rupture in Michigan describes an ongoing independent review of Enbridge's Mainline Corridor pipelines that resulted from Enbridge failures. We provide evidence that Minnesota must also conduct an independent review on multiple aspects of the pipeline.
(See Section VIII.)

II. G. The DEIS does not take a "life of project' approach in the DEIS.

The DEIS did not take a "life of project" approach to the DEIS analysis. Such an approach is essential considering the CN decision criteria on alternatives and the human and natural environment. *(See Section IX.)*

II. H. FOH believes the PUC should be assertive of Minnesota's rights.

The proposed Enbridge pipelines are interstate and cross the international border. They have major federal components such as pipeline safety and federal water permits. FOH is of the opinion that this fact influences the choices about DEIS content. This is the first time Minnesota has done an EIS on a large oil pipeline of this nature. Furthermore, it has engendered a high degree of controversy and diametrically opposed attitudes. We suggest that asserting Minnesota's authority by describing it in the DEIS could possibly help put the Enbridge projects in context and help reduce public controversy, one of the objectives pointed out in MEQB guidance documents. *(See Section X.)*

SECTION III. FOH REVIEW ON DEIS CONTENT REGARDING OIL RELEASES

Oil releases are covered in Chapter 10 of the DEIS and in two reports incorporated by reference into the DEIS, Stantec et al and Stantec/Barr Engineering.

III. A. Developing useful DEIS content on oil releases is extremely important.

This puts a high burden for accuracy and completeness. For five reasons it is important for overall pipeline permitting for the CN decision:

1. The pipelines are proposed to go through landscapes highly sensitive to oil releases and areas where clean-up will be very difficult or unlikely to completely occur.

2. A new pipeline corridor is to be partially created through the same kind of area.

3. Any new pipelines in the future receive an immediate presumption they would be added to this corridor because of Minnesota's policy of following existing utility corridors.

4. Good information on this topic is highly important to the comparison of alternatives. The alternative comparison is central to both federal and state environmental review, regulations and guidance documents. The magnitude of damages from oil releases will greatly differ among alternatives. There are differences because of natural resources and population, and differences in oil spill response times. Therefore, there will be large differences in impact magnitude between at least one alternative and the others that go through lake country.

5. The PUC CN decision will be based in a large part on understanding potential impacts of oil releases and for comparing the key part of the CN decision criteria concerning the viability of alternatives as compared to environmental and social impacts.

III. B. The FOH approach to examining the DEIS content on oil releases.

Besides looking at compliance with MEQB rules and the CN decision criteria, FOH imagined a future oil release of the magnitude of the 2010 Enbridge release in Michigan. We imagined it occurring next to the Straight River or the Mississippi River a couple of years after it was built. The Michigan release resulted in many studies of the actual impacts of such a release and has even been used as a case study to understand the monetary value of impacts to people and the environment. *(See Attachments: D-1 ORNL 2012 - Oak Ridge Block Valve Study, A-1 Stolen 4.4.14 Sandpiper Comments, A-2 Stolen 5.28.14 Sandpiper comments.)*

We then asked ourselves whether the information and analyses in the Line DEIS would have shed light on one of these possible future events if one looked back at it. The answer is a resounding "NO" in our view.

It is helpful to contrast what the DEIS *does not contain and what it does contain* while "Monday morning quarterbacking" from this imagined future event.

III.B.1. What key information is *lacking from the DEIS* concerning oil release?

Here are just a few examples:

a) Probably the most egregious missing data from the DEIS is that no actual amounts of oil releases are included at the sites that are examined. This is missing because Enbridge maintains it can be kept secret from the public document. FOH has a simple suggestion for the new DEIS to get around this demand. DOC should select its own figures and follow the recommendations in previous FOH documents on Sandpiper. *(See Attachments: D-1 ORNL 2012 - Oak Ridge Block Valve Study, A-1 Stolen 4.4.14 Sandpiper Comments, A-2 Stolen 5.28.14 Sandpiper comments, B-1 Stolen 11.19.14 Direct Testimony Sandpiper.)*

b) The DEIS provides little actual analysis of the specific impacts of large oil releases. There is not a single location in the entire EIS where specific impacts to people and the environment are described if an oil release were to occur at that site. This is in spite of high quality information and methodology already available from other studies and in fact previously recommended by FOH. *(See Attachment: D-1 ORNL - Oak Ridge Block Valve Study.)*

c) The DEIS contains study of the potential impacts to wild rice waters even though there has been much prior discussion of the need for it.

d) The DEIS contains no discussion of access difficulties for clean-up operations in order to compare routes or to contribute to the impact analysis. Longer access times lead to higher distances of oil travel in watercourses—a crucial landscape dependent factor in the analysis. For example, an oil release at the Mississippi crossing just north Itasca State Park will likely continue miles downstream because of rapid stream flow. There is difficult access downstream from this location. Another example is described in *Section III.E.2*, which describes a very inaccessible area in the upper reaches of the Wild Rice River and another in the La Salle lakes area in *Section III.D.3.*

e) Almost no discussion of long-term impacts of oil in the environment and too often reliance on industry studies and data.

f) No route comparison using site-specific impact analysis on the different routes. Instead *data* about environmental features that might be affected by pipeline construction is collected for the various routes and is used as a surrogate for analysis. *(See Section III.B.2.c below.)*

III.B.2. Here are examples of what the DEIS *does* contain and why this information is deficient.

a) Many hundreds of pages of modeling what happens to oil after it is released*, but not followed up with an analysis of impacts of such releases.* For example, the Red River site analysis indicated oil pollution from Bakken oil a distance of 40 miles downstream. Canada is less than 40 miles from this location. An oil release would likely trigger a review under the International Joint Commission because such pollution is covered under the Boundary Waters Treaty.

b) The methodology of selecting seven analysis sites to serve as proxies for all other locations is described in Chapter 10 and in the Stantec et al report. It is profoundly flawed. *(See Section III.C.)*

c) The DEIS supplies a fair amount of *data* about the environment along the proposed routes, but again, little analysis of what specific impacts might occur from an oil release. This is essentially an inventory of data about possibly sensitive areas. Data is collected about natural resources, HCAs, and so forth—but *data* is not *impact analysis*. Data is apparently regarded as a surrogate for impacts. This results in a shallow comparison among routes. We do not suggest that site-specific impact assessments be done on all sites along the routes—but we do suggest that route comparison methods be developed that are more meaningfully based on impacts rather than data. *Sections IV.E and VI* explain how some of this data analysis could be developed.

d) The DEIS contains a small amount of generic information about impacts to ecological resources. An EIS of this nature should spend a significant amount of time analyzing potential impacts to this topic including generic, long term and site-specific analysis of impacts of oil releases. Yet only four pages of the DEIS discuss this topic and they are confined to generic impacts to terrestrial plants and wildlife, terrestrial and aquatic habitats, and wetlands. *(See pages 10.45 through 48 of the DEIS.)* There is only a sentence or two concerning remediation difficulties in wetlands and no discussion of impacts from the remediation itself.

e) The DEIS heavily relies on Enbridge data and Enbridge consultants in spite of the obvious conflict of interest. *(See Section VIII.)*

III. C. Problems with the seven site methodology.

The DEIS and accompanying Stantec et al report say that seven sites were selected for in-depth analyses so they could serve as a proxy for other sites. Page 10-9 of the DEIS indicates that "Agency staff and 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…." It is noted in a footnote that Stantec did not look at SA04—with no explanation as to why this was done.

III.C.1. This method has several problems based on the following:

a) Page 1.10 of the Stantec et al report has two paragraphs describing the reasoning behind this selection. Later portions of Section 3 of this report describe the selection process and its use in substantially more detail. However, it still has little or no reasoning showing why the seven sites can be proxies.

b) Page 1.10 of the Stantec et al report reads "Should an interested party have concerns over a specific watercourse that was not modeled; this table can be used to find an equivalent representative release location. From there, the interested party can consider the range of seasons to found and/or determine the range of potential consequences for their specific location… each site serves as a proxy for other similar sites… because *oil behaves similarly in water bodies and locations with similar geographic and environmental locations,* there is not a need to model multiple watercourses that have similar features…"

III.C.2 FOH asks, "So why doesn't the DEIS provides tests of this proxy theory?"

FOH believes that this method is profoundly in error, simplistic and unsupported by ecological knowledge about the environment. Here are some of the reasons:

a) Claims are made that the factors used in the site selection and in the resulting modeling are "conservative" and therefore will result in "bracketing" the possible outcomes. There is nothing in the report that allows this claim to be validated. *(See Attachment: G-1 RRVWNA Drake Letter.)*

b) The claim is made that the seven sites can be used as proxies for all other water bodies crossed by the proposed pipeline and any alternative routes. This a profoundly important claim which must be supported by strong evidence, justification and reasoning—evidence which is completely lacking from the Stantec et al report and the DEIS.

c) A claim, highlighted above, that water bodies "have similar geographic and environmental locations." This is the type of view one might take from looking down from an airline flying at 20,000 feet. In other words, it very much "high grades" similarities. If the 20,000 barrels of oil released by Enbridge in 2010 had reached a different Michigan river, it would have had different impacts, different oil remediation and different impacts from remediation.

d) Water quality is different in different rivers. Would oil behave the same in the silt-laden Red River as it would in the cold, spring-fed, low sediment Straight River, a nationally recognized trout stream?

e) Perhaps no measure of ecological differences among rivers is starker than the boundaries of rivers and the rest of the landscape. Rivers with abrupt and short transitions to uplands are much different than rivers that flow through large areas of wetlands. Aquatic and semi-aquatic species are much different between these two situations. An oil release when

these wetlands are flooded means that oil clean-up cannot occur in these wetlands without removing the wetland soils—impossible. It means that the wetlands will continue to bleed at least some pollutants every time they are flooded. Subsequent damage to aquatic life will depend on persistence of these pollutants and many other factors.

III.C.3 Lack of impact assessment on the seven sites.

The Stantec et al report and the DEIS do not actually do any impact assessment on the seven sites based on the information developed from the model. The report focused on modeling the behavior of oil releases and ignored any site-specific impact assessment of those releases. Even if one accepts the results of the modeling, it isn't used to assist with an important impact assessment. Other parts of the DEIS and Stantec et al have limited information on generic impacts as noted in *Section III.B.2.c.* But this is clearly not a generic EIS. In Dec 2015 PUC Commission Chair Heydinger ordered a "robust, competent, comprehensive and independent" EIS. All impacts are supposed to be assessed in it. The lack of this assessment can only be regarded as *strange*.

III.C.4 Downstream oil pollution forecast for 40 miles yet DEIS used only 10 miles in other site analysis.

Even though oil releases were modeled to occur 40 miles downstream at the Red River site, the DEIS confines its affected area to only 10 miles at the other six sites, a profound error. And, as noted before, it only modeled the behavior of oil and did not assess impacts to people and the environment downstream. The federal draft supplemental EIS on the Line 67 Expansion project used a 20 miles river distance. The DEIS contains no discussion of these discrepancies.

III.C.5 Poor selection of hydrologic parameters ignoring high flow summer events.

The Stantec et al report also "high grades" hydrology considerations on the seven sites. It uses summer *average* flows in the streams and assumes this represents all summer conditions. This is a major error. Minnesota has seen increasingly high summer rain events in recent years, some of which are as high as or perhaps even higher than spring runoff events. These must be taken in consideration in the DEIS and impact assessment.

III. D. Mosquito Creek site, one of the seven. An Exception.

FOH has chosen not to examine or critique all seven sites because of the lack of time and aforementioned critical lack of Enbridge withheld data. However, the Mosquito Creek site is so egregiously inappropriate that we provide a specific critique of its selection. The problems with this site are as follows:

a) Potential effects on wild rice from an oil release are an extremely important topic for this DEIS. An impact assessment on wild rice waters must be carefully accomplished in it and must be based on actual locations where oil releases can reach wild rice waters. In fact, there are a number of better locations along the proposed route where this can occur such as the upper reaches of the Wild Rice River *(See III.E.2)* as noted below.

b) The selection of Mosquito Creek purports to represent a site where wild rice waters might be affected and also a site that can represent an on land oil release. It is an extremely poor choice with respect to wild rice waters to the point of being almost ludicrous. Lower Rice Lake is about 14 miles away. The first two miles toward the creek from a theoretical oil release site are largely open farmland with a low gradient. This is the very top of the creek's watershed, so there is no area above it carrying water to enhance oil movement away from the

spill site. In other words, this is a site very conducive to oil containment after a release, including a large release.

c) The first two miles down-gradient toward Mosquito Creek drop only about 16-17 feet. The creek channel is barely visible except when examining topography maps.

d) As noted, Lower Rice Lake is on the order of 14 miles downstream. The elevation change over these 14 miles is only 122 feet. Such a gentle landscape change is not representative of many locations along the proposed route. For example, in the La Salle Creek area only a few miles south of the Mosquito Creek location there are elevational changes of about 100 feet in one mile.

e) Mosquito Creek is a small channel providing many opportunities to control oil releases in most of its length. The FOH consultant, Paul Stolen, is familiar with the lower Mosquito Creek area having regularly hunted there for more than 50 years. Mr. Stolen is also familiar with Lower Rice Lake. He has not only done research on it, but also worked on a river restoration project on the Wild Rice river above Lower Rice Lake. It simply is a completely poor choice to be a proxy for anything but an on-land oil spill.

III. E. The DEIS must contain an analysis of impacts to wild rice from oil releases.

Wild rice is extremely important to Minnesota with respect to waterfowl, other wildlife, and economically and culturally to Native Americans. The DEIS contains no analysis of impacts to wild rice from oil releases. There is a clear potential for significant impacts from oil releases to Lower Rice Lake should a pipeline rupture occur at the location of the proposed route that crosses the upper watershed of the Wild Rice River.

Therefore, FOH recommends Lower Rice Lake be a location for a site-specific analysis of potential impacts to wild rice.

III.E.1. This lake is important for the following reasons:

a) Lower Rice Lake often supports about 2,000 acres of wild rice and therefore is culturally and historically important to Native Americans.

b) Oral histories of Native Americans in the area say that it was the site of peaceful meetings between the Anishinaabe and Nakota to trade since it is not far from the prairies to the West.

c) Lower Rice Lake is also the site of a major river restoration along State Highway 200 where several square miles and 62 river meanders were restored by closing a bypass ditch along the highway that had diverted flow to bypass the river south of the highway. The White Earth Tribal Biology Office maintains that this has improved wild rice stands in the lake.

d) One of the ricing landings on the lake is named after Ted Bonga, a prominent person in the fur trade era of early Minnesota.

e) Finally, Lower Rice Lake has seen enormous concentrations of waterfowl in the fall. Tens of thousands of waterfowl feeding on wild rice have been documented by the DNR from overflights.

III.E.2. Pipeline crosses upper reach of Wild Rice River.

The crossing of the Mud Lake wetland must be the location of a site specific analysis of impacts from a large oil release. These features need to be examined in this analysis:

a) The proposed route crosses wetlands located close to Mud Lake, a small wild rice lake next to the existing MinnCan pipelines. There are actually 4 pipelines in this wetland, as noted below.

b) During the construction of the MinnCan pipeline, DNR prepared a PowerPoint presentation indicating impacts to wetlands from pipeline construction. This contains photos of the Mud Lake wetland. *(See Attachment: E-1 Stolen, author, Pipeline Impacts to Wetlands & River Floodplains PowerPoint.)* During the construction of that line, MinnCan had a problem such that a new pipeline section through this wetland needed to be replaced. Instead of removing it, the decision was made to abandon it in place, clean it and plug it. DNR has records of why this occurred, as well as MinnCan. This means there are already four pipeline sections within this wetland with some likelihood of construction problems in the wetland. The DEIS needs to explore and address the reasons for the past failure of the MinnCan pipeline section.

c) There is an outlet ditch from Mud Lake that is open to the confluence of the Wild Rice River outlet of Upper Rice Lake. It is a bit less than three miles from Mud Lake to this confluence. This ditch and the Upper Rice Lake outlet result in a fairly large watershed at this point. In another location to the south, the proposed route is also just a bit more than one half mile from Upper Rice lake itself with wetlands in between. In other words this is a second exposure location of an oil release.

d) There is a large expanse of wetlands along the ditched outlet of Mud Lake, which continues downstream after the confluence of the ditch and Wild Rice River. There are about 4.5 miles along the river where there are no roads with one small trail near Mud Lake. An oil spill during high flows would expand into these wetlands. Essentially the area is roadless between these points. Response to an oil spill here would have severely limited access.

e) The potential impacts of an oil spill in this area and a preliminary description of the importance of the natural resource, cultural, and social values of the area is contained in A*ttachment H-1 Montana IPTF, pages 13-15*.

III. F. "Pinhole" leak issues

Simplifying, there are two types of pipeline oil releases discussed in this section.

1. Oil release amounts that result in a pressure drop that can be immediately detected by pressure monitoring systems.

2. Oil releases small enough so as to not be detected by pressure drops.

These issues are addressed in the DEIS by the report entitled "Line 3 Replacement Project: Assessment of Potential Pinhole Release," by consulting companies Stantec and Barr Engineering. Dated January 13, 2017, the report was funded by Enbridge. Barr Engineering was Enbridge's paid consultant during the Sandpiper administrative hearings that occurred in late 2014 and early 2015. Barr has a component of its business in oil spill remediation.
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III.F.1. Key findings of this report with respect to the "pinhole leak" concept, as defined in the report, are as follows.

a) A pinhole leak, defined as being 1/32 inches in diameter, can amount to 28 barrels per day. (Page 11 of Stantec/Barr Report.)

b) The report claims that oil cannot percolate through buried material very fast even though sand is used in the model to make this claim. In fact, it states that of the 28 barrels per day (1176 gallons/day) from a pinhole leak only 1.5 gallons/day will percolate into the parent material around the trench. In other words, the report from the model says that sand is so impermeable that the leaked oil will essentially have nowhere to go, but *it must have to go somewhere*.

c) The claim is made that because of very slow infiltration, oil will likely reach the surface and therefore oil from a 1/32 inch diameter leak will be detected within 28 days. This number is said to be "conservative." With no detection until at least 28 days, this means 784 barrels or 32928 gallons of oil will be released. Of this, the model—using the assumption that infiltration will be greatly impeded—predicts only 64 barrels of oil will be infiltrated into the ground. A claim that 97 percent of the oil will reach the surface is a claim of such magnitude it needs independent confirmation. Besides, that level of resistance against infiltration would seem to mean oil would reach the surface much sooner than 28 days. In other words, what was it doing during the 28 days after it began to leak from the pipe?

II.F.2. Findings with respect to oil releases between pressure detection threshold and pinhole leak concept. These findings of the report were:

a) The report states that the detection level for pressure drops is one percent or more of flow amounts, which can amount to 7,600 bpd.

b) The report claims that oil release amounts of between 0.5 and one percent would be detected within 120 minutes.

c) Oil releases of 0.5% (1,750 bpd) would be detected within 2 days.

d) Oil releases of 0.1% (760 bpd) would be detected within 14 days.

e) All of these oil amount numbers would be greatly reduced by the report's claim of very low infiltration rates and quick detection of oil as it reaches the surface.

III.F.3. FOH finds problems with modeling this approach, as follows:

a) Modeling is an attempt to measure the "real world." Therefore, it is not the "real world." This universal problem with models is reduced by several other techniques, none of which are contained in this report nor the DEIS. These are described in *Section VIII.D* such as using "sensitivity analysis" to show how outcomes vary if one uses different assumptions.

b) The report refers to the Exponent report done for the Keystone XL pipeline. Results in the Exponent Report differ very significantly from this report. Also distances of potential groundwater affected are much higher—1,000 feet. This report insufficiently discusses these differences.

c) The models are treated as if landscape differences do not matter. In other words, the modeled results are claimed to apply equally on all segments of all route alternatives with landscape and soil differences being immaterial. Furthermore, the Exponent Report on Keystone XL was completed before the final centerline had been established. It cautioned that further studies needed to be done to more accurately forecast impacts because such forecasts depended on site-specific conditions.

III.F.4. Chances of oil reaching the surface quickly is overblown.

There are numerous references in the report stating that nearly all small leaks will "quickly reach the surface" and be detected. This is a bald, self-serving statement unsupported by real world conditions. The report does accurately state that leaks can be detected if seen during aerial surveys being done every two weeks as well as by passersby and neighbors seeing or smelling oil that has reached the surface. Aerial surveys look out for oil on the surface and watch for dead vegetation. Here are some factors that delay "quick detection" of small leaks and that vary across the landscape:

a) Deep burial of pipe by HDD under rivers where pipe can be 20-40 feet under the riverbed and deep under much of the floodplain. In hilly terrain, groundwater movement is toward the river, and if the pipe is within an area of such terrain, oil can be carried by piping action downward or by downward groundwater flow in general. This is not always toward the surface as compared to pipe buried in flat terrain with the pipe bottom being about eight feet below the surface and possibly in or near the water table.

b) Deeper burial at crests of hills due to curve flattening to reduce the degree of pipe bends. In hilly moraine terrain, the bottom of the pipe can easily be 15 feet below the surface. *(See Attachment C-1 Montana IPTF.)*

c) Leaks in snow covered areas are not visible unless they become large enough to melt snow.

d) One of the best methods of detecting leaks where no oil is visible on the surface is dead vegetation, but vegetation in Minnesota (except conifers) looks dead for about six months of the year.

III.F.5. Water table aquifer importance downplayed.

On page 45 of the Stantec/Barr Report, it is noted that along 62% of the proposed route and its alternatives, there is very low or low susceptibility "water table aquifers." So, what about the 38% where there is medium or high susceptibility? This is not addressed in the DEIS, whatsoever, which brings us to our next point.

The above 62% figure is followed by the next sentence which makes the claim that "where high-susceptibility areas are located along the proposed route, potential impacts to water supplies are limited" because they are polluted by fertilizers and pesticides from farms. This same statement was submitted by Enbridge's consultant, Barr Engineering, during the Sandpiper hearing and was just as fallacious. Basically this statement is saying that oil pollution of such aquifers doesn't matter and ignores such things as successful attempts to reduce such farm pollution. Of course, it also ignores related issues such as effects on fish and wildlife populations in groundwater emergent zones from oil contaminants.

III.F.6. Case studies and remediation of small leaks.

These case studies are misleading and deficient. The report describes 10 case studies in Minnesota of oil releases categorized as being from small and slow leaks. Seven of the 10 are in Enbridge's Mainline Corridor. Clean-up efforts are described. The case studies are presented as if, when the Minnesota PCA determined site clean-up was completed, that there was no residual environmental impacts from the oil left at the site. This is entirely incorrect—PCA's efforts were not to study long term environmental impacts of the polluted sites caused by oil contaminants. It was rather to determine if "enough" efforts had been made to recover as much oil as reasonably possible under clean-up regulations. For most of the 10 cases, not all

of the oil was removed during clean-up operations. Besides, scientific studies of impacts of oil contaminants in the environment continue to advance and develop new information.

a) Section 5.3 attempts to explain impacts and susceptibility to wildlife found in wetlands. It confines the discussion to the immediate effects of oil and the remediation of such affects, such as de-oiling birds. This completely ignores the long term effects on such wetland life and ignores the fact that oil cannot completely be removed without destroying major wetland ecological values.

b) Page 39 of the report discusses the Enbridge oil release site west of Bemidji that has received extensive and long term study of the potential for groundwater pollution from oil releases. It is a certainty, as the report says, that these studies have developed valuable information. But the report again makes the same claim made by Barr Engineering during the Sandpiper hearings: that these findings can be extrapolated to many other locations that are in fact dissimilar. The Bemidji site is quite flat with slow lateral groundwater movement away from the oil release site. In fact, in the seventeen years since the spill, groundwater has moved only an average of 96 feet per year. There are areas along the proposed Line 3 route where lateral groundwater movement is much faster and even moves 100 feet in one day. Also there are many moraine areas with high relief with many landlocked depressions and gravel lenses. It is not uncommon for drilling and excavation to cause a sudden high pressure release of groundwater in some of these areas.

III.F.7. Pinhole leak report's erroneous conclusion

The report concludes with statements that oil cleanup will essentially eliminate any problems created by such releases, ignoring the fact that there are many locations along the proposed route where clean-up operations did not remove oil. This means it is a polluted site and has been entered into the records as such. The report confuses termination of oil clean-up with a finding of no continuing impact."

SECTION IV. ALTERNATIVES

Our comments in this section are related to and depend on other sections of our comments because of the overlapping issues in the necessary DEIS analyses. We point that out where necessary. Comments are as follows:

IV. A. SA04 is a viable alternative because of PUC decisions, MEQB rules, and because it meets Enbridge's ultimate purpose.

As noted in *Section V*, we believe SA04 must be treated the same as other alternatives in a new DEIS for these reasons.

1. The PUC decided to include it and they asked for a rigorous examination of all alternatives.

2. The PUC set aside the MEQB rule that alternatives that do not meet the applicant's stated purpose may be eliminated from study at the discretion of the RGU. This rule in almost all EIS cases in the past eliminated many possible alternatives and was a significant change from past practice, even though the rule used the term "may."

3. The applicant Enbridge confines its *stated purpose* as being to build a pipeline and to use various existing Enbridge facilities. This is only true in a superficial sense. The *actual*

purpose is to move oil to Chicago area refineries and locations beyond. SA04 is the only route that goes directly to that area.

4. While it may be true that if a CN for Line 3 is denied, Enbridge may suffer additional costs; however, Subd. 6 of MEPA says that "*so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct*." (emphasis added.)

Furthermore, Enbridge may achieve long term financial benefits from building a larger pipeline in the SA04 corridor—because it may eliminate the need for the planned Line 66 in Wisconsin. Line 3 and any new line in Wisconsin will likely cost much more than going directly to Chicago along SA04.

5. Enbridge's existing corridors are aging and are in problematic locations.

6. The CN decision criteria mandates a full exploration of alternatives that have distinct differences. Otherwise the analysis will be futile. The DOC itself recognized this in its screening report when it said that SA04 has distinct environmental benefits compared to other alternatives.

IV. B. SA04 is treated much differently than other alternatives in the DEIS.

This serious DEIS error is most obvious when comparing the methods of examining the Line 3 proposed route compared to the method of examining SA04.

1. The proposed route has been studied in detail. Many adjustments have been made to it to reduce impacts. Enbridge has already agreed to these modifications during the Sandpiper review process. None of this has been accomplished for SA04. For example, SA04 as proposed now crosses in vicinity of some karst areas in Mower and Freeborn Counties in southern Minnesota and possibly in Iowa. This is a landscape feature to be avoided for oil pipelines because of high risk of groundwater pollution from an oil release. We have examined these karst areas and it appears that a re-route could avoid this areas. *The DEIS needs to examine re-routes of SA04 to achieve impact reduction in the same manner as it does with the proposed route and its routing alternatives.*

2. The selection of the various alternatives and sub-alternatives in northern Minnesota selected for DEIS study was a much smaller subset of other routes that were rejected for various reasons. (See the Alternatives Screening Report.) There were no SA04 variations that were examined.

3. The Alternatives Screening Report indicates that a screen of 15 percent slope was used for screening alternatives. This is an extremely inappropriate number to use with respect to pipelines. This is demonstrated in *Section VI*. The justification for its use is not explained.

IV. C. Failure to take paint a "big picture" of the Enbridge system.

The FOH comments on the Cumulative Impact section *(See Section V)* of the DEIS describe other pipelines and other events that could result in increasing the viability of SA04. The implications of this were not covered in the DEIS.

IV. D. Failure of the DEIS to accurately describe the project's environmental footprint.

This topic is more fully explored in *Section VI* of these comments. That discussion clearly indicates that the project's footprint gets exponentially larger on hilly terrain. Therefore, the comparison of alternatives of terrain with differing amounts of flat terrain vs hilly terrain will fail if this issue is not properly captured in the analysis. The obvious problem in the DEIS *is that it assumes the project's footprint is the same on all routes*.

FOH makes suggestions as to rectifying this serious DEIS defect in the next section. These measures will also pertain to the needed cumulative impact section of the revised DEIS.

IV. E. FOH suggestions for metrics that will better capture differences among alternatives based on the project's environmental footprint.

As described in this section, the pipeline construction's environmental footprint grows exponentially in hilly terrain. Therefore, the comparison among alternatives needs to compare flat terrain vs non-flat terrain by developing metrics that carefully capture this construction characteristic. Each of these metrics can then be combined with the site-specific impact assessment we also recommend as much as possible. This should shift the route comparison more toward actual real impacts than merely data compilation. These metrics will also be dependent on the independent assessment FOH recommends in *Section VI*. We recommend the following metrics be used:

1. Several categories of slope measurements should be used such as
    a) Near-zero percent,
    b) 2-3 percent)
    c) 4-5 percent,
    d) 7-8 percent,
    e) 10 percent, and
    f) slopes over 10 percent.

These can be obtained by GIS methods and should be expressed in about five mile increments on each of the proposed routes. This is the most important metric we are recommending. These metrics should then also be used in the oil release impact assessment.

2. Vegetation cover categories should be described in the same five mile increments.

3. Major environmental densities should be expressed in the same five mile increments. The list need not be exhaustive, but should include wetlands and natural watercourses.

4. Land use should be characterized in the same 5 mile increments. Great detail is not necessary. Farmland, forest, and urban categories (if possible, houses within one tenth of a mile, for example) are the main ones.

5. Road density data should be obtained in the same five mile increments. This is especially important because it is an indicator of speed of reaction time to oil spills.

It is possible that some of this information or related information was developed for the DEIS. We are confident, however, that the slope measures we recommend above were not used in the DEIS. These are the most important with respect to the environmental footprint of the project.

It will be evident that these metrics will be useful for both the cumulative impact section of the DEIS and the assessment of potential impacts in general.

With respect to the use of these measures in comparing routes, it would be possible to portray them on a per mile basis. If the next version of the DEIS were to continue to portray oil release chances on a per mile basis, using other environmental metrics could be somewhat useful in route comparisons. However, as we note elsewhere, any oil release information needs to be portrayed as a "life of project" issue rather than as a "per year" issue.

IV. F. DEIS fails to accomplish a useful comparison of routes based on route length among alternatives.

The DEIS did not solve the issue of correcting for different route lengths among alternatives. This made it confusing and misleading, especially for the SA04 alternative. FOH strongly maintains that the next DEIS address the ultimate purpose of Line 3: carrying oil to the Chicago area and south. The route comparison should use a metric that compares the length of the ultimate purpose of the project—carrying oil to the Chicago area. That means that SA04 has significant advantages because it is much shorter than routing oil to Superior then south to the Chicago area. We do not have any other specific suggestions at this time because the current DEIS errors are so large.

SECTION V. CUMULATIVE POTENTIAL EFFECTS

This section of the DEIS is woefully inadequate.

Because this section is extremely important to the EIS "adequacy" decision and CN decision criteria, it must be readdressed. It fails to provide the proper analysis required by MEQB rules, especially regarding the description of the impacts of the existing pipeline corridors and future additions of pipelines in these corridors. Minnesota has a policy of adding additional pipelines to existing pipeline corridors yet has never done an "analysis" including a full risk assessment of both short and long term impacts of doing so.

This DEIS chapter continues to follow this error which now must be rectified in order to comply with MEQB rules for this EIS. The document essentially has no actual analyses of impacts; rather it is replete with assertions of little or no impact or, when it does recognize impacts, merely says they will "increase" or be mitigated. We believe that to be compliant with MEQB rules, this DEIS needs to be revised to fully account for the current corridors and future expansions.

Supported reasoning is provided below as well as suggestions as to how to rectify the error. We recommend 15 types of data that need to be obtained in order to do the proper cumulative impact assessment according to MEQB rule requirements. *(Section V.E.)* This should be included in the revised DEIS.

V. A. Importance of this section of the DEIS.

FOH regards this section of the DEIS exceedingly important because of the following five physical and historic facts.

1. The Pipeline corridors under study in the DEIS—Enbridge's Mainline Corridor and the proposed corridor to the Park Rapids area—were built through environmentally sensitive areas and therefore established many years before effective environmental laws.

2. Minnesota has pursued a policy—but not written into required rules—of adding linear facilities to other linear facilities without ever examining the actual impacts of doing so. It appears that this assumes overall fewer impacts, even when the existing corridor is a poor location environmentally, and even though Minnesota rules that require such an analysis. FOH challenges this unsupported assumption that must be rectified in the new DEIS.

3. Enbridge has clearly practiced a corporate policy of incrementally adding other pipelines or looping projects to its original corridor. This has resulted in about 7 pipelines in the corridors west of Clearbrook and six east on to Superior. However, because of looping projects, there may be additional pipes in certain locations.

4. Enbridge states its Mainline Corridor can no longer contain any new pipelines. It then proposes to follow the next shortest pipeline corridor to its desired destination in Superior, WI. The result is that a new corridor through an equally problematic region becomes a foregone conclusion if the project is approved as proposed—thus perpetuating past practices.

5. Most of the oil to be carried by the proposed Line 3 is destined to go via Superior to the Chicago area and beyond. Therefore, the oil itself will be transported on a much longer route through Minnesota and Wisconsin lake and river country than if it were to go directly to Chicago from Canada via SA04 in the DEIS.

6. Enbridge's pipeline system is "aging private infrastructure" with respect to the cumulative impact assessment. It is not only Line 3 that is aging. The time is now to do a thorough analysis of whether these pipelines should go through a more appropriate landscape. As noted, the Consent Decree on the Michigan 2010 oil release requires Enbridge to do new and rigorous testing of all its pipelines in Minnesota. *(See Attachment P-1.)*

V. B. The following characteristics of cumulative impacts of pipelines are necessary parts of the analysis under existing Minnesota law, rules, and policy regarding pipelines.

1. Given Minnesota's policy of following existing pipelines with new pipelines, there is a good chance another oil or gas pipeline might be proposed for the same corridor should Enbridge's proposal be approved. There is no basis for concluding otherwise. This raises a new set of possible impacts that should at least be discussed in this EIS section.

2. This DEIS cannot be narrowly focused on this project in the present moment. Rather, the analysis must look at the past when the first pipelines were established and assess the likelihood of new pipelines in a "life of project" manner—at least 50 years into the future.

3. Full understanding of the cumulative potential effects of cumulatively adding more and more pipelines to an existing corridor in a poor location is completely necessary in order to do an adequate analysis of alternatives.

V. C. What do the MEQB rules and guidance documents require for a cumulative potential effects analysis?

Chapter 12 is so deficient it is hard to know where to begin our critique. FOH therefore starts with a review of what the rules require and what the MEQB Guide to the Rules provides as further guidance.

In *Section V.C.1* we quote the rule which defines "cumulative potential effects" and in *Section V.C.2* we quote relevant sections of the MEQB "Guide to the Rules" which, while not a rule, provide a practical interpretation for the RGU to follow. In that section, we provide our interpretations of why, if one is to follow the rules and guidance, it would lead to a conclusion

that the Sandpiper project must be included in the analysis and other future pipelines as well. In other words, the DEIS must study the addition of 2 or more large diameter pipelines in the proposed Line 3 corridor.

V.C.1. Rule guidance MEQB 4410.0200, Subp. 11a, the definition of "Cumulative Potential Effects."

The MEQB rules and guidance regarding cumulative potential effect have received additional prominence because, as is explained in the quote from the MEQB guidance document in *Section V.C.2* below, the concept as used in EISs has been problematic for years. This has recently changed due to a Minnesota Supreme Court decision and rule revisions. The definition in the rule of this phrase is very important regarding the Line 3 DEIS for reaching an adequacy determination later. Therefore, we quote this definition in its entirety, with our added emphasis on key language.

"*Cumulative Potential Effects" (CPE) means the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid,… Significant cumulative potential effects can result from individually minor projects taking place over a period of time. In analyzing the contributions of past projects to cumulative potential effects, it is sufficient to consider the current aggregate effects of past actions. It is not required to list or analyze the impacts of individual past actions, unless such information is necessary to describe the cumulative potential effects. In determining if a basis of expectation has been laid for a project, an RGU must determine whether a project is reasonably likely to occur and, if so, whether sufficiently detailed information is available about the project to contribute to the understanding of cumulative potential effects. In making these determinations, the RGU must consider: whether any applications for permits have been filed with any units of government; whether detailed plans and specifications have been prepared for the project; whether future development is indicated by adopted comprehensive plans or zoning or other ordinances; whether future development is indicated by historic or forecasted trends; and on other factors determined to be relevant by the RGU."* (Emphasis added.)

V.C.2. Guidance from the EQB for interpreting MEQB rules taken from "Guide to the Rules" regarding defining Cumulative Potential Effects.

The following section describes the manner in which the RGU needs to decide on future projects and also on how to assess past cumulative impacts. The sections of the Guide to the Rules are in quotes with particularly important language emphasized. These sections support the justification for why Sandpiper (for example) needs to be included in the DEIS analysis. They are noted in underline. The FOH conclusions listed below provide the specific reasons for a more detailed discussion as to why the Sandpiper pipeline must be included in the DEIS analysis.

"*The concept of cumulative potential effects was a troublesome aspect of environmental review for many years. The rules provided little – and in some ways puzzling – guidance and RGUs usually gave the concept fairly superficial treatment. However, …in the 2006 case Citizens Advocating Responsible Development (CARD) vs. Kandiyohi County Board of Commissioners and Duininck Brothers, Inc., the Minnesota Supreme Court provided new insight into how to handle the concept (which the court termed "cumulative potential effects," rather than "cumulative impacts")." This new clarity elevated the obligation of RGUs to address the concept if their environmental review decisions were to be defensible against legal challenges*." (page 16, emphasis added)

"*Definition of cumulative potential effects. The concept of cumulative potential effects means, as the Supreme Court stated, putting the project in context. It has to do with the question of to what extent, when conducting Environmental Review of a given project, do you need to consider impacts from other projects. How do you decide what other projects need to be considered? How far does the RGU need to look in terms of geography and timing, especially with respect to the future*?"

…"*The new definition indicates that CPE means the (total) effect on the environment resulting from the incremental effects of the project under review plus similar effects from certain other projects. The crux of the matter usually lies in deciding which are the relevant "other projects" that need to be considered*." (Emphasis added.)

"*The definition provides the following specific guidance regarding which other projects must be considered*:

"*1. They must be located within the "environmentally-relevant area" and be reasonably expected to affect the same environmental resources as the project under review. One way to think about this that may be helpful is to consider the "environmental footprints" of projects; those other projects whose environmental footprints would likely overlap the footprint of the project under review are those that meet this test…*" (Emphasis added.)

FOH conclusion: The Sandpiper project is/was proposed to be located within a few feet of the Line 3 project. There is strong evidence this project is merely suspended rather than stopped. In fact, the federal SEIS on the Line 67 project indicated Sandpiper was "on hold." This also fits with verbal statements made by Enbridge officials after they withdrew their Sandpiper application. Furthermore, Minnesota's policy of following existing corridors means that it is reasonable to conclude other pipelines will follow.

Furthermore, Enbridge indicates that the ultimate capacity of the proposed Line 3 will likely be expanded in the future to carry 915,000 barrels/day. Enbridge says the pipe is designed to carry this much and only needs the additional pumping stations and other facilities. Clearly, this must be addressed in the new DEIS, including increased oil release consequences.

"*2. To account for past projects (which includes projects constructed in the past but still in existence), the definition provides that the "current aggregate effects" of past projects can be used as a surrogate for an inventory of the effects from individual past projects (in most cases)."* (Emphasis added.)

FOH conclusion: This is the key phrase that commands the PUC to fully explore the current corridors. The "current aggregate effects" of past projects refers to impacts in and along the Enbridge's Mainline Corridor and along the MinnCan corridor from Clearbrook to Park Rapids. Recommendations for the content of this analysis are in *Section V.E* below.

"*3. In looking to the future, only other projects actually planned or for which a basis of expectation has been laid need be considered. This restriction was specifically stated by the Supreme Court in the CARD decision. However, the court did not define what is meant by a basis of expectation being laid. In its 2009 rule amendments the EQB provided guidance about that topic. This guidance consists of a two-part test and five sources of pertinent information."* (Emphasis added.)

FOH conclusion: Clearly, a "basis of expectation has been laid" for the Sandpiper project as well as the Enbridge Line 66 in Wisconsin. The basis for this expectation for the Wisconsin line

may have been strengthened by the recent call by the Michigan Attorney General to close Line 5 across the Mackinac Straits. *(See Attachments: R-1 Enbridge Wisconsin Landowner News, R-2 PressPub.com "Enbridge Announces Plan to "twin" Line 61, M-1 Michigan official calls for shutting down oil pipeline - ABC News.)*

It is also our contention that Minnesota's policy of following existing pipeline corridors whenever a new pipeline is proposed provides an additional "basis of expectation" for studying any additional pipelines besides Sandpiper for the proposed corridor. The manner of studying them needs to be creative so as to inform the CN decision criteria.

"*The first half of the test is whether the other project is "reasonably likely to occur." The definition lists the following as sources of information that should be scrutinized relative to that question:"*

"1. Whether any applications for permits have been filed with any units of government; (note that this includes units of government other than the RGU and that "permit" is a defined term (4410.0200, subp. 58) that includes virtually any form of permission or assistance from any unit of government)." (Emphasis added.)

FOH conclusion: This test is met. Enbridge filed an application for Sandpiper.

"2. Whether detailed plans and specifications have been prepared."

FOH conclusion: This test is met. Enbridge made detailed plans and specifications for Sandpiper and Line 3 together (Note: FOH fully believes these plans underestimated environmental impacts, however, see *Section IV and Attachments A-1, A-2, and B-1*. Such plans could reasonably be used to estimate additional impacts from a second pipeline besides Sandpiper. In addition, Enbridge has surveyed a route for its proposed new Line 66 in Wisconsin. *(See Attachments: R-1 and R-2.)*

"*3. Future development indicated by adopted comprehensive plans, and zoning or other ordinances.*"

FOH conclusion: This test is met to some extent. Enbridge obtained and paid for easements and had detailed discussions with road authorities and counties regarding Sandpiper and Line 3. Enbridge also funded some projects it said was mitigation for the project and actually surveyed for a new line from Superior to the Chicago area.

"*4. Historic or forecasted development trends, and*… "

FOH Conclusion: This test is met by several factors including past actions by Enbridge of incremental growth, by Minnesota's policy of following existing linear corridors which is still in existence, and by oil analysts who seem to agree that a big jump in oil demand will re-invigorate the Bakken fields and Alberta oil sands. Essentially this means under current practices any pipelines proposed in the next 50 or more years to cross Northern Minnesota from east to west will follow the new Enbridge corridor if it is approved, whether they are oil or natural gas. This means that another additional large diameter pipeline in addition to Sandpiper—were it be oil or natural gas—needs to be studied in the cumulative potential effects DEIS chapter.

"*5. Any other factors found to be relevant by the RGU; (one possible example might be the status of funding for the project). The EQB staff believes that each of these sources of information is not intended to be a "hard-and-fast rule" that by itself necessarily means that a*

project is or is not "reasonably likely to occur" (although in some cases a single piece of information may be found definitive)… In general, the RGU is advised to synthesize available information from all the sources and come to an overall conclusion about the likelihood that the project in question will in fact occur." (Emphasis added.)

FOH conclusion: First, we believe that Enbridge has demonstrated an ability to rapidly change its funding—witness its swift change to buy into the Dakota Access pipeline. Furthermore, the sources of funding (shipper's contracts) have in the past been kept secret prior to being announced publicly. Second, this guidance as well as the content of the rule indicates that an RGU should do a fully independent look at all market factors as well as looking into the 50 year operational life of the project. If this guidance and rule support were to be actually followed by the PUC, it must conclude that at least one other pipeline should receive analysis in the corridor besides Sandpiper.

Finally, this guidance makes it clear that the DOC cannot equate the Enbridge withdrawal of the Sandpiper application with permanent or even near-future termination of the project. It must take into account other evidence which clearly shows the project can come back full bore at any moment.

V. D. MEQB 4410.2300,, Subp. H. This is a rule regarding content of the EIS with respect to, among other things, cumulative potential effects:

"H*. Environmental, economic, employment, and sociological impacts: for the proposed project and each major alternative there shall be a thorough but succinct discussion of potentially significant adverse or beneficial effects generated, be they direct, indirect, or cumulative. Data and analyses shall be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives …*" (Emphasis added.)

This rule says that cumulative impacts need just as must attention as any other potential impact. EIS preparation requires best efforts be made to enumerate impacts. Other parts of the DEIS make some attempts to enumerate impacts—but Chapter 12 does not. Its focus on potential cumulative impacts of SA04 and all the route alternatives is limited and suffers from deep lack of knowledge of the "current aggregate effects" of past projects. It made no attempt to use the recommendations to address cumulative impacts that were submitted during the Sandpiper hearing where much information was presented on impacts. (*See Attachments A-1, A-2, B-1, I-1, J-1, J-2.)* And, in its description of potential impacts from oil releases, it merely says it would increase, but impacts would still be minor.

FOH presented detailed information regarding pipeline impacts and recommended forms of analysis on the Sandpiper project for adding additional pipelines to the proposed route as well as detailed suggestions as to how to analyze cumulative impacts. FOH is resubmitting this entire set of material as comment on the DEIS. *(See Index of Attachments List.)*

We conclude that Chapter 12 of the DEIS does not begin to comply with the MEQB rules cited here regarding content of the EIS with respect to cumulative potential effects. In the next section, we list some of the impacts that should be addressed in order to portray the "current aggregate effects" of past projects.

V. E. Suggested means of compliance with the MEQB rule to portray the "current aggregate effect" of past pipeline projects.

FOH suggests that the following 15 data and analysis needs to be included in a revised DEIS in order to achieve a proper cumulative impact analysis of Line 3 and future pipelines. This data

needs to use the Sandpiper information that was becoming available prior to Enbridge's dropping of the project as well as the volume of concerns from the public and parties about locating the two projects together. These data and associated impact assessments for a new DEIS are as follows:

1. Acreage of the existing Enbridge Mainline Corridor and acreage of the existing corridor from Clearbrook to Park Rapids. This should be portrayed in 4-5 mile segments in order to learn its variability. Such data can be easily obtained from GIS methods. This would develop a picture of terrain-related pipeline construction and also give the amount of clearing of forest areas in hilly areas vs flat terrain.

2. Analysis of historic aerial photography to assess the acreage expansion of these same corridors as pipelines were added to them, and the growth in proximity to human habitation as the expansion proceeded. For example, how many houses were within 200 feet (just an example) when the first line was place, and then continue this effort as each was added. Such data can be obtained from aerial photography in earlier years; GIS in later years. This important data will provide a good measure of adverse impacts of Minnesota's policy of adding new linear facilities to old ones.

3. Special attention to the "before/after" aerial photography (and/or GIS) of the MinnCan Line 4 project from Clearbrook to Park Rapids since the existing pipelines in that corridor were small and old. This would demonstrate the effects of adding large diameter pipelines. This information will be useful in assessing and confirming the Montana IPTF report, *(see Attachment: C-1 Montana IPTF)* of the exponential increase in ROW width on hilly terrain.

4. A determination of the actual number of pipelines in these corridors since there are looping projects. This is relevant to whether pipe removal or replacement is an option.

5. Information from DNR, Enbridge, and MinnCan regarding frac-out frequency on MinnCan Line 4, Alberta Clipper and Southern Lights. Data should include the area affected and estimated amounts of drilling mud release, recovery and non-recovery. Include analysis of types of locations where this occurred (such as rivers, next to rivers, groundwater discharge area, etc.) Include description of constituents of drilling mud as much as it was available including additives to the bentonite.

6. Aerial photography taken close after construction of these projects to determine whether forecasted Extra Work Space was accurate. (If such aerial photography is available.) Also, this will determine where there was extra wide ROW because of hilly terrain—this information will also be useful for calculating impacts on alternative routes, etc. This should be compared to Enbridge's Alberta Clipper/Southern Lights applications.

7. Inventory of all oil spills on Enbridge past facilities since original construction with acreage affected. Also include oil spill data on pipelines south of Clearbrook.

8. Data on post construction digs on corridors including reasons for such digs. MinnCan Line 4, even though completed by 2008, seems to have a history of digs.

9. Using GIS, measure shoreline or river bank clearing distances at river crossing locations. Enbridge insisted during construction of Alberta Clipper/Southern Lights that it needed a cleared area. This is an important riparian zone for wildlife travel. Shorelines denuded of brush are a serious adverse impact to wildlife due to exposure to aerial predators and other risks.

10. Detailed discussion of why Enbridge says the Mainline Corridor can't take any more pipelines. Include contact with the USFS, Leech Lake, and Fond du Lac tribes. Describe these reasons and conflicts.

11. Obtain information on complaints submitted to DOC during construction of Alberta Clipper, Southern Lights and MinnCan Line 4. Include a review of social issues during construction of those projects. DOC should have this information since Larry Hartman of the Minnesota DOC was the contact person.

12. Locations of cross-overs. Lengths of crossovers. Reasons for cross-overs. This information is relevant to determine the difficulty of pipeline replacement or abandonment. This is also important to determine whether the corridor is "maxed out" for additional pipelines.

13. Locations and lengths of pipeline separations from adjacent pipelines beyond what is normal. In its applications Enbridge gives a typical separation from existing lines. However, as pipelines are added alongside existing pipelines, obstacles are found. This results in smaller or larger centerline deviations from the stated normal separation. Sometimes there are larger deviations, which are then called "minor route changes". Both of these figures are very important to fully understand the cumulative potential effects of pipeline corridor growth. Such information also contributes to the Alternatives analyses and the CN decision criteria. Therefore, locations, length and separation figures should be collected.

14. Use of the group of metrics described in *Section IV.E* including list of the different slope categories.

15. Characterization of added risk of oil releases because of the concentration of pipelines in the same corridor, including the chances of damage from a pipeline rupture accompanied by fire causing cascading damage to other pipelines as few feet away. (See *Attachments A-1, A-2, and D-1.*)

V. F. New Wisconsin proposed pipeline, Line 66, from Superior to the Chicago area and possible close of Line 5 in Michigan.

FOH believes this project and the Michigan scenario must be included in the DEIS analysis in some manner. It is appropriate to reference these projects in both the cumulative impact section and the alternatives section. According to A*ttachments R-1 and R-2* Enbridge developed plans for a new Line 66, a 42 inch pipeline from Superior to the Chicago area. They accomplished survey work, then later suspended the planning. There is no evidence they have made a decision to irrevocably terminate these plans.

In addition, the actions in Michigan that might result in closing Line 5 across the Mackinac Straits could possibly make the Line 66 project more likely. According to news reports, "*Michigan's attorney general on Thursday called for shutting down twin oil pipelines beneath the waterway where Lakes Huron and Michigan meet, as the state released a consultant's report outlining alternative scenarios for the future of oil transport in the ecologically sensitive tourist destination.*

Republican Bill Schuette said a "specific and definite timetable" should be established for decommissioning the nearly 5-mile-long (8-kilometer-long) section of Enbridge Inc.'s Line 5 in the Straits of Mackinac, which environmental groups want removed but the Canadian pipeline company insists is in good shape." *(See Attachment: M-1 Michigan official calls for shutting down oil pipeline - ABC News.)*

The relationship of these two projects is with two significant impact analysis topics--cumulative impact issues and the alternatives analysis—and with the CN decisions in Minnesota because:

1. It might result in an additional pipeline in Minnesota.

2. If the Wisconsin line is built, it would be a continuation of Enbridge's investment in aging pipeline corridors through Minnesota and Wisconsin lake and river country, rather than using a shorter and more direct route to Chicago area and beyond refiners through a landscape less susceptible to oil releases and where response time and remediation is far more favorable. If the Michigan line is shut down, it could have cascading effects throughout Enbridges's system, including the parts in Minnesota

FOH makes no specific recommendation as to how these projects should be addressed, but they must be addressed in the new DEIS. They certainly pertain to the CN decision criteria regarding alternatives and impacts to the human and natural environment.

SECTION VI. LACK OF ANALYSIS IN THE DEIS OF THE PHYSICAL FOOTPRINT OF THE PROJECT DURING CONSTRUCTION

It is helpful to simplify the concept of the potential economic, socioeconomic, and environmental impacts of an oil pipeline before getting into the details that become necessary in an EIS on a very large pipeline costing billions of dollars. Setting aside the first two of these, the environmental impacts fall into two categories: oil release potential over the life of the project and the various physical impacts during construction—often known as the environmental "footprint." Oil release issues are described in *Section III*.

It is a factual statement as described in this section that a pipeline's physical footprint is much smaller on flat farmland terrain vs hilly terrain. It is also true that pipeline construction encounters more problems in hilly terrain because of the landscape characteristics of Minnesota's water rich moraine country.

This FOH section will demonstrate these statements and will demonstrate that the DEIS does a poor job of addressing these issues.

VI. A. Enbridge estimates of project's footprint is significantly lower that it's likely footprint.

The Enbridge descriptions of the project's footprint is contained in its application. The DEIS analysis was in turn based on acceptance by DOC and its consultants that Enbridge's estimates were accurate. FOH estimates that Enbridge's acreage estimates are off by at least 40% and likely somewhat more. If so, this changes many of the estimates of environmental impacts in the DEIS. Enbridge acreage estimates taken from the DEIS are as follows:

1. About 5,780 acres total footprint, including the ROW, access roads, and extra work space at rivers, road crossing, pump stations, and so forth.

2. The ROW proposed will be 120 feet in uplands and the same when co-located, but with a somewhat different configuration.

3. ROW width in wetlands is 85 feet.

4. Estimates are given that about 270 acres of access roads will be needed, which are included in the overall figures.

VI. B. An accurate project description is crucial to understanding impacts in order to comply with MEQB rules.

MEQB guidance documents describe the crucial importance of having accurate descriptions of a project. Note the following from MEQB's "EAW Guidelines (for) Preparing Environmental Assessment Worksheets."

"*The project description is the most important item in the EAW. It must be completed thoroughly and accurately… Clear, complete and detailed project descriptions are essential to understanding the potential for environmental effects… The detailed description should be focused on aspects of the project that may directly or indirectly manipulate, alter or impact the physical or natural environment. This can include: construction methods, especially in regard to site preparation; operational features (ongoing operations), especially in regard to waste production and management… project closure actions. The description should distinguish between construction and operational activities… Any infrastructure constructed to serve the project and not independent of project must be treated in the EAW as part of the project. For example, a road built to serve a specific project must be treated…" (Emphasis added.)*

Of course, since the Scoping EAW merely referred to Enbridge's application for the project description, that error has continued to ramify to now cause serious DEIS deficiencies.

VI. C. Basic principles involved in impact reduction from pipeline construction.

There are general principles common to all areas except but we provide more detail for the special case of farm land because the issues are so important regarding perceived effects on the farming community and the livelihood of people. These are:

1. *Long-term vs short term impacts*. The overall concept of pipeline construction is to open up the earth, place a pipeline in it and restore the land as much as possible to the original condition and productivity, no matter what the ownership and surface use. Here are important considerations for reducing long-term impacts:

a) There are few direct obstacles to accomplishing restoration—the main one being that woody vegetation must be kept off the permanent ROW area some distance in order to observe for oil releases, provide access, and so forth.

b) An overall principle is to avoid permanent impacts by using careful restoration, effective revegetation and use of appropriate erosion control methods.

c) Proper topsoil separation and replacement after pipe emplacement goes a long way toward restoring productivity.

d) In comments that follow, FOH shows that deep excavation on areas other than the trench can occur in many locations in hilly terrain. This will be certain to cause topsoil loss from mixing with parent material. This will in turn cause long-term impacts from invasive species, loss of productivity and soil erosion on slopes above water courses and sedimentation into them. *Loss of topsoil by burying it in parent material is a serious potential long term impact from pipeline construction that is only prevented by proper topsoil separation*.

2. *Farmland issues*. Pipeline construction in farmland is a special case because farmers depend on high soil quality for producing crops. Proper pipeline installation can prevent loss of

topsoil quality. Here are possible impacts and mitigation of such impacts; keeping in mind that some measures result in a wider ROW:

a) Trench excavation and any other excavation areas on farmland (such as non-flat terrain) potentially can result in topsoil loss from mixing. Enbridge is committing to separation over the trench and also says it will separate topsoil in other areas as desired by the landowner. However, they do not describe the ROW expansion that will follow from this.

b) Repeated heavy equipment travel during pipeline construction—which occurs on the work pad—results in serious long-term compaction in certain soils. This will reduce crop productivity. Measures to reduce such compaction are deep ripping during restoration after pipe installation. An even more effective technique in these kinds of soils is topsoil separation over the trench and the entire work pad, following by deep ripping of the subsoil and parent material.

c) Minnesota rules require pipeline companies to provide deeper cover over pipelines if the landowner desires this.

d) Proper compensation for seasonal crop losses and for possible loss of access can be accomplished quite easily for most landowners.

e) If these measures are followed, and if environmental inspectors ensure their use during construction, productivity loss on farmland is low or not present for the long term.

f) Organic farms must be avoided because the presence of a pipeline is incompatible with organic farming.

3. *Pipeline siting issues with respect to the physical location in the landscape*. With respect to the theoretical best physical place to put a pipeline, it is on flat farmland where the best management approach described above is sincerely used by the pipeline company to prevent productivity loses and where there are numerous roads. Roads are important to provide quick access if there is an oil release and a flat landscape means oil will not travel far and be relatively easy to recover.

Note: *"Enbridge's Mark Curwin, Senior Director for Strategic Coordination of Major Project Executions in the U.S. stated their construction preference is to build pipelines across farmland. He made these remarks at a public meeting in Park Rapids on Jan. 29, 2014. In attendance were two Minnesota legislators, Roger Erickson and Rod Skoe, as well as Hubbard County government, agency and business officials. Mr. Curwin gave the reasons of better soils, easier construction, easier access, less natural habitat destruction, cheaper and quicker. After construction the farmland can be put back into crop production. Access to leaks and spills is much easier. Winter wetland construction would be at a minimum." (See Attachment I-1 FOH 4.4.14 Sandpiper Public Comments Part1.)*

This point is made without regard to social acceptance of pipelines by the farm community which, of course, is an important issue. However, in many cases, when farmers are appropriately assured that productivity loss will not occur, they often accept a pipeline. This acceptance has fallen lately, however, and social acceptance of pipelines is a general issue wherever they are proposed.

VI. D. FOH evidence for Enbridge's underestimate of impacts.

VI.D.1. Evidence from construction of the Northern Border Pipeline in Montana.

This Interagency Pipeline Task Force report on pipeline construction is *Attachment C-1*. It concerned a 42 inch gas pipeline. The report was prepared in response to the Northern Border Pipeline Company seriously underestimating the size of the construction zone. This led to a high degree of concern from landowners and caused more permanent impacts from topsoil loss than otherwise would have occurred. It is referred to in this section as the IPTF Report.

The main construction techniques described in the IPTF Report are similar to many current practices even though that pipeline was built some time ago.

The findings of the IPTF Report are highly relevant to the Line 3 project and the DEIS analysis. The proposed route crosses terrain similar to some of the terrain documented in the IPTF Report. The relevant findings of the IPTF Report are as follows :

a) *Flat terrain*. On flat farmland terrain similar to many locations west of Clearbrook, eastern North Dakota and Iowa, even a 42 inch pipeline can be constructed on an 85-foot right of way (ROW) if topsoil is separated only over the trench. *(See C-1 Montana IPTF, Page 34.)*

b) *Pipeline construction work pad widths*. Equipment operations during construction are primarily confined to a work pad of 50-60 feet depending on company preferences. Initial clearing and restoration activities occur out to the edge of the project's "footprint." According to the application, Enbridge intends to use a 55 foot work pad. This work pad must be flat in order to ensure worker safety with respect to equipment passage and operation of side-boom tractors carrying pipe. Such tractors cannot carry pipe safely on a side-hill. Enbridge says it will use a 120 foot ROW in upland terrain and a 95 foot ROW in wetland terrain according to the project description in the DEIS.

c) *Side-hill cutting to construct the 50 foot work pad*. Any deviation from flat terrain in almost all landscapes results in a wider ROW for these reasons:

1) Side-hill cutting to construct the work pad requires a wider ROW to store excavated material from the work pad construction.

2) Additional extra space to separate topsoil from the excavated side-hill cut is needed. Failure to do this practice will result in long term topsoil loss when it becomes mixed with non-soil parent material in these side-hill locations. This additional space increases the ROW width and results in wider clearing in forested areas. This means it becomes a trade-off between temporary impacts (forest loss) and long-term impacts (topsoil loss and accompanying impacts.)

3) Side-hill cuts can easily be more than 6-8 feet deep on slopes of only 6 or 7%, resulting in large amounts of spoil and risk of topsoil mixing if not carefully separated. The ROW width increases exponentially as the degree of slope increases. Even a 2% slope will result in a noticeably wider ROW if topsoil is to be saved.

4) These findings are documented on pages 32-55 of the report. There was also a finding that slopes did not exceed 6-7 percent on almost all locations except for ravines. Page 46 indicates a ROW width of 230 feet.

d) *Deep cuts at the crest of hills.* Generically, the amount of cover for the proposed Line 3 is 3 to 4 feet. However, pipeline burial depth is deeper in some locations in hilly terrain or

such locations as rivers. This can greatly increase ROW width because of spoil and topsoil storage. One of the main reasons for deeper burial is the standard engineering practice used to reduce the degree of bend to increase hydraulic efficiency and reduce internal corrosion. This essentially means that a pipeline does not follow the exact landscape contour that would result if the same burial depth was always used.

The result is that quite deep cuts occur at certain locations because the work pad elevation must be consistent with the bottom of the trench.

This means exponential increases in ROW width at these locations. An example is seen on pages 43-46. ROW width was up to 230 feet in this area even though topsoil was not properly separated. Doing so would have widened the ROW even more, unless different construction techniques were used.

e) *Very wide construction ROWs in terrain steeper than 6-7 degree slopes*. On steeper slopes such as the ravine shown on pages 27-29, ROW widths were 350-400+ feet wide.

f) FOH submitted much of this information during the Sandpiper review process. *(See Attachments A-1, B-1.)*

VI.D.2. Evidence from construction of the MinnCan pipeline from Clearbrook south to St. Paul of a wider ROW wider than that proposed by Enbridge for Line 3 in non-flat terrain.

FOH consultant Paul Stolen was one of the DNR's main environmental contacts during permit review and construction of both the MinnCan Line 4 and Enbridge projects in 2007-2008 before retirement. He was also the author of the IPTF Report when working for the State of Montana. He was involved in reviewing pipeline plans, analyzing impacts, developing permit conditions, coordinating with other DNR staff and other agency staff, and monitoring construction with the company's environmental inspector. These are his findings with respect to knowledge of this route:

a) The MinnCan pipeline route has many locations with slopes of 6-7 degrees with some locations of steeper slopes. There are also sharp crests of hills that will result in deep cuts and wider ROWs.

b) MinnCan construction on flat farmland was similar to some of the same landscapes in the IPTF Report with respect to ROW widths.

c) The pipeline segment from Clearbrook to Park Rapids and across hilly terrain to the south along the route resulted in extra wide ROWs similar to those described in the IPTF Report.

d) There were substantial numbers of extra-work space areas on the MinnCan route and some were not anticipated by prior plans or became larger during construction.

e) There were locations where the ROW was hundreds of feet wide because of very large amounts of spoil storage in the hilly terrain.

f) The existing pipeline corridor along the MinnCan route through forested areas was about 60 feet prior to construction. After MinnCan construction, the corridor expanded in some locations to 230 feet and in hilly areas such as the La Salle Creek area, the MinnCan environmental "footprint" was nearly 400 feet wide.

f) "Cross-overs" are locations where obstacles (or other engineering reasons) require that a new pipeline must cross to the other side of existing pipelines. It is done with a bore that

requires extra work space and flat areas widening the ROW. Such cross-overs become more frequent in difficult terrain. Such cross-overs were common on MinnCan.

VI.D.3. Special case of the La Salle Creek crossing location.

The proposed route crosses another extremely problematic area after continuing south from the Upper Rice Lake area and crossing the Continental Divide. This is an exceptionally deep glacial tunnel valley not far north of Itasca State Park. This valley contains a small trout stream and three downstream lakes before drainage from the valley's watershed empties into the Mississippi River downstream. The lakes are in downstream order Big La Salle Lake , Middle La Salle Lake (a small lake about two miles from the pipeline crossing), and La Salle Lake about 3.5 miles from the crossing. La Salle Lake is within the La Salle Lake State Recreation Area. Just north of this is the La Salle Lake Scientific and Natural Area (SNA) bounded on the west by the Mississippi River and the east by La Salle Creek. The proposed pipeline crosses both waterways upstream of the SNA. *(See Attachment T-1 La Salle Creek and Lakes Area Line 3 Map.)* Therefore, the SNA is between the State Recreation Area and the Mississippi River. La Salle Lake is an extremely high value Minnesota resource, based on the following information from the DNR about the La Salle Lake State Recreation Area (SRA):

"*At 221 acres and 213 feet deep, with over 18,600 feet of shoreline, La Salle Lake is one of Minnesota's most pristine and deepest lakes. The lake supports walleye, northern pike, largemouth bass, black crappie, and bluegill sunfish populations… In the early 1990s, an early Native American Elk Lake Culture prehistoric site was discovered adjacent to La Salle Creek near the outlet of La Salle Lake. The site was identified during planning for an upgrade of the county highway and was partially excavated in 1995 before the road was rebuilt."*

The Institute for Minnesota Archaeology states: "*...artifacts recovered from the La Salle Creek site have provided archaeologists with a clearer picture of how the producers of Brainerd Ware ceramics lived, what they ate, and what tools they made. In addition, the date of 3,180 years ago obtained from charred residue on the inside of a ceramic shard at the La Salle Creek Site is one of the earliest known dates for an Elk Lake Culture occupation in Minnesota.*"
(See DNR website for the quoted description, and see *Attachment H-1* for further information about the multiple values of the area and about potential consequences of an oil release)

La Salle Lake, the second deepest lake in Minnesota, is surrounded by the 1,000 acre La Salle Lake State Recreation Area. It was acquired by funds from the Legacy Amendment for about $8.5 million not long after the construction of the MinnCan 4 pipeline. Therefore, about 35 percent of the stream reach (and steep tunnel valley) between the pipeline crossing and the Mississippi River has been given, by Minnesota law, special high level protection.

FOH notes that even though the DEIS says that rivers within 10 miles of the proposed route are of concern, it contains no assessment of potential impacts to this area.

With respect to the DEIS analysis this location is so problematic for pipeline construction that it needs a site-specific analysis in the DEIS. This is not only a bad location with respect to possible oil releases during the project life, but construction impacts will likely be very severe. Enbridge is proposing what they term as a "dry crossing." This is a complete misnomer because of the site conditions. It merely means a trenched crossing. The problems are as follows:

a) This is a textbook case of the problems with old pipeline corridors being built without regard to environmental impacts. The pipeline crosses this steep valley at such an oblique angle that the pipeline route is over a mile long in the valley.

b) Paul Stolen estimates that, based on his previous experience with this site and with pipeline construction, Enbridge's current plans for crossing La Salle creek with a trenched crossing plus the valley crossing as proposed will result in an environmental "footprint" alone of 40 plus acres.

c) There are hillside wetlands formed because of groundwater discharge in this steep valley. Enbridge's plan is to put staging areas at these very problematic locations. Enbridge proposes to expand the existing corridor by co-locating on the west side of the Koch MinnCan pipelines as its pipeline enters the valley. This will involve cutting into the side-slope of this steep valley crossed at an oblique angle. A large staging area is needed in order to accomplish the sharp turn east to cross the valley and the creek. This staging area will be hemmed in by the steep valley on the west and the "hot" lines of the Minncan pipelines. Any cutting into the spring-fed slope base will be problematic risking slope de-stabilization and could also lead to slope slumping during heavy rain events. The same problem may occur on the east side of the valley because of the hillside and the sharp turn back south to return to the existing corridor. Enbridge's centerline route from there is actually proposed to be on the hillside, possibly causing other stability problems.

Analysis of Enbridge's specific plans for this crossing should address the possibilities of slope de-stabilization in the valley and should consider heavy rain events that could exacerbate the problem. The study should include an analysis of whether the terrain and construction in it will increase the likelihood of pipeline integrity being damaged by slope destabilization and slumping.

d) The valley itself is filled with a water-rich deep combination of gyttja and peat accompanied by upwelling groundwater. This material is very soft and because of the large expanse of water saturated soft organic matter in the valley, normal matting to support backhoes will not be effective. The characteristics of this wetland that receives large amounts of groundwater discharge will likely necessitate using sheet pile across the entire valley to prevent trench slumping as the pipeline trench is excavated for weighted pipe installation. This wider matting will increase wetland impacts.

Note: *Gyttja* is a mud formed from the partial decay of peat. It is black and has a gel-like consistency. Aerobic digestion of the peat by bacteria forms humic acid and reduces the peat in the first oxygenated meter (generally 0.5 meter) of the peat column. As the peat is buried under new peat or soil the oxygen is reduced, often by water logging, and further degradation by anaerobic microbes, anaerobic digestion can produce gyttja. (This definition is most appropriate to the La Salle Valley peat formation in the opinion of FOH consultant Paul Stolen.)

e) Mr. Stolen indicates this is the worst location for a pipeline installation he has seen in Minnesota and Montana in his years of pipeline experience. This experience did include locations with groundwater discharge into peat wetlands and where sheet pile was needed.

f) Hills on both sides of this steep glacial valley are about 100 feet higher than the valley floor.

g) This was the site of a very large drilling release of drilling mud during the construction of MinnCan. An HDD was accomplished during winter construction instead of a trenched crossing because MinnCan recognized the severe obstacles faced by a trenched crossing. The HDD was done to avoid this, but it then led to the drilling mud frac-out. The HDD bore was about 25 feet below La Salle Creek, but the drilling mud broke out into the creek and other places in the wetland. The wetland surface does not freeze in winter at this location because of groundwater upwelling. The lack of frost and the soft wetlands soils limited the use of motorized equipment during the drilling mud recovery operation. Some recovery operations had to be accomplished by hand work that normally would have been done with such

equipment. *(See Attachments E-1 Stolen Pipeline Impacts to Wetlands & River Floodplains PowerPoint, F-1 La Salle Creek MinnCan Response Activities report bentonite frac-out, F-2 La Salle Creek Barr Response Activities Work Plan Bentonite clean-up plan.)*

h) The DEIS provides a rudimentary discussion of a possible re-route around this area that does not consider any impacts to the La Salle Creek valley, its lakes, and so forth. It even included the issue of temporary noise impacts from construction-- to the few people living in the area-- with other superficial long-term environmental impacts and concluded a re-route was not advisable. Such noise impacts are the type that occurs from road construction that occurs every summer in Minnesota, and is regarded as an acceptable, temporary impact.

i) A trenched crossing in this area might even mean shutting down the MinnCan lines because even with mats over them, the very soft spring fed organic soils may not support equipment over the live lines.

j) Impacts from constructing in this area will likely be long term and last for many years. FOH strongly recommends that an independent engineering analyst be done for this location that closely examines Enbridge plans as well as making a determination of difficulties and environmental impacts of any type of crossing.

VI.D.4. Simplifying issues pertaining to ROW width and acreage forecasts.

There is a useful rule of thumb regarding ROW width and a pipeline's environmental "footprint." A 100 foot ROW means 12.1 acres/mile. Enbridge's proposed route in Minnesota is about 337 miles long. If it had a 100 foot ROW, this means a bit over 4,000 acres. Enbridge's proposal is for a 120 foot ROW. Adding Enbridge's estimate for access roads, extra work space and other figures, one can then translate this into an equivalent ROW width. If one does this for the 337 mile pipeline length in Minnesota, this amounts to the equivalent footprint of an average ROW width of 140 feet across the proposed route.

VI. E. Problems with Enbridge's acreage forecast of the project's footprint.

These are:

1. There has been no independent review of Enbridge's description of its land requirements or its ROW estimates. In fact, it is clear from the DEIS and Enbridge's application that Enbridge's diagrams of its pipeline ROW are flat *terrain diagrams—the ideal situation for a narrow ROW*. They are not diagrams of construction In hilly terrain. The application contains no descriptions of ROW in hilly terrain .

2. The IPTF Report documented exponential ROW width increases in hilly terrain. Some of the terrain in that report is similar to substantial areas along the proposed route. Thus there are locations along the proposed route where the project "footprint" will be substantially greater than 140 feet wide. This leads to a conclusion—though not proof—that Enbridge's figures are likely too low. Taken in their entirety, *Sections VI.D.1 through 3*, and Paul Stolen's estimates that based on his experience with this route and other pipelines, FOH has concluded that the ROW equivalent width for the pipeline and associated facilities across Minnesota is at least 200 feet. This means a "footprint" of 8,155 acres instead of 5,780 acres.

3. There are methods that can be used to develop an independent review of Enbridge's figures. An obvious one is the use of aerial photos of the proposed route to see how much the corridor expanded when MinnCan was built.

4. If Enbridge's figures are wrong, the DEIS calculations of impacts to various natural resources will also be wrong. If so, this will be a serious deficiency in the DEIS.

5. Again, if wrong, this will in turn lead to deficiencies in the cumulative impact analysis and comparison of alternatives. This topic is explored further in *Section V* with suggestions for rectifying the problem in the next DEIS.

6. FOH concludes that there is sufficient evidence that this topic should receive an independent review by an outside party. Such a review is necessary in order for the DEIS to be in compliance with MEQB rules, since the MEQB has emphasized that the environmental footprint of any project is key to analyzing impacts. The review should focus on three items:

a) ROW requirements in non-flat terrain, estimates of ROW widths and depth of excavation in order to prepare a flat work pad. Estimates should be according to the metrics listed in *Section IV.E*. The estimates should assume topsoil separation to prevent long-term impacts.

b) A review of Enbridge's specific plans on these topics.

c) La Salle Creek.

VI. F. Drilling mud release can cause both short and long term impacts to wetlands and water bodies.

As noted in FOH's comments on Sandpiper, there were numerous locations where drilling mud '"frac-outs" occurred during HDDs on the MinnCan route. *(See Attachments E-1, F-1, F-2.)* Although the reasons for this were not determined, many of the events seemed to be associated with spring areas along certain rivers and wetlands. Most drilling mud from a frac-out remains in the environment. The DEIS did not address this potential impact. A revised DEIS needs to address the issue of drilling mud not being recovered as well as the potential toxicity of its additives.

Most of the MinnCan releases were not recovered and some were very large. The La Salle Creek winter event involved collection of 24,500 gallons of slurry containing drilling mud. This was water plus drilling mud. Since the HDD was 25 feet below the wetland surface, it is likely that much was not recovered. Some of the other frac-out locations along the route south of Clearbrook included:

Wetlands adjacent to the Clearwater River near Bagley
Mississippi Riverbed north of Itasca State Park
Straight River riverbed south of Park Rapids
Hay Creek, a site of a very large drilling mud release
Others farther south

Drilling mud is mostly bentonite clay, which would be considered wetland fill. However, it contains additives to increase the likelihood of a successful bore. Pipeline companies often declare that such additives are trade secrets. This occurred on the MinnCan project. MinnCan refused to release the information to the PCA and DNR after frac-outs. Therefore, there may still be contaminants remaining at the frac-out locations along the proposed route that are toxic to aquatic organisms.

Drilling mud releases are part of the environmental footprint of the proposed project. This topic needs to be carefully evaluated in the DEIS because of the numerous occurrences on the MinnCan project. The independent review of Enbridge's construction plans needs to consider these plans and ways to reduce releases. One of the main problems in the past is the HDD operators keep putting mud into the hole until it reaches the surface, even though they know

that so much is being used that it is not staying in the bore hole. This happened on the MinnCan project in several locations. *(See Attachments E-1, F-1, F-2.)*

VI. G. Accurate information about the project's footprint in different landscapes is significant to the crucial alternatives analysis and the cumulative impact analysis.

The alternative routes studied in the DEIS cross variable landscapes. As described above, the pipelines environmental footprint increases exponentially in hilly terrain. This means routes that pass through generally flat or flatter terrain will have a substantially smaller physical impact on the environment.

Minnesota's glacial moraine country has an abundance of isolated basins that are often at different elevations on the landscape. All precipitation that doesn't evaporate or get used by vegetation enters the groundwater instead of flowing into creeks and rivers. One of the results is groundwater movement down-gradient including lateral movement and such phenomenon as upwelling into lakes and streams or emergence at the base of hills. This is likely the cause of at least some drilling mud releases.

This topic is addressed more fully in *Section V, Alternatives*. FOH suggestions are made there which will help to understand the project's footprint as it relates to that analysis as well as the cumulative impact analysis.

SECTION VII. LACK OF SITE SPECIFIC ANALYSIS OF IMPACTS, ESPECIALLY ABOUT EFFECTS OF OIL RELEASES

VII. A. Oil releases.

As noted elsewhere in the FOH comments, the DEIS includes *data* about potentially affected areas along the route, but has little or no *analysis of impacts* to such areas. It does have some flawed generic information which can be used if corrected to supply this information.

FOH suggests the following techniques to help resolve this serious lack:

VII.A.1. Types of site-specific analyst needed.

A revised DEIS should select actual locations of the type of area potentially affected by an oil release and do a site specific analysis of a large oil release that affects that particular type. It is our opinion that the analysis we are suggesting need not be an exhaustive analysis, but it should distinguish between ease of response time, distance traveled away from the release location, ease of clean-up, type of impacts, and long-term impacts. It should also include discussion of seasonal differences as to when the oil release occurred.

Such a method is open to the same criticism FOH has levied against the seven river and creek locations we criticize in *Section III.C.* Therefore, thought must be put into avoiding the methodological problems of doing this. We feel that selecting more sites and developing criteria for examining them could likely avoid these problems.

Some of the types of areas would include *actual* sites of the following:

a) A population center, or more than one.

b) An actual flat or nearly flat farmland area crossed by the pipeline that is within a larger farmland area such as in the Red River Valley, or in Minnesota or Iowa along SA04.

c) A farmland area characterized by at least some steeper terrain.

d) One or more important wild rice areas, such as Lower Rice Lake discussed in *Section III.E* or in consultation with Minnesota's Native American tribes.

e) An appropriate selection of the several types of HCAs including water supply areas such as the Straight River aquifer.

f) Locations where oil releases can easily spread beyond the immediate oil release area. These are rivers. They need the most attention in site specific analysis. Substantially more than one river site needs to be selected than the seven sites in the DEIS. Furthermore, instead of putting so much detailed focus on modeling attempts to determine the fate of oil releases, more focus should be on forecasting impacts based on assumptions about fate based work done in the DEIS, for example, past events such as the Kalamazoo River oil release and the two relatively recent Yellowstone River spills. Rivers selected should include the most important ones, such as the Red River, both crossings of the Applicant's proposed routes on Mississippi River, the Straight River, La Salle Creek and selected rivers on the other routes.

g) Rivers selected should have a variety of floodplain types, such as farmed floodplains, and those that have extensive floodplain wetlands along a river.

h) Rare wetland types, such as calcareous fens. The wetland northwest of Trail, Minnesota would be a good choice.

i) Forested areas.

j) Other highly sensitive locations of multiple difficult terrain and significant natural resources. The La Salle Creek area north of Itasca State Park must receive special attention because of steep terrain with its groundwater fed wetlands on hillsides. It is a designated trout stream from the pipeline crossing and upstream. Downstream it enters a pristine lake. The La Salle valley has difficult access issues, and so forth. It is discussed in more detail in *Section VI.D.3.*

k) Other locations representing examples of the data collected in the DEIS.

VI.A. 2. Types of site specific oil release information.

How might this information be used in the EIS? When information is obtained from site specific analysis of these sites, the information can be extrapolated at least to some extent to other similar types along the various proposed routes. We are confident this can be accomplished in a more useful manner than the current DEIS which contains no such effort. Information about these site-specific locations need to include at least:

a) Descriptions of the responses to the oil release because they will differ in most areas, and include seasonal differences.

b) Difficulty in response time and clean-up efforts. For example, oil releases into wetland adjacent to rivers if releases occur during flood stage will be difficult to clean up and will continue to pollute. Plus, the Minnesota Pollution Control Agency during the Sandpiper proceedings identified 28 stream crossings where access for first responders would be extremely difficult 2000 ft downstream of the crossing.

c) Long term effects on natural areas.

d) Short term and long term economic effects, including on people and natural resources, using methods described in ORNL 2012. *(See Attachment D-1.)*

e) And so forth.

VII. B. Lack of analysis of site specific impacts from pipeline construction and operation other than oil releases.

There is no independent analysis of Enbridge's construction plans or environmental plans in the DEIS. For example, topsoil loss causes long term impacts. Enbridge is planning on leaving topsoil separation up to the landowner except over the trench. The DEIS contains no discussion of the impacts of drilling mud releases, something that was very common along Enbridge's proposed route south of Clearbrook during the construction of the MinnCan Line 4 pipeline several years ago. This topic is discussed in more detail in *Section VI*.

It is generally known that complex technological systems become prone to unforeseen failures, especially as they age. As Enbridge's engineers understand, a modern pipeline is much more than a steel pipe in the ground. It is not just a pipe. It is a highly engineered system. In fact, there is some evidence that these increasingly sophisticated pipeline features have become more prone to failure because of this sophistication.

For example, the damage to the Keystone 1 pipeline from stray electrical currents occurred only four years after it was built in spite of complex cathodic protection systems. This occurred in spite of it being built to the same industry and PHSMA standards as the proposed Line 3. *(See Attachments: H-1 Stolen Risk & Consequences, H-2 DHS Solar Magnetic Storm Impact on Control Systems, H-3 AC Corrosion HV Power Line Cathodic Protected Pipeline, J-2 FOH 9.30.15 Line 3 Public Comments, O-1 TransCanada - Keystone Corrosion.)*

SECTION VIII. NEED FOR AN INDEPENDENT REVIEW AND IMPROVED METHODOLOGY

FOH's position is the DEIS suffers from the lack of an independent review of Enbridge's engineering plans and Enbridge's description of the project's environmental footprint. It also is deficient for not only the lack of an independent third party review of its accident oil release chapter and supporting documents, but also is in need of an improved and comprehensive methodology for analyzing oil release risks and consequences both short and long term. Other topics are covered here as well.

VIII. A. Features of a modern pipeline that are subject to failure are based on engineering models or require high intensity management during construction and operating.

1. An oil pipeline has a sophisticated cathodic protection system that involves factory coating and then field applied coatings during installation at tie-ins and field-welded joints. Pipelines, as well as HVTL lines, develop electrical currents caused by the Earth's magnetic field, known as Geomagnetically Induced Currents (GIC). This phenomenon is stronger in northern latitudes and increases during the various types of solar storms that reach Earth. GIC can lead to increased corrosion in pipelines and can also vary by soil types. Computerized models are used to develop the pipeline's engineered features before it is buried. Models are

used afterwards to determine responses (for example) to solar events. (*See Attachments H-1, H-2, H-3, J-2, O-1.)*

2. Electrical currents in pipelines can be increased if they parallel or are crossed by HVTL lines. HVTL lines are even more susceptible than pipelines to high electrical spikes during severe thunderstorms and in solar storm events that increase GIC. These spikes in turn can affect adjacent pipelines. Enbridge is proposing to co-locate its pipeline along an existing HVTL. *(See Attachments: H-1, H-2, H-3, J-2, O-1.)* Note the following:

"*Collocated pipelines, sharing, paralleling, or crossing high voltage power line rights-of-way (ROW), may be subject to electrical interference from electrostatic coupling, electromagnetic inductive, and conductive effects. If the interference effects are high enough, they may pose a safety hazard to personnel or the public, or may compromise the integrity of the pipeline."*

"Because of increased opposition to pipeline and power line siting, many future projects propose collocating high voltage alternating current (HVAC) and high voltage direct current (HVDC) power lines and pipelines in shared corridors, worsening the threat."

"Predicting HVAC interference on pipelines is a complex problem, with multiple interacting variables affecting the influence and consequences. In some cases, detailed modeling and field monitoring is used to estimate a collocated pipeline's susceptibility to HVAC interference, identify locations of possible AC current discharge, and design appropriate mitigation systems to reduce the effects of AC interference."

"This detailed computer modeling generally requires extensive data collection, field work, and subject-matter expertise." (emphasis added, "Criteria for pipelines co-located with electric power lines," INGAA Foundation Final Report 2015-04, 2015.)

3. Enbridge monitors its entire pipeline system from a control center in Alberta. This center became infamous in 2010 when it failed to shut down a large pipeline in Michigan for 17 hours. In fact, personnel restarted pumping oil several times. The result was a release of over 20,000 barrels of oil that fouled over 35 miles of the Kalamazoo River. Just a few days before this accident, Enbridge testified in Washington before a U.S. House of Representatives Committee hearing that its pipelines were safe. Clearly, they have revamped their management system, but also clearly, they are now asserting exactly the same thing and there is no independent confirmation by an outside reviewer.

4. As a pipeline is put together along a right of way and placed in its trench, there are numerous inspectors monitoring all aspects, including when it is placed in the trench. (As an example, it should be bedded in soft material without rocks against the pipe since pipes move as oil flows through them with temperature changes. These temperature changes can cause rocks to rub through cathodic protection.) This essential feature is because once buried it can't be examined. Thus this management system must be a crucial feature of pipelines. Failures of the management of this inspection system have been shown to be the source of pipe failures on the new Keystone 1 pipeline built in 2010.

Pipeline construction has unique features that environmental regulators need to fully understand in order to first properly understand the project's environmental "footprint" and then analyze environmental impacts. Construction proceeds rapidly with complex operations. There is extensive grading in non-flat terrain to create the necessary flat work pad and the separation of topsoil to allow restoration widens the affected area. Access roads and extra workspace for road and river crossings increase this footprint. As *Section VI* of these comments indicate, the DEIS uncritically used Enbridge's estimate of the project's footprint and

other operations that occur during construction. This estimate seriously underestimates the project's impacts.

By not taking a critical look at these issues, the alternatives analysis and analyses of impacts in the DEIS is seriously flawed.

VIII. C. FOH recommends the following *independent* studies.

The current DEIS contains no content on these subjects. FOH describes some of the principles driving risk studies and the need for an independent study of the potential for oil releases in *Section VIII.D*. FOH also strongly supports the recommendations for studying oil release potential in the report of Accufacts. *(See Attachment S-1.)*

1. Assessment of Enbridge's engineering design of cathodic protection system to address stray voltage, solar storm affects, grounding system and protection from HVTL lines that cross or are adjacent to the proposed route. Such an assessment should attempt to understand the failures of such a system that occurred with the recently built Keystone 1 pipeline where rapid corrosion from stray currents nearly ate through the pipeline wall in about 3 years. *(See Attachments: H-1, H-2, H-3, J-2, O-1.)*

2. Assessment of effects on Enbridge's Alberta control center and its remotely operated valves and pressure reading system from solar storms including effects that reach the Earth within minutes. *(See Attachment H-2.)*

3. Assessment of whether Enbridge's setback from co-locating along an HVTL line is adequate to protect the pipeline integrity including during solar storms. Studies indicate that such effects are likely increased in Northern Minnesota. This also is necessary for determining corridor width where Enbridge is co-locating to determine whether there are environmental advantages of doing so under Minnesota's policy of following existing utility corridors, and as Enbridge's contends. *(See Attachment H-2.)*

4. Assessment of Enbridge's control center operations. Enbridge has supplied repeated and abundant assurances that it has changed its operations center since the 2010 Michigan oil release where the pipeline was not shut down from the center for 17 hours. Just a few days before that event, Enbridge assured a Congressional Committee that its pipeline was safe from such events. No independent assessment of this center has been referenced in the DEIS. Therefore, Minnesota is in the same position as that Congressional committee. *(See Attachment H-2.)*

5. Assessment of the environmental "footprint" of the project based on knowledge of the landscape on the proposed routes and alternatives as well as on Enbridge's plans and likely events during construction, as described in *Section VI*.

6. Assessment of site-specific impacts of oil releases at the various specific locations to the human and natural environment recommended in FOH comments as well as others.

7. The selected contractors should affirm that they have done no prior work for Enbridge. This would be the same requirement imposed on Enbridge by the Consent Decree on the 2010 Michigan oil release. *(See Attachment P-1)*

VIII. D. Principal features of methods of estimating rare events with very high consequences.

Forecasting the chances of oil releases and the consequences if large releases could occur is a crucial part of the DEIS and is crucial for the PUC's CN decision. It is important for any oil pipeline in any location, but is of heightened importance here because of the proposed location and because future pipelines are likely to follow along the proposed new corridor. Even though ruptures are rare, consequences can be very large and must be properly examined. This is documented in previous FOH material that is enclosed. *(See Attachments: A-1 Stolen 4.4.14 Sandpiper Comments, B-1 Stolen 11.19.14 Direct Testimony Sandpiper.)*

The approach that was used in this DEIS to forecast the likelihood of oil releases during the 50 or more year life of this project did not use a risk assessment approach. It merely looked at federal data on pipeline ruptures for various sizes of oil releases. It also used oil release amounts and other information that have been kept out of the DEIS, which is a fatal flaw in the DEIS. *(See Attachment S-1.)* It then characterized this on a per mile per year basis.

Forecasting methods for rare but highly consequential events all have similar methodological problems since all of them are intended to inform decision makers. Even though the DEIS did not do a risk assessment, FOH believes that the principles of accomplishing risk assessments are completely applicable to the problem of decision-making regarding any method of forecasting the chances of oil releases.

A useful case study that can provide some guidance for this DEIS pipeline review was a project in which the Minnesota Department of Natural Resources ("DNR") was deeply involved in 2006. This was a large risk assessment that was sponsored by the U.S. Bureau of Reclamation concerning a large bulk water transfer from the Missouri River Basin across the continental divide to the Hudson Bay Drainage. It attempted to place numerical numbers on the risk of various invasive species crossing the divide because of the water transfer. The DNR solicited a review of the risk assessment from a risk assessment expert. The review that resulted provides useful guidance for the current effort to study oil risk release and consequences. It is enclosed as *Attachment G-1 RRVWNA Drake Letter.*

We believe the principles laid out in the attached document are relevant to the needed revision of the DEIS to more objectively describe the risk of future oil releases for the public as well as for the PUC when making its CN decision. The following language in the attached document provides such necessary and useful guidance:

1. "*Before risk assessment will be complete, risk characterization must also occur, including risk estimation, risk description, development of alternative scenarios, and evaluation of evidence and uncertainty. In order to be viable, such a process should be well documented, transparent, and available for public comment as this is the stage where the relationship between the probabilities of hazards are being realized and society's aversion to risk is determined*." (Page 1, emphasis added.).

2. "*Certainly, it is acceptable to treat any possible component of failure as a "black box" or in some qualitative way. However this judgement must be made transparent and open to criticism… there would be an independent comprehensive effectiveness analysis of proposed systems*." (First paragraph of page 2, emphasis added.)

3. "*An alternative is to perform risk analysis along a range of possible failure rates…*"

4. "*Risk analysis must make very clear the potential sources of error in projected scenarios. Sometimes the focus of risk analysis on inherently unpredictable events… obscures other sources of errors that must be assessed… Additionally, supporting sensitivity analysis should be conducted for all analysis and reported in order to allow to decision makers to weight the importance of all modeled assumptions*." (First paragraph of answer to Q 3, emphasis added.)

5. FOH Conclusion and summary: Being able to portray EACH of these statements is relevant to the attempts to characterize oil release risk from the proposed project, as well as cumulative impacts of corridor expansion in these sensitive areas. We do not believe the methods of characterizing oil releases in the DEIS meets the criteria noted above. Our FOH emphasis strongly asserts that certain statements in the Drake letter apply directly to the need to properly analyze oil release risk. These statements are underlined, and concern transparency, potential sources of error, openness to criticism, and sensitivity analysis. Our emphasis here is on the assumptions being evident and open to all parts of the analysis, sensitivity analysis, and an independent review.

SECTION IX. "LIFE OF PROJECT" ANALYSIS NEEDED

FOH has separated out this topic because the DEIS so pervasively did not address this crucial approach. Pipelines are linear facilities—"highways"—to carry oil. In this way they are very similar to automotive highways. The new DEIS needs to look ahead just as highway agencies look at population growth and inter-connecting highways. Our point is that these pipelines will be in the ground for 50 or more years. It is equally important to look back into the past to be aware of the consequences of past decisions compounding current problems. This is important to keep paramount for DEIS content as well as the CN decision criteria regarding alternatives and impacts to the human and natural environment.

Doing so involves developing an acute awareness that the economic, socioeconomic, and environmental values represented by the Minnesota and Wisconsin river country will continue to grow in value and need long-term protection from industries that can degrade these values. This is merely normal good government practice and good common sense that regular citizens use whenever they think of their own future.

Here are some of the most major deficiencies in the DEIS demonstrating that this was not accomplished:

A. As noted elsewhere, the cumulative impact section of the DEIS did not address the ever widening utility corridors in inappropriate locations even though Minnesota's practice of following existing utility corridors has never been examined in an EIS and MEQB guidance documents have stated this requirement in rules is more important than ever based on a recent Minnesota Supreme Court case.

B. The DEIS failed to look ahead at the high likelihood of additional pipelines following the same route as that proposed for Line 3.

C. The chance of oil releases were calculated on a per year basis rather than a per "life of project" basis. It is true that a "recurrence interval" was calculated, but this seems an afterthought. As the attached Accufacts report, *Attachment S-1*, shows, this method is extremely flawed at any rate.

D. The Enbridge project description was accepted at face value, even though MEQB rules and especially guidance documents stress that is crucially important to obtain an accurate description of the project's environmental "footprint. This guidance points out without such accuracy the impact assessment becomes inaccurate. FOH estimates the Enbridge estimate of project acreage affected during construction is off by 40 percent.

E. Whatever location is selected by permitting authorities, it will be in that place for 50 or more years. By not providing a scientifically and "best practices" approach to the above four items and by not treating the SA04 alternative the same as the other routes, the entire alternatives analysis is deeply flawed. Therefore, the PUC cannot make a proper "life of project" decision which, in our opinion, is required by Minnesota law.

SECTION X. FAILURES BY THE FEDERAL GOVERNMENT INCREASE THE NEED FOR FULL AND INDEPENDENT STATE REVIEW AND ANALYSIS

FOH believes Minnesota must exert its full and independent authority as it reviews the potential environmental impacts of this pipeline. This need is heightened by the federal government's failure to provide a complementary information gathering and review process which is anticipated by laws, regulations and past practices, but has been woefully lacking here.

A. Federal Consent Decree filed in May 2017.

This Consent Decree, *Attachment P-1,* is a result of the Enbridge very large oil release in Michigan in 2010 and indicates that Line 3 should be replaced as soon as possible. Enbridge, in 2013, was still saying that repairing the pipeline was fine—now they are using the Consent Decree to urge haste and have adopted a "sky is falling" public relations approach to putting a new and enlarged Line 3 in a new problematic corridor. This inappropriate pressure makes it all the more important that the PUC fully support the objective study of SA04 as a viable and common sense alternative to Enbridge's private desire to expand its existing decaying private infrastructure through Minnesota and Wisconsin. It is important to note that the Consent *Decree contains requirements to test all of Enbridge's pipelines in Minnesota, including ones older than Line 3.* This testing may well reveal information relevant to Minnesota's DEIS analyses of alternatives and cumulative impacts—that another old pipeline needs replacement.

B. Failures and inadequacies of federal pipeline oversight.

The federal agency that oversees pipelines, PHSMA, has been found to be at fault in a number of pipeline oil releases and gas pipeline ruptures. The NTSB found this to be the case with the 2010 Michigan spill as well as the San Bruno gas pipeline explosion that killed 9 people and destroyed over 40 houses. *(See Attachment: B-1 Stolen 11.19.14 Direct Testimony Sandpiper.)* There also have been failures of PHSMA on the Keystone 1 pipeline, which was just built in 2010. Yet the DEIS supporting documents for oil releases—done by Enbridge consultants—are highly dependent on PHSMA regulations and studies. Nothing in these federal regulations prevents Minnesota from obtaining independent information. We therefore urge the PUC to not rely on Enbridge's attempt to hide behind federal regulations and oversight that is either inadequate or nonexistent.

C. Inaction by federal agencies.

The federal agency with substantial jurisdiction over rivers and wetlands in Minnesota, the U.S. Army Corp of Engineers, has not said a word publicly on either the Sandpiper or Line 3 pipelines with respect to oil releases into wetlands and rivers, nor as it weighed in on others'

studies of them. Furthermore, their actions on the DAPL pipeline were found by the courts and Obama Administration to be severely problematic. In addition, the U.S. Environmental Protection Agency, which has oversight over the quality of federal environmental review, as well as the Clean Water Act has also been nearly silent, as far as we know. *(See Attachment H-1).*

D. Failure of interstate pipeline siting.

It is obvious that a pipeline is a "line" from product origin all the way to the product's destination, which involves passing through a number of states. Yet because of the federal agencies' failure to look at the environmental impacts of the entire proposed pipeline, each state has had to take actions on segments of this line without any reference to the impacts of the entire project. This is obviously a problem and federal agencies have done nothing to solve it. Of course we recognize that there is no federal law requiring such a study—but it is eminent common sense that federal agencies could have set up interstate coordination or encouraged a joint federal/state EIS. The federal environmental review law (NEPA) encourages such coordination, although not requiring it. *(See Attachment H-1).*

E. All Enbridge pipelines are interstate and international.

Even though this is the case, Minnesota is put in the disadvantageous situation of "going it alone." Most of the product Enbridge transports does not stay in Minnesota. And the destination of the product from both Sandpiper and Line 3 is largely in the Chicago area and regions south. Essentially Enbridge is proposing *to follow a much longer route than if it were to follow SA04.* Yet the federal government has done nothing to assist the involved states to do a coordinated and rational interstate review which we believe would normally be done under federal environmental review. Therefore, we urge the PUC to not treat SA04 as a lesser route simply because using it would involve other states. To do so would deprive Minnesota of the opportunity to take a hard look at reasonable alternatives. To do so would also encourage pipeline companies to unfairly benefit from a fractured regulatory structure and from the federal government's failure to provide critical information about an entire pipeline from product origin to its final destination.