



**APPLICATION  
INCOMPLETE**

***TransCanada fails to say  
how the Energy East  
pipeline would cross  
major Canadian rivers***

JUNE 2017



environmental  
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équiterre

# ACKNOWLEDGEMENTS

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# EXECUTIVE SUMMARY

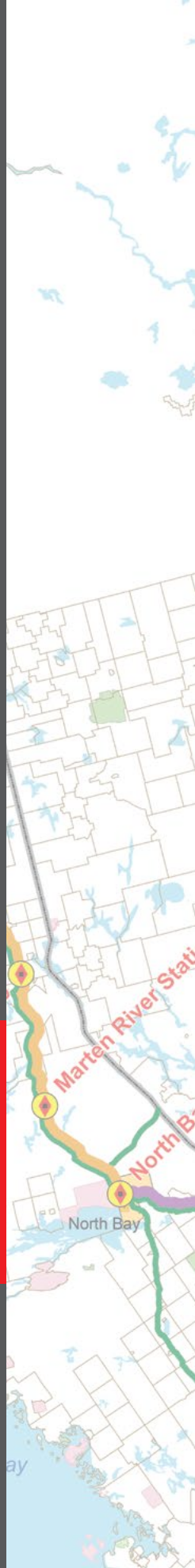
Two and a half years after submitting it to the National Energy Board (NEB), TransCanada's application to build the proposed Energy East pipeline still lacks critical details on how it would cross major Canadian rivers, including the Ottawa, Saint Lawrence and Assiniboine Rivers.

An analysis of TransCanada's application to the NEB panel reviewing Energy East found that the application is missing fundamental information about the precise location and/or method of these river crossings, among numerous other information gaps. Without this information, it is impossible to assess the potential risks and impacts to these iconic rivers and the commercial, ecological, and recreational benefits they provide. Without this information, the review of Energy East cannot even begin.

According to the *National Energy Board Act*, in order to officially begin the regulatory hearing to evaluate the proposed pipeline, the NEB panel reviewing the pipeline must first determine that the company's project application is complete. Without this vital river crossing information, it's clear that the Energy East application is still incomplete, and that the NEB must not begin to evaluate the costs and benefits of the proposed pipeline. The clock should not start ticking on the NEB's Energy East review process until TransCanada has provided details about how they intend to cross these rivers.

***Even a short duration spill has the potential to release large quantities of crude oil into the environment and cause substantial harm to ecosystems, human health, and downstream communities.***

Given the amount of oil flowing through the proposed 4,600 km pipeline and the significant risk of a spill, river crossings are a crucial detail of the application to build Energy East. Even a short duration spill has the potential to release large quantities of crude oil into the environment and cause substantial harm to ecosystems, human health, and downstream communities. This backgrounder summarizes the information gaps remaining in TransCanada's application pertaining to the pipeline crossings at the Ottawa, Saint Lawrence and Assiniboine Rivers.





POINTE-FORTUNE, QUEBEC, JUST SOUTH OF THE CARILLON DAM ON THE OTTAWA RIVER.

Photo: Alex Drainville

## OTTAWA RIVER

Energy East would cross the historic Ottawa River just east of the Quebec-Ontario border. A pipeline rupture in this fast-moving section of the river would put the drinking water of many downstream communities at risk of contamination, including Greater Montreal, Laval and the Mohawk First Nation of Kanata. It would also jeopardize the numerous commercial, ecological and recreational benefits of the Ottawa River delta. However, TransCanada's application does not provide the NEB with a thorough assessment of the risks of Energy East's

crossing of the Ottawa River, nor has the company clarified the proposed method it would use to cross the river.

When TransCanada first filed its application in October 2014, it included a preliminary feasibility study to run the pipeline under the Ottawa River using a construction method called "horizontal directional drilling" (HDD). However, the study concluded that the proposed crossing method was technically unfeasible and would likely result in additional costs, delays and increased environmental impacts, with a high probability of failure. Since then, TransCanada has completely pulled this feasibility study from its application to the NEB and has not yet provided new information about using a different method to cross the river. As recently as February 2017, TransCanada has acknowledged that it is still examining a new method for the Ottawa River crossing, which could require a new location for the crossing and raise a new set of risks and questions.



THE SAINT LAWRENCE RIVER FLOWING THROUGH QUÉBEC CITY.

Photo: Tony Webster

## SAINT LAWRENCE RIVER

Energy East would cross the Saint Lawrence River near Saint-Augustin-de-Desmaures, about 25 km upstream of the drinking water intake for Sainte-Foy, Québec. The crossing threatens Sainte-Foy's drinking water and also puts the Saint Lawrence estuary at risk, a vulnerable ecosystem rich in biodiversity which is one of the main feeding grounds for certain North Atlantic whale populations and home to a number of threatened species.

There are numerous problems with the information provided to date by TransCanada concerning the proposed



Energy East pipeline's Saint Lawrence River crossing. First, there are substantial differences between the French and English versions of the TransCanada application. In the French version, TransCanada omitted a key engineering assessment that found the river crossing to be "High Hazard," which is especially troubling given that the location planned for the river crossing has serious potential risks from landslides and earthquakes. Second, although engineering consultants found that additional geophysical work is necessary before determining if the proposed crossing method (a backfilled tunnel) is feasible, TransCanada has not disclosed such testing to the NEB. For these reasons, the NEB and the Canadian public remain in the dark about the feasibility of Energy East's proposed crossing of the Saint Lawrence River.



THE ASSINIBOINE RIVER.

Photo: Jacob Norlund

### ASSINIBOINE RIVER - PORTAGE LA PRAIRIE

Energy East would cross the Assiniboine River, which flows eastward across southern Manitoba, at two points, one just west of Miniota and the other just south of Portage la Prairie. While the Miniota crossing, like all waterways traversed by Energy East, is cause for concern, this report highlights the crossing near Portage la Prairie, where the current existing gas pipeline needs to be replaced. Critical details on the potential impacts and risks of the crossing are missing from TransCanada's application despite the fact that a spill could contaminate the drinking water of downstream communities, particularly Portage la Prairie and the Long Plain and Dakota Plains First Nations.

The Assiniboine has a long history of serious flooding, making necessary the Portage Diversion that diverts overflow water from the river northward to Lake Manitoba. An Energy East oil spill at the Portage la Prairie crossing during flood conditions could reach Lake Manitoba, the drinking water intakes of Portage la Prairie, and the popular recreational destinations of Crescent Lake and Portage Spillway Provincial Park. A feasibility study of the Portage la Prairie pipeline crossing using HDD determined that the crossing is not feasible due to unconsolidated soil conditions and construction constraints. The engineers warned that an "HDD crossing at the proposed location carries a high risk of environmental impact or a high risk of crossing failure." TransCanada took this advice and indicated its intention to proceed with a different crossing method, an open-cut river crossing. However, the company did not disclose any additional study of the impacts of an open-cut crossing and made only a vague commitment to demonstrate that the crossing method is feasible and safe.



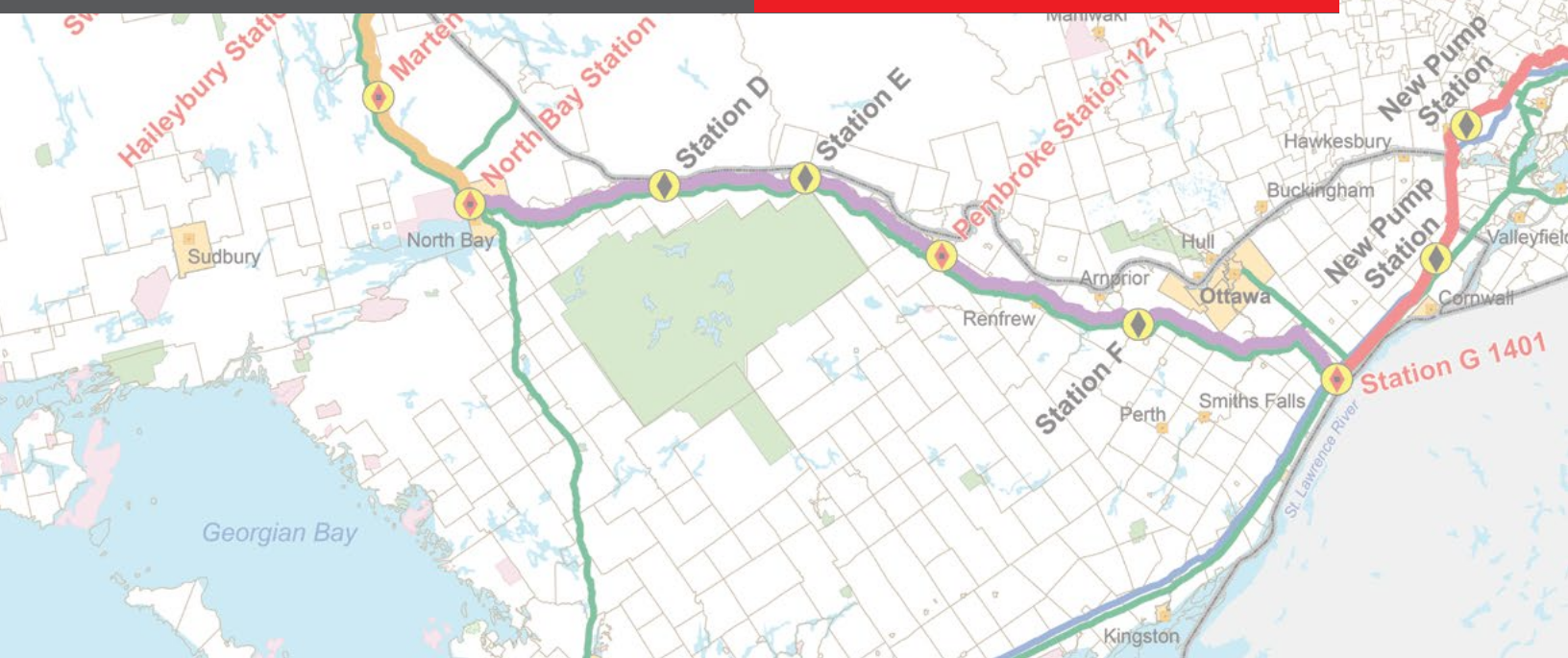
## CONCLUSION

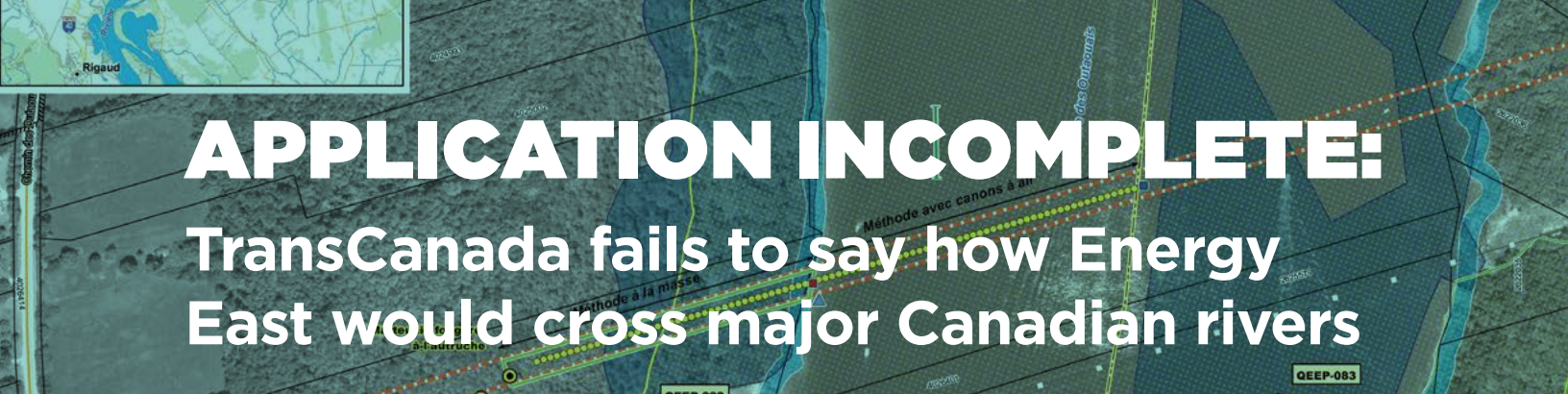
Fundamental details are still missing from TransCanada's Energy East application about how the pipeline would cross three of Canada's largest and most iconic rivers—the Ottawa, Saint Lawrence and Assiniboine. A spill into one of these rivers would be devastating, and spills into waterways are of the gravest risks posed by this or any other pipeline proposal. The Energy East pipeline should not be assessed by the NEB until TransCanada provides crucial information about the location and method of these river crossings.

Ideally, the NEB should postpone the review of Energy East until the federal government has completed the modernization of the NEB itself, a process designed to restore public confidence in the regulator and address fundamental flaws in the way the Board regulates and reviews major energy projects. Barring this postponement, the NEB panel reviewing Energy East should rule TransCanada's application incomplete until the company provides

vital information on how and where the pipeline would cross major rivers. The NEB must also demand that TransCanada makes available to all intervenors and the public any and all advanced studies about the crossing of major rivers, in both official languages. Otherwise, the pipeline's risks to the enormous commercial, ecological, historical and recreational benefits of these important rivers cannot be properly assessed. And the review of Energy East, already restarted once due to scandal, will be tainted again with a perception of bias.

***The Energy East pipeline should not be assessed by the NEB until TransCanada provides crucial information about the location and method of these river crossings.***





# APPLICATION INCOMPLETE:

## TransCanada fails to say how Energy East would cross major Canadian rivers

### INTRODUCTION

Two and a half years after submitting it to the National Energy Board (NEB), TransCanada's application to build Energy East still lacks critical details on how the proposed pipeline would cross major Canadian rivers, including the Ottawa River, Saint Lawrence River, and Assiniboine River. Without these important details, the application remains incomplete and the National Energy Board (NEB) review of Energy East should not proceed.

An analysis of TransCanada's application to the NEB panel reviewing Energy East demonstrates that the application is missing fundamental information about the precise location and/or method of these river crossings. In the absence of this information, it is impossible to assess the potential risks and impacts to these iconic rivers and the commercial, ecological, and recreational benefits they provide. It is irresponsible for the review of a pipeline project to proceed without a detailed explanation of how TransCanada would mitigate risks to Canada's most precious resource—water—from the devastation of an oil spill.

Energy East is the longest, largest pipeline ever proposed in North America. It would cross nearly 3,000 waterways on its way from the Alberta tar sands to refineries in eastern Canada and an export terminal in New Brunswick. Every lake, river, stream, wetland and drainage basin crossed by this pipeline is important, and Energy East could have significant adverse effects on drinking water,

ecosystem health, wildlife habitat, commercial fisheries, protected areas, and species at risk across its 4,600 km route. TransCanada's track record on pipeline ruptures is worrisome.<sup>1</sup> If the company is unable to provide detailed information on how Energy East will transport tar sands oil across three of Canada's largest and most iconic rivers, how can the pipeline be trusted to safely cross the other waterways along its route?

***If TransCanada is unable to provide detailed information on how Energy East will transport tar sands oil across three of Canada's largest and most iconic rivers, then the clock should not start ticking on the NEB's Energy East hearing process.***

As this report will show, TransCanada has not disclosed the precise location and method for crossing the Ottawa River. The company has not completed essential feasibility studies for the pipeline's crossing of the Saint Lawrence River, and omitted an important detail in a French version of a key report. And TransCanada has not undertaken or made public any study of the impacts of its proposed crossing of the Assiniboine River near Portage La Prairie, Manitoba.

As with all pipeline reviews, one of the first steps in the NEB's review of the proposed Energy East pipeline is the determination that TransCanada's application is complete.<sup>2</sup> Given that TransCanada has not provided complete and proper information on how it will cross the Ottawa, Saint Lawrence and Assiniboine Rivers, the company's application is clearly incomplete.

The current NEB panel reviewing Energy East cannot repeat the mistakes of the past. It is alarming that the previous NEB panel tasked with reviewing Energy East deemed TransCanada's application complete. This contributed to a crisis of confidence regarding the NEB's ability to evaluate the project fairly and thoroughly. Without this vital river crossing information, the new panel must not rule TransCanada's Energy East application complete, and thus should not begin to evaluate the proposed pipeline.

If TransCanada is unable to provide detailed information on how Energy East will transport tar sands oil across three of Canada's largest and most iconic rivers, then the clock should not start ticking on the NEB's Energy East hearing process.



THE PROPOSED ENERGY EAST PIPELINE WOULD STRETCH 4,600 KM ACROSS CANADA FROM THE ALBERTA TAR SANDS TO SAINT JOHN, NEW BRUNSWICK.

Photo: National Energy Board

## ENERGY EAST: THE LARGEST, LONGEST TAR SANDS PIPELINE EVER PROPOSED IN NORTH AMERICA

If built, TransCanada's proposed Energy East pipeline would be the largest, longest tar sands pipeline in North America. The pipeline would ship crude oil<sup>3</sup> at high pressure 4,600 km across Canada, from Alberta to New Brunswick, crossing nearly 3,000 identified waterways and countless smaller streams and wetlands along the

way.<sup>4</sup> Energy East could carry up to 1.1 million barrels of oil per day (bpd), eclipsing the scale of other recent tar sands pipeline proposals such as Kinder Morgan's Trans Mountain Expansion or TransCanada's Keystone XL, which would have capacity for 890,000 bpd and 830,000 bpd, respectively.

According to the *National Energy Board Act*, in order to officially begin the hearing to evaluate the proposed pipeline, the new NEB panel reviewing Energy East must determine that the company's project application is complete.<sup>5</sup> The former NEB Energy East review panel ruled TransCanada's application complete in June 2016,<sup>6</sup> despite widespread concerns among participants about gaps and inconsistencies in the application. One of the most striking gaps concerned the lack of information about the precise locations and/or methods by which TransCanada plans to route the pipeline across and adjacent to rivers, lakes, wetlands and waterways, including major rivers such as the Ottawa, Saint Lawrence, and Assiniboine Rivers.

After the previous panel deemed TransCanada's application complete, the panel members were forced to recuse themselves from the Energy East hearing in September 2016 over a perception of bias. NEB Board members met with a lobbyist working for TransCanada outside of the formal hearing process, undermining

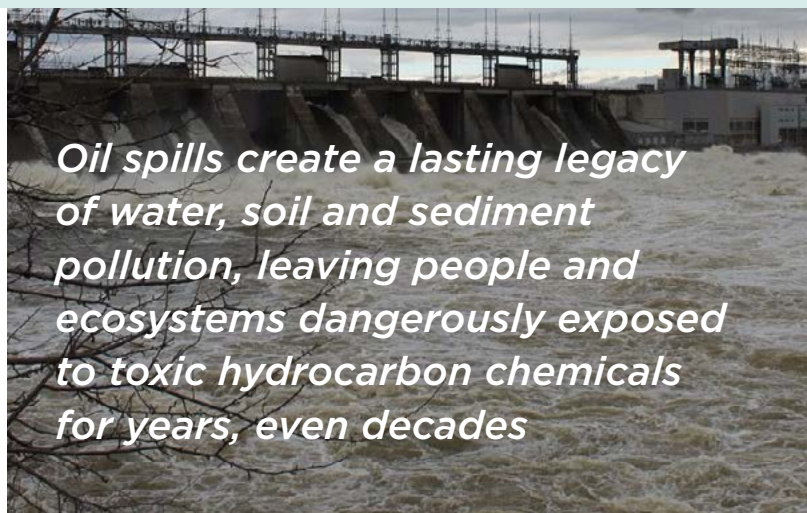
the impartiality of the review panel.<sup>7</sup> A new panel of NEB Board members was selected in January 2017 to review the Energy East project. Shortly after, the new panel declared all decisions made by the previous panel void, including its decision on completeness.<sup>8</sup> The new review panel must now make a fresh ruling on the completeness of TransCanada's application.

This is an opportunity for the NEB to kick off the review on the right foot, rather than repeat the mistakes of the recused panel.<sup>9</sup> If TransCanada is unable to provide detailed information on their plans for Energy East to transport tar sands oil across three of Canada's largest and most iconic rivers, then the application is incomplete and the hearings cannot begin. The review panel must not rule the Energy East application complete unless TransCanada can show how the pipeline will cross these rivers. It's not possible to assess the project without a clear understanding of how TransCanada intends to mitigate the considerable risks to Canada's freshwater.

## ENERGY EAST'S RISKS TO DRINKING WATER

Given the amount of oil flowing through such a massive pipeline and the significant risk of a spill, river crossings are a crucial detail of Energy East. Even a short duration spill has the potential to release large quantities of crude oil into the environment and cause substantial harm.

Crude oil spilled into the environment is rarely fully recovered. In most large pipeline ruptures into water, only a percentage of the released oil can be cleaned up.<sup>10</sup> Spills create a lasting legacy of water, soil and sediment pollution, leaving people and ecosystems dangerously exposed to toxic hydrocarbon chemicals for years, even decades. Acute or chronic exposure to hydrocarbon pollution can significantly impact ecosystems and



*Oil spills create a lasting legacy of water, soil and sediment pollution, leaving people and ecosystems dangerously exposed to toxic hydrocarbon chemicals for years, even decades*

THE CARILLON DAM, JUST UPSTREAM OF THE PROPOSED CROSSING OF THE OTTAWA RIVER.

Photo: Carmen Marie Fabio

human health. For example, the benzene contained in crude oil is known to cause leukemia and neurological problems.<sup>11</sup>

## THE KALAMAZOO RIVER SPILL

In July 2010, an Enbridge pipeline ruptured near Marshall, Michigan, sending 3.8 million litres of heavy crude oil, primarily diluted bitumen, into the Kalamazoo River.<sup>12</sup> The oil spread and traveled about 65 km downstream, contaminating some 4,435 acres of land along the riverbanks.<sup>13</sup> The affected part of the river was closed for two years, and large segments of the Kalamazoo River still today remain contaminated, despite the spending of approximately \$1.2 billion on clean-up.<sup>14</sup> Residents near the spill said things like, “No money is ever going to fix what happened” and “They ruined my life, but this company (Enbridge) gets to go on with their life. What’s a few million dollars to them?”<sup>15</sup>

Pipeline spills into rivers and lakes are common in Canada, too. As recent as July 2016, a Husky Energy pipeline near Maidstone, Saskatchewan ruptured, spilling as much as 250,000 litres of heavy crude mixed with other chemicals into the North Saskatchewan River. Nearly two weeks after the spill, oil had traveled more than 500 km downstream<sup>16</sup>, and public drinking water



WORKER CLEANING UP AFTER THE KALAMAZOO RIVER SPILL.

Photo: Greenpeace

supplies for as many as 70,000 people were contaminated and disrupted for two months.<sup>17</sup> The clean-up is expected to cost at least \$107 million and the Saskatchewan government has still not released a report on an investigation into the spill.<sup>18</sup>

The type of oil that spilled in the Kalamazoo River, diluted bitumen, or “dilbit”, would likely be the primary type of oil to be carried by Energy East over the lifetime of the pipeline, putting the risks of pipeline river crossings into sharp perspective. A 2016 study by the United States National Academies of Sciences, Engineering and Medicine (NASEM) shows that dilbit sinks in water and sticks to particles and surfaces in water as a residue, posing unique and particularly difficult challenges for clean-up. The NASEM study concludes that there are few effective techniques for detection, containment, and recovery of dilbit that is submerged in water.<sup>19</sup>

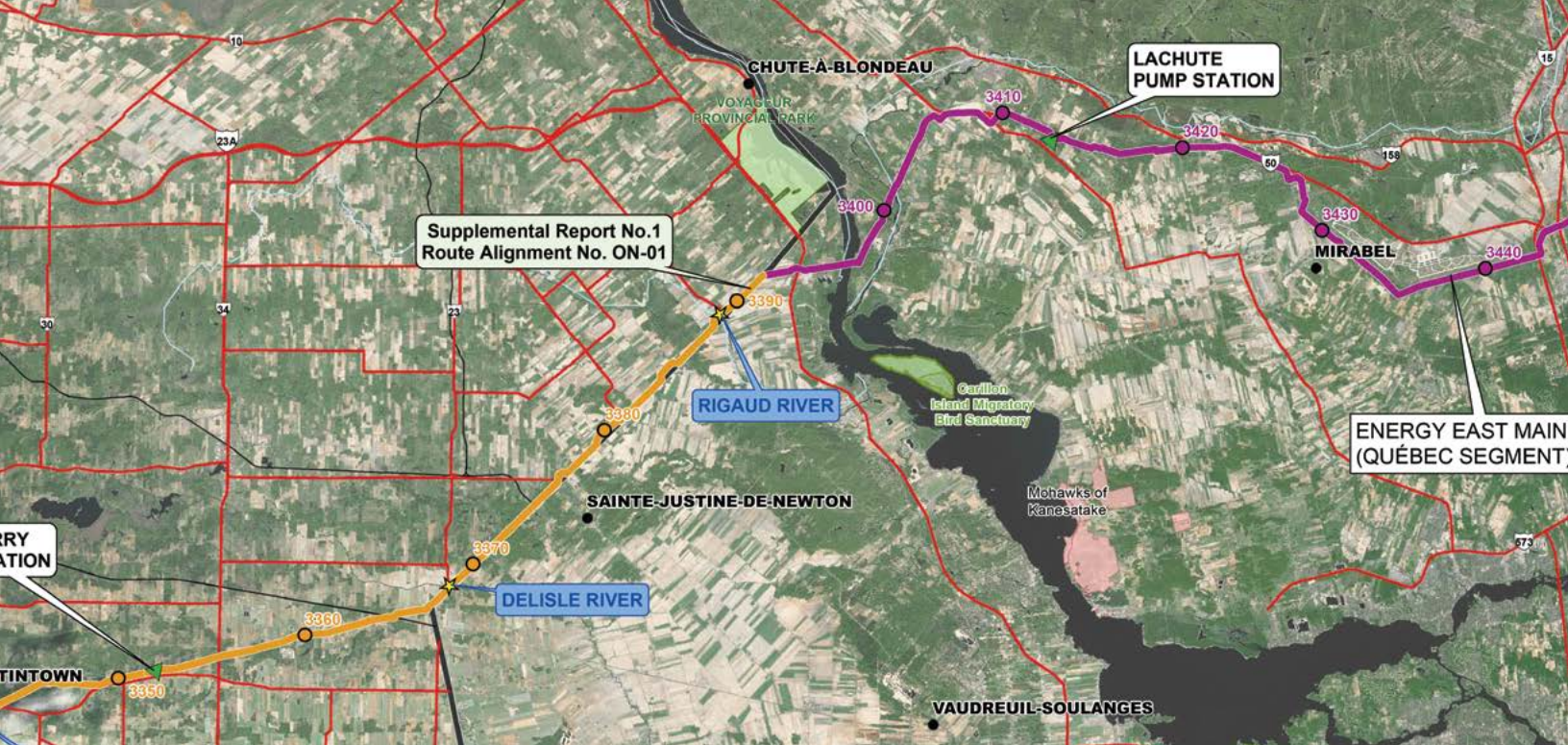
The company building Energy East, TransCanada, has a particularly worrisome track record when it comes to pipeline

ruptures. TransCanada’s currently-operating tar sands pipeline, Keystone I, which runs from Alberta to Illinois, is very similar to the Energy East pipeline proposal, involving a converted gas pipeline segment and an add-on new pipeline section. Since it began operating, Keystone I has leaked numerous times on both the converted and new sections,<sup>20</sup> including 117 leaks on the Canadian portion between June 2010 and February 2016.<sup>21</sup> This is equal to nearly 2 leaks or spills per month. Most of these spills occurred during the first three years of the pipeline’s operation, suggesting that new pipes pose a worrisome spill risk, not just the converted section. TransCanada’s poor safety record also extends to its natural gas pipelines, which experienced 295 leaks in Canada between 2004 and February 2016.<sup>22</sup>

TransCanada claims that the planned electronic leak detection system for Energy East will enable the company to promptly identify and respond to leaks, but recent history suggests otherwise. Most ruptures are detected by passersby on the ground, not the electronic system. Between 2002 and 2012, remote sensors detected only five per cent of pipeline spills in the U.S. In comparison, the general public reported 22 per cent of the spills and pipeline company employees at the scene reported 62 per cent.<sup>23</sup> Even if TransCanada's leak detection system works as planned, it can still only detect leaks greater than 1.5 per cent of pipeline capacity. Based on a total capacity of 1.1 million barrels per day, an undetected leak of 1.5 per cent could release 2.6 million litres of oil in a single day.<sup>24</sup> TransCanada says it is aiming for a 10-minute spill response time. Even if TransCanada detected a spill immediately and achieved that response time, more than 1 million litres of dilbit could spill from the pipeline in just 10 minutes.<sup>25</sup>

It has now been two and a half years since TransCanada submitted its original application for the Energy East pipeline, yet the company has still not provided critical details on its plans to construct the pipeline across three major rivers, among numerous other information gaps. If TransCanada can't demonstrate to Canadians how the longest, largest pipeline ever proposed in North America would cross three of the country's largest and most iconic rivers, then the Energy East application is incomplete. This backgrounder summarizes the information gaps remaining in TransCanada's application concerning pipeline crossings of the Ottawa River, the Saint Lawrence River and the Assiniboine River. The NEB review panel must not deem TransCanada's Energy East application complete until the company provides the requisite information on these three river crossings. Similarly detailed information must be provided for other waterway crossings as well.

*It has now been two and a half years since TransCanada submitted its original application for the Energy East pipeline, yet the company has still not provided critical details on its plans to construct the pipeline across three major rivers, among numerous other information gaps.*



MAP OF THE PROPOSED PIPELINE ROUTE ACROSS THE OTTAWA RIVER.

Photo: TransCanada, as submitted to the National Energy Board.

## OTTAWA RIVER

After its trek eastward across Ontario, the proposed Energy East pipeline would cross the Ottawa River near the village of Pointe-Fortune, Quebec, just east of the Quebec-Ontario border. Across from Pointe-Fortune, Energy East would connect to the village of Carillon and then track eastward, north of the greater Montréal metropolitan area. Just 1.6 km upstream of the pipeline's proposed river crossing<sup>26</sup> is the Carillon Dam, the most powerful hydroelectric generating station on the Ottawa River. The river is quite powerful south of the dam,<sup>27</sup> with its flow rate greater than some of the mightiest rivers in North America.<sup>28</sup> During the spring freshet season, the Ottawa River's flow rate just south of the Carillon Dam is even greater than that of Niagara Falls.<sup>29</sup> Oil from a pipeline spill would flow quickly downstream, making spill response and clean-up extremely difficult and risking devastating impacts on the health and safety of downstream communities, flora and fauna.

The pipeline crossing is also just upstream of the Ottawa River delta, where it splits off into the Lake of Two Mountains, the Rivière

des Mille Îles and the Prairies Rivers, before ultimately flowing into the Saint Lawrence River. These tributaries provide water to many of the 2.8 million people in Greater Montréal. A pipeline spill at the Ottawa River crossing could therefore put the drinking water of many communities downstream at risk of contamination.<sup>31</sup> A study by Polytechnique Montréal found that the Ottawa River would be one of the four rivers crossed by Energy East most vulnerable to a negative impact on water quality in the event of a spill.<sup>32</sup>

***A study by Polytechnique Montréal found that the Ottawa River would be one of the four rivers crossed by Energy East most vulnerable to a negative impact on water quality in the event of a spill.<sup>32</sup>***



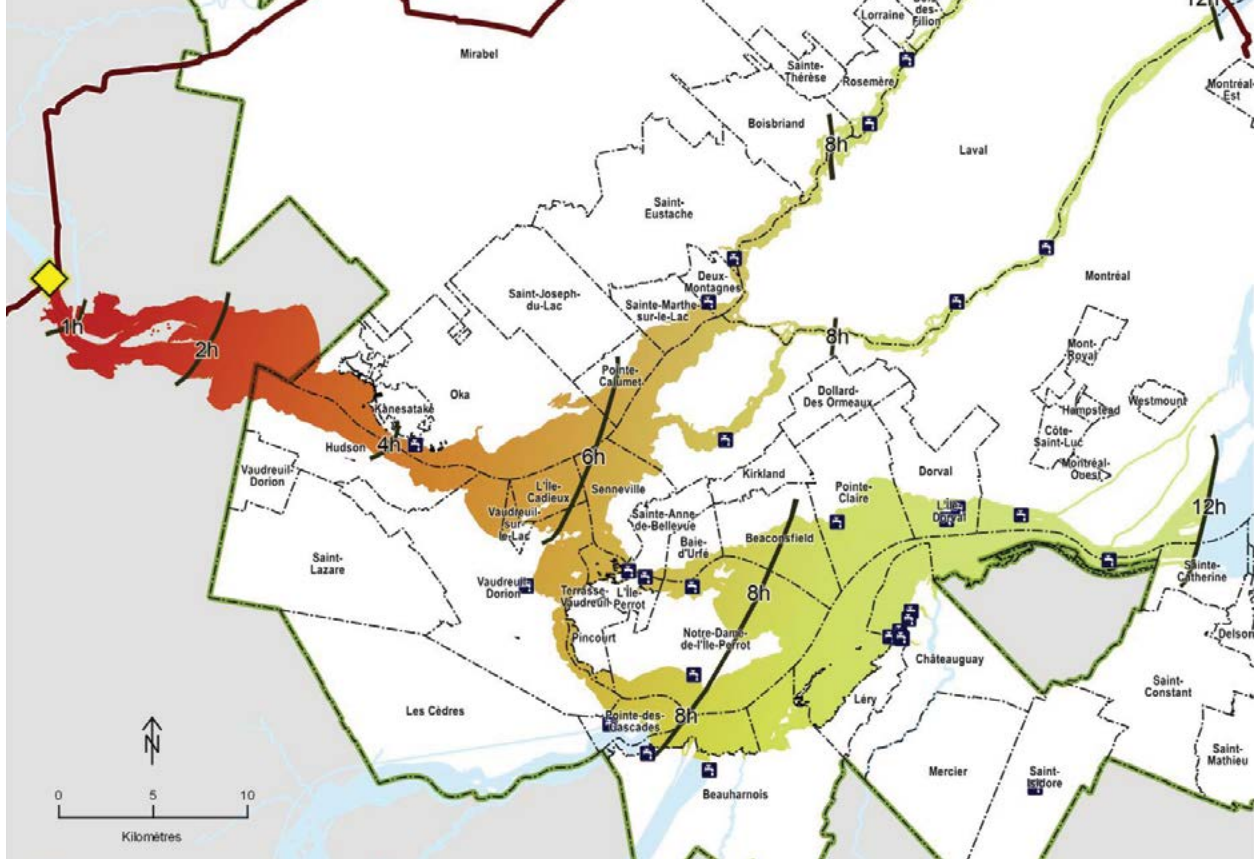
**Map: The thick black line represents the approximate route<sup>33</sup> of the proposed Energy East pipeline and illustrates how the Ottawa River flows into other rivers downstream.<sup>34</sup>**

The Greater Montréal Community, in preparation for a consultation on Energy East it held in 2015, commissioned a study by consulting engineering firm Savaria Experts-Conseils to examine the potential impacts of a large spill from the pipeline crossing near Pointe-Fortune.<sup>35</sup> The study found that if a spill occurred, crude oil could begin reaching river sediments and the shoreline within just a few hours. For example, it was estimated that if responders were unable to contain the spill within four hours, oil would reach the first drinking water intake downstream of the spill. Where intervention time exceeded eight hours, more than ten drinking water intakes would be affected. And if response time exceeded 12 hours, the total number of intakes that would be reached is 26, disrupting the supply of safe drinking water to citizens in the Greater Montréal area. As an example, virtually all of the drinking water intakes of Laval (population 425,225) would

be affected within eight to 12 hours in the event of a spill at the Ottawa River Crossing.<sup>36</sup>

Considering the commercial, ecological, historical and recreational importance of the Ottawa River, and the economic benefits it brings to communities, TransCanada must provide the NEB a thorough assessment of the risks of Energy East. However, not only is this assessment missing from TransCanada's application, but the method the company proposes to use to build Energy East across the Ottawa River remains unclear.

When TransCanada first filed its application in October 2014, it included a preliminary feasibility study conducted by the engineering firm Entec. The study looked at a method of crossing the Ottawa River by running the pipeline under the river using a "trenchless" construction method called "horizontal directional drilling," or HDD,<sup>44</sup> touted as one of the less intrusive methods



**Map illustrating how long it would take an oil spill near the Pointe-Fortune pipeline crossing to reach various points downstream.<sup>37</sup>**

Photo: Savaria Experts-Conseils inc.



**A RECREATIONAL AREA IN OKA NATIONAL PARK, DOWNSTREAM FROM THE PIPELINE'S OTTAWA RIVER CROSSING.**

Photo: Société des établissements de plein air du Québec (Sépaq)

## THE OTTAWA RIVER: THE “ORIGINAL TRANS-CANADA HIGHWAY”

In addition to being a source of drinking water for Greater Montréal, the Ottawa River is of great commercial, biological, historical and recreational value. The river is an important source of water for the industrial, agricultural and municipal sectors within its watershed, as well as numerous recreational

and commercial activities.<sup>38</sup> More than 300 species of birds have been catalogued along the river, as well as 33 species of reptiles and amphibians, 53 species of mammals, and 85 species of fish. Among these, over 50 are considered to be species at risk.<sup>39</sup> A pipeline spill at Pointe-Fortune would put this biodiversity at risk. For example, the Carillon Island Migratory Bird Sanctuary, a protected staging area for migratory birds,<sup>40</sup> would be entirely and directly in harm's way.

The Ottawa River is a designated Canadian Heritage River, known as the “original Trans-Canada highway” and renowned for its critical role in the cultural and economic development of Canada.<sup>41</sup> The Ottawa River downstream of the pipeline crossing is also home to a number of sport and recreational activities. The river's delta includes Oka National Park,<sup>42</sup> and Nature Park Cap St-Jacques,<sup>43</sup> both of which are popular spots for swimming, canoeing, kayaking and hiking.

of pipeline river crossings.<sup>45</sup> This method “involves drilling a path underneath a river or other obstacle (like a road) and basically threading the pipeline underneath.”<sup>46</sup> The study concluded that the proposed HDD crossing of the Ottawa River at Pointe-Fortune was technically unfeasible and to conduct the HDD crossing would likely result in additional costs, delays, and increased environmental impact, with a high probability of failure.<sup>47</sup>

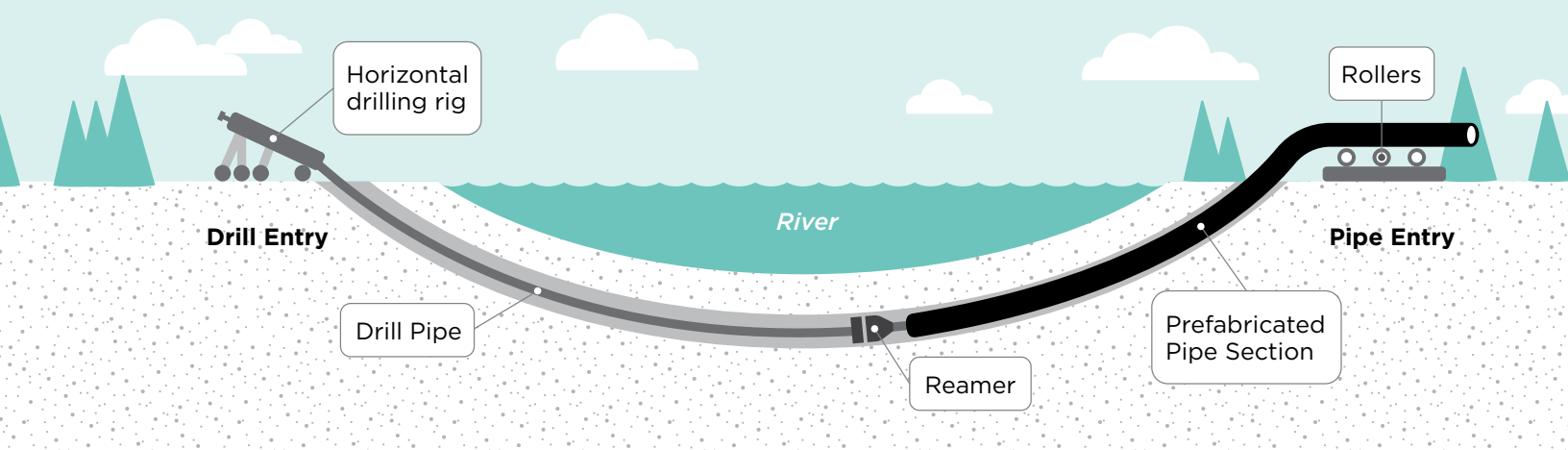
Since the preliminary feasibility study was tabled in October 2014, and then re-submitted in December 2015 as part of TransCanada’s “Amended Application,” no additional information has been provided. Furthermore, at the company’s request, the preliminary feasibility study was pulled completely from the NEB’s hearing record and does not even appear in the most recent iteration of the application, labelled the “Consolidated Application.” It is not standard practice to pull preliminary reports like this from a hearing’s document file. Even when *final* reports are filed, preliminary reports

stay in the file. But this case is different, it appears. There is currently nothing in the file but a one-page placeholder for a future document on the Ottawa River crossing, and an indication that this new information will be provided in the future by Hatch Mott, instead of Entec, the firm that prepared the earlier report.<sup>48</sup>

***The proposed HDD crossing of the Ottawa River at Pointe-Fortune was technically unfeasible and to conduct the HDD crossing would likely result in additional costs, delays, and increased environmental impact, with a high probability of failure.<sup>47</sup>***

## HORIZONTAL DIRECTIONAL DRILLING

The study looked at a method of crossing the Ottawa River by running the pipeline under the river using a “trenchless” construction method called “horizontal directional drilling”, or HDD, touted as one of the less intrusive methods of pipeline river crossings. This method “involves drilling a path underneath a river or other obstacle (like a road) and basically threading the pipeline underneath.”



TransCanada itself has acknowledged that the work required to design a safe crossing has not yet been completed. In an emailed statement to a journalist writing about the Mohawks of the Kanesatake, TransCanada spokesperson Tim Duboyce writes:

***Beginning with your question regarding the planned crossing of the Ottawa River, I would first point out that the original location that was selected was changed after initial feasibility studies were conducted. We are currently examining a new location in order to design a safe crossing. There is still some geophysical survey work required in order to complete that exercise and proceed with a crossing design.<sup>49</sup>***



THE OTTAWA RIVER NEAR OKA, QUEBEC.

Photo: Société des établissements de plein air du Québec (Sépaq)

Spills and impacts on water are one of the greatest threats posed by Energy East. With all of the potential harm possible from a spill at the Ottawa River crossing at Pointe-Fortune, it is wholly unacceptable that participants in the hearing do not have the requisite information to comment on the risks of the Ottawa River crossing. It is also difficult to understand how TransCanada is unable to provide current information on this matter to the public at this late stage in the game – two and a half years after the original filing of the Energy East application.

Information gaps on the Ottawa River pipeline crossing remain, despite repeated calls from concerned citizens and intervenors to make any new information public, including environmental organizations such as Environmental Defence,<sup>50</sup> Équiterre,<sup>51</sup> Ottawa Riverkeeper,<sup>52</sup> Ecology Ottawa,<sup>53</sup> Nature Canada<sup>54</sup> and Council of Canadians.<sup>55</sup> A number of local governmental organizations, such as the Communauté métropolitaine<sup>56</sup> and the Municipalité Régionale de Comté (MRC) d'Argenteuil,<sup>57</sup> also asked the NEB to withhold its determination that the project application was complete until these gaps, among others, were filled. The Mohawk First Nation of Kanesatake, situated along the banks of the Ottawa River, also raised serious concerns about the potentially devastating impacts that an oil spill could have on their community.<sup>58</sup> Additionally, experts tasked by the Ontario Energy Board to do a close study and analysis of the Energy East application concluded that the application was incomplete due to missing details on river crossings and other matters.<sup>59</sup>

TransCanada said it would submit a feasibility report for the Ottawa River crossing in late 2016, but missed its own deadline.<sup>60</sup> A study by Polytechnique Montréal raises the question of whether any type of HDD crossing at all would be technically feasible at the Pointe-Fortune location due to geological risks such as landslides and loose, silty,



OKA NATIONAL PARK, JUST PAST WHERE  
THE OTTAWA RIVER FLOWS INTO THE LAC DES  
DEUX MONTAGNES.

Photo: Société des établissements de plein air du Québec (Sépaq)

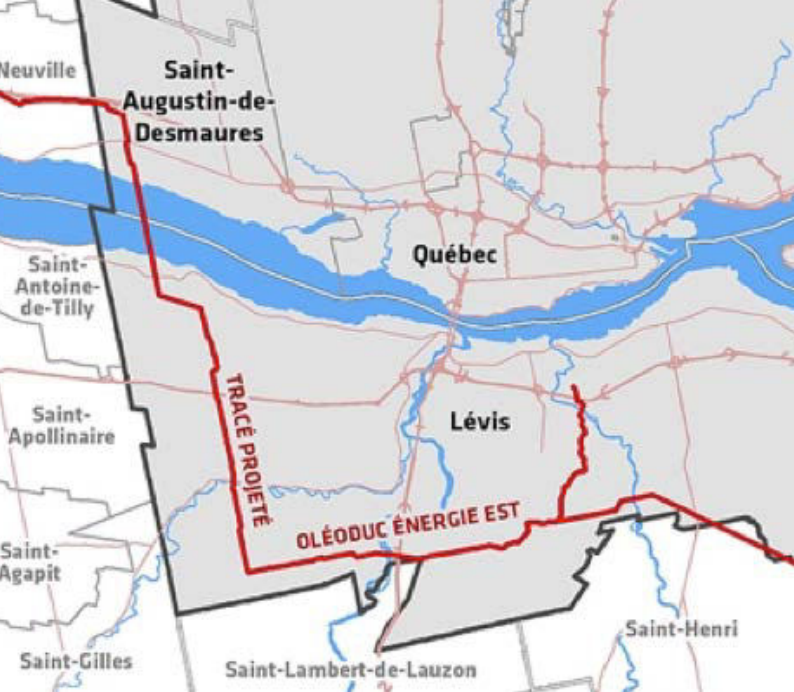
poor-quality soil.<sup>61</sup> Polytechnique Montréal recommends that TransCanada either choose a new location to cross the river or choose another crossing method altogether.<sup>62</sup>

Using a different method to cross the Ottawa River raises a new set of questions, including whether or not TransCanada might consider building a tunnel under the river instead of using HDD. Polytechnique Montréal's report mentions that the tunnel method may be one of several that could be considered for the Energy East crossing of the Ottawa River. It is not clear, however, what experience TransCanada has with tunnel crossings. As well, it seems possible that a tunnel may bring different and perhaps more substantial impacts than an HDD crossing. In its factsheet

on "Watercourse Crossing Methods," TransCanada lists "three types of crossing methods that have been utilized and proven to minimize potential environmental impacts,"<sup>63</sup> and while HDD is included, tunnels are not. This exclusion begs the question whether tunnels create a larger environmental footprint or greater risks to the river than HDD. The path drilled horizontally for insertion of a pipeline using HDD is only slightly larger than the pipeline itself whereas a tunnel is much larger in diameter, which means a lot more earth and rock from the riverbed must be removed as compared with HDD. In the tunnel method, the pipeline runs through a tunnel and the remaining space is either empty, allowing for passage of an access vehicle for pipeline maintenance, or backfilled.

The Ottawa River has enormous ecological, commercial, historical, and recreational value. Yet, two and a half years after it filed its application, TransCanada still has not disclosed to Canadians where or how Energy East would cross the Ottawa River, despite the risks of a spill to communities and ecosystems downstream.

***In the tunnel method, the pipeline runs through a tunnel and the remaining space is either empty, allowing for passage of an access vehicle for pipeline maintenance, or backfilled.***



MAP OF THE PROPOSED ENERGY EAST CROSSING OF THE SAINT LAWRENCE RIVER.

Photo: Communauté Métropolitaine de Québec



A BLUE WHALE SURFACING IN THE SAINT LAWRENCE RIVER.

Photo: Group for Research and Education on Marine Mammals

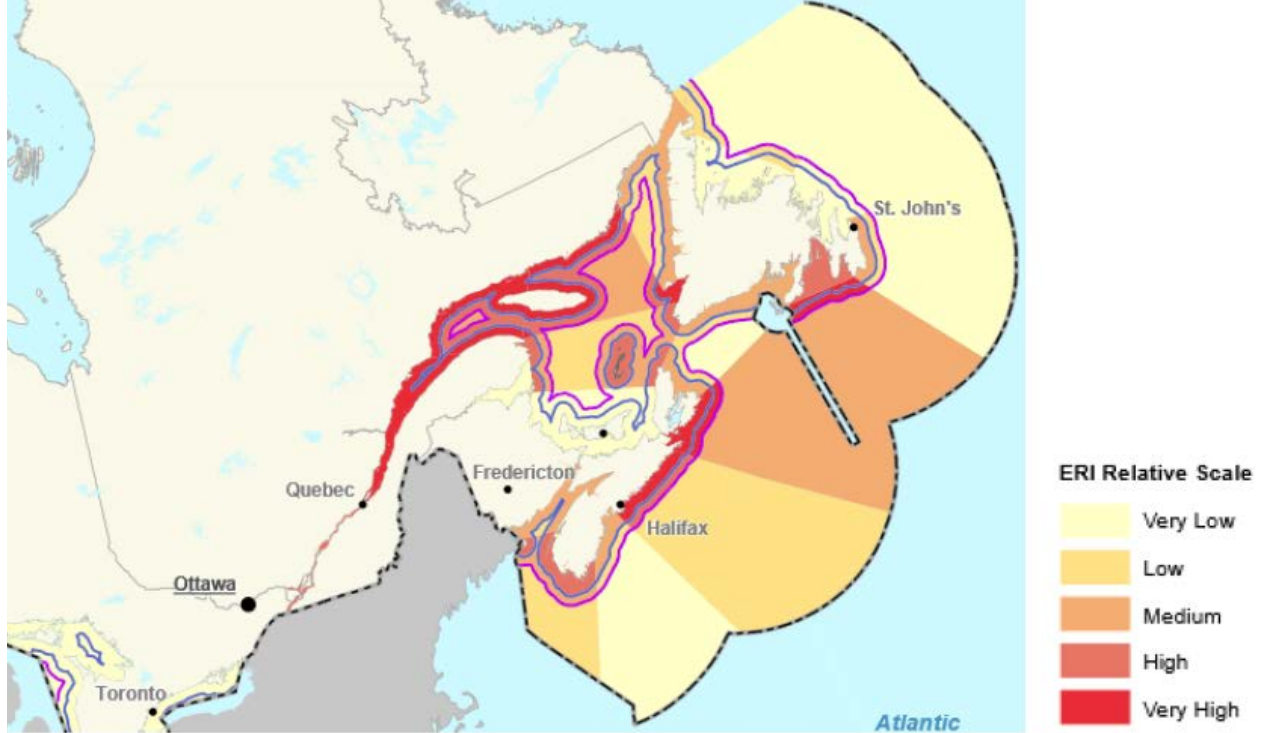
*The estuary is rich in biodiversity and, among other things, serves as one of the main feeding grounds for certain North Atlantic whale populations.*

## SAINT LAWRENCE RIVER

The proposed Energy East pipeline would follow the northern shore of the Saint Lawrence River east of Montréal and cross the river near Saint-Augustin-de-Desmaures, a few kilometres southwest (upstream) of Sainte-Foy, reaching the south shore at Saint-Nicolas.<sup>64</sup> The drinking water intake for Sainte-Foy, a borough of Québec City, is approximately 25 km downstream from the location of the pipeline crossing.<sup>65</sup> A December 2015 evaluation by professors at Polytechnique Montréal of the potential impacts of a spill at the location of the Saint Lawrence crossing indicates that three fish species that are particularly intolerant to pollution would be affected negatively by a spill: the Atlantic sturgeon, channel darter, and the silver mooneye.<sup>66</sup> According to the Species at Risk Public Registry, the Atlantic sturgeon is a “threatened” species, and the channel darter is a species of “special concern.”<sup>67</sup>

This area of the Saint Lawrence River is a short distance upstream from the beginning of the Saint Lawrence estuary, one of the world’s largest and deepest estuaries.<sup>69</sup> Just a very short ways downstream from Québec City, the river widens into a large estuary near Île d’Orléans, where the river’s fresh water first encounters oceanic salt water.<sup>70</sup> The estuary is rich in biodiversity and, among other things, serves as one of the main feeding grounds for certain North Atlantic whale populations.<sup>71</sup>

The authors of the Polytechnique Montréal report indicated that a spill at the point where the pipeline would cross the Saint Lawrence River would be catastrophic since it constitutes “one of the most vulnerable ecosystems” on the river.<sup>72</sup> The map below illustrates the seriousness of an oil spill into the Saint Lawrence River near Québec City.



MAP: ENVIRONMENTAL RISK INDEX FOLLOWING AN OIL SPILL IN THE SAINT LAWRENCE GULF AND ESTUARY<sup>73</sup>

Photo: WSP Canada Inc.

There are numerous problems with the information provided to date by TransCanada concerning the crossing of the Saint Lawrence River. First and foremost, there are substantial differences between the French and English versions of the TransCanada application regarding the engineering assessment of the crossing. As part of its application, TransCanada commissioned Calgary-based engineering consultants Golder Associates to undertake a hydrotechnical hazards report. The March 2015 report identified Energy East's crossing of the Saint Lawrence to be "High Hazard" and recommended that the crossing receive a Phase 3 Assessment.<sup>74</sup> The French version of the report, however, omits completely the recommendation that a Phase 3 hydrotechnical hazards study should be conducted for the Saint Lawrence River crossing.<sup>75</sup>

To better understand the significance of this problem, a Phase 2 assessment is meant to further characterize the hazards at water crossings that were initially assigned a High Hazard rating during the Phase I assessment. The Saint Lawrence River was one of twenty river crossings given a High Hazard rating in Québec (to compare, Ontario had one, and

New Brunswick had six crossings with a High Hazard rating). A Phase 3 assessment is done when even greater scrutiny of a High Hazard water crossing is required. It consists of a detailed investigation of an identified hazard and/or mitigation options.

As of the date of this report, TransCanada has yet to produce a Phase 3 Hydrotechnical Hazards Assessment for the Saint Lawrence River crossing.

This lack of clarity is especially troubling given that the location planned for the river crossing has both serious landslide risk and earthquake potential. The Polytechnique Montréal study found that the banks of the northern shore of the Saint Lawrence have stability issues due to soil composition, and that the majority of the potential crossing points at high risk from landslides were located on the Saint Lawrence's north shore between Montréal and Saint-Augustin-de-Desmaures – where TransCanada proposes the pipeline crossing.<sup>76</sup> If the banks are too unstable to support the pipeline in the event of a landslide, it is obvious that serious spill risks follow.

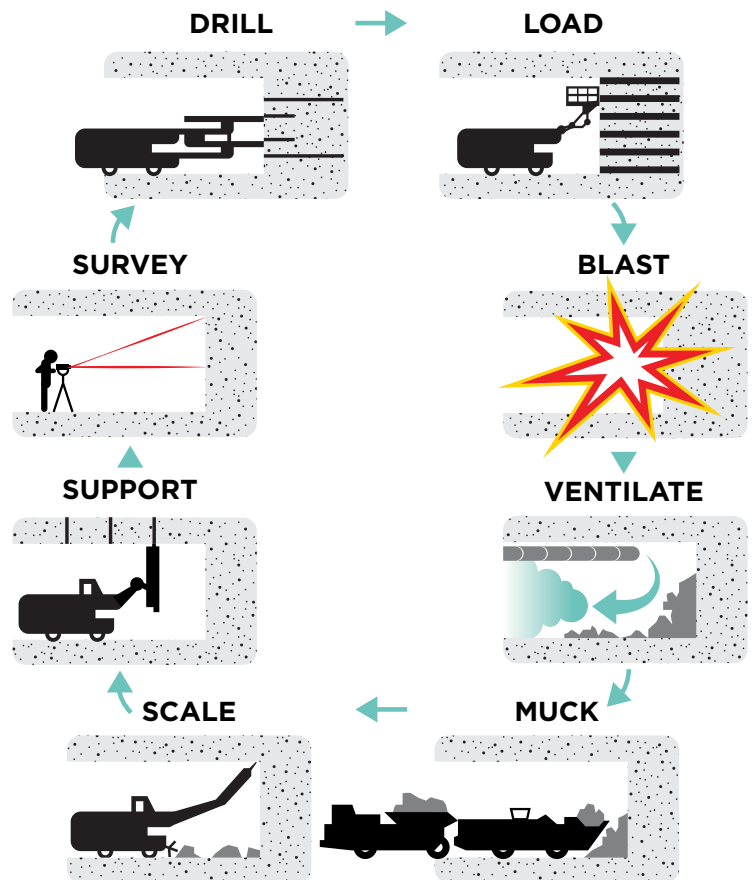
In addition to landslide risks, the area around the river crossing also sits in an earthquake zone. TransCanada has chosen to cross the

***The Saint Lawrence River crossing “is located in the southwest corner of the Charlevoix Seismic Zone (CSZ).” ... the Insurance Bureau of Canada, describes the CSZ as “one of the most active seismic source zones in eastern North America.”***

Saint Lawrence by means of a backfilled tunnel and commissioned a tunnel feasibility report by consultant Hatch Mott MacDonald.<sup>77</sup> The report mentions, among other things, that the Saint Lawrence River crossing “is located in the southwest corner of the Charlevoix Seismic Zone (CSZ).”<sup>78</sup> The report concedes that “the CSZ is considered to be one of the most active in eastern Canada, however the project area is located approximately 140-170 km away from the area with the greatest earthquake concentration.”<sup>79</sup> An October 2013 report commissioned by the Insurance Bureau of Canada, describes the CSZ as “one of the most active seismic source zones in eastern North America” and mentions that in the general region there is a five to fifteen per cent chance of a major earthquake in the next 50 years (from 2013).<sup>80</sup> Also worrying is that once the pipeline reaches the south shore, it heads right through one of the riskiest parts of the CSZ, near La La Pocatière and Saint-Onésime. Thus, the earthquake risk may be significant for the pipeline downstream of the river crossing, as well.

With respect to the choice of method for this crossing, Hatch Mott MacDonald indicated that additional geophysical survey work is required.<sup>81</sup> In particular, seismic studies are recommended. It remains unclear whether or not this seismic testing has in fact been completed, as TransCanada neither submitted it to the NEB nor disclosed it to the public.<sup>82</sup> Finally, another document in the Energy East application indicates that while the general method of crossing has been determined – by backfilled tunnel – the

#### **DRILL & BLAST METHOD PROPOSED FOR SAINT LAWRENCE RIVER CROSSING**



with TransCanada committing to consider a feasibility report “during detailed design.”<sup>83</sup>

There are serious risks associated with how TransCanada proposes to build Energy East across the Saint Lawrence River. Essential feasibility studies have not been completed. And major discrepancies between French and English versions of the feasibility study give Francophones and Anglophones alike cause for grave concern. These vital information gaps make it imperative that TransCanada carry out and submit to the NEB any and all advanced studies for the crossing of the Saint Lawrence.



THE ASSINIBOINE RIVER NEAR PORTAGE LA PRAIRIE, MANITOBA.

Photo: Geoff Sowrey

## ASSINIBOINE RIVER - PORTAGE LA PRAIRIE

The Assiniboine River runs over 1,000 km. Starting in eastern Saskatchewan, it flows southeastward into Manitoba and then eastward across southern Manitoba, connecting most of Manitoba's largest cities. It meanders through Winnipeg and Brandon, and just south of Portage la Prairie, all of which are located close to the proposed Energy East pipeline route. The converted gas-to-oil pipeline would cross the Assiniboine River at two points. The first crossing is just west of Miniota, a "highly significant" archaeological site<sup>84</sup> near the Manitoba-Saskatchewan border. The second is about five km south of the city of Portage la Prairie,<sup>85</sup> about 75 km west of Winnipeg.

Of the two Assiniboine River crossings, only the one near Portage la Prairie has been evaluated by TransCanada, because only that crossing will require new pipe. Unlike the Miniota crossing, the Portage la Prairie crossing requires the replacement of the current 36-inch pipe with 42-inch pipe to



MAP OF THE RED RIVER OF THE NORTH DRAINAGE BASIN, WITH THE ASSINIBOINE RIVER HIGHLIGHTED.

Photo: Karl Musser

match the pipe diameter on either side of the river. In its application, TransCanada did not identify or evaluate river crossings along the existing natural gas pipeline segments of the project that would be converted to transport crude oil, including the Miniota crossing of the Assiniboine. The Miniota crossing, like the entirety of the converted section of Energy East, is cause for concern. But the crossing near Portage la Prairie is highlighted in this report because critical details on the potential impacts and risks of the crossing are missing from TransCanada's application despite the fact that a spill at this location could result in severe consequences for Manitoba residents. This crossing occurs less than 5 km upstream of Portage la Prairie's drinking water intake, on the southwest edge of the city.<sup>86</sup> As such, most of the city's population of approximately 13,000 could be deprived of clean water in the event of a spill.<sup>87</sup> As well, the Long Plain and Dakota Plains First Nations all rely on the Assiniboine for their drinking water.<sup>88</sup>

***Most of Portage La Prairie's population of 13,000 could be deprived of clean water in the event of a spill from the Energy East pipeline.***

## TRANSCANADA'S APPLICATION EXCLUDES CONSIDERATION OF RIVERS CROSSED BY THE NATURAL GAS PIPELINE TO BE "CONVERTED"

As part of the Energy East project, TransCanada plans to convert 3,000 km of existing natural gas pipelines in Alberta, Saskatchewan, Manitoba and Ontario that were never designed to carry oil. Experts hired by the Ontario Energy Board confirmed that the conversion portion of Energy East's route, the decades-old Canadian Mainline gas pipeline, was not designed to mitigate the environmental impacts of transporting dilbit.<sup>89</sup>

In its application, however, TransCanada provides no information on the precise locations of hundreds of pipeline river crossings from Alberta to Ontario, much less information on the potential impacts

of an oil spill at these locations. The company simply did not evaluate the safety or impacts of specific river crossings on the "conversion" section of the pipeline.<sup>90</sup> The lack of information on river crossings of the existing pipeline that would be converted is particularly worrisome given the fires and explosions that have occurred on the gas pipeline over the years, raising serious concerns about its integrity.<sup>91</sup> These incidents include a serious explosion in 2014 in Otterburne, south of Winnipeg,<sup>92</sup> and an explosion near Winnipeg that destroyed a home in 1996, which was partially caused by riverbank instability at the crossing of the LaSalle River.<sup>93</sup>

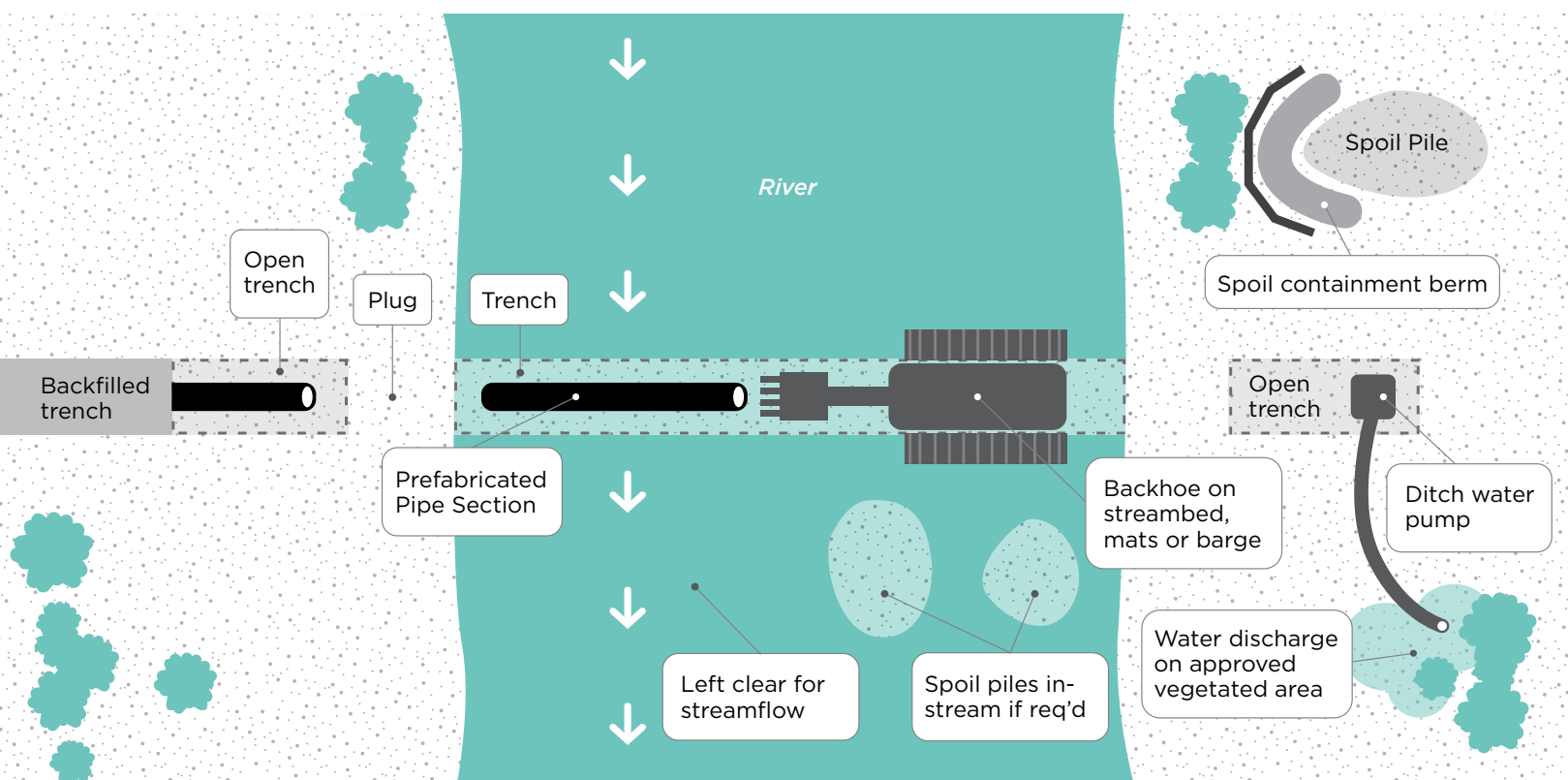
The Assiniboine has a long history of serious flooding, which led to the construction of the Portage Diversion,<sup>94</sup> a massive piece of infrastructure designed to alleviate flooding between Portage la Prairie and Winnipeg by diverting overflow water from the Assiniboine north to Lake Manitoba via a 29 km canal.<sup>95</sup> The Portage Diversion and spillway structure is located just west of Portage la Prairie and the intent is to divert floodwaters from the Assiniboine north into the canal before they reach the city. Thus, an Energy East oil spill, upstream of Portage la Prairie, during flood conditions could potentially flow toward Lake Manitoba. If floodwaters exceed the Portage Diversion, as has occurred before,<sup>96</sup> the oil could also reach the part of the Assiniboine that borders Portage la Prairie as it flows eastward.

In addition to the risks to drinking water, a spill at the Assiniboine crossing near Portage la Prairie could cause other harms for local residents. A spill at this crossing could contaminate Crescent Lake, a small lake sometimes referred to as the "Jewel

of Portage la Prairie"<sup>97</sup> that is a popular recreational destination. Portage Spillway Provincial Park is also directly in harm's way of an upstream rupture at this river crossing. The park is less than 5km downstream from the pipeline crossing and is a popular fishing spot for sauger, walleye, northern pike and silver bass.<sup>98</sup>

TransCanada has not yet provided fundamental information concerning the crossing of the Assiniboine south of Portage la Prairie. In 2014, a consulting engineering firm, Entec, provided TransCanada with a feasibility study on that crossing,<sup>99</sup> which TransCanada included in its original application filed with the NEB. TransCanada proposed running Energy East under the riverbed using the same HDD method it proposed for the Ottawa River.<sup>100</sup> After its examination of the feasibility of crossing the Assiniboine using HDD, Entec concluded that the crossing is not feasible due to unconsolidated soil conditions and construction constraints. The engineers warned that an "HDD crossing at the

## OPEN-CUT RIVER CROSSING



proposed location carries a high risk of environmental impact or a high risk of crossing failure.”<sup>101</sup>

Based on the results of this study, TransCanada rejected the HDD method and indicated its intention to proceed with a different method, an open-cut river crossing.<sup>102</sup> Unfortunately, it did so without undertaking – or at least not submitting to the NEB or making public – any additional study of the impacts of an open-cut crossing. The only details provided are a one-page diagram of the planned open-cut crossing,<sup>103</sup> a reference to the previous feasibility study that concluded the HDD crossing was unfeasible,<sup>104</sup> and a vague commitment to undertake additional study “during the detailed design phase” of the Energy East pipeline project.<sup>105</sup>

To date, none of this promised information on the open-cut crossing for the river south of

Portage La Prairie has been provided to the NEB or made public, so Canadians still do not know how TransCanada plans to build Energy East across the Assiniboine River.

***TransCanada rejected the HDD method and indicated its intention to proceed with a different method, an open-cut river crossing.<sup>102</sup> Unfortunately, it did so without undertaking any additional study of the impacts of an open-cut crossing.***

## CONCLUSION AND RECOMMENDATIONS

Fundamental details are missing from TransCanada's Energy East application. The company has not disclosed how the pipeline would cross three of Canada's largest and most iconic rivers—the Ottawa, Saint Lawrence and Assiniboine Rivers.

The three rivers analyzed in this report have enormous commercial, ecological, historical and recreational value. Entire communities, from First Nations to large cities, depend on them for their drinking water. Given TransCanada's track record of pipeline ruptures and oil spills, there is good reason to expect future failures if this project goes ahead. That puts our lakes, rivers and waterways at risk. At the very least, the project cannot be assessed, and the application cannot be deemed complete, until this crucial information about how the pipeline will cross these rivers is provided.

The federal government is currently reviewing how to modernize the NEB<sup>106</sup> in order to address fundamental flaws in the way the

Board regulates and reviews major energy projects and to restore public confidence in the regulator. Many participants, including Environmental Defence, Équiterre and Ecology Ottawa, have been clear in asking the federal government to postpone the review of Energy East until NEB modernization is complete. A fresh review under a modernized NEB would provide a clean slate and avoid the risk that the new panel will repeat the former panel's mistakes. However, if the federal government and the NEB continue to move forward with the Energy East review before NEB modernization, the least the review panel can do is demand that TransCanada put forward a complete application.

**We recommend the NEB takes the following simple steps before proceeding with an assessment of TransCanada's Energy East application:**

1

The NEB review panel should not rule the Energy East application complete until TransCanada provides details about the precise locations and methods by which the pipeline will cross the Ottawa, Saint Lawrence and Assiniboine Rivers. The fact that vital information is missing on how and where the pipeline would cross three of Canada's largest and most iconic river crossings is alarming and unacceptable.

2

The NEB review panel must demand from TransCanada and make available to all intervenors and the public any and all advanced studies about the crossing of major rivers, in both official languages.

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