HONOR THE EARTH
PO BOX 63, 607 MAIN AVE, CALLAWAY MN 56521
INFO@HONOREARTH.ORG | WWW.HONOREARTH.ORG

Overall, the report shows an unsurprising lack of understanding of the estuary/lake dynamics. This is especially evident in the media coverage of the report. Reporters have latched on to that statement that it is highly improbable that a spill in the Little Otter would reach the lake, however, it is very likely it would reach the St. Louis Estuary (Gitchigami-ziibii {not 100% sure of the anishinaabemowen for estuary}). This is one of the largest freshwater estuaries in the world and has been labeled a priority conservation area due to the number of high and outstanding biodiversity ecosystems within the estuary. The estuary is also essentially the nursery for the lake, the largest tributary to the lake, and the health of the estuary is very vital for the health of the lake. It is for these reasons that a coalition of state, federal, local, and tribal agencies have been working for decades to clean-up and restore the estuary. This area is a prime manoomin area, and one of the reasons Anishinaabe settled here in the first place. The report does not even cover the fact that the estuary has a number of areas of concern, listed in both national and international lists. Any spill that would reach this area would put back these restoration efforts. In their cover letter, the DOC states:

> DOC-EERA requested Enbridge commission an oil spill modeling analysis at the Little Otter Creek site on behalf of, and with input from, DOC-EERA. The modeling used the same assumptions and scenarios that were identified in the FSDD and used for the other seven sites modeled in the EIS, to ensure consistency. For its review and analysis, DOC-EERA contracted with an independent oil spill expert to review the modeling results.
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> Similar to other previously modeled sites, the modeling results for a full bore rupture at Little Otter Creek demonstrate that, considering evaporation, entrainment, and shoreline stranding, floating oil remains after 24-hours. Depending on the oil type and seasonal river flow, the modeling shows that the leading edge of the floating oil might reach the Fond du Lac Dam. After that, the modeling indicates that the oil would mix into the water column because of the turbulent water immediately below the dam, and then the movement of oil would slow as the oil resurfaces. The most significant environmental effects of the spilled oil would be the potential for effects on fish as concentrations of toxic components of the oil in the water column may be high for short periods of time due to entrainment and dissolution in the turbulent waters in rapids and in the overflow of the Fond du Lac Dam.
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> Past the dam and the rapids and beyond the 24-hour modeling window, the physical characteristics of the system suggest that surface oil movement would largely be driven by the wind on the St. Louis River. The sinuous configuration of the St. Louis River would make it unlikely that the oil would be blown downstream to any great extent. Instead, the oil remaining on the surface after 24-hours would likely continue to strand on shorelines without reaching the entrance to Lake Superior.

This again, shows the lack of understanding of the estuary, as the estuary is tidally affected and this seiche activity may pull the oil further into the lake ecosystem. In fact, the estuary itself can be seen as part of the larger lake ecosystem and should be protected as such.

It is also important to note that:

In order to address the court's opinion ***Enbridge commissioned a modeling analysis on behalf of, and with input from the Minnesota Department of Commerce***,

This means that Stantec and RPS were technically clients of Enbridge. We know from experience firms fudge numbers to get the results their clients are looking for. When we had previsious Stantec reports indepenently reviewed, there were a number of situations where ecological conditions were reclassified to make the potential impact seem less. It is a simple truth that if these firms were not able to create reports that sastified their clients, they would not get many repeat clients.

Throughout the report, evaporation is indicated as a prime way the oil will "leave" the environment- however studies state: *"Light oils will change very dramatically from fluid to viscous. Heavy oils will become solid-like. Many oils after long evaporative exposure form tar balls or heavy tar mats."*[1], which essentially means, the volatile components will evaporate, leaving the heavier crude to sink to the bottom of the aquatic system. While it is difficult to find studies on freshwater estuaries, this study shows how the tar balls continue to impact aquatic life: https://crrc.unh.edu/Richard%20Lee%20final%20report

In addition to these broad stroke issues, the report also states:

*As with the other seven representative sites, the maximum volume of oil hypothetically released at this representative site included both the initial release volume prior to shutdown (**i.e., actively pumping oil for 10 minutes), followed by a 3-minute period for valve closure (shutdown)**, and then hydraulic drain down of the pipeline (i.e., gravity drained oil within the pipeline between the valves), following isolation and shutdown at the site...**The maximum 13-minute duration of Control Center response time to valve closure is a standard for safe operations and leak detection for Enbridge.***

However, studies have shown that:

The annual average time elapsed between an accident and its identification is 9 hours, while the annual average time elapsed between accident identification and operator's response is 5 hours and 13 minutes (**Fig. 10**)**.** Although the data do not cover the complete year, the values for 2017 for the elapsed time between an accident and its identification are larger than for 2014 and 2016. In addition, results for 2010, 2011, 2012, and 2013 contain bias due to missing information in the PHMSA database. 73% (±5%) of hazardous liquid pipeline accidents over the period 2010–2017 were identified without delay, meaning that the time between the occurrence of an accident and its identification is zero, and 8% (±4%) had an unknown elapsed time to response.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6226826/

- While the modeled spill would reach the St. Louis River estuary, the report and subsequent media articles ignore the dynamic connection between the lake and the estuary.
- The report completely ignores the manoomin (wild rice) growing in the estuary and the massive investment in the restoration of the estuary.
- The report also neglects to indicate the fact that much of the estuary is listed as an international area of concern, containing high amounts of legacy contamination.

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[1] Studies on the Evaporation Regulation Mechanisms of Crude Oil and Petroleum Products Merv F. Fingas Advances in Chemical Engineering and Science, 2012, 2, 246-256 http://dx.doi.org/10.4236/aces.2012.22029 Published Online April 2012 (http://www.SciRP.org/journal/aces) https://www.scirp.org/pdf/ACES20120200007_19273845.pdf

- The model shows that a potential spill would coat the estuary in oil, damaging habitats and setting back restoration efforts.
- The model also shows oil entering the water column, which would pose a hazard to aquatic life, and extend the existing fish advisories.
- Once again, the comment period is extremely short and occurs during the holiday season.
- Rights of Nature