

**COMMENTS OF BAY MILLS INDIAN COMMUNITY
SEEKING THE DENIAL OF ENBRIDGE'S APPLICATION FOR A PERMIT FOR THE LINE 5 TUNNEL
AND PIPELINE PROJECT UNDER SECTION 404 OF THE CLEAN WATER ACT AND SECTION 10 OF
THE RIVERS AND HARBORS ACT**

Application Number LRE-2010-004653-56-A19

EXHIBITS

EXHIBIT A



STATE OF MICHIGAN
OFFICE OF THE GOVERNOR
LANSING

GRETCHEN WHITMER
GOVERNOR

GARLIN GILCHRIST II
LT. GOVERNOR

June 19, 2020

Al Monaco
CEO, Enbridge, Inc.
200, Fifth Avenue Place
425 – 1st Street S.W.
Calgary, Alberta
Canada T2P 3L8

Dear Mr. Monaco,

Yesterday evening your company informed the State of Michigan that an anchor support on one of the Line 5 dual pipelines running along the bottomlands of the Straits of Mackinac had incurred significant damage. This support lies approximately 150 feet from a section of the pipeline where damage to the pipeline coating was discovered on or around May 26, 2020. At this point, as I understand it, the cause for this damage to the pipeline support is unknown, although it appears the anchor support was subject to considerable force. After discovering the damaged anchor support, Enbridge shut down the Line 5 pipeline and is gathering more information through divers, the use of a remotely operated vehicle (ROV), and other means. The pipeline remains shut down as Enbridge continues to gather more information.

The information I have received about this incident leaves many unanswered questions as to the cause of this damage, the catastrophe that may have been narrowly avoided, and the threats that may remain as a result of the damaged infrastructure. As you know, under the 1953 easement Enbridge holds an ongoing duty of “due care” to the State of Michigan in the “operating” and “maintaining” of the dual pipelines. There can be no question this duty obligates Enbridge to proceed with the utmost caution and care at this moment.

As a first step toward fulfilling that duty, I ask that Enbridge provide Director Liesl Clark, Department of Environment, Great Lakes, and Energy, and Director Dan Eichinger, Department of Natural Resources, all information available to Enbridge about this incident. This includes, but is not limited to, all engineering reports, photographs, video,

and other demonstrative evidence of the damage. Please provide this information no later Monday, June 22, 2020 and supplement that disclosure with all further information about the incident as it becomes available. Information in digital form and available immediately should be provided within 24 hours to Director Eichinger (EichingerD@michigan.gov) and Director Clark (ClarkL20@michigan.gov). In addition, I ask that Enbridge provide affirmative evidence, including appropriate diagnostic testing, that establishes the integrity of the dual pipelines in the Straits of Mackinac.

As Governor of the State of Michigan – the Great Lakes State – I carry an immense burden to protect this priceless treasure that defines the contours of our state and our way of life. I anticipate and expect your full cooperation.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gretchen Whitmer". The signature is fluid and cursive, with a large initial "G" and "W".

Gretchen Whitmer
Governor

cc: Liesl Clark, Director, Department of Environment, Great Lakes, and Energy, State of Michigan
Dan Eichinger, Director, Department of Natural Resources, State of Michigan
Alan K. Mayberry, Associate Administrator for Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation

EXHIBIT B

STATE OF MICHIGAN
IN THE 30TH JUDICIAL CIRCUIT FOR INGHAM COUNTY

DANA NESSEL, ATTORNEY GENERAL
OF THE STATE OF MICHIGAN, ON BEHALF
OF THE PEOPLE OF THE STATE OF
MICHIGAN,

Plaintiff,

TEMPORARY RESTRAINING
ORDER

v

CASE NO. 19-474-CE

HON. JAMES S. JAMO

ENBRIDGE ENERGY, LIMITED
PARTNERSHIP; ENBRIDGE ENERGY
COMPANY INC.; and ENBRIDGE ENERGY
PARTNERS, L.P.,

Defendants.

At a session of said Court
held in the city of Lansing, county of Ingham,
this 25th day of June, 2020.

PRESENT: HON. JAMES S. JAMO, Circuit Court Judge

This matter comes before the Court on Plaintiff's Ex Parte Motion for a Temporary Restraining Order Pending Hearing on Motion for Preliminary Injunction, arising out of Defendants' disclosure on June 18, 2020, to various State of Michigan entities of damage to the Line 5 pipelines. Having reviewed the Motion for a Temporary Restraining Order (TRO) and Brief in Support with the Affidavit of Daniel Eichinger, Director of the Michigan Department of Natural Resources, as well as Plaintiff's Motion for Preliminary Injunction and Brief in Support with Exhibits A and B and the subsequently filed Exhibits D and E, as well as Defendants' Response in Opposition to Plaintiff's Motion for a Temporary Restraining Order, this Court finds:

1. This is an ex parte motion for a temporary restraining order; however, notice was given and received by Defendants, as evidenced by Plaintiff's counsel's e-mail confirmation and by Defendants' counsel's e-mail correspondence and response filed and reviewed June 23, 2020. Therefore the Court reviews this motion pursuant to MCR 3.310(C), rather than the requirements of MCR 3.310(B)(1) and (2).
2. Defendants have agreed to not restart the East Line until after a hearing can be held on Plaintiff's request for a preliminary injunction. Therefore, a temporary restraining order is GRANTED prohibiting Defendants from restarting the operation of the East Line pending hearing and further related Court Order.
3. As to the West Line, Defendants have argued that their engineering reports show no damage and no risk to operation of the West Line, and that the federal regulator Pipeline and Hazardous Materials Safety Administration (PHMSA) stated "no objection" to restarting the West Line and suggested restarting the line in daylight and monitoring the restart, which Enbridge did with several patrol boats presumably so that a spill or leakage happening some several hundred feet below the surface could be visibly spotted. Assuming *arguendo* that federal pre-emption does govern the field of safety regulation, as Defendants have asserted in this litigation, Defendants have failed to document the involvement of the federal regulator in any way beneficial to this Court's review of the Plaintiff's request for a restraining order. Defendants provide no documentation from PHMSA regarding what information was communicated to PHMSA or what was communicated from PHMSA to Defendants.
4. Furthermore, assuming *arguendo* that the 1953 Easement and the Second Agreement of 2018 govern the current operation of the pipelines, as Defendants have asserted in

this litigation, Defendants have effectively agreed to provide the State of Michigan certain oversight which Defendants have failed to follow regarding the June 18, 2020 event(s) resulting in Enbridge's emergency shutdown of the East and West Lines. Through the 1953 Easement, Defendants guaranteed that operation of the Line 5 pipelines "shall follow the usual necessary and proper procedures for the type of operation involved, and at all times shall exercise the due care of a reasonably prudent person for the safety and welfare of all persons and of all public and private property." Defendants provide a single internal report¹ regarding the potential damage and risk of operating the West Line, but with limited information as to how conclusions were drawn, and a promise to provide more information to the State of Michigan entities. The report detailed a remote operated vehicle (ROV) and diver visual inspection examination of the West Line, but as to any engineering or materials testing, Defendants rely exclusively on inspections made in 2017 and 2018/2019, at which time the "feature of interest" identified by the ROV and diver visual inspection had not yet appeared. No information was given about how the report reached its conclusion that current operations are safe, what might have caused the "feature of interest" on the West Line, what steps were taken to mitigate or avoid similar damage to the West Line as has been sustained by the East Line, or what information was analyzed in determining that there was no damage to the West Line's structural integrity. The Court is therefore unable to determine that Defendants have followed the usual necessary and proper procedures in restarting the West Line, or that

¹ Defendant's Exhibit 1.

Defendants are operating the West Line with due care as a reasonably prudent person would.

5. Further, through the Second Agreement of 2018, Defendants have agreed to provide the State with “all requested information in Enbridge’s possession concerning the operation, integrity management, leak detection, and emergency preparedness for Enbridge’s Line 5 pipeline located in the State of Michigan.” Defendants by their own admission failed to provide such documentation, leaving the State of Michigan or the Court unable to assess the risk to state-owned bottomlands and the Great Lakes generally, as a public resource. Contrary to Enbridge’s assertion, this is not “merely a discovery motion” matter. Defendants’ response to the TRO request does indicate Enbridge is working on uploading more information to a shared electronic site for the State’s access.
6. Defendants’ failure to provide sufficient documentation to the State of Michigan related to the nature, extent, and cause(s) of the newly-discovered damage to Line 5 and its supporting infrastructure has resulted in the State’s inability to review or assess any risk of harm arising from the identified damage to the West Line and from Defendants’ continued use of the West Line. Since the risk of harm to the Great Lakes and various communities and businesses that rely on the Great Lakes would be not only substantial but also in some respects irreparable, this Court GRANTS a temporary restraining order against the Defendants’ continued operation of the West Line until a hearing on the State’s request for preliminary injunction and further related Court Order.

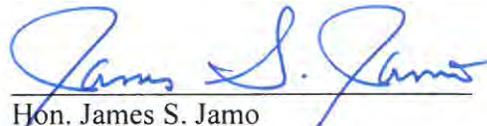
7. Even if this Court were considering the Motion under MCR 3.310(B)(1)(a), the Court still finds that Plaintiff has and will suffer an immediate and irreparable injury from Defendants' failure to comply with the terms of the 1953 Easement and the Second Agreement, by depriving Plaintiff of certain oversight and documentation due to it by the contractual language. Plaintiff retains a duty to protect public trust lands, and it is currently unable to do so as a result of Defendants' failures. Furthermore, the severe risk of harm that may result from Defendants' operation of the West Line if wrong in its conclusion that it can safely do so in spite of recent damage to Line 5 of unknown origin is so substantial and irreparable, and endangers so many communities and livelihoods and the natural resources of Michigan, the danger far exceeds the risk of financial loss to Defendants if the west pipe of Line 5 is shut down pending hearing and further related Court Order.
8. The East Line may not be restarted by Defendants until a determination is made on the Motion for a Preliminary Injunction.
9. The West Line operations must cease as immediately as possible upon receipt of this Order, but within no more than 24 hours. The West Line may not be restarted by Defendants until a determination is made on the Motion for a Preliminary Injunction.
10. The Veteran's Memorial Courthouse as well as the Ingham County Clerk's Office is currently closed on Fridays due to employee furloughs related to the COVID-19 pandemic. Therefore, Defendants must SERVE a written response to the Motion for a Preliminary Injunction upon Plaintiff via email, with email copy to the Court's Law Clerk, no later than 1:00 p.m. on Friday, June 26, 2020. Defendants must then FILE

the written response with the Ingham County Clerk's Office no later than 9:00 a.m. on Monday, June 29, 2020.

11. Plaintiff may FILE and SERVE a Reply Brief no later than 1:00 p.m. on Monday, June 29, 2020, with email service upon Defendants and email copy to the Court's Law Clerk.

12. This Court will hear oral arguments on the Motion for Preliminary Injunction via Zoom video conference hearing on Tuesday, June 30, 2020, at 1:30 p.m. The hearing will be livestreamed concurrently on YouTube at Judge Jamo's Channel, accessible at www.youtube.com/c/HonJudgeJamesSJamoVirtualCourtroom.

IT IS SO ORDERED.


Hon. James S. Jamo
Circuit Court Judge

PROOF OF SERVICE

I hereby certify that I emailed a copy of the above ORDER upon each attorney of record on June 25, 2020.

Kacie Smith

Kacie Smith (P78903)
Law Clerk to the Hon. James S. Jamo

EXHIBIT C

STATE OF MICHIGAN
CIRCUIT COURT FOR THE 30TH JUDICIAL CIRCUIT
INGHAM COUNTY

DANA NESSEL, ATTORNEY GENERAL OF
THE STATE OF MICHIGAN, ON BEHALF
OF THE PEOPLE OF THE STATE OF
MICHIGAN,

No. 19-474-CE

Plaintiff,

HON. JAMES S. JAMO

v

ENBRIDGE ENERGY, LIMITED
PARTNERSHIP; ENBRIDGE ENERGY
COMPANY, INC.; and ENBRIDGE ENERGY
PARTNERS, L.P.,

Defendants.

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**BRIEF IN SUPPORT OF PLAINTIFF'S
MOTION FOR PRELIMINARY INJUNCTION**

INTRODUCTION

On Thursday, June 18, 2020, representatives of the Defendant Enbridge entities (Enbridge) informed the State of Michigan that Enbridge had discovered new evidence of substantial damage to the Line 5 dual pipelines infrastructure. According to Enbridge, this includes damage to the coating of both pipelines, as well as jarring loose one of the anchor supports affixed to the east leg of the dual pipelines. Enbridge initially shut down operation of both pipelines.

Enbridge stated that it does not presently know what caused this damage to the Line 5 dual pipelines. But it is clear that the pipelines were impacted by a physical force powerful enough to dislodge a solid steel anchor support and damage the protective coating of the pipelines themselves. The fact that, according to Enbridge, this impact occurred approximately 220 feet below the surface of the Straits of Mackinac necessarily limits the universe of potential causes.

As set forth more fully below, Enbridge's response to this alarming occurrence has been woefully inadequate. On Friday, June 19, 2020, the Governor requested that Enbridge immediately provide the State of Michigan with all information in its possession related to this issue, with digital information provided within 24 hours and all remaining information provided no later than Monday, June 22, 2020. Despite initially stating that it would provide the requested information Enbridge has failed to provide an adequate response, providing two short engineering reports on Monday, June 22, but none of the underlying data or information that went into the reports, no video, and only the small number of

photographs included in the reports. In addition, the response failed to explain how the damage occurred and what measures will be taken to prevent a recurrence. Enbridge unilaterally reactivated the West leg of the dual pipelines on Saturday, June 20, 2020 without consulting the State, and prior to providing any of the information that the Governor requested. Later, on June 20, 2020, the Governor requested that Enbridge leave the dual pipelines shut down until an investigation into the cause of this incident and the overall risk to the Great Lakes could be completed. Enbridge has nevertheless continued operating the West leg and appears to be preparing to re-activate the East leg.

This newly discovered damage to the Line 5 dual pipelines is merely the latest in a troubling pattern of events in which the pipelines have been damaged, often without explanation, and without immediate detection or prevention by Enbridge. For example, in 2017, Enbridge belatedly disclosed several areas of damaged pipeline coating where bare metal was exposed,¹ despite having identified some of this damage as early as 2014.² In April 2018, the pipelines were struck by an anchor, but Enbridge did not detect the anchor strike and damage to the coatings on both pipelines until notified by a third party. Again, in May 2020, Enbridge belatedly discovered additional damage to pipeline coating, but

¹ <https://www.freep.com/story/news/local/michigan/2017/11/14/enbridge-discloses-dozens-more-gaps-straits-mackinac-pipelines-protective-coating/863490001/>

² https://www.mlive.com/news/2017/10/enbridge_line_5_damage_2014_de.html

apparently does not know when and how it occurred.³

Enbridge's inadequate response to the latest incident reflects the continuation of a pattern of conduct in which Enbridge puts profits above the health and safety of the Great Lakes and ignores its due care obligation under the 1953 Easement.

It is apparent that this pattern will continue unless the Court compels Enbridge to manage the pipelines responsibly as long as they are allowed to remain in operation. To that end, a preliminary injunction is necessary to compel Enbridge to provide the State of Michigan with any and all information it possesses related to this newly discovered damage to the pipelines, to allow the State to review this information with the assistance of outside experts, and to preserve the status quo by shutting down both of the Line 5 dual pipelines until this review is complete, the cause investigated, and mitigation measures are in place.

STATEMENT OF FACTS

The Court is no doubt familiar with the Line 5 dual pipelines and their history, as well as the grave harm that would be caused by a release from the pipelines. This brief will, therefore, focus only on the immediately relevant facts.

On Thursday, June 18, 2020, Enbridge representatives contacted the Directors of the Michigan Department of Natural Resources (DNR) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE) via

³ <https://www.detroitnews.com/story/news/local/michigan/2020/05/26/enbridge-says-four-bare-spots-line-5-repaired/5262976002/>

telephone conference and informed them that Enbridge had discovered evidence of damage to the Line 5 dual pipelines infrastructure. (Ex A, p 1.) Specifically, on June 18, Enbridge had discovered significant damage to an anchor support attached to the east leg of the dual pipelines. (*Id.*)

This damaged anchor support is located approximately 150 feet from a portion of the pipeline where, on or about May 26, 2020, Enbridge discovered damage to the pipeline coating. (Ex A, p 1.) Enbridge informed the State that it had shut down both legs of the pipelines and was in the process of gathering information via divers and the use of a remotely operated vehicle (ROV). (*Id.*)

In a letter dated June 19, 2020, the Governor requested that Enbridge provide the DNR and EGLE Directors with all information in its possession related to this incident, including, but not limited to, engineering reports, photographs, video, and any other demonstrative evidence of the damage. (*Id.*, pp 1–2.) The Governor requested that immediately available digital information be provided within 24 hours, and that the remaining information be provided no later than Monday, June 22, 2020, and supplemented as necessary thereafter. (*Id.*, p 2.)

The next day, on June 20, 2020, Enbridge’s CEO Al Monaco responded with a letter stating that the anchor support had “shifted position,” that this was “an issue affecting that anchor support assembly and not the pipeline itself,”⁴ and that, “As a preliminary precaution, we immediately shut down both the east and west legs of

⁴ Mr. Monaco’s letter did not mention that, as previously noted, this damaged anchor support was located a mere 150 feet from recently discovered damage to the coating of the pipeline itself. (Ex A, p 1.)

Line 5” and promptly notified the State of Michigan and federal regulators. (Ex B, p 1.) Mr. Monaco further stated that, “Our current efforts to assess the fitness for service of the dual pipelines includes deployment of divers to inspect the area around the damaged support assembly and the use of a remotely operated vehicle (ROV) to inspect the entire pipeline, both the east and west legs.” (*Id.*)

At approximately 1:59 p.m. that same day, shortly after Mr. Monaco’s letter was received electronically by the Governor, Enbridge informed the DNR and EGLE Directors that it would reactivate the west leg of the dual pipelines at approximately 2:00 p.m. (Ex C, p 1.) The west leg of the pipelines was reactivated without consulting the State of Michigan or providing any of the information that Enbridge had agreed to provide. Indeed, it was reactivated less than 48 hours after Enbridge informed the State that it was shut down. (*Id.*) This reactivation appears to have occurred with no understanding of the cause of the damage to the pipeline infrastructure, no understanding of how the source of the damage escaped Enbridge’s detection and prevention measures, and no determination by any party other than Enbridge itself as to whether it was prudent to resume operations.

The Governor responded with another letter that same day, June 20, 2020.

(Ex C.) In this letter, the Governor stated:

Given the gravity of this matter, I was taken aback to learn the company has unilaterally resumed operation of the west leg without even opportunity for discussion. At this moment, Enbridge is pumping crude through the Great Lakes on state-owned bottomlands without any explanation for the cause of this damage to the pipeline structure and no assurance that Enbridge has taken sufficient steps to mitigate future harm. This disregard for the safety and well-being of our Great

Lakes, and Enbridge's due care obligations under the 1953 Easement, is unacceptable.

(*Id.*, p 1.)

The Governor then requested that Enbridge immediately shut down the dual pipelines until the matter could be investigated and preventative measures put in place. (*Id.*) The Governor requested that this involve a full report prepared by Enbridge and reviewed by the State or a third party selected by the State. (*Id.*, p 2.)

To date, Enbridge has failed or refused to fully respond to the Governor's request for information. As noted above, Enbridge did not provide any information within the 24 hour timeline requested by the Governor, and to date has provided only the two short engineering reports, see Exhibits D and E,⁵ without providing any of the underlying data or any video footage, and only the small handful of photographs included in the reports. Additionally, the west leg of the dual pipelines remains active despite there being no apparent indication of precisely what caused the damage to the pipelines, how it evaded Enbridge's detection and prevention measures, or what steps need to be taken to prevent future harm from recurring.

⁵ Exhibits D and E were provided to the State by Enbridge and were stamped "privileged and confidential." The basis for Enbridge's assertion of confidentiality is unclear at this time. However, due to time constraints and out of an abundance of caution, Exhibits D and E will be filed separately once the State determines whether it is necessary to file them under seal.

ARGUMENT

- I. Enbridge is legally required to produce any and all information it possesses related to the newly discovered damage to the Line 5 dual pipelines. Additionally, the Court has the authority to compel Enbridge to produce this information, and to enjoin the operation of the pipelines until an independent review confirms that it is safe to resume operation.**

The relief sought in this motion is available under four legal bases.

Enbridge's conduct constitutes violations of both the 1953 Easement that

authorized the placement of the Line 5 dual pipelines in the Straits of Mackinac as

well as a subsequent contract between Enbridge and the State of Michigan

commonly referred to as the "Second Agreement." (Exs F and G.) The Court has

the power to grant injunctive relief to compel compliance with these agreements.

Additionally, injunctive relief is available under count II, public nuisance, and count

III, Michigan Environmental Protection Act, of the complaint.

- A. The 1953 Easement requires Enbridge to produce the information that it has thus far withheld, and provides a legal basis for the Court to compel Enbridge to produce that information and to enjoin operation of the dual pipelines until Enbridge affirmatively establishes that it is reasonably prudent to resume operations.**

The 1953 Easement itself contains provisions that require Enbridge to provide the information requested in this motion.⁶ First, the Easement requires that Enbridge, "in its exercise of rights under this easement, including its

⁶ While this lawsuit challenges the validity of the 1953 Easement, a contract is presumed to be valid and binding until a court declares otherwise. Therefore, until this matter is resolved and so long as Enbridge continues to operate the dual pipelines, Enbridge is bound by the Easement's terms.

designing, constructing, testing, operating, maintaining . . . said pipelines, shall follow the usual necessary, and proper procedures for the type of operation involved, and at all times shall exercise the due care of a reasonably prudent person for the safety and welfare of all persons and of all public and private property.” (Ex F, pp 3–4 ¶ A.)

Second, the Easement provides that the Grantor can inspect, at all reasonable times, the pipelines, appurtenances, and fixtures authorized by the Easement. (*Id.*, p 12 ¶ O.)

Here, Enbridge has thus far withheld information in its possession related to the pipelines, appurtenances, and fixtures, including the damaged anchor support. While Exhibits D and E constitute short compilations and analyses of information performed by Enbridge or its agents, they do not satisfy the Governor’s request for *all* information Enbridge possesses. The purpose of this request is, among other things, to allow the State to conduct a full independent review of all of the available facts, rather than short summary reports prepared by Enbridge itself.

Enbridge’s inadequate response to the Governor’s request violates the “due care” obligation that requires Enbridge to exercise the care of a reasonably prudent person. The Court has the power to grant injunctive relief to compel compliance with the terms of the Easement, including that Enbridge uphold its due care obligations by taking the reasonably prudent steps of sharing information related to damage to the pipelines’ infrastructure. Additionally, the Court has the power to determine that a reasonably prudent person would cease operations of the dual

pipelines until that information can be reviewed, and until Enbridge affirmatively establishes that it is reasonably prudent to resume normal operations.

B. The “Second Agreement” between the State of Michigan and Enbridge requires Enbridge to produce the information that it has thus far withheld and provides a legal basis for the Court to compel Enbridge to produce that information.

On October 2, 2018, the State of Michigan, DNR, and EGLE entered into a contract with Enbridge commonly referred to as the Second Agreement. (Ex E.)

The Second Agreement specifically provided that:

Enbridge will work cooperatively with the State to: (a) make available to the State’s representative data and other materials generated under this Second Agreement, including but not limited to geologic, engineering, or other technical information concerning Line 5 located in the State of Michigan and Enbridge’s implementation of the measures described herein; (b) *all requested information in Enbridge’s possession concerning the operation, integrity management, leak detection, and emergency preparedness for Enbridge’s Line 5 pipeline located in the State of Michigan.*

(Ex E, p 4 ¶ I.A.2.)

The Attorney General has the ability to enforce this contractual provision against Enbridge, on behalf of the people of the State of Michigan, in this lawsuit. While two of the signatories to the Second Agreement, DNR and EGLE, are not parties to this lawsuit, the State of Michigan itself is a signatory, and the Attorney General brings this action on behalf of the people of the State of Michigan.

Additionally, the Second Agreement was expressly entered into for the benefit of the people of the State of Michigan.⁷ Therefore, even if they were not a

⁷ See, e.g., the following passage: “WHEREAS, the State and Enbridge recognize that the Straits Crossing and the St. Clair River Crossing (collectively ‘Crossings’)

signatory, the people of the State of Michigan would collectively be an intended third party beneficiary of the Second Agreement, and may enforce its provisions in court. MCL 600.1405; *Schmalfeldt v North Pointe Ins Co*, 469 Mich 422, 427–428 (2003), internal citations omitted.

Here, the State of Michigan has requested precisely the sort of information that Enbridge is obligated to provide, and Enbridge’s partial response is simply inadequate. The information requested by the Governor is crucial to determining whether, as the complaint alleges, Line 5 presents an imminent threat of pollution, impairment, or destruction of natural resources or the public trust in those natural resources, and whether Line 5 presents an imminent threat of a public nuisance. The Court may, therefore, enter an injunction requiring that Enbridge immediately produce all information in its possession related to this newly discovered damage to the pipelines and their infrastructure.

C. The common law doctrine of public nuisance provides an independent basis for the Court to preserve the status quo and prevent irreparable harm to the Great Lakes by enjoining the operation of the pipelines until an independent review confirms that it is safe.

Count II of the complaint in this matter alleges that Enbridge’s operation of the Line 5 dual pipelines in the Straits of Mackinac creates a public nuisance because it constitutes a continuing, unreasonable risk of catastrophic harm to

are located in the Great Lakes and connecting waters that include *and are in proximity to unique ecological and natural resources that are of vital significance to the State and its residents, to tribal governments and their members, to public water supplies, and to the regional economy.*” (Ex F, p 2, emphasis added.)

public rights. (6/27/19 Complaint, Count II pp 25–26.) The fact that there is evidence of some new damage to the pipelines, discovered barely two years after the April 1, 2018 anchor strike, highlights the gravity of this risk.

The Court has the power to grant injunctive relief to abate a public nuisance. MCL 600.2940(1). Here, where there is evidence of damage to the Line 5 pipelines, but where Enbridge refuses or otherwise fails to share all of its information related to that damage, this creates an unreasonable risk that constitutes a public nuisance which this Court should abate.

D. The Michigan Environmental Protection Act provides an independent basis for the Court to preserve the status quo and prevent irreparable harm to the Great Lakes by enjoining the operation of the pipelines until an independent review confirms that it is safe.

Count III of the complaint in this matter alleges a violation of Part 17, Michigan Environmental Protection Act (MEPA), of the Natural Resources and Environmental Protection Act, MCL 324.1701 *et seq.* (6/27/19 Complaint, Count III, pp 26–27.)

MEPA specifically provides that the Attorney General may seek, and the Court may award, equitable relief to prevent the pollution, impairment, or destruction or natural resources or the public trust in those natural resources. MCL 324.1701(1). Injunctive relief is equitable in nature. *Dep't of Env't'l Quality v Gomez*, 318 Mich App 1, 31–34 (2016).

As alleged in the complaint in this matter, a release of oil from Line 5 would undoubtedly pollute, impair, or destroy the natural resources of the State of

Michigan and the public trust in those resources. Here, where there is evidence of damage to the Line 5 pipelines, but where Enbridge refuses or otherwise fails to share all of its information related to that damage, injunctive relief under MEPA is necessary and appropriate.

II. A preliminary injunction is necessary to preserve the status quo and to prevent irreparable harm to the Great Lakes.

The purpose of a preliminary injunction is to preserve the status quo, so that upon hearing the rights of the parties may be determined without injury to either. *Psychological Services of Bloomfield, Inc. v Blue Cross Blue Shield of Michigan*, 144 Mich App 182, 185 (1985), citing *Gates v Detroit M&R Co*, 151 Mich 548, 551 (1908). The status quo that must be preserved is the “last actual, peaceable, noncontested status” which preceded the pending controversy. *Id.*, citing *Steggles v National Discount Corp*, 326 Mich 44, 51 (1949).

A. Standard of Review

Michigan courts apply a four-factor test in determining whether to issue a preliminary injunction. The Supreme Court has held:

Whether a preliminary injunction should issue is determined by a four-factor analysis: harm to the public interest if an injunction issues; whether harm to the applicant in the absence of a stay outweighs harm to the opposing party if a stay is granted; the strength of the applicant’s demonstration that the applicant is likely to prevail on the merits; and demonstration that the applicant will suffer irreparable injury if a preliminary injunction is not granted.

Michigan State Employees Ass’n v Dep’t of Mental Health, 421 Mich 152, 157–158 (1984).

Whether to issue a preliminary injunction rests in the discretion of the trial court. *State v McQueen*, 493 Mich 135, 146 (2013).

Here, the four factors set forth by the Supreme Court militate in favor of issuing a preliminary injunction to prevent irreparable harm to the Great Lakes by preserving the status quo by ceasing the recently resumed operation of the west leg and preventing the reactivation of the east leg of the Line 5 dual pipelines until an independent review has confirmed that it is safe.

B. A preliminary injunction is necessary and appropriate to ensure that the Line 5 dual pipelines remain inactive until an independent review is complete, the cause investigated, and mitigation measures are in place .

Here, the last actual, peaceable, noncontested status was that the Line 5 dual pipelines were shut down pending an investigation. (Exs A and B.) That was the status that existed before Enbridge unilaterally reactivated the west leg of the pipelines almost immediately after informing the Governor that both legs had been shut down pending an investigation. A preliminary injunction restoring and preserving that status quo is necessary given the gravity of the harm that will be suffered if Enbridge's rush to resume pipeline operations without a full investigation and impartial review proves misguided.

1. A preliminary injunction serves the public interest.

It is beyond dispute that the public interest is best served by taking appropriate measures to prevent a release from Line 5 into the waters of the Straits of Mackinac. Given the facts set forth above, the public clearly has a strong interest

in an order compelling Enbridge to provide all information related to this issue to the State, for the State to review that information with the assistance of outside experts, and for the pipelines to remain shut down until that review confirms that it is reasonably prudent to resume operations.

2. Any harm caused to Enbridge by a preliminary injunction is heavily outweighed by the risk of harm to the public if a preliminary injunction is not entered.

Enbridge will not be harmed at all by being compelled to share its information with the State. Indeed, Enbridge agreed to do so in the Second Agreement, and appeared to agree to do so again in the June 20, 2020 letter from its CEO. Additionally, Enbridge will not be harmed by having its information reviewed by the State, nor by outside experts chosen by the State.

The only potential harm to Enbridge would be the financial impact of a temporary shutdown of the Line 5 pipelines. But that harm is dwarfed by the potential harm to the public if there is a release of oil from the pipelines. Therefore, a preliminary injunction requiring Enbridge to provide all information it possesses to the State for a full review and requiring that the pipelines be shut down until this review is complete is appropriate.

3. The Attorney General is likely to succeed on the merits of this action.

The Court is familiar with the merits of this lawsuit, so in the interest of economy they will not be repeated here. This new information only serves to increase the Attorney General's likelihood of success on the merits. Enbridge's

primary defense to counts II and III of the complaint, public nuisance and MEPA, hinge on the notion that this exact occurrence—large force impact to the Line 5 dual pipelines infrastructure—is statistically unlikely.

Specifically, Enbridge has argued that count II, public nuisance, should be dismissed because it is “impermissibly speculative,” and that count III, MEPA, should be dismissed because the Attorney General is unable to demonstrate that a release from the pipelines is likely to occur. (Defendants’ 9/16/19 Brief in Support of Motion for Summary Disposition, pp 36–43.)

This alarming new occurrence proves that Enbridge’s arguments based on likelihood are divorced from reality. As the Court is aware, a massive anchor strike damaged the pipelines infrastructure on April 1, 2018. Now, approximately two years later (though no one is currently able to say when with any precision), there is evidence of another large force impact. This directly undercuts Enbridge’s arguments on these counts and demonstrates that the merits of the Attorney General’s claims are well founded.

Moreover, the Attorney General is likely to succeed on the merits of the specific relief requested in this motion. As set forth above, the due care obligations of the 1953 Easement, the information sharing requirements of the Second Agreement, the common law of public nuisance and MEPA all provide legal support for the interim relief requested here: (a) restoring the last uncontested status quo by ordering Enbridge to cease operation of the west leg of the Straits Pipelines and by maintain the current shutdown of the east leg pending disclosure of and

independent review of the requested information; and (b) ordering Enbridge to immediately and fully disclose the requested information regarding the nature, extent and causes of the most recent damage to the pipeline infrastructure.

4. There is a grave risk of irreparable harm that can only be prevented by the entry of a preliminary injunction.

The gravity of the threat to the Great Lakes cannot be overstated. It is beyond dispute that a release from the Line 5 dual pipelines would constitute irreparable harm. It is also clear that, absent an injunction, Enbridge will not honor its legal duty to share all of its information with the State. Given Enbridge's troubling history, combined with its indifferent and inadequate response to this alarming incident, a preliminary injunction is necessary to ensure that the available information is vetted by the State or by experts of the State's choosing.

CONCLUSION AND RELIEF REQUESTED

Despite Enbridge's protestations that anchor strikes or similar large force impacts to the Line 5 dual pipelines are highly unlikely, the Court now has before it evidence of a second substantial strike to the pipelines in approximately two years. At present, no one is able to say whether this second impact was caused by an anchor strike or some other source, which itself is troubling. Enbridge's prevention and detection measures have failed to prevent or detect the source of this damage, and that failure has created a risk of irreparable harm to the Great Lakes. Enbridge's response has been to largely shrug off its information-sharing responsibilities, providing only limited summary reports rather than the full suite

of information in its possession, and promptly resume operation of the west leg of the pipelines almost immediately after telling the Governor that the pipelines had been shut down pending an investigation.

A preliminary injunction is necessary to ensure that Enbridge is not the only party with access to the facts, and that an independent review verifies Enbridge's conclusions. Further, a preliminary injunction is necessary to ensure that Enbridge cannot resume pipeline operations until an independent review confirms that it is reasonably prudent to do so.

Respectfully submitted,

Dana Nessel
Attorney General

/s/ Daniel P. Bock
S. Peter Manning (P45719)
Robert P. Reichel (P31878)
Daniel P. Bock (P71246)
Charles A. Cavanagh (P79171)
Assistant Attorneys General
Attorneys for Plaintiff
Environment, Natural Resources,
and Agriculture Division
P.O. Box 30755
Lansing, MI 48909
(517) 335-7664

Dated: June 22, 2020

LF: Enbridge Straits (AG v)/AG #2019-0253664-B-L/Brief in Support of Motion for Preliminary Injunction 2020-06-22

EXHIBIT D

STATE OF MICHIGAN
CIRCUIT COURT FOR THE 30TH JUDICIAL CIRCUIT
INGHAM COUNTY

DANA NESSEL, ATTORNEY GENERAL OF
THE STATE OF MICHIGAN, ON BEHALF
OF THE PEOPLE OF THE STATE OF
MICHIGAN,

No. 19-474-CE

Plaintiff,

HON. JAMES S. JAMO

v

ENBRIDGE ENERGY, LIMITED
PARTNERSHIP; ENBRIDGE ENERGY
COMPANY, INC.; and ENBRIDGE ENERGY
PARTNERS, L.P.,

Defendants.

S. Peter Manning (P45719)
Robert P. Reichel (P31878)
Daniel P. Bock (P71246)
Charles A. Cavanagh (P79171)
Assistant Attorneys General
Attorneys for Plaintiff
Environment, Natural Resources, and
Agriculture Division
P.O. Box 30755
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(517) 335-7664

Peter H. Ellsworth (P23657)
Jeffery V. Stuckey (P34648)
Ryan M. Shannon (P74535)
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Attorneys for Defendants
215 South Washington Square
Suite 200
Lansing, MI 48933
(517) 371-1730

David H. Coburn (pro hac vice)
William T. Hassler (pro hac vice)
Alice Loughran (pro hac vice)
Joshua Runyan (pro hac vice)
Steptoe & Johnson LLP
Attorneys for Defendants
1330 Connecticut Avenue, N.W.
Washington, DC 20036
(202) 429-3000

Phillip J. DeRosier (P55595)
Attorney for Defendants
500 Woodward Avenue
Suite 4000
Detroit, MI 48226
(313) 223-3866

**PLAINTIFF'S EX PARTE MOTION FOR
TEMPORARY RESTRAINING ORDER PENDING
HEARING ON MOTION FOR PRELIMINARY INJUNCTION**

The Plaintiff, Dana Nessel, Attorney General of the State of Michigan, on behalf of the people of the State of Michigan, brings this ex parte motion for a temporary restraining order pursuant to MCR 3.310(B).

The purpose of this motion is to preserve the status quo until the Court can hear and decide the Plaintiff's contemporaneously filed motion for preliminary injunction. A temporary restraining order preserving the last peaceable, uncontested status quo is necessary to prevent two irreparable injuries. First, the grave risk of irreparable injury to the Great Lakes if Defendants continue operation of the west leg of the Line 5 dual pipelines, or resume operation of the east leg of the pipelines, before the Court can consider Plaintiff's motion for a preliminary injunction.

Second, the State of Michigan will suffer an irreparable injury if Defendants continue operation of the west leg of the pipelines, or resume operation of the east leg of the pipelines, without first providing legally required information to the State for its review and determination that it is safe to resume pipeline operations.

Consistent with MCR 3.310(B)(2), undersigned counsel for the Plaintiff certifies that he attempted to contact Defendants' counsel Philip DeRosier, who has been Plaintiff's primary point of contact in this matter, via telephone at approximately 3:40 p.m., and via email at approximately 3:50 p.m. on June 22, 2020, to provide notice of this motion.

For these reasons, as set forth more fully in the brief in support of this motion, the Plaintiff respectfully requests that the Court enter a temporary

restraining order enjoining operation of the Line 5 dual pipelines in the Straits of Mackinac until the Court can rule on Plaintiff's motion for preliminary injunction.

Respectfully submitted,

Dana Nessel
Attorney General

/s/Daniel P. Bock
S. Peter Manning (P45719)
Robert P. Reichel (P31878)
Daniel P. Bock (P71246)
Charles A. Cavanagh (P79171)
Assistant Attorneys General
Attorneys for Plaintiff
Environment, Natural Resources,
and Agriculture Division
P.O. Box 30755
Lansing, MI 48909
(517) 335-7664

Dated: June 22, 2020

LF: Enbridge Straits (AG v)/AG #2019-0253664-B-L/Motion for TRO 2020-06-22

EXHIBIT E



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
GAYLORD DISTRICT OFFICE



LIESL EICHLER CLARK
DIRECTOR

May 4, 2020

VIA E-MAIL

Mr. Paul Turner
Enbridge Energy, Limited Partnership
26 East Superior Street, Suite 309
Duluth, Minnesota 55802

Dear Mr. Turner:

SUBJECT: Correction Request
Submission No. HNY-NHX4-FSR2Q
Counties: Emmet and Mackinac
Site Name: Enbridge Energy-Line 5-Straits of Mackinac

The Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD), has received and reviewed your application for a utility tunnel beneath the Straits of Mackinac. Based on the review, the application has been determined to be incomplete as received and cannot be further processed until the information and edits requested below have been submitted.

EGLE requires a public notice document to explain the proposed regulated activities as concisely as possible and to be easily accessible to the public. The public notice material is intended to be published for the public to use in reviewing the proposal and offering substantive comments on the proposed project. The materials, as submitted when compiled, total over 350 pages in length and are 86 MB in size. This is a very large sized document. EGLE requests that Enbridge edit submitted materials for precision and relevance to actual proposed construction. Please eliminate items that do not apply to the proposed work, as well as, adding details where needed/requested. All Enbridge materials submitted to date will be retained in MiWaters and will continue to be accessible to the public. EGLE is not advising elimination of already submitted documents. EGLE is requesting refining of materials for appropriate public noticing.

EGLE understands that design–build process is being used by overlapping the design phase and construction phase of this project. This means that much of the exact dimensions and specifications of structures and tunnel location and design are to be determined as the project design is finalized. One example is the exact proposed tunnel inside diameter is not yet determined. Enbridge is proposing the tunnel will be approximately 18 to 21 feet in finished diameter, or other appropriate diameter determined through final design. Enbridge will be required to provide appropriate and relevant final design details to EGLE WRD as soon as designs are finalized and available.

Please consider the benefits of scheduling a conference call to discuss this correction request and EGLE comments and requested edits to Enbridge application materials. EGLE recommends that we discuss this application, its processing, and to go over the details of

implementing this application review including Enbridge future submittals of relevant design products and specifications.

Under Part 17, Michigan Environmental Protection Act, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), the department is required to assess whether there are any feasible or prudent alternatives to the tunnel project. The application should include a complete assessment of the alternatives.

On page 2 of the application attachment titled "Investing in Michigan's Future" two transportation options are mentioned but not analyzed. Please include a detailed analysis of those options and any others that are available to Enbridge.

EGLE anticipates requiring mitigation for permanent wetland impacts. Please provide a conceptual wetland mitigation plan. If permanent wetland impacts are proposed and no mitigation is offered, you must provide more than a request for wetland mitigation waiver. A commentary is required with an explanation detailing why compensatory wetland mitigation is not required.

The wetland restoration plan requires additional details. Please refer to R 281.925 (Rule 5) of Part 303, Wetlands Protection, of the NREPA for guidance.

Houghton's Goldenrod (*Solidago houghtonii*) and Dwarf Lake Iris (*Iris lacustris*), both plant species that have been separately listed by Michigan and the United States Fish and Wildlife Service as Threatened (legally protected), have been observed within the limits of disturbance on the north side of the Straits of Mackinac. Please upload a mitigation plan for the anticipated impacts to Houghton's Goldenrod and Dwarf Lake Iris.

Please provide spoil disposal information detailing, as best estimated, anticipated amounts including muck and rock that will be moved off-site and how and where this material will be both temporarily and permanently disposed of. Once designs are final please update this information.

There is known litigation involving the property with several ongoing legal challenges. On page 8 of the application there is a question asking about any known litigation involving the property. If not including known litigation information, Enbridge should explain why the still pending litigation on the validity of Act 359, the Tunnel Agreement, and the Assignment of Easement are not mentioned.

Please upload a copy of the referenced Michigan Department of Natural Resources Easement to Construct and Maintain Underground Utility Tunnel at the Straits of Mackinac.

Please upload a copy of the Straits Geotechnical Data Report (GDR). Enbridge indicated that additional laboratory testing was being completed and results of this analysis are proposed as an addendum to the GDR. As this project moves forward, please provide any additional GDR information as it is generated.

This is an effort to refine and reduce the total size and reduce number of pages to be included in the final public notice. Edits can simply be uploaded into the existing MiWaters application as an addition to already submitted materials.

Additional information and/or filing fees may be required upon further review of your application. Should we not receive the requested information from you within 30 days of this letter, we will consider your application as withdrawn and will close your application. Fees are not refundable on applications once a decision has been made or if an action has been taken, such as closing an application due to no or incomplete response to a correction request letter, posting a public notice, or conducting a site visit. A new application may be submitted, but fees are not transferable.

If you have any questions regarding this letter or your application, please contact me at 989-330-9252; or HaasJ1@michigan.gov. Most EGLE staff, including myself, are working remotely and we are attempting to complete as much as possible without going into the office. Please do not mail any work/application products to the Gaylord District Office. Please submit requested modifications as an amendment by uploading to the MiWaters site for this project and copy me at my email address. Please include Submission No. HNY-NHX4-FSR2Q in your response. The status of your application can be tracked online at <https://miwaters.deq.state.mi.us/miwaters/>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joe Haas', with a long horizontal flourish extending to the right.

Joseph Haas, District Supervisor
Gaylord District Office
Water Resources Division

cc: Mr. Peter Holran, Enbridge
Mr. Jeff Benefiel, Stantec Consulting Services, Inc.
Ms. Katie Otanez, U.S. Army Corps of Engineers, Detroit

EXHIBIT F



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, DETROIT DISTRICT
477 MICHIGAN AVENUE
DETROIT MI 48226-2550

April 14, 2020

REPLY TO
ATTENTION OF:

Engineering & Technical Services
Regulatory Office
File No. LRE-2010-00463-56-A19

Paul Turner
Enbridge Energy, Limited Partnership
26 East Superior Street, Suite 309
Duluth, Minnesota 55802

Dear Mr. Turner:

We have reviewed your application for a Department of the Army permit to construct a tunnel under the bed of Lake Michigan between McGulpin Point and Point LaBarbe in Emmet and Mackinac Counties, Michigan. Based on the scope of the proposed project and its potential impacts, we have elected to review the project under our standard permit review process, beginning with a public notice. In order to continue processing the application, we require the following information:

- a. Provide a site plan showing the proposed launch portal, retrieval shaft, and all other temporary and permanent features that would be constructed within the limits of disturbance. Define the areas that would be permanently impacted and those that would be restored to natural conditions.
- b. Provide an estimate of the total volume of rock cuttings that would be removed from under the lakebed to construct the tunnel. Identify the final disposal area(s) for tunnel spoils.
- c. On project drawings, show the length, width, and depth of each proposed wetland or waterway fill area.
- d. Show the wetland limits and the federal Ordinary High Water Mark (OHWM) of 581.5 feet, IGLD 85 in all cross-section drawings of proposed wetland and waterway fill areas.
- e. For wetland fill areas associated with widening Boulevard Drive, provide cross-sections at defined locations, and provide a plan view that shows the location of the cross sections. Clarify on drawings which parts of the road would be widened to 14 feet and which would be widened to 20 feet.
- f. Provide drawings of the proposed outfalls, showing the wetland limits, the OHWM, any parts of the structures that extend waterward of the OHWM, and all discharges of fill material in wetlands or in the waterway. Show any riprap that

would be placed around culvert ends. Clarify whether the proposed outfall in the south work area would involve discharges of fill in wetlands or structures or fill waterward of the OHWM. Identify any intake structures that would extend waterward of the OHWM, and provide drawings and dimensions.

- g. Clarify the purpose and need for the proposed fill in wetland W3.
- h. The construction sequence indicates that the pipeline may be tied in through either open trench or trenchless (horizontal directional drilling) methods. Clarify whether open trench methods may be used within Wetland 3. If you propose to use open trench methods within Wetland 3, clarify why directional drilling under the wetland is not practicable, and provide drawings of the trench and temporary spoils sidecasting areas in the wetland, with all dimensions shown.
- i. Provide a cross-section drawing of the proposed tunnel showing the tunnel lining, the pipeline, and other features within the tunnel.
- j. Provide a decommissioning plan for the existing dual pipelines, specifically identifying the extent of structure removal and other jurisdictional work with the waterway. Include a construction sequence and drawings clearly showing all jurisdictional work.

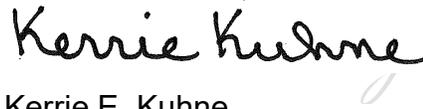
Please provide the above information within 30 days from the date of this letter. If you need additional time, please request it, providing the reason(s) for the delay and time required. If we do not hear from you, we will withdraw your application.

While not required for application completeness and our public notice, we request your response to the items below before we begin consultation with the U.S. Fish & Wildlife Service under Section 7 of the Endangered Species Act and with the State Historic Preservation Office and federally recognized tribes under Section 106 of the National Historic Preservation Act.

- k. Provide a biological assessment, including surveys for federally listed threatened or endangered species over the full project disturbance area. For each species, provide the acreage of each impact area where the species is present. How was the number of impacted stems estimated for dwarf lake iris and Houghton's goldenrod?
- l. Provide a plan to mitigate for the impacts to dwarf lake iris and Houghton's goldenrod that would result from the proposed work.
- m. Provide a Phase I cultural resources survey covering the full area within the limits of disturbance.

Your response and any questions should be directed to Katie Otanez at the above address, by E-Mail at Katie.L.Otanez@usace.army.mil, or by telephone at (313) 226-5479. In all communications, please refer to File Number LRE-2010-00463-56-A19.

Sincerely,



Date: 2020.04.14

10:39:54 -04'00'

Kerrie E. Kuhne
Chief, Permit Evaluation Western Branch
Regulatory Office

Copy Furnished

EGLE, 24/49-Enbridge Energy-Line 5- Straits of Mackinac

EXHIBIT G



February 21, 2019

Submitted via electronic mail to CEMVP-L3R-PN-Comments@usace.army.mil

Thomas Hingsberger
St. Paul District, Corps of Engineers
Regulatory Branch, CEMVP OP-R
180 Fifth St. E., Suite 700
St. Paul, Minnesota 55101-1678

Re: Comments on Application No. 2014-01071-TJH

Dear Mr. Hingsberger:

On behalf of Sierra Club, Honor the Earth, Friends of the Headwaters, Minnesota Interfaith Power & Light, and MN350, we submit the following comments on the application No. 2014-01071-TJH for U.S. Army Corps of Engineers' (the "Corps") permits for the proposed Enbridge Line 3 project (the "Project").

I. INTRODUCTION

On December 20, 2018, the Corps issued a public notice inviting the public to comment on applications submitted pursuant to section 404 of the Clean Water Act, 33 U.S.C. § 1344, and sections 10 and 14 of the Rivers and Harbors Act, 33 U.S.C. §§ 403, 408. On January 18, the Corps extended the comment deadline from January 21 to February 21, 2019.

The undersigned groups have serious concerns about the direct, indirect, and cumulative environmental impacts posed by the proposed Line 3 Pipeline, including, but not limited to, the potential for oil spills along the pipeline route, the life-cycle greenhouse gas emissions associated with the oil to be transported through the project, and impacts to waterways crossed by the pipeline. A report prepared by Grobbel Environmental & Planning Associates on behalf of the Sierra Club highlights additional concerns with the Line 3 application. Grobbel Environmental & Planning Associates, Comments on Application No. 2014-01071-TJH, (Feb. 21, 2019) ("Grobbel Report") (attached as Ex. A).

As set forth in detail below, Enbridge's application fails to provide sufficient information for the Corps or the public to meaningfully assess the impacts of the proposed project. The above groups hereby request that the Corps, as well as the Bureau of Indian Affairs and other federal agencies, prepare an environmental impact statement ("EIS") that analyzes the full host of impacts of the Line 3 Pipeline, including all connected actions that fall within the jurisdiction of federal agencies and all sections that fall outside of federal jurisdiction, and provide additional opportunities for public participation and comment.

II. REQUEST FOR PUBLIC HEARING

Public participation plays an important role in Clean Water Act (“CWA”) permitting decisions. Section 404 states: “The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites.” 33 U.S.C. § 1344(a). The applicable Corps regulations state: “[A]ny person may request, in writing, ... that a public hearing be held Requests for a public hearing under this paragraph shall be granted, unless the district engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.” 33 C.F.R. § 327.4(b).

As such, commenters hereby request a public hearing on the Line 3 application pursuant to 33 C.F.R. § 327.4(b). The Corps would violate CWA’s clear mandate to involve the public and allow public hearings if it approves a massive crude oil pipeline through Minnesota without ever holding a single public hearing during the federal approval process.

III. PROJECT BACKGROUND

Enbridge is proposing to replace and expand its existing Line 3 oil pipeline, which was built in 1962 and runs from the Canadian border to Superior, Wisconsin. Enbridge proposes replacement of approximately 282 miles of the existing 34-inch diameter Line 3 pipeline with approximately 340 miles of 36-inch diameter pipeline and associated facilities between the North Dakota/Minnesota border and the Minnesota/Wisconsin border (the “Project”). Replacement of the pipeline from 34 inches to 36 inches would allow Enbridge to expand Line 3 from its current operating capacity of approximately 390,000 barrels per day (“bpd”) to around 800,000 bpd and potentially to 915,000 bpd in the future.

Replacement of the line using Enbridge’s preferred route would follow the existing pipeline right-of-way from the Canadian border to Clearbrook, Minnesota, but would deviate from the existing route and create a new pipeline right-of-way from Clearbrook to Superior. Enbridge proposes to decommission and abandon-in-place the majority of the existing pipeline.

The Line 3 expansion would require the construction of associated facilities, including eight new pump stations (four adjacent to existing pump stations and four at new locations), electric transmission lines, access roads, and 37 mainline valves, as well as the expansion of the Clearbrook Terminal.

The Project will cross Kittson, Marshall, Pennington, Polk, Red Lake, Clearwater, Hubbard, Wadena, Cass, Crow Wing, Aitkin, and Carlton counties in Minnesota.

IV. NATIONAL ENVIRONMENTAL POLICY ACT

A. Legal Background

The National Environmental Policy Act (“NEPA”) is our “basic national charter” for environmental protection. 40 C.F.R. § 1500.1. Among the statute’s goals are to “insure that environmental information is available to public officials and citizens before decisions are made

and actions are taken,” and to “help public officials make decisions that are based on [an] understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.” *Id.* § 1500.1(b)–(c).

To achieve these objectives, NEPA requires all agencies of the federal government to prepare an EIS for all “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(2)(C). According to regulations promulgated by the Council on Environmental Quality (“CEQ”), an agency created by Congress to implement NEPA, the term “major Federal action” includes “actions with effects that may be major and which are potentially subject to Federal control and responsibility.” 40 C.F.R. § 1508.18.

Major federal actions include “new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies,” *id.* § 1508.18(a), and “[a]pproval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.” *Id.* § 1508.18(b)(4). “Major reinforces but does not have a meaning independent of significantly.” *Id.* § 1508.18.

The EIS must describe, among other things: (1) the environmental impact of the proposed action, and (2) any adverse environmental effects that cannot be avoided should the proposal be implemented. 42 U.S.C. § 4332(2)(C)(i), (ii). CEQ regulations require that a “lead agency” supervise the NEPA analysis. Lead agencies are selected according to the following factors, among others: (1) the magnitude of the agency’s involvement; (2) the agency’s project approval/disapproval authority; (3) the agency’s expertise concerning the action’s environmental effects; (4) the duration of the agency’s involvement; and (5) the sequence of the agency’s involvement. 40 C.F.R. § 1501.5(c).

To determine whether a proposed action significantly affects the environment, and whether an EIS is required, the lead federal agency may first prepare an environmental assessment (“EA”). *Id.* § 1508.9. An EA must provide sufficient evidence and analysis to determine whether to prepare an EIS. *Id.* The lead agency must take a ‘hard look’ at the relevant environmental concerns and alternatives to the proposed action. *Id.*

NEPA requires federal agencies to analyze a project and all of its connected, cumulative, and similar actions together in a single EA or EIS before the project is allowed to proceed. *Id.* § 1508.25(a). Connected actions include: “(ii) *Cannot or will not proceed unless other actions are taken previously or simultaneously*; or (iii) *Are interdependent parts of a larger action and depend on the larger action for their justification.*” *Id.* § 1508.25 (a)(1) (emphasis added).

If the agency concludes in an EA that a project may have significant impacts on the environment, then an EIS must be prepared. *Id.* § 1501.4. To determine whether a proposed action may significantly affect the environment, the agency must consider both the context and intensity of the proposed action, including whether the project will take place in “ecologically critical areas,” and whether the project will affect endangered species. *Id.* §§ 1508.27 (a), (b).

NEPA also mandates that the lead agency consider “the degree to which the action is related to other actions . . . with cumulatively significant impacts . . .” *Id.* § 1508.27(b)(7). NEPA defines “cumulative impact” to mean “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” *Id.* § 1508.7. A federal action will significantly affect the environment “if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” *Id.* § 1508.27(b)(7). NEPA requires that a reviewing agency consider in the same EIS any “connected” actions, including actions that are “interdependent parts of a larger action” and “depend on the larger action for their justification.” *Id.* § 1508.25(a)(1)(iii).

If an EA concludes that there are no potentially significant impacts to the environment, the federal agency must provide a detailed statement of reasons why the project’s impacts are insignificant and issue a finding of no significant impact (“FONSI”). *Id.* § 1508.13. If the agency issues an EA and FONSI, it must make a convincing case for a finding of no significant impact on the environment.

The CEQ regulations require a give and take between an agency and members of the public. *See id.* §§ 1500.1(b) (2010) (“public scrutiny [is] essential”), 1500.2(d) (2010) (the agency must “encourage and facilitate public involvement”), 1506.6 (2010) (the agency must “[m]ake diligent efforts to involve the public” in preparing environmental documents, give “public notice of . . . the availability of environmental documents so as to inform those persons . . . who may be interested or affected,” and “solicit appropriate information from the public.”). CEQ regulations require federal agencies to give the public as much information as is practicable, so that the public has a sufficient basis to address those areas that the agency must consider in preparing the environmental assessment. *Id.* § 1501.4 (2010).

B. The Corps Must Prepare an Environmental Impact Statement.

1. The Impacts of Line 3 Are Significant.

In determining whether to prepare an EIS as opposed to an EA, the Corps must consider a range of factors to determine whether the impacts would be “significant” enough to warrant a full EIS. *Id.* § 1508.27. NEPA regulations require consideration of two broad factors: “context and intensity.” *See id.*; 42 U.S.C. § 4332(2)(C). Context refers to the setting in which the proposed action takes place. 40 C.F.R. § 1508.27(a). Intensity means “the severity of the impact,” and involves examining ten factors:

- (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
- (2) The degree to which the proposed action affects public health or safety.
- (3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

- (4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.
- (5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- (6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- (7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- (8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
- (9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

See id. § 1508.27(b). The presence of “one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances.” *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846 (9th Cir. 2005).

As set forth in detail throughout these comments, many of those factors are met here, indicating the need for a full EIS. For example, Line 3 would affect public health and safety (*see infra* Section IV.F.); be constructed in the proximity of historic and cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas (*see infra* Section V.C.1); would adversely affect protected species and habitat (*see infra id.*); and is related to other project that would together have significant cumulative effects (*see infra* Section IV.E.). Of the 340 miles of linear project, 78.3 miles is through wetlands, 13 miles are within the Fond du Lac Reservation, and essentially all of the proposed route is through lands in which Anishinaabe Tribes hold treaty-protected usufructuary rights. The impacts of Line 3 are also highly controversial, uncertain, and involve unique and unknown risks, as demonstrated by the voluminous evidence presented by environmental organizations, tribes, and state agencies in proceedings before the Minnesota Public Utilities Commission (“MN PUC”) proceedings demonstrating, *inter alia*, the potential for the Project to cause significant greenhouse gas emissions, pollute Minnesota’s waterways, and destroy historic and culturally significant resources of tribal nations. The evidence, some of which is attached to these comments, further shows a lack of demand for the Line 3 replacement and the existence of less environmentally damaging alternatives.

In fact, the Corps’ own NEPA regulations indicate that “[f]easibility reports for authorization and construction of major projects” are “[a]ctions normally requiring an EIS.” 33 C.F.R. § 230.6. *See also Stop the Pipeline v. White*, 233 F. Supp. 2d 957, 961–63 (S.D. Ohio 2002) (The Corps prepared an EIS for a 149-mile oil pipeline). Simply put, Line 3 is a massive

pipeline project with the potential to cause significant impacts to the environment, and thus it warrants the preparation of an EIS.

2. The Corps Cannot Adopt the State-Level EIS Prepared by the Minnesota Department of Commerce.

During the pendency of the review process, the only existing EIS is one that was prepared by the Minnesota Department of Commerce (“MN DOC”). However, NEPA regulations do not allow the federal agencies to use this EIS to satisfy their NEPA obligations; and regardless, that EIS fails to comply with NEPA in numerous respects.

Where projects fall under both federal and state jurisdiction, NEPA’s implementing regulations require federal and state agencies to cooperate to the “fullest extent possible” to reduce duplication between NEPA and State and local requirements. 40 CFR § 1506.2(b). Specifically, the regulations require that “such cooperation *shall* to the fullest extent possible include: (1) [j]oint planning processes; (2) [j]oint environmental research and studies; (3) [j]oint public hearings (except where otherwise provided by statute); (4) [j]oint environmental assessments,” and “joint environmental impact statements.” *Id.* §§ 1506.2(b)–(c) (emphasis added). The regulations further require the federal and state agencies to act as “joint lead agencies” and ensure compliance with NEPA as well as state environmental review laws. *Id.* § 1506.2(c).

None of those things occurred here. Instead, MN DOC prepared an EIS for the Line 3 expansion (hereafter, “MN EIS”)¹ without any involvement by or input from the Corps or any other federal agencies.

While the Corps and other agencies may wish to simply adopt the MN EIS, NEPA does not allow federal agencies to adopt EISs prepared by state agencies. NEPA regulations do allow federal agencies to “adopt a *Federal* draft or final environmental impact statement or portion thereof provided that the statement or portion thereof meets the standards for an adequate statement under these regulations.” *Id.* § 1506.3 (emphasis added). However, there is no provision that allows a federal agency to adopt a state EIS or portion thereof.

Even if the Corps could legally adopt or use an EIS prepared by a state agency, the Corps cannot do so here because the MN EIS falls far short of fulfilling the requirements of NEPA. As set forth in detail throughout these comments, the MN EIS fails to adequately analyze many of the potential impacts of, and alternatives to, the Line 3 replacement project.

Some of the NEPA deficiencies of the MN EIS include, but are not limited to: it fails to consider reasonable alternatives, such as alternative routes that would cause less damage to aquatic ecosystems, conducting a “same-trench” replacement along the entire line, or upgrading other Enbridge pipelines to achieve the desired capacity increase; fails to include an analysis of construction methods at the crossing-by-crossing level; fails to evaluate the climate impacts of

¹ See Minn. Dep’t of Commerce Final Environmental Impact Statement Text – Revised (Feb. 12, 2018), <https://mn.gov/eera/web/file-list/3196/>.

construction and operation of Line 3; fails to consider reasonably foreseeable cumulative effects such as an eventual upgrade of Line 3 to 915,000 bpd or other future pipelines that may be built in the same right-of-way or “downstream” of Line 3; and fails to evaluate worst case oil spill discharges at specific places along or near the pipeline route. *See* Br. and Addendum of Relator Honor the Earth, Mille Lacs Band of Ojibwe et al. v. Minn. Pub. Utils. Comm’n, Nos. A18-1283, A18-1291, A18-1292 (Nov. 12, 2018) (“HTE Br”) (attached as Ex. B); Opening Br. and Addendum of Relator Friends of the Headwaters, Mille Lacs Band of Ojibwe et al. v. Minn. Pub. Utils. Comm’n, Nos. A18-1283, A18-1291, A18-1292 (Nov. 12, 2018) (attached as Ex. C); Br. of Relators Mille Lacs Band of Ojibwe, Red Lake Band of Chippewa Indians, and White Earth Band of Ojibwe, Mille Lacs Band of Ojibwe et al. v. Minn. Pub. Utils. Comm’n, Nos. A18-1283, A18-1291, A18-1292 (Nov. 12, 2018) (attached as Ex. D).

C. Purpose and Need

NEPA requires federal agencies to prepare an EIS discussing, among other things, the environmental impact of a proposed action and alternatives to the proposed action. 42 U.S.C. § 4332(2)(C). Implementing regulations also require the agency to state the underlying purpose and need for the proposed action. 40 C.F.R. § 1502.13; *Nat’l Parks & Conservation Ass’n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1069 (9th Cir. 2010).

Because the statement of purpose and need is closely related to the discussion of alternatives, “an agency cannot define its objectives in unreasonably narrow terms.” *City of Carmel–By–The–Sea v. U.S. Dep’t. of Transp.*, 123 F.3d 1142, 1155 (9th Cir.1997). “An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency’s power would accomplish the goals of the agency’s action, and the EIS would become a foreordained formality.” *Friends of Se.’s Future v. Morrison*, 153 F.3d 1059, 1066 (9th Cir. 1998) (quoting *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C.Cir.1991), *cert. denied*, 502 U.S. 994, 112 S.Ct. 616, 116 L.Ed.2d 638 (1991)).

An agency must vigorously explore the no action alternative. The no action alternative “provide[s] a baseline against which the action alternative . . . is evaluated.” *Ctr. for Biological Diversity v. U.S. Dep’t of the Interior*, 623 F.3d 633, 642 (9th Cir. 2010). It is therefore “meaningless if it assumes the existence of the very plan being proposed.” *Pac. Coast Fed’n of Fishermen’s Ass’ns v. U.S. Dep’t of the Interior*, 655 F. App’x 595, 598 (9th Cir. 2016) (internal quotation marks omitted). An agency violates NEPA “where it considers ‘essentially identical’ alternatives.” *W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *7 (D. Mont. Mar. 26, 2018) (citing *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1039 (9th Cir. 2008)).

According to the Corps’ Public Notice, Enbridge states Line 3 is needed “to improve public safety and protection of the environment by replacing the existing Line 3, an aging pipeline operating at reduced capacity with a large number of identified pipe defects and anomalies, with a new pipeline constructed with the latest construction practices, technology and materials.” Public Notice at 5. While improving public safety and protection of the environment may certainly be valid purposes, the Corps cannot accept Enbridge’s proposition that replacement of Line 3 with a new pipeline is the only way to achieve that goal. Similarly, the

Public Notice states that the Line 3 project “would enable Enbridge to better meet the demand for crude oil by allowing Enbridge to more reliably and efficiently transport an economical and secure supply of crude oil by restoring the capacity of the pipeline to its historic operating capacity of 760,000 bpd.” *Id.* Again, if the purpose of the project is to meet a projected future level of demand for crude oil, the Corps must independently verify Enbridge’s demand projections (*see infra* section V.E.) and evaluate alternatives that would allow it to meet that demand.

D. The Corps Must Evaluate all Connected Actions.

1. Connected Action Law

The Corps and other agencies must evaluate all components of the Line 3 expansion project in a single EIS because all parts of this pipeline, including the parts that cross federal jurisdiction and/or control, are connected actions because none would have independent utility.

As stated above, NEPA requires federal agencies to analyze a project and all of its connected, cumulative, and similar actions together in a single EIS before the project is allowed to proceed. 40 C.F.R. § 1508.25(a). Connected actions are defined as actions that: “(ii) *Cannot or will not proceed unless other actions are taken previously or simultaneously*; or (iii) *Are interdependent parts of a larger action and depend on the larger action for their justification.*” *Id.* § 1508.25 (a)(1) (emphasis added).

“The justification for the rule against segmentation is obvious: it ‘prevent[s] agencies from dividing one project into multiple individual actions each of which individually has an insignificant environmental impact, but which collectively have a substantial impact.’” *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1314 (D.C. Cir. 2014) (quoting *NRDC v. Hodel*, 865 F.2d 288, 297 (D.C. Cir. 1988)); *see also Taxpayers Watchdog, Inc. v. Stanley*, 819 F.2d 294, 298–99 (D.C. Cir. 1987) (the segmentation doctrine “was developed to insure that interrelated projects the overall effect of which is environmentally significant, not be fractionalized into smaller, less significant actions.”).

Courts have allowed individual components of pipelines and other linear projects to be analyzed in a separate NEPA document only if they would have “independent utility.” *Hammond v. Norton*, 370 F. Supp. 2d 226, 244 (D.D.C. 2005) (applying the independent utility test and holding that an entire 480-mile oil pipeline must be analyzed in a single NEPA document); *Coal. on Sensible Transp., Inc. v. Dole*, 826 F.2d 60, 69 (D.C. Cir. 1987) (applying the independent utility test to a highway project). In *Delaware Riverkeeper v. FERC*, the court held that the Federal Energy Regulatory Commission’s (“FERC”) EA for a 40-mile natural gas pipeline project called the Northeast Project, violated NEPA by failing to include all connected actions pursuant to 40 C.F.R. § 1508.25(a). 753 F.3d 1304. The court found that the Northeast Project was actually one of four “physically, functionally, and financially connected and interdependent” components that resulted in a complete overhaul of a 200-mile pipeline, and that FERC had improperly segmented its NEPA analysis. *Id.* at 1308.

2. Line 3 Includes Numerous Connected Federal Actions.

The following subsections summarize some of the major federal actions being taken to approve the Line 3 Pipeline that must be analyzed together in a single EIS as required by NEPA.²

a. Army Corps' Clean Water Act Section 404 Permit

The Corps' issuance of a dredge and fill permit for the Enbridge Line 3 pipeline pursuant to Section 404 of the Clean Water Act is a major federal action that requires compliance with NEPA. *See, e.g., Stop The Pipeline v. White*, 233 F. Supp. 2d 957 (S.D. Ohio 2002) (the Corps prepared EIS for individual 404 permit for an 149-mile petroleum pipeline); *Hammond v. Kempthorne*, 448 F. Supp. 2d 114 (D.D.C. 2006) (BLM prepared EIS for the Williams oil pipeline project); *Spiller v. Walker*, No. A-98-CA-255-SS, 2002 WL 1609722 (W.D. Tex. July 19, 2002), *aff'd sub nom. Spiller v. White*, 352 F.3d 235 (5th Cir. 2003) (Corps' permitting of an oil pipeline was a major federal action); *Wilderness Soc'y v. Morton*, 479 F.2d 842 (D.C. Cir. 1973) (DOI prepared EIS for trans-Alaska oil pipeline requiring rights-of-way and special land use permits over federal land). The requirements for a permit under Section 404 are discussed in greater detail below in Section V.

b. Army Corps' Section 408 Permit

Section 14 of the Rivers and Harbors Act allows the Corps to “grant permission for the alteration or permanent occupation or use of any of the aforementioned public works when *in the judgment of the Secretary such occupation or use will not be injurious to the public interest and will not impair the usefulness of such work.*” 33 U.S.C. § 408(a) (emphasis added). This permission is commonly referred to as a “Section 408 Permit.” Enbridge's September 2018 application submitted to the Corps notes that the Line 3 project requires a Section 408 Permit due to the pipeline's proposed crossing of the Lost River in Minnesota.³

As the Corps has acknowledged with respect to Section 408 permit for other projects, a “decision on a Section 408 request is a federal action, and therefore subject to [NEPA] and other environmental compliance requirements.”⁴ The Corps guidance document for Section 408 (the

² NEPA defines “major federal actions” subject to NEPA as: “actions ... which are potentially subject to Federal control and responsibility,” including “projects ... entirely or partly ... regulated, or approved by federal agencies” and the “approval of specific projects ... by permit or other regulatory decision. . . .” 40 C.F.R. § 1508.18.

³ Enbridge Energy, Supplemental Information for an Application for U.S. Army Corps of Engineers Permit, 36 (Sept. 2018), <https://www.pca.state.mn.us/sites/default/files/wq-wwprm1-52g.pdf> (“App.”).

⁴ U.S. Army Corps of Engineers, Des Moines Market and 1st Stormwater Pump Station Improvements (Public Notice ID #2017-968) at 2 (June 16, 2018), <http://www.mvr.usace.army.mil/Portals/48/Users/050/86/1586/2017-968%20Sec%20408%20PN%20non-CATEX%20Des%20Moines%201st%20Market%20pump%20station.pdf?ver=2018-06-01-092555-340>; *see also* 82 Fed. Reg. 5543 (Jan. 18, 2018) (discussing NEPA review for section 408 permit for the Dakota Access pipeline).

“Guidance”) discusses the Corps’ NEPA obligations in issuing a Section 408 Permit.⁵ The Guidance makes clear that the Corps’ “decision on a Section 408 request is a federal action subject to NEPA and other federal environmental and cultural resources compliance requirements, such as Section 7 of the Endangered Species Act (ESA), Section 106 of the NHPA, essential fish habitat (EFH) consultation, tribal consultation, etc.”⁶

To date, the Corps has not issued any public notices or indicated that it has conducted any NEPA review for the Section 408 Permit for Line 3. The Corps must prepare an EIS for the Section 408 determination in conjunction with all connected and cumulative actions pursuant to NEPA regulations. 40 C.F.R. § 1508.25. The EIS must also evaluate all direct, indirect, and cumulative impacts of the project. Those impacts include, but are not limited to, climate change impacts, risk and impacts of oil spills, impacts to waterways, wildlife, and forested areas along the pipeline route. A careful consideration of these impacts will demonstrate that the Line 3 Pipeline will be injurious to the public interest, and the Section 408 permit should be rejected.

c. Bureau of Indian Affairs Right-of-Way

The Bureau of Indian Affairs (“BIA”) must issue a right-of-way and/or special use permit for Line 3 to cross approximately 13 miles of the reservation of the Fond du Lac Band of Lake Superior Chippewa pursuant to 25 U.S.C. § 321 and § 323.

BIA is authorized by 25 U.S.C. § 321 to “grant a right-of-way in the nature of an easement” for oil and gas pipelines to cross through any Indian reservation or other lands allotted to Indian tribes. Similarly, 25 U.S.C. § 323 more broadly empowers the Secretary of the Interior to grant rights-of-way “over and across any lands now or hereafter held in trust by the United States for individual Indians or Indian tribes, communities, bands, or nations....” Title 25, Part 169 of the Code of Federal Regulations outlines the procedures and conditions under which BIA would consider a request to approve right-of-ways over and across tribal lands pursuant to its broad authority under 25 U.S.C. §§ 323–328.

As indicated in Enbridge’s application, BIA’s issuance of a right-of-way to cross the Fond-du-Lac reservation is a major federal action triggering NEPA. *See App.* at 27; *see also All Indian Pueblo Council v. United States*, 975 F.2d 1437, 1440 (10th Cir. 1992) (BIA prepared an EIS for an electric transmission line that would cross an Indian reservation); 25 C.F.R. § 169.123 (b)(acknowledging requirement to comply with NEPA). Nonetheless, Enbridge’s application to the Corps is utterly devoid of any information describing the potential impacts of the Project’s proposed crossing of the reservation.

⁵ Corps, EC 1165-2-220, Policy and Procedural Guidance for Processing Requests to Alter U.S. Army Corps of Engineers Civil Works Projects Pursuant to 33 U.S.C. 408 (Sept. 10, 2018), https://www.publications.usace.army.mil/Portals/76/Publications/EngineerCirculars/EC_1165-2-220.pdf?ver=2018-09-07-115729-890.

⁶ *Id.* at 18.

3. The Corps Must Select a Lead Agency.

If one or more federal agencies are “involved in the same action” or are “involved in a group of actions directly related to each other because of their functional interdependence or geographical proximity,” a lead agency “*shall* supervise the preparation of an environmental impact statement.” 40 C.F.R. § 1501.5(a)(emphasis added). “[T]he potential lead agencies *shall* determine by letter or memorandum which agency shall be the lead agency and which shall be cooperating agencies.” *Id.* § 1501.5(b)(emphasis added). There are clearly multiple agencies involved with the approval of Line 3. Thus, the Corps and other agencies must select an agency to act as lead agency in the preparation of an EIS that covers all federal actions.

4. The Corps Must Evaluate Associated Facilities.

The application describes some of the associated facilities necessary for the Line 3 project to proceed. *See App.* at 7. Those include, but are not limited to: a significant expansion of the Clearbrook Terminal; eight new pump stations (four that would replace existing pump stations located in Donaldson, Viking, Plummer, and Clearbrook, and four entirely new pump stations located in Two Inlets, Backus, Swatara, and North Gowan); electric transmission lines to power the pump stations; and at least thirty-seven valves that each require a permanent access road. *Id.* at 7–8.

Because none of these associated facilities would have independent utility in absence of the overall Line 3 project, they are connected actions pursuant to 40 C.F.R. § 1508.25(a) that must be evaluated in a single EIS. However, the application suggests that at least some of these associated facilities would undergo a separate CWA/NEPA review.

For example, the application states that for the four new pump stations south of Clearbrook, “The transmission company or companies will submit a separate application(s) to the USACE St. Paul District for discharge of dredged or fill material in navigable waters or jurisdictional wetlands.” *Id.* at 7–8. None of the transmission lines or other associated facilities can be segmented from the overall NEPA review of Line 3 because they are all connected actions, and must be included in a single EIS.

The MN EIS provides some general information about the other associated facilities, but fails to contain enough specifics to compare the impacts of alternatives. Enbridge has identified the general location of the existing and proposed pump stations and valves.⁷ The EIS includes a general discussion of associated facilities, including pump stations, valves and access roads.⁸

However, Enbridge has not identified the location and level of impact of all associated facilities for each alternative. In fact, the MN EIS acknowledges:

⁷ *See, e.g.*, MN EIS at 2-2.

⁸ *See id.* § 2.3.2.

Temporary and permanent access roads, pump stations, and valve sites have not been determined for the route alternatives; therefore, the additional affected acreage from these footprints cannot be quantified.⁹

Without this information, the Corps can neither discharge its obligations to analyze the alternatives to the proposed Line 3 project (including all connected associated facilities), nor can it determine whether the proposed alternative (including all connected associated facilities) is the least damaging practicable alternative. *See infra* section V.B.

Similarly, the MN EIS provides only general information about the level of impacts of associated facilities, but acknowledges that the specifics remain unknown. For example:

A total of 36 acres would be temporarily disturbed during construction of the new pump stations, and 29 acres would be permanently converted (Table 2.3-2).¹⁰

Enbridge is proposing to install 27 [Mainline Valves (“MLVs”)]. As a result of the action of permitting agencies with jurisdiction, including [Pipeline and Hazardous Materials Safety Administration (“PHMSA”)], however, the final number and location of MLVs may be modified.¹¹

Enbridge proposes to construct or improve permanent roads along the permanent right-of-way to access the pump stations. Enbridge also proposes to construct permanent roads along the permanent right-of-way to access the MLVs in accordance with the request of the Minnesota Public Utilities Commission. The amount of land required would range from 0.1 to 0.5 acre, with the average being closer to 0.1.¹²

Construction of the proposed Line 3 pipeline would require that land be temporarily used for pipe and materials storage, construction staging, and offloading rail deliveries of construction materials. These pipe and material storage yards, contractor yards, and rail sidings would be located apart from the pipeline right-of-way.¹³

Enbridge has proposed a preliminary list of 288 access roads distributed throughout the counties in the Project (Appendix D). At some points along the pipeline route, final construction planning and Project permitting could require additional or different access roads. Enbridge estimates that roads used to access the construction work area along the pipeline route would temporarily disturb approximately 271 acres, based on a standard 30-foot-wide road. Of the proposed 288 access roads, 75 would be existing roads, 172 would be new roads, and 41 would be a combination of new and existing roads.

⁹ *Id.* at 6-707.

¹⁰ *Id.* at 2-10.

¹¹ *Id.*

¹² *Id.* at 2-12.

¹³ *Id.*

A final list of roads proposed to access the construction work area and the degree to which the roads would need improvement will not be available until the final planning and engineering phase of the Project.

Temporary access roads will also use appropriate stormwater erosion prevention and sediment control BMPs per Minnesota [Pollution Control Agency]'s [National Pollutant Discharge Elimination System] General [Construction Stormwater] Permit.¹⁴

This level of uncertainty regarding the location and impacts of associated facilities is inadequate for the Corps to evaluate the impacts of Line 3 compared with alternatives. The MN EIS provides a table describing thousands of acres of land use types to be impacted by associated facilities, but provides no information about where these impacts would occur or how these amounts compare to any of the considered alternatives.¹⁵

5. The Corps Must Evaluate the Impacts of the Sections of Line 3 Outside of Minnesota.

Similarly, the application appears to be limited only to the section of the Line 3 project in Minnesota, but excludes the sections located in Wisconsin, North Dakota, and Canada. All sections of this project are connected actions that must be evaluated in single EIS pursuant to 40 C.F.R. § 1508.25(a).

The Application notes that only the Minnesota section of the pipeline is included in this application. App. at 2. However, it acknowledges that the project also requires the replacement of a portion of the pipeline in North Dakota between the Red River Valve and the North Dakota/Minnesota border as well as a significant length of pipeline in Canada; and 27.3 miles of pipeline that has already been replaced in North Dakota, 13 miles of pipeline that have already been replaced in Wisconsin, and 14.2 miles that have already been replaced in Canada.

All of these sections are part of the overall Line 3 replacement project, the goal of which Enbridge has claimed cannot be achieved by incremental or piecemeal replacement. The sections in Wisconsin, North Dakota, and Canada would not have independent utility and would not be able to function or meet its purpose independent of the total Line 3 project. Thus, they are connected actions that must be evaluated in a single EIS.¹⁶

E. The Corps Must Evaluate Cumulative Actions and Cumulative Effects.

In addition to “connected actions” discussed above, the scope of a NEPA analysis must also include cumulative actions, “which when viewed with other proposed actions have

¹⁴ *Id.* at 2-12 to 2-13.

¹⁵ *Id.* at 6-15.

¹⁶ The fact that some sections are already built does not excuse them from inclusion in the EIS. At the very least, they constitute past, present, and/or reasonably foreseeable “cumulative actions” that must be included pursuant to 40 C.F.R. § 1508.25(a)(2) and 40 CFR § 1508.7. *See also infra* Section IV.E.

cumulatively significant impacts and should therefore be discussed in the same impact statement.” 40 C.F.R. § 1508.25(a)(2).

Similarly, NEPA requires an evaluation of cumulative effects, which are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” *Id.* § 1508.7. Thus, the obligation to consider cumulative effects is not limited to actions taken by a particular agency, nor actions that are “major federal actions” triggering NEPA. An agency is required by 40 C.F.R. § 1508.7 to consider the cumulative effects of actions taken by other agencies, and in fact other actions not subject to NEPA at all. *See Grand Canyon Trust v. FAA*, 290 F.3d 339, 345 (D.C. Cir. 2002) (the FAA’s EA for an airport expansion had to analyze the cumulative increase in air traffic from other sources in the area).

Courts have articulated that “a meaningful cumulative impact analysis must identify (1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions—past, present, and proposed, and reasonably foreseeable—that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.” *Del. Riverkeeper Network*, 753 F.3d at 1319 (quoting *Grand Canyon Trust*, 290 F.3d at 345).

In *Delaware Riverkeeper*, after determining that the various section of the pipeline project were connected actions, the court found that FERC was required to analyze all of the pipeline sections together as cumulative actions. The court discussed the requirements of 40 C.F.R. § 1508.7 and held:

It is apparent that FERC did not draft these pages with any serious consideration of the cumulative effects of the other project upgrades on the Eastern Leg of the 300 Line. In light of the close connection between the various sections of the line that have been upgraded with new pipe and other infrastructure improvements, FERC was obliged to assess cumulative impacts by analyzing the Northeast Project in conjunction with the other three projects.

Id. at 1320.

All sections of the pipeline requiring federal approval must be analyzed together in a single EIS as cumulative actions pursuant to 40 C.F.R. § 1508.25(a)(2); and/or as projects that would have cumulative impacts pursuant to 40 C.F.R. § 1508.7. In addition, all of the non-federal components of the Line 3 Pipeline—that is, the sections that fall outside of federal jurisdiction—must also be analyzed in a single EA or EIS pursuant to 40 C.F.R. § 1508.25(a)(2) and § 1508.7.

Furthermore, the Line 3 EIS must include other infrastructure projects within the project area that may result in cumulative effects to waterways, such as projects that may result in forested wetland conversion or otherwise impact wetlands in the same watershed. The EIS

should also evaluate other reasonably foreseeable projects or project expansions that could proceed after Line 3, including but not limited to: other pipelines being constructed in, or moved to, the new right of way / corridor that the Line 3 pipeline would create; the eventual expansion of the Line 3 project to 915,000 bpd; and reasonably foreseeable “downstream” pipelines designed (e.g., Line 61 or Line 66) to transport the expanded capacity of Line 3 from Superior, Wisconsin to Illinois or other refinery markets.

F. The Corps Must Evaluate Oil Spills.

The Corps’ obligation under NEPA to analyze oil spills in conjunction with its issuance of § 404 permits is well-recognized. In *Stop the Pipeline v. White*, the Corps was required to analyze oil spills in issuing a Section 404 permit for an oil pipeline. 233 F. Supp. 2d at 967. In *Sierra Club v. Sigler*, the court struck down a Corps EIS for a dredging project that would allow increased oil tanker access in a port because its oil spill analysis did not analyze the “worst case” scenario of an oil tanker spill. 695 F.2d 957, 968–75 (5th Cir. 1983). Similarly, *Ocean Advocates* held that the Corps was required to analyze risks of tanker oil spills before issuing a Section 404 permit for a dock extension, because “a ‘reasonably close causal relationship’ exists between the Corps’ issuance of the permit, the environmental effect of increased vessel traffic, and the attendant increased risk of oil spills” 402 F.3d at 868 (quoting *Public Citizen*, 541 U.S. at 767).

Indeed, courts routinely require the Corps to consider the direct, indirect, and cumulative effects—including non-aquatic effects—of the *installations* the Corps’ dredge and fill permits authorize. For example, in *Hillsdale Environmental Loss Prevention, Inc. v. U.S. Army Corps of Engineers*, the court considered the validity of the Corps’ NEPA analysis when issuing a Section 404 dredge and fill permit for the construction of an intermodal rail/truck terminal. 702 F.3d 1156, 1162–63 (10th Cir. 2012). In its NEPA analysis, the Corps “considered both [the] direct and reasonably foreseeable indirect impacts to land use, air quality, noise, traffic, water quality, threatened and endangered species, and cultural resources” from the operation of the intermodal terminal. *Id.* at 1164. The court made clear that NEPA requires the Corps to look beyond the effects occurring directly within its jurisdictional waters.

1. The Impacts of Dilbit Spills Can Be Substantial.

One of the greatest risks of Line 3 is that Enbridge will spill millions of gallons of heavy diluted bitumen (dilbit) and then fail to respond quickly and thoroughly, as it did in Kalamazoo, Michigan. Enbridge’s own troubling history, along with an inadequate regulatory structure, the extreme risks of transporting nearly impossible to clean-up diluted bitumen, and the oil industry’s history of major spill disasters all point to the serious risk this project presents.

The transportation of diluted bitumen presents higher risks to communities, wildlife and natural resources than conventional crude. These risks, particularly the risks and impacts after a release of dilbit, differ substantially from conventional crude oil. Unlike conventional crude, tar sands oil is derived from sand that is impregnated with viscous, extra-heavy oil known as

bitumen.¹⁷ Bitumen is the valuable component of tar sands because it can be refined into liquid fuels.¹⁸ In many ways, bitumen is as akin to coal as it is oil, a solid mass that cannot be pumped out of the ground under normal conditions.¹⁹ For years, it was considered a junk fuel: too expensive, too dirty, and too impractical to develop.²⁰

Because it is so viscous and heavy, tar sands oil must be diluted with lighter hydrocarbons before it can be pumped through a pipeline (this is the derivation of term diluted bitumen).²¹ In contrast, conventional crude is a liquid fuel source that flows readily. As Nancy Kinner, a civil and environmental engineering professor at the University of New Hampshire and co-director of the Coastal Response and Research Center who researches submerged oil has stated: “[O]ne would not consider tar sands typical crude oil...It’s not considered crude oil by most people who deal with oil and oil spills.”²²

Most troublingly, the impacts of spills can be much greater than conventional crude, and effective clean-up methods simply do not yet exist, and may never exist.

Bitumen has a propensity to sink in water, attach itself to the bottom of waterbodies, and persist in the affected environment, polluting impacted areas indefinitely. For example, the State Department’s Final Supplemental EIS for the Keystone XL pipeline (“Keystone XL FSEIS”) notes that:

A notable difference between dilbit and other forms of crude is its capacity to precipitate out in water. After a period of several days in water, the diluent in dilbit will eventually volatilize into air or dissolve into water, leaving the heavy bitumen behind to sink or become suspended. This could occur with dilbit more so than with other forms of crude due to the higher percentage of heavy compounds present.²³

The State Department further acknowledges that unlike conventional crude, dilbit will not readily biodegrade, concluding that:

¹⁷ Alberta Energy, *What is Oil Sands?*, <https://www.energy.alberta.ca/OS/AOS/Pages/WOS.aspx>.

¹⁸ Cong. Research Serv., R42611, *Oil Sands and the Keystone XL Pipeline: Background and Selected Environmental Issues 3* (Apr. 14, 2014), <http://www.fas.org/sgp/crs/misc/R42611.pdf>.

¹⁹ The Pembina Inst., *Oilsands, Heavy Crudes, and the EU Fuel-Quality Directive 2* (Mar. 2012), <http://www.pembina.org/pub/2325>.

²⁰ Robert Kunzig, *Scraping Bottom*, *Nat’l Geographic Mag.* (Mar. 2009), <https://www.nationalgeographic.com/magazine/2009/03/canadian-oil-sands/>.

²¹ Cong. Research Serv., R42611 at 3.

²² Lisa Song, *A Dilbit Primer: How It’s Different from Conventional Oil*, *InsideClimate News*, (June 26, 2012), <http://insideclimatenews.org/news/20120626/dilbit-primer-diluted-bitumen-conventional-oil-tar-sands-Alberta-Kalamazoo-Keystone-XL-Enbridge>.

²³ Keystone XL FSEIS at 3.13-10 (2014), <https://keystonepipeline-xl.state.gov/finaiseis/>.

Dilbit...is largely comprised of branched hydrocarbon chains and heavy hydrocarbons, which are less readily biodegradable [than conventional crude]. A biodegradation study conducted by the USEPA in response to the 2010 Enbridge dilbit spill in the Kalamazoo River in Michigan concluded that only 25 percent of the residual hydrocarbons impacting the river could be reasonably removed by natural attenuation (USEPA 2013).²⁴

The Keystone XL FSEIS further finds that, “Due to the capacity for dilbit to precipitate out in water and its resistance to biodegradation, in the event of a release to a waterbody, more difficult cleanup scenarios (e.g., dredging) for dilbit may be expected than with other types of crude oil”²⁵ and that this sinking bitumen could be “a continual source of oil.”²⁶

The State Department elaborates on the clean-up concerns regarding dilbit. The FSEIS concludes that, “The release of dilbit to a river or other aquatic environment introduces the potential for additional impacts and additional recovery challenges for responders of such an event to the environment.”²⁷ The FSEIS then describes the challenges presented by dilbit and the fact that how to handle these challenges is not fully understood:

As with some other types of oil, dilbit would not float on water indefinitely. The dilbit-specific characteristics, water temperature, and particulate load in the water could result in oil being submerged in the water column. Submerged oil could be suspended in the water column, suspended just above the river bed, or intermixed with sediment and trapped in the river bed and shoreline. In flowing waters, the spreading of the oil in three dimensions creates many challenges for responders to minimize the impacts of the release. Consideration of submerged oil in a flowing water environment would require to a certain extent different response action planning and response equipment to contain and recover the submerged oil. *Dilbit intermixed with sediment and trapped in the river bed and shoreline results in a persistent source of oil and has the potential to present additional response and recovery challenges. The understanding and adaptation of response and recovery techniques to dilbit spills in flowing water scenarios continues along the Kalamazoo River in response to the 2010 Enbridge release near Marshall, Michigan.*²⁸

The persistence of long-term pollution from a spill is explicitly realized by the State Department:

Dilbit intermixed with sediment could persist for years. A biodegradation study conducted by the USEPA in response to the 2010 Enbridge dilbit spill in the Kalamazoo River in Michigan concluded that only 25 percent of the residual

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.* at 3.13-3.

²⁷ *Id.* at 4.13-84.

²⁸ *Id.* at 4.13-88 (emphasis added).

hydrocarbons impacting the river could be reasonably removed by natural attenuation (USEPA 2013).²⁹

Both the immediate and long-term implications of a spill can be catastrophic. The State Department itself outlines the immense impacts to health from a tar sands spill and its long-term persistence in the environment. They include:

- Benzene toxicity, which is a known carcinogen and long-term exposure which can adversely affect bone marrow and cause anemia, leukemia, and possibly death.
- Long-term exposure to toluene, which may affect the nervous system or kidneys.
- Long-term exposure to ethylbenzene, which has been observed in animal studies to cause damage to the kidneys, inner ear, and hearing.
- Long-term exposure to xylene, which may cause impaired reaction time, impaired concentration and memory, and changes in the liver and kidneys.
- Long-term exposure to [hydrogen sulfide (“H₂S”)], which may cause permanent or long-term effects including headaches, impaired attention span, impaired memory, or impaired motor function.
- Symptoms of long-term exposure to [polycyclic aromatic hydrocarbons (“PAHs”)], which may include chronic bronchitis, chronic cough irritation, bronchogenic cancer, and dermatitis.³⁰

The National Academies of Science, Engineering, and Medicine were in turn asked by DOT to conduct a study to help answer this question. Their resulting study, unequivocally concludes, “it is clear that the differences in the chemical and physical properties relevant to environmental impact warrant modifications to the regulations governing diluted bitumen spill response plans, preparedness, and cleanup.”³¹

The study shows that tar sands diluted bitumen has a series of properties that differentiate it from historically transported crude oil and that, taken together, those properties mean that tar sands spills pose higher risks to people and the environment. The study also found that U.S. “regulations and agency practices do not take the unique properties of diluted bitumen into account, nor do they encourage effective planning for spills of diluted bitumen.”³² In addition to identifying deficiencies in the current regulatory structure, the study outlines seven recommendations to develop “a more comprehensive and focused approach to diluted bitumen across the oil industry and the relevant federal agencies.”³³

²⁹ *Id.* at 4.13-112 (emphasis added).

³⁰ *Id.* at 3.13-30.

³¹ Nat’l Acads. of Scis., Eng’g, & Med., *Spills of Diluted Bitumen from Pipelines: A Comparative Study of Environmental Fate, Effects, and Response* 4 (2016), <http://www.nap.edu/catalog/21834/spills-of-diluted-bitumen-from-pipelines-a-comparative-study-of>.

³² *Id.*

³³ *Id.* at 6-8.

The attached testimony of Richard Kuprewicz further discusses the unique properties of dilbit which cause greater impacts in the case of a spill and pose challenges to responders:

It is important to recognize that a dilbit spill can do extensive damage and irremediable harm and requires more expensive and significantly different oil spill response than conventional oil spills. The spill location and its impact on the specific environment where it might occur places greater importance on dilbit pipeline routing decisions when compared to conventional oil pipeline routing and design. Despite industry attempts to characterize dilbit as heavy oil, upon release dilbit will not act like conventional heavy oil that floats on water.

Direct Testimony of Richard Kuprewicz at 2 (Sept. 11, 2017) (“Kuprewicz test”) (attached as Ex. E).

Given the severe impacts that are already known or suspected, it is simply irresponsible to subject people, wildlife and communities to the risks of a major bitumen release where proper clean-up methods have not, and may not ever be, developed, and where the likelihood of long-term toxic persistence is high because bitumen does not readily break down over time.

2. The Kalamazoo River Spill and Disaster in Mayflower, Arkansas Demonstrate the Extreme Consequences of a Tar Sands Spill.

The substantial and unacceptable risks of tar sands oil on the environment are have tragically been illustrated by two recent spills: the Kalamazoo River spill and the tar sands spill in Mayflower, Arkansas.³⁴ The July 2010 Kalamazoo River spill especially illustrates the immense and long-term damage that tar sands can do. It also serves a poster child for the complete inadequacy of current regulations and of relying on the company responsible for the disaster to prevent and respond to it.

On July 26, 2010, Enbridge reported that its 30-inch diameter 6B Pipeline had ruptured and released an estimated 840,000 gallons of crude oil (approximately 94 semi tanker trucks)³⁵ of diluted bitumen in a rural area about one mile south of Marshall, Michigan.³⁶ Investigation showed that the oil flowed into a culvert, which led to Talmadge Creek, then followed the creek to the Kalamazoo River, ultimately contaminating about 30 to 35 miles of the River before it was contained. After the spill, the River flooded and stranded oil on floodplains, wetlands, backwaters, and islands. The spill threatened to flow all the way to Lake Michigan, which would have fouled many more miles of river, as well as the lake’s shoreline.

³⁴ EPA, Region V, Pollution/Situation Report #166 8 (Oct. 29, 2012), https://archive.epa.gov/region5/enbridgespill/pdfs/web/pdf/20121025_sitrep_166.pdf.

³⁵ This number has varied some, with 840,000 gallons being at the low end.

³⁶ Nat’l Transp. Safety Bd. (“NTSB”), PB2012-916501, Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release, Marshall, Michigan, July 25, 2010 at xii (July 10, 2012), <https://www.nts.gov/investigations/AccidentReports/Reports/PAR1201.pdf> (“NTSB Report”); Mem. from Staff to Members of H. Comm. on Transp. & Infrastructure, 111th Congr., Hearing on “Enbridge Pipeline Oil Spill in Marshall Michigan” (Sept. 14, 2010).

In the Kalamazoo River, the heavy bitumen sank to the river bottom, coating wildlife, rocks and sediment.³⁷ The lighter chemicals used to dilute the bitumen stayed on the surface and evaporated.³⁸ Resulting toxic fumes forced local residents to flee from their homes and over 300 people suffered from immediate illness due to benzene exposure.³⁹ A report filed by the Michigan Department of Community Health found that nearly sixty percent of individuals living in the vicinity of the Kalamazoo River spill experienced respiratory, gastrointestinal, and neurological symptoms consistent with acute exposure to benzene and other petroleum related chemicals.⁴⁰ The long term consequences for these people who were exposed to benzene and other compounds contained in the diluted bitumen remain unknown. It took several weeks for officials to be informed that the spilled substance was diluted bitumen: up to that point they did not even know the name of the substance they were responding to because federal law does not require pipeline operators to reveal the specific contents of their pipelines and Enbridge did not initially volunteer this information.⁴¹

The response to this diluted bitumen spill is far from complete, and may never be complete.⁴² Enbridge recently disclosed that the cleanup costs have exceeded one billion dollars, making Kalamazoo by far the most expensive pipeline oil spill in U.S. history.⁴³ The response to the Kalamazoo River spill has required more than 2000 personnel, over 150,000 feet of boom, 175 heavy spill response trucks, forty-three boats, and forty-eight oil skimmers.⁴⁴ The river may never be restored.⁴⁵ Despite already spending eighteen times more than would be spent on a spill

³⁷ NTSB Report, *supra* note 36; David Sassoon, *Crude, Dirty and Dangerous*, N.Y. Times (Aug. 20 2012), available at http://www.nytimes.com/2012/08/21/opinion/the-dangers-of-diluted-bitumen-oil.html?_r=0.

³⁸ Sassoon, *supra* note 37.

³⁹ Press Release, NTSB, Pipeline Rupture and Oil Spill Accident Caused by Organizational Failures and Weak Regulations (July 10, 2012), <https://www.nts.gov/news/press-releases/Pages/PR20120710.aspx>.

⁴⁰ Martha Stanbury et al., Mich. Dep't of Community Health, *Acute Health Effects of the Enbridge Oil Spill* (2010), http://www.michigan.gov/documents/mdch/enbridge_oil_spill_epi_report_with_cover_11_22_10_339101_7.pdf.

⁴¹ Sassoon, *supra* note 37.

⁴² Carol Linnitt, *Official Price of the Enbridge Kalamazoo Spill, A Whopping \$1,039,000,000*, *The Narwhal* (Aug. 26, 2013), <https://thenarwhal.ca/official-price-enbridge-kalamazoo-spill-whopping-1-039-000-000>.

⁴³ <http://desmog.ca/2013/08/26/official-price-enbridge-kalamazoo-spill-whopping-1-039-000-000>.

⁴⁴ Plains Justice, *The Northern Great Plains at Risk: Oil Spill Planning Deficiencies in Keystone Pipeline System* 9 (Nov. 23, 2010), http://plainsjustice.org/files/Keystone_XL/Keystone%20Pipeline%20Oil%20Spill%20Response%20Planning%20Report%202010-11-23%20FINAL.pdf.

⁴⁵ See Press Release, EPA, EPA Orders Enbridge to Perform Additional Dredging to Remove Oil from Kalamazoo River (Mar. 14, 2013), https://archive.epa.gov/epapages/newsroom_archive/newsreleases/19cdd21822f762cd85257b2e006ecbb9.html.

of conventional oil, cleanup crews are still working to remove residual oil from the riverbed and wetlands.⁴⁶ On October 3, 2012 EPA issued an order to Enbridge demanding that the company undertake additional efforts to continue to “remove and mitigate the effects of oil discharged.”⁴⁷ On March 14, 2013, EPA ordered dredging of the river to contain further contamination from lingering oil.⁴⁸ The response to this spill is likely to continue for many years. As reported in a New York Times piece the Kalamazoo spill, the “accident underscored not only how different dilbit is from conventional oil, but how unprepared we are for the impending flood of imports.”⁴⁹

In the aftermath of the Kalamazoo Spill, the statements made by EPA give context to the above conclusions that dilbit presents vastly different challenges from conventional crude. For instance, EPA’s On-Site Spill Coordinator Mark Durno stated that, “The submerged oil is a real story—it’s a real eye-opener. . . . In larger spills we’ve dealt with before, we haven’t seen nearly this footprint of submerged oil, if we’ve seen any at all.”⁵⁰ Similarly, Susan Hedman, EPA Region 5 Administrator, said in a press interview that, “Capturing and cleaning up this heavy oil is a unique challenge. No one at the EPA can remember dealing with this much submerged oil in a river.”⁵¹ Ralph Dollhopf, EPA incident commander for Kalamazoo, stated that when Enbridge’s pipeline ruptured, the lighter part of the oil evaporated, “making the heavy mixture even more heavy as it moved down the creek and down the river; it had an increased tendency to sink. . . . It’s the nature of the mixture of the oil that caused it to sink.”⁵²

The tragic consequences of the Kalamazoo spill were detailed in a July 2012 report by the NTSB. The NTSB Report was highly critical of Enbridge, the pipeline operator, and the existing federal regulatory framework.⁵³ The NTSB Report shows precisely why allowing companies to be in charge of their own clean-up is a recipe for disaster. Not only was the pipeline rupture not addressed for over seventeen hours, Enbridge’s operators twice pumped

⁴⁶ Nat’l Wildlife Fed’n, *Importing Disaster: the Anatomy of Enbridge’s Once and Future Oil Spills* 3 (2012), http://www.nwf.org/~media/PDFs/Global-Warming/Reports/NWF_EnbridgeOilSpill_WEB_Final.ashx.

⁴⁷ EPA Region 5, In the Matter of Enbridge et. al., Docket No. CWA 1321-5-13-001, Order for Removal Under Section 311(c) of the Clean Water Act (2012), <https://www.epa.gov/sites/production/files/2016-06/documents/enbridge-AR-1720.pdf>.

⁴⁸ See Press Release, EPA, *supra* note 45.

⁴⁹ Sassoon, *supra* note 37.

⁵⁰ Anthony Swift, *Kalamazoo One Year Later: Anatomy of a Tar Sands Spill*, NRDC: Expert Blog (July 26, 2011), <https://www.nrdc.org/experts/anthony-swift/kalamazoo-one-year-later-anatomy-tar-sands-spill>.

⁵¹ Tim Martin, *A Year Later, Michigan Oil Spill Cleanup Continues*, Associated Press (July 22, 2011), <https://www.deseretnews.com/article/700165207/A-year-later-Michigan-oil-spill-cleanup-continues.html>.

⁵² Fritz Klug, *Kalamazoo River Oil Spill Responders 'Writing the Book' on Submerged Oil Clean Up*, The Kalamazoo Gazette (July 24, 2011), http://www.mlive.com/news/kalamazoo/index.ssf/2011/07/kalamazoo_river_oil_spill_resp.html

⁵³ NTSB Report, *supra* note 36.

additional oil through the pipeline, constituting eighty-one percent of the total release.⁵⁴ In other words, the systems that were in place to prevent such a spill failed catastrophically.

The fact of the matter is that while Kalamazoo has taught us some lessons, the biggest lesson is that we are unprepared for a spill of that magnitude. There is still no indication that dilbit, which would be traveling along the Line 3 pipeline, can be effectively cleaned up, that Enbridge would prove any more adept or responsive to the emergency than it did in Kalamazoo; and there has been no change in the inadequate regulatory structure that in part allowed the Kalamazoo disaster to happen.

In fact, the EPA submitted comments objecting to the Corps' EA for Enbridge's Flanagan South tar sands pipeline on December 23, 2013.⁵⁵ The EPA argued that the EA's analysis of oil spills and Enbridge's response capabilities were insufficient and vague.⁵⁶ The EPA argued that the Corps should have discussed lessons learned from Enbridge's 2010 spill of heavy crude oil into the Kalamazoo River in Michigan and required special prevention, protection, and mitigation measures to ensure that such an accident does not occur in the sensitive areas that Flanagan South would cross, including the Upper Mississippi River System, a "nationally significant ecosystem and nationally significant commercial navigation system."⁵⁷ For example, EPA recommended "commissioning an independent engineering analysis to review Enbridge's risks assessment of the potential impacts from oil discharges to surface and groundwater resources along the entire route as well as placing mainline valves along the route and installing leak detection equipment"; requiring a "network of sentinel or monitoring wells along the entire length of the pipeline, especially in sensitive or ecologically important areas... to provide a practical means for early detection of leaks..."; requiring that the emergency response plans address submerged oil and require "pre-positioned response assets"; and allowing an opportunity for public review and comment on these issues.⁵⁸ The same analysis and mitigation measures should be required for Line 3.

3. The March 2013 Mayflower, Arkansas disaster.

The Kalamazoo River is not the only major tar sands spill to plague an American community. On March 29, 2013, a pipe carrying dilbit ruptured in a small neighborhood in Mayflower, Arkansas, spilling approximately 210,000 gallons of dilbit through the streets, into nearby wetlands and streams and may have contaminated portions of Lake Conway,⁵⁹ one of the

⁵⁴ *Id.* at xii.

⁵⁵ Letter from Jeffrey Robichaud, EPA Region 5 to Joe Jordan, U.S. Army Corps of Engineers (Dec. 23, 2013).

⁵⁶ *Id.* at 3–4.

⁵⁷ *Id.* at 3.

⁵⁸ *Id.* at 3–4.

⁵⁹ See Jacob Kauffman, *Tar Sands Oil in Lake Conway?*, KUAR Pub. Radio (Apr. 23, 2013), <http://ualrpublicradio.org/post/tar-sands-oil-lake-conway>. There is a dispute as to whether tests in the lake were adequate, as they focused on the water itself, rather than the bottom materials. Some have reported oil contamination in the lake. Indeed, the Arkansas Attorney General stated that because a cove of Lake Conway was deemed contaminated, the lake was contaminated because "the cove is part of Lake Conway." Maria Gallucci, *Cove Where Exxon Oil Has Been*

State's most prized warm water fisheries. The pipeline is the Pegasus Pipeline owned by the ExxonMobil Pipeline Company.

As with the Michigan spill, there was some question at the time of the spill regarding whether or not it was bitumen that was spilled. It was not until April 10, 2013 that the company admitted in a letter that the material spilled was indeed bitumen.⁶⁰

The incident has forced twenty-two families from their homes.⁶¹ It has also caused numerous health problems. As detailed in the *New Republic*:

Ever since ExxonMobil's Pegasus pipeline burst in March and spilled an estimated 210,000 gallons of Canadian heavy crude oil two miles from [Jason Thompson's] house, he's had headaches of preternatural intensity, so bad they wake him up in the middle of the night. He has nosebleeds, and hemorrhoids even though he's only 36; there's a rash on his neck that has only gotten worse in the eight months since the spill; and some days he feels so weak that he can hardly get out of bed. He estimates that he has lost almost 35 pounds since the rupture, falling from a fit 220 down to 185. When he went to see a doctor in April, he was told he has a mysterious spot on one lung—but he hasn't been able to afford to go back.

Hundreds of people in this working-class town of 2,200 have complained of symptoms like Thompson's. And their maladies—respiratory disorders, nausea, fatigue, nosebleeds, bowel issues, throbbing headaches—echo the ones that appeared in Marshall, Michigan, where an Enbridge Energy pipeline burst in 2010. The two pipelines were carrying the same kind of oil: a heavy crude, or bitumen[.]⁶²

As with the tragedy in Michigan, in Mayflower, the owner of the pipeline, Exxon, demonstrated it could not be trusted to protect the public. In a November 6, 2013 letter of probable violations sent to Exxon, PHMSA found nine probable violations by Exxon.⁶³ These

Found Is Part of Lake Conway, InsideClimate News (Apr. 10, 2013), <http://insideclimatenews.org/news/20130410/cove-where-exxon-oil-has-been-found-part-lake-conway>.

⁶⁰ Letter from Richard E. Byrne, Exxon Mobil to Edwin Quinones, EPA Region 6 (Apr. 10, 2013) (“ExxonMobil considers the oil released on March 29, 2013 to be conventionally produced Wabasca Heavy crude. ExxonMobil was advised today by the Government of Alberta's Energy Resources Conservation Board that Canadian producers report their production of Wabasca Heavy as bitumen.”).

⁶¹ Maria Gallucci, *Dilbit or Not? Wabasca Crude Is the Question*, InsideClimate News (Apr. 18, 2013), [www. http://insideclimatenews.org/news/20130418/dilbit-or-not-wabasca-crude-question](http://insideclimatenews.org/news/20130418/dilbit-or-not-wabasca-crude-question).

⁶² Nora Caplan-Bricker, *This Is What Happens When a Pipeline Bursts in Your Town*, New Republic (Nov. 18, 2013), <http://www.newrepublic.com/article/115624/exxon-oil-spill-arkansas-2013-how-pipeline-burst-mayflower>.

⁶³ PHMSA, CPF No. 4-2013-5027, Notice of Probable Violation and Proposed Compliance Order (Nov. 6, 2013),

probable violations make clear that a long-standing problem with a seam that caused the accident should have been apparent to Exxon for some time. PHMSA stated that:

The pipe manufacturing information, fracture toughness, and hydrostatic testing failure history of the Youngstown pre-1970 low frequency ERW pipe in the Patoka to Corsicana segments of the Pegasus Pipeline *provided more than adequate information for the pipe to be considered susceptible to seam failure*. Further, the operator did not present an acceptable engineering analysis to PHMSA to demonstrate that the pre-1970 ERW pipe in the Pegasus Pipeline was not susceptible to seam failure.⁶⁴

The letter detailed basic safety procedures Exxon failed to follow, many of which concern oversight of the seam that failed.⁶⁵ These failures were long-standing. Testing from as far back as 1991 demonstrated the existence of the defect that eventually led to the spill twenty-four years later. Thus, the problem was left unaddressed by Exxon for almost a quarter century until the line burst. In addition, there is speculation that pressure cycling, which is associated with transportation of dilbit, may have caused this long-standing defects in the pipe to finally rupture.⁶⁶

Exxon may well have been betting the costs of dealing with a spill were less than the costs of taking measures to prevent one. As a result of these probable violations, Exxon incurred just a \$2.6 million fine from PHMSA for the incident, just .0003 percent of the company's \$7.8 billion profit in just the third quarter of 2013.⁶⁷

Regardless, Mayflower, Arkansas stands as yet another tragic example of what happens when pipeline companies shipping tar sands are trusted to police themselves.

4. Inadequate Measures Are in Place to Protect the Public from a Spill of Dilbit from Line 3.

As is detailed in the NTSB Report, the current regulatory structure fails to account for the unique risks of transporting and responding to tar sands spills and to protect the public and the environment from diluted bitumen spill risks. There is simply not an adequate regulatory structure to deal with the extreme risks of dilbit.

The NTSB account of the Kalamazoo spill is sobering and identifies key failures in the regulation of the diluted bitumen pipeline that spilled. The NTSB cited “[i]nsufficient public

https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/420135027_NOPV%20%26%20PCO_11062013.pdf.

⁶⁴ *Id.* at 2 (emphasis added).

⁶⁵ *See id.*

⁶⁶ Elizabeth Douglass, *Experts Say Dilbit Could Have Created Pressure Swings, Hydrogen Cracks in Pegasus Rupture*, Ark. Times (Sept. 12, 2013),

<http://www.arktimes.com/arkansas/experts-say-dilbit-could-have-created-pressure-swings-hydrogen-cracks-in-pegasus-rupture/Content?oid=3037915>.

⁶⁷ Caplan-Bricker, *supra* note 62.

awareness and education,” “weak regulation” and “ineffective oversight of pipeline integrity management programs, control center procedures, and public awareness” as factors in the Kalamazoo disaster.⁶⁸ The NTSB specifically found that the regulatory oversight for the pipeline was “inadequate.”⁶⁹ It also faulted “inadequate regulatory requirements for facility response plans,” the inadequacy of the “facility response plan to ensure adequate training of the first responders and sufficient emergency response resources allocated to respond,” and “inadequate review and approval of Enbridge’s facility response plan that failed to verify that the plan content was accurate and timely” for the spill.⁷⁰ The NTSB also concludes that it is “improbable that PHMSA would be able to perform an adequate review of facility response plans or enforce Federal requirements that pipeline operators identify and ensure that adequate response resources are available to respond to worst-case discharges.”⁷¹ Put another way, PHMSA’s response resource regulations are unenforceable. The NTSB also found that, “[e]ssentially, the regulations allow the pipeline industry to dictate the requirements of an adequate spill response and to determine whether those requirements have been met.”⁷² As a consequence, communities along the pipeline route can expect no greater amount of spill response resources from TransCanada than those that TransCanada, in its sole discretion, believes is due them.

The NTSB additionally found that PHMSA has only 1.5 full-time employees managing about 450 response plans, far fewer than either the Coast Guard or EPA which also have spill response responsibilities, despite the fact that it receives significantly greater funding from the Oil Spill Liability Trust Fund,⁷³ which, ironically, is not funded by dilbit shippers such as TransCanada.⁷⁴ It also found that PHMSA had approved Enbridge’s Facility Response Plan (“FRP”) within two weeks of its receipt without comment and that only a “ cursory” review of the plan could have been conducted within this time period.⁷⁵

The NTSB Line 6b Report also found that PHMSA does “not perform on-site audits to verify the content and adequacy of plans before approving them. In contrast, both the Coast Guard and the EPA conduct on-site audits and plan reviews after the initial review and approval of the submitted plan.”⁷⁶ Thus, PHMSA appears to do little more than bean count whether an FRP has all required parts, rubber stamp whatever pipeline companies’ submit with no meaningful review process, and then ignore FRP’s until the process repeats itself.

⁶⁸ NTSB Report, *supra* note 36, at xii.

⁶⁹ *Id.* at xiii.

⁷⁰ *Id.* at xiii-xiv.

⁷¹ *Id.*

⁷² *Id.* at 113.

⁷³ *Id.*

⁷⁴ IRS Nat’l Office, Technical Advice Memorandum 201120019 at 3 (Jan. 12, 2011)

(“Accordingly, tar sands imported into the United States from Country by Company are not subject to the excise tax on petroleum imposed by § 4611.”).

⁷⁵ NTSB Report, *supra* note 36, at 113.

⁷⁶ *Id.*

This weak and inadequate regulatory structure—which is not currently being addressed or revised by PHMSA—is essentially all that serves to protect the people and places that will be impacted by the Line 3 pipeline and a potentially major release of heavy crude oil.

The attached testimony of Richard Kuprewicz discusses some of the deficiencies of federal pipeline safety regulations, their inability to prevent failures, inadequacies of Enbridge’s “safety management systems” and the “serious deficiencies in current integrity management regulations and/or approaches.” Kuprewicz test, Ex. E, at 3–6. For example:

PHMSA does not verify nor certify that oil spill response plans are effective. PHMSA’s task is to assure compliance with the specific oil spill response regulations. Based on my experience, the oil spill response regulations are deficient in several areas. For example, worst case release defined in 49 C.F.R. § 194.105 does not reflect oil spill release rates from a liquid transmission pipeline rupture where pumping flow rates can easily exceed the “maximum daily capacity of the pipeline” outlined in the regulation. Another key example, the regulation fails to capture the potential impact from dilbit. It makes a difference in spill response approaches, whether the released oil will float or sink when hitting water, and dilbit’s demonstrated ability to sink, such as in the Marshall, MI Line 6B release, has nothing to do with the dilbit’s gravity.

Id. at 6.

I must point to a U.S. Department of Transportation 2012 study that found that pipeline controllers/control rooms identified that a release occurred around 16% of the time. This low percentage of remote identification is supported by Accufacts’ many pipeline failure investigations as well. Remote identification of pipeline release via SCADA can be very challenging even for pipeline ruptures. Those of us very familiar with the complex transient dynamics of hydrocarbon pipeline release detection appreciate the challenges of trying to make such detection reliable. This is one reason such requirements have not been codified into pipeline safety regulation. The timely success of remote release detection can be very pipeline specific, and Enbridge has not provided sufficient information to support their assertions of rapid remote rupture determination for Line 3.

Id. at 7; *see also id.* at 11–12 (discussing common construction related issues that can lead to pipeline ruptures).

The Commandant of the U.S. Coast Guard, Adm. Paul Zukunft, testified in April 2015 to Congress that he was “not comfortable” with spill response plans in the Great Lakes. Stmt. of Admiral Paul Zukunft, S. Hrg. 114-93, 19 (Apr. 28, 2015) (attached as Ex. CC). He explained “that information is then factored in what we call an Area Contingency Plan, when you look at what a worst case discharge might be . . . we found out during Deepwater Horizon that those Area Contingency Plans were inadequate for a spill of that volume, so I need to do a deeper read on that . . . to say how ready we are for a major spill in the Great Lakes.” *Id.* In November 2017 he testified before the United States Senate Commerce, Science and Transportation Committee and on several other occasions that: “I would go on the record to say that the Coast Guard is not Semper Paratus for a major pipeline oil spill in the Great Lakes.” Stmt. of Admiral Paul Zukunft to Senate Commerce, Science and Transportation Subcommittee on Oceans, Atmosphere, Fisheries, and the Coast Guard, at 19 (Nov. 16, 2017) (attached as Ex. DD). The U.S. Coast Guard lacks the capacity or technology to recover crude oil from deep water, including Lake Superior. In a 2013 Coast Guard analysis on

bottom oil recovery systems, the Coast Guard explained its limited capability to detect and recover submerged oil in deep waters.⁷⁷ This report stated that agency responders have “limited capability in detection and recovery” for higher profile submerged oil spills, and “[e]xisting systems are inadequate to meet Federal On Scene Coordinator (FOSC) current needs for heavy and sunken oil detection and recovery.”⁷⁸

Further, since May 1999, the Coast Guard has prohibited tank vessels from transiting the U.S.-side of Lake Superior due to a failure to meet Oil Pollution Act equipment response time requirements, which indicates that the Coast Guard is not prepared to respond to a worst case discharge from Line 3.

Since the U.S. Coast Guard’s Western Lake Superior Area Response Plan recognizes that a rupture of an Enbridge pipeline facility could be the source of a worst-case discharge for western Lake Superior,⁷⁹ the Commandant’s testimony indicates that oil spill preparation measures for Lake Superior are inadequate, putting the public and tribal interests in Lake Superior at risk.

5. The Corps’ EIS Must Evaluate Worst Case Discharge Scenarios for Sensitive Locations Along the Pipeline Route.

As set forth above, NEPA requires the Corps to prepare an EIS considers the potential environmental effects of an oil spill on specific and important natural resources. *Stop the Pipeline*, 233 F. Supp. 2d at 967 (requiring the Corps to evaluate oil spills in issuing a Section 404 permit for an oil pipeline); *Sigler*, 695 F.2d at 968–75 (Corps EIS failed to analyze the “worst case” oil spill scenario); *Ocean Advocates*, 402 F.3d at 867 (NEPA required Corps to analyze risks of tanker oil spills in issuing a Section 404 permit for a dock extension).

NEPA requires federal agencies to analyze both the probability of a given harm occurring and the consequences of that harm if it does occur. *New York v. Nuclear Regulatory Comm’n*, 681 F.3d 471, 482 (D.C. Cir. 2012). “When the degree of potential harm could be great, *i.e.*, catastrophic, the degree of analysis and mitigation should also be great.” *Gov’t of the Province of Manitoba v. Salazar*, 691 F.Supp.2d 37, 50 (D.D.C. 2010). When the evidence of the possibility of severe accidents is disputed, an agency must “admit that such accidents are possible,” determine the probability of occurrence, and “discuss [] their potential effects.” *Sierra Club v. Watkins*, 808 F. Supp. 852, 868 (D.D.C. 1991). Federal courts have found that NEPA requires analysis of the risk that a spill will occur *and* an assessment of the potential impacts of a spill on particular resources. *Standing Rock Sioux Tribe v. U.S. Army Corps of Engineers*, 255 F. Supp. 3d 101, 133–134 (D.D.C. 2017) (EA inadequate because it did not describe the potential impacts of an oil spill on specific

⁷⁷ Homeland Security, Acquisition Directorate Research & Development Center, Development of Bottom Oil Recovery Systems—Final Project Report (June 2013), <https://homeport.uscg.mil/Lists/Content/Attachments/1275/Bottom%20Oil%20Recovery%20Final%20Report.pdf>.

⁷⁸ *Id.* at 1.

⁷⁹ Western Lake Superior Area Contingency Plan, App’x D at 21 (October 2009), <https://homeport.uscg.mil/Lists/Content/DispForm.aspx?ID=1320> (“W. Lake Superior Plan,” attached as Ex. M).

tribal hunting and fishing rights). Given the potentially catastrophic nature of an oil spill from the Project, NEPA also requires analysis of both the risk of a spill and its impact on important resources.

Therefore, the Corps must conduct a worst case scenario oil spill analysis for any and all sensitive water resources or other locations along the pipeline route, including an evaluation of potential site-specific impacts and response capabilities.

The Western Lake Superior Plan provides an example of the minimum amount of site specific information this analysis should contain. W. Lake Superior Plan, Ex. M. For example, Appendix D, Amplifying Information on Worst Case Scenarios, discusses specific sites, their sensitivity, geographic challenges, land ownership, access points, response strategies, and protection strategy requirements. *Id.* at 1–17. It further discusses spill response strategies and practices, including notifications, incident organization, staging areas, boom deployment, and resource requirements. *Id.* at 17–20. It specifically discusses a worst case discharge from an Enbridge pipeline facility in particularly sensitive places, including the Duluth/Superior Port Area. *Id.* at 20–25.

The attached Honor the Earth brief describes the potential environmental impacts of an oil spill in St. Louis River Estuary, the Duluth-Superior Harbor, and Lake Superior—the largest body of fresh water in North America, holding ten percent of the entire Earth’s fresh water—via the St. Louis River and Nemadji River watersheds that are traversed by the Project:

A rupture of the Project into a tributary of either of those rivers or into the rivers themselves could result in the transport of large amounts of crude oil downstream into the St. Louis River Estuary, the Duluth-Superior Harbor, and Lake Superior. The Project, therefore, creates a risk of a major oil spill into the St. Louis and Nemadji Rivers, and via them into their receiving waters of Duluth-Superior Harbor and Lake Superior....A rupture of the Project could inflict substantial adverse environmental effects on all of these waters and the benefits they provide to society.

A release of crude oil into any of these aquatic resources poses unique and serious harm and would raise unique mitigation concerns. An oil spill could severely harm the numerous bays, wetlands, and forested areas of the estuary, including areas of significant cultural importance to the Ojibwe. A spill could also adversely impact Duluth-Superior Harbor at the mouth of the estuary, including its shipping, recreation, and tourism industries. The harbor is Lake Superior’s largest port, supporting approximately 2,000 jobs and shipping goods estimated at \$1.9 billion.

An oil spill could also damage the substantial mitigation measures taken to isolate hazardous materials contained in at least two underwater hazardous waste sites on the U.S. Environmental Protection Agency’s National Priorities List, both of which are in the St. Louis River Estuary: the U.S. Steel Superfund Site and the St. Louis River/Interlake/Duluth Tar Site.

If an oil spill occurred in either the Nemadji or St. Louis River, it could enter Lake Superior, thereby damaging its water quality and recreation and tourism industries.

Moreover, the deep water of Lake Superior would make cleanup of submerged oil challenging, if not impossible. An oil spill affecting the St. Louis River Estuary, Duluth-Superior Harbor, and Lake Superior would have environmental, socioeconomic, and cultural impacts unlike those of any other water resources in Minnesota.

HTE Br, Ex. B, at 45–46 (internal citations omitted).

The MN EIS failed to evaluate the potential impacts of a spill in this area and the difficulties associated with responding to such a spill. Instead, it modeled seven “representative release locations,” including three sites on the Mississippi River and four others on smaller rivers and creeks. However, Honor the Earth’s Brief explains why this approach is insufficient:

No sites on the Nemadji River or the St. Louis River and no sites potentially affecting the St. Louis River Estuary, the Duluth-Superior Harbor, or Lake Superior were evaluated. None of the representative locations or their downstream receiving waters bear any resemblance to the St. Louis River Estuary, the Duluth-Superior Harbor, or Lake Superior, in terms of the physical, ecological, cultural, economic, and aesthetic resources that would be impacted by an oil spill. A spill into the Mississippi River would not have the same impacts as a spill into Lake Superior.

The EIS assumed that a spill of equivalent volume at any non-modelled locations along the APR would, at most, have similar consequences to one of its “representative” locations. The EIS suggested that citizens will be able to read through the list of representative spill sites in Table 10.3-1, select the one that is most similar to the St. Louis and Nemadji Rivers, and then use the corresponding impacts in EIS Table 10.3-2 to extrapolate how a spill into these rivers would impact the Duluth-Superior Harbor and Lake Superior. Although one or more of the stream flow volumes at the representative locations may bear some superficial resemblance to those in the St. Louis and Nemadji Rivers, this cannot be determined from data contained in the EIS. Even if there were some hydrological correlation between the representative sites and the St. Louis and Nemadji Rivers, none of the aquatic resources downstream from the “representative” locations contain any of the unique features of the St. Louis River Estuary, the Duluth-Superior Harbor, or Lake Superior, such as a major port, large metropolitan area, major tourist destinations, commercial and recreational fisheries, water as deep as Lake Superior, or underwater superfund sites on the National Priorities List. Also, none of the representative release locations contain tribal resources that have the same values as those found in and around the St. Louis River Estuary and Lake Superior. This region is of unique significance to the Ojibwe people. Therefore, the EIS does not indirectly evaluate or provide the tools needed to evaluate the adverse effects of an oil spill into these sensitive, valuable, and culturally important waters.

The “representative” spill approach used by the EIS means that it contains generic descriptions of the impacts of oil spills on various types of resources, but does not contain an assessment of any specific adverse effects of an oil spill on the unique features of the St. Louis River Estuary, the Duluth-Superior Harbor, or Lake Superior, including adverse effects on the interests of indigenous peoples. Therefore, the EIS fails to provide any indirect analysis of the potential for or the impacts of major oil spills into the St. Louis River Estuary, Duluth-Superior Harbor, or Lake Superior.

Just as the EIS fails to consider impacts to these critical waters, it also fails to discuss any mitigation measures specifically designed to respond to a spill into the St. Louis River Estuary, Duluth-Superior Harbor or Lake Superior. The EIS provides a very general discussion of oil spill prevention, preparedness, response measures, and laws. None of this discussion describes the specific spill response measures that would be appropriate for the Duluth-Superior Harbor. None of these mitigation measures identify any technology that can remove crude oil from the deep waters of the Duluth-Superior Harbor or the deeper waters of Lake Superior.

Id. at 47–48 (internal citations omitted).

The surrebuttal testimony of Richard Kuprewicz further discusses why the use of “representative sites” is not an acceptable approach:

Enbridge’s witnesses endorse the methodology of using seven “representative” sites along the proposed route to access the risks of an oil spill on the new Line 3. Such an oversimplification seriously misrepresents the risks and understates the maximum release volume that are system specific. The maximum volume of oil release is driven by a specific pipeline elevation and hydraulic profile dictated by a particular pipeline route, the response time to recognize a release and initiate pipeline shutdown and segment isolation, the type of oil, size of the pipeline opening, and sensitivity of the area that could be affected by the oil spill. Note that the size of an opening such as a full-bore rupture does not necessarily control the maximum volume of the oil that can be released. My experience in pipeline rupture investigations indicates that federal oil spill pipeline regulations do not adequately capture a possible worst case release for a transmission pipeline rupture.

Surrebuttal Testimony of Richard Kuprewicz on Behalf of Friends of the Headwaters, at 4 (Oct. 23, 2017) (“Kuprewicz Surrebuttal test”) (attached as Ex. F).

6. The Corps’ EIS Must Consider Oil Spill Risks in Evaluating Alternative Routes.

The oil spill analysis in the Corps’ EIS, including an analysis of impacts of dilbit spills and worst case scenario discharge scenarios, must be conducted so that it can inform the Corps’ selection of the least environmentally damaging alternative route. The Kuprewicz Testimony argued that the MN PUC must conduct this analysis before making a pipeline routing decision:

The Line 3 [MN EIS] fails to provide critical key details and relevant information on many issues, especially related to routing, that would allow the PUC to make a prudent decision as to the risks of moving dilbit in a pipeline such as Line 3, and assure the best route to avoid unnecessary environmental risks has been presented.

Kuprewicz test, Ex. E, at 3.

Q. Do you believe Enbridge’s testimony is sufficient to make a pipeline routing decision?

A. No. Certain details that would assist in evaluating routing decisions are missing, such as the approximate pipeline elevation profile and hydraulic profile of the pipeline at the flow rate and oil gravity and temperature of the design rate stream day case. There should be sufficient

information on elevation and hydraulic profiles to screen possible route alternatives, given that pump station locations have apparently been determined for the various routes.

In addition, it is important that any unusually sensitive area location, such as karst aquifers be identified for any route proposal. A dilbit release into a karst aquifer renders the water supply unfit for life because such dilbit contamination cannot be remediated in rapidly flowing underground dispersion conditions associated with karst aquifers. Possible routing proposals should also clearly identify other environmentally sensitive area classifications that could be impacted such as lakes, rivers, wetlands, porous soil areas with vulnerable groundwater, etc., as well.

Id. at 9–10.

The [MN EIS] and Enbridge witness testimony does not provide the information needed by the PUC to make a prudent decision concerning the Line 3 proposal, including routing. Without these additional details, the PUC will unnecessarily be taking on enormous risk, significantly understated by Enbridge as demonstrated by my testimony today. Routing decisions should take under consideration the unique characteristics of a dilbit release on the environment that sets dilbit pipelines apart from more conventional oil pipeline movements.

Id. at 12–13.

G. The Corps Must Evaluate Climate Change Impacts, Including from Increased Tar Sands Development.

The Corps must analyze the climate change impacts of the Line 3 project, including but not limited to the greenhouse gas (“GHG”) emissions associated with the extraction, processing, transportation, refining, and end-use combustion of the crude oil associated with Line 3.

1. NEPA Requires an Analysis of Climate Change Impacts.

“The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.” *Ctr. for Biological Diversity v. NHTSA.*, 508 F.3d 508, 550 (9th Cir. 2007)); *Mid States Coal. for Progress v. Surface Trans. Bd.*, 345 F.3d 520 (8th Cir. 2003); *Border Power Plant Working Grp. v. DOE*, 260 F. Supp 2d 997 (S.D. Cal. 2003). The courts also underscore the need to analyze climate change when the proposed action is regional or national in scope, which is clearly the case for the proposed project which extends from Canada through several U.S. states.

Moreover, NEPA calls for a quantification of the “incremental impact[s] that [the proposed project’s] emissions will have on climate change... in light of other past, present, and reasonably foreseeable actions.” *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1216 (9th Cir. 2008). This is true “regardless of what agency or person undertakes such other actions.” *Id.* at 1217. Even if a proposed project has an “individually minor” effect on the environment, this and other such actions are “collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7; *see also Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 897 (9th Cir. 2002) (holding that the Forest Service’s road density standard amendments

must be subject to cumulative impacts analysis because otherwise, “the Forest Service will be free to amend road density standards throughout the forest piecemeal, without ever having to evaluate the amendments’ cumulative environmental impacts.”); *City of Los Angeles v. NHTSA*, 912 F.2d 478, 501 (D.C.Cir.1990) (Wald, C.J., dissenting) (“[W]e cannot afford to ignore even modest contributions to global warming. If global warming is the result of the cumulative contributions of myriad sources, any one modest in itself, is there not a danger of losing the forest by closing our eyes to the felling of the individual trees?”), *overruled on other grounds by Fla. Audubon Soc. v. Bentsen*, 94 F.3d 658 (D.C.Cir.1996). NEPA requires analysis of the “actual environmental effects resulting from those emissions.” *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d at 1216. Accordingly, the Corps must quantify and evaluate the cumulative and incremental effects of climate change resulting from the Line 3 and connected actions in comparison to and in conjunction with the effects of emissions of other reasonable alternatives or actions—past, present and reasonably foreseeable.

2. The Corps EIS Must Evaluate the Risks and Impacts Posed by Climate Change.

Climate change threatens the nation’s communities with extended periods of heat, greater numbers of heavy downpours, more regional drought, increased wildfires in parts of the American West, permafrost thawing in Alaska, ocean acidification, and sea-level rise in coastal communities. Tar sands oil production generates almost triple the global warming pollution as conventional oil production due to the massive amounts of energy needed to extract, upgrade, and refine the oil.

A warmer environment is making heat waves hotter, droughts deeper and longer, and causing an increase in extreme rainfall events. As climate models predicted 30 years ago, wet areas are trending wetter and dry areas are trending drier. Increased droughts and dryness has influenced the frequency and intensity of wildfires across the western United States. Warmer temperatures are believed to be driving more frequent severe hurricanes in the western Pacific, and creating hurricanes in the Atlantic that are more likely to reach Category 45 strength.

During the Line 3 proceedings before the MN PUC, Dr. John Abraham, an internationally acclaimed climate scientist, provided a synthesis of his research on climate change. Direct Testimony of Dr. John Abraham (“Abraham test”) (Nov. 7, 2017) (attached as Ex. G). He testified that average global temperatures reached record highs in 2014, 2015, and 2016, respectively. Heat contained within the Earth’s climate continues to increase, and as Dr. Abraham stated, “[t]he amount of warming that is entering the oceans is equal to 4–5 Hiroshima explosions of heat every second.” *Id.* at 5. Consequently, he warned that long-term trends of sea ice loss have been observed and are projected to raise sea levels by a conservative minimum of one meter by 2100 unless greenhouse gas emissions are substantially reduced. The brief of the Line 3 Youth Climate Intervenors also provides an overview of the climate crisis. Initial Br. of the Youth Climate Intervenors, In the Matter of the Application of Enbridge Energy, Limited Partnership for a Certificate of Need and Pipeline Route Permit for the Line 3 Replacement Project in Minnesota from the North Dakota Border to the Wisconsin Border OAH 11-2500-32764, No. PL-9/CN-14-619, OAH 11-2500-33377, No. PL-9/CN-15-137, at 15–17 (Jan. 23, 2017) (“YCI Br”) (attached as Ex. H).

In addition, the State Department prepared several environmental impact statements for the proposed Keystone XL tar sands pipeline, the most recent being in 2014.⁸⁰ That document contains a discussion of the science of climate change as it existed at that time, as well as various studies estimating the well-to-wheel GHG emissions associated with tar sands crude oil.⁸¹ The U.S. Army Corps of Engineers was a cooperating agency in the Keystone XL NEPA process and the preparation of this EIS in particular.⁸² Therefore, the Corps is aware of, and already possesses the information contained in the Keystone EIS, and must consider that information in its entirety as it prepares the EIS for Line 3.

In fact, the State Department and Army Corps participated in the preparation of a Supplemental EIS for Enbridge's proposed expansion of its Alberta Clipper pipeline (also known as Line 67) across the U.S. border in 2017.⁸³ The expansions of Alberta Clipper and Line 3 are closely linked—the two pipelines share a right-of-way, and because the Alberta Clipper pipeline was occupying the Line 3 border crossing segment in 2017, Enbridge needed to first expand its lower-capacity Alberta Clipper border crossing before it could free up the Line 3 border crossing in order to allow the expansion of Line 3 pipeline at issue here. In other words, the expansion of the Alberta Clipper border crossing would allow the Line 3 expansion. In that context, the Alberta Clipper SEIS again discussed the science of climate change; acknowledged a new model suggesting life-cycle greenhouse gas emissions from tar sands crude may be 20% higher than previously estimated; and evaluated the potential level of greenhouse gas emissions attributable to the Alberta Clipper / Line 3 expansions under various scenarios.⁸⁴ The SEIS estimated that the expansion of both Line 3 and Alberta Clipper could result in up to 155.6 million metric tons of greenhouse gas emissions per year.⁸⁵ The Corps must perform a similar analysis in an EIS for Line 3.

3. The Corps' EIS Must Evaluate Climate Change Impacts to Minnesota and its Water Resources.

The Corps' EIS must also evaluate the potential impacts climate change is likely to have on the local environment along and near the proposed pipeline route in Minnesota, including but not limited to climate change impacts to wetlands and waterways. *See* YCI Br, Ex. H, at 16–20; Direct Testimony of Paul Douglas (Sept. 9, 2017) (“Douglas test”) (attached as Ex. I); Abraham test, Ex. G.

Minnesota, due to its northerly latitudinal location, is already experiencing the effects of climate change more than areas closer to the equator due to positive feedback effects such as a

⁸⁰ Keystone XL FSEIS, <https://keystonepipeline-xl.state.gov/finalseis/>.

⁸¹ *Id.* at Volume 3: Chapter 4, <https://2012-keystonepipeline-xl.state.gov/documents/organization/221190.pdf>.

⁸² *See id.* at 3 (cover page listing “Cooperating Agencies”), <https://2012-keystonepipeline-xl.state.gov/documents/organization/221137.pdf>.

⁸³ *See* Alberta Clipper Supplemental Environmental Impact Statement (“Alberta Clipper SEIS”), available at <https://www.state.gov/e/enr/applicant/applicants/environmentalreview/>.

⁸⁴ *Id.* at Sections 4.10 and 6.4.

⁸⁵ *Id.* at 6-64–6-69.

weakening albedo (a measure of the amount of solar energy reflected from Earth back into space) and the release of methane into the atmosphere from melting permafrost. YCI Br, at 16–17; Douglas test, Ex. I, at 3.

These warming effects may be impacting jet stream winds. As reported by Mr. Douglas, “this may be creating a slower, wavier pattern, with greater amplification, more dips and bulges in the jet stream.” The jet stream is an important global weather regulator, and changes to it “may be leaving [Minnesota] weather more susceptible to stalling storms and fronts, in turn capable of magnifying rainfall amounts.” YCI Br, Ex. H at 16–17; Douglas test, Ex. I, at 3.

Dr. Bruce Snyder also detailed Minnesota’s climate irregularities. He testified that, “Minnesota’s average temperature has risen about 2F in the past century,” and, “[s]even of Minnesota’s ten warmest years occurred since 2000.” Direct Testimony of Bruce Snyder (September 10, 2017) (“Snyder test”) (attached as Ex. X). Every county in Minnesota is, “experiencing more climate related stresses: extreme storms, flash floods, excessive heat, droughts.” If business continues as usual, the average temperature of the Midwest is projected to increase by ~5°F or ~9°F, respectively, under for low or high emission scenarios. This would be a massive shift to our normal climate, which we are already observing. YCI Br, Ex. H at 17; Snyder test, Ex. X, at 3, 11.

The observed humidity and tropical dew points, have exceeded 70–80°F more frequently over time. Our winters are also getting much warmer, with substantially fewer nights reaching below -20°F in the metro area or -40°F in northern Minnesota. Mark Seeley, a climatologist and meteorologist from St. Paul, Minnesota has recorded a “fourfold increase in midwinter rain and ice across Minnesota.” YCI Br, Ex. H, at 17–18; Douglas test, Ex. I, at 4–7.

Mr. Douglas observed that, “[t]he most obvious change has been the frequency and intensity of extreme rainfall events, statewide.” Douglas test, Ex. I, at 4. Minnesota has had 14 “Mega-Rains” since 1858 (six inches or more rain falling over at least 1,000 square miles), and half of them have occurred since 2002. Our state has also observed four separate 1,000 year floods since 2000. YCI Br, Ex. H, at 17–18; Douglas test, Ex. I, at 4–7.

More rainfall does not necessarily mean wetter soils, however. Rain has been falling in larger pulses across the state and subsequently evaporating quickly due to greater heat or simply running off into storm sewers. Mr. Douglas testified that, “retaining water for Ag, maintaining consistent soil moisture, will be a challenge in the years ahead.” YCI Br, Ex. H, at 18 (quoting Douglas test, Ex. I, at 9).

Aggregate Minnesota rainfall amounts have increased over time as well. “Average annual Twin Cities precipitation was 25.93 [inches] during the 30-year period from 1941 to 1970. The most recent 30-year average from 1981 to 2010 is 31.16 [inches] in Minneapolis/St. Paul.” YCI Br, Ex. H, at 17–18; Douglas test, Ex. I, at 4–7.

Forests in Minnesota will also be damaged by climate change. Dr. Peter Reich, a Sr. Professor at the University of Minnesota’s Department of Forest Resources, explained that a changing climate will cause “major problems to our forests, including slower growth, greater

mortality and poorer regeneration. This is due to the greater frequency of temperature extremes, soil water shortages, and floods...increased frequency of wildfires, windstorms, native insect pests, and non-native invasive plants, worms, insects, and diseases.” YCI Br, Ex. H, at 18. According to Dr. Reich, unhealthy forests will mean “fewer economic benefits and ecosystem services in terms of timber production, water quality, tourism and recreation.” *Id.* at 18–19.

An especially prevalent effect of climate change in Minnesota is the increase in pests and the infectious diseases that come with them. Warmer temperatures are causing mosquitos and ticks to thrive in places they normally do not. In the Twin Cities, an annual average of 42 “ideal mosquito days” have been added as a result of the warming climate, and the black-legged deer tick has migrated throughout our state from southeastern Minnesota, where it used to be isolated 20 years ago. *Id.* at 21; Snyder test, Ex. X, at 10.

4. The Corps EIS Must Evaluate the Climate Change Impacts of Line 3 Due to the Potential for Increased Tar Sands Development.

The Corps must analyze the cumulative greenhouse gas emission that would result from the Corps’ approval of Line 3, along with the other tar sands pipelines, particularly relating to the emissions from increased levels of tar sands production in Alberta that these pipelines would allow.

The Line 3 expansion will presumably carry 65% heavy crude oil. That heavy crude oil is produced by extracting bitumen from the tar sands. Extraction of bitumen from the tar sands requires the combustion of large amounts of natural gas to turn water into steam, which is then pumped underground to heat the bitumen so it will flow. The raw bitumen must then be processed, blended with diluent, and transported long distances to refineries. Thus, tar sands oil requires significantly more energy input to generate the same amount of usable energy output than the refining of conventional crude oil. YCI Br, Ex. H, at 12–14; Abraham test, Ex. G, at 4.

The testimony of Anthony Swift, Direct Testimony of Anthony Swift (Sept. 11, 2017) (attached as Ex. J), and of Adam Scott, Direct Testimony of Adam Scott (Sept. 10, 2017) (“Scott test”) (attached as Ex. K), both discuss in detail the connection between additional pipeline capacity and upstream tar sands growth. Tar sands crude oil is significantly more GHG-intensive than conventional crude oil. And because the tar sands deposits are landlocked in Northern Alberta and are more expensive to extract and process than conventional crude oil, the growth of tar sands development in coming years is uniquely dependent on additional export pipeline capacity.

Enbridge acknowledges that Line 3 would allow additional transportation of heavy crude oil from Western Canada, which includes tar sands crude. Line 3 would be capable of transporting 760,000 bpd of additional oil to refineries. If not for Line 3, some portion or even all of this amount of oil would not be capable of being developed and transported to refineries. Thus there is a causal connection between Line 3 and the greenhouse gas emissions associated with 760,000 bpd of heavy and light crude oil.

The Alberta Clipper Supplemental EIS (“SEIS”) discussed the GHG emissions associated with the Alberta Clipper/Line 3 expansions, including the likelihood that these expansions would

lead to more upstream development of high-carbon tar sands crude oil.⁸⁶ The Alberta Clipper SEIS explains how it quantified the lifecycle GHG emissions associated with tar sands:

The analysis of estimated lifecycle greenhouse gas emissions in this SEIS uses publicly available data from published studies to provide quantitative estimates of total lifecycle greenhouse gas emissions (on a per barrel bases) for WCSB.... The Department relied upon 10 studies from government, industry, and academic sources to obtain lifecycle greenhouse gas emissions of WCSB crude oil and crude oil from other sources (Bergerson et al. 2012; Brandt et al. 2015; Cai et al. 2015; Charpentier et al. 2011; Cooney et al. 2017; Ghandi et al. 2015; Keesom et al. 2009; National Energy Technology Laboratory 2009; Nimana et al. 2015; TIAX LLC and MathPro, Inc. 2009). These studies used engineering models and industry data to generate lifecycle emissions estimates for WCSB and other crude oils.⁸⁷

The State Department estimated that the Alberta Clipper and Line 3 expansions, assuming no displacement of other crude oils, could result in up to an additional 7.78 billion metric tons of GHG emissions over the projects' 50 year lifespan.⁸⁸ In addition, the Alberta Clipper SEIS estimated that if the Enbridge Alberta Clipper/Line 3 expansions were built in addition to the TransCanada Keystone XL tar sands pipeline, they could result in up to 49.9 million metric tons of GHG emissions per year assuming full displacement of other crude oils (much more assuming no displacement).⁸⁹

In November 2018, a federal court ruled that the State Department's approval of Keystone XL without considering these cumulative climate change of Keystone XL and Alberta Clipper/Line 3 violated NEPA by failing to evaluate these cumulative climate impacts in approving the Keystone XL pipeline despite the information being available to the agency. *Indigenous Envtl. Network v. U.S. Dep't of State*, 347 F. Supp. 3d 561, 577–78 (D. Mont. 2018). The Army Corps now has the same obligations under NEPA, and must evaluate the climate impacts of its approval of the Line 3 expansion.

5. The Corps EIS Must Weigh the Social Cost of Carbon Pollution.

Finally, the Corps' EIS needs to evaluate the social cost of carbon ("SCC") of Line 3. Federal and state policy recognizes that there is a social cost associated with carbon emissions that can be considered in decision making, YCI Br, Ex. H, at 11–12.

The "social cost of carbon" is a common measurement used by government agencies to contextualize the greenhouse gas emissions associated with a project. As the Youth Climate Intervenors brief explains:

⁸⁶ See Alberta Clipper SEIS at 4.10, 6.4. The State Department similarly discussed these impacts in the 2014 Final SEIS for the Keystone XL project. Keystone XL FSEIS, <https://keystonepipeline-xl.state.gov/finalseis/>.

⁸⁷ Alberta Clipper SEIS at 6-76.

⁸⁸ *Id.* at 6-86.

⁸⁹ *Id.*

The [social cost of carbon] is meant to be a comprehensive estimate of climate change damages. It includes changes in net agricultural productivity; human health; property damages from increased flood risk; and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning.

Id. at 12.

The Corps' EIS should use the projected GHG emissions attributable to the Line 3 Project to calculate the social cost of those carbon emissions.

In the MN EIS, two scenarios were proposed, one that involves no displacement, assuming all oil transported by Line 3 would **not** have been otherwise extracted, and one that involves partial displacement, in which the Project displaces 390,000 bpd of WCSB light crude and 370,000 bpd U.S. light tight oil, *id.* at 11. The MN EIS listed the no-displacement scenario as producing an incremental increase of 193 million tons of CO₂e annually, and the partial displacement scenario as producing an increase of 35 million tons CO₂e annually.⁹⁰ The ALJ Report accepted those calculations, finding: “the incremental life-cycle [greenhouse gas] emissions (“GHGe”) for the Project will be 193 million tons of carbon dioxide emissions (“CO₂e”), totaling \$287 billion in social costs.” ALJ Finding of Fact, Conclusions of Law, and Recommendation, In the Matter of the Application of Enbridge Energy, Limited Partnership, for a Certificate of Need for the Line 3 Project in Minnesota from the North Dakota Border to the Wisconsin Border, OAH 65-2500-32764, MPUC PL-9/CN-1-916, at 196 (April 24, 2018) (“ALJ Report”) (attached as Ex. L).

In their initial brief, the Youth Climate Intervenors estimated that most *conservative* partial displacement scenario in the MN EIS would result in a \$330 billion social cost of carbon over 60 years. YCI Br, Ex. H, at 14. If calculations are done using a 2.5% discount rate instead of a 3% discount rate (in other words, valuing future damages more), the cost increases to \$444 billion. *See also id.* The Youth Climate Intervenors conclude that “[t]he \$330 billion social cost of carbon associated with this Project is a conservative valuation of the future ... mark[ing] a reasonable lower limit, [and] is far from a full assessment of the harm that will befall our generation if this Project is allowed to proceed.” *Id.* at 53; *see also* Scott test, Ex. K, at lines 134–140.

Adam Scott’s testimony included the following tables that show numbers for both the 3% and 2.5% discount rates, and the no-displacement and partial-displacement scenarios described in the MN EIS.

⁹⁰ MN EIS at 5-465–5-456; *see also* YCI Br, Ex. H, at 12.

3% Av. Discount Rate			
	SCC 2020-2050	SCC 2051-2080	Total SCC
No displacement	\$287,000,000,000.00	\$663,081,762,560.40	\$950,081,762,560.40
Partial Displacement	\$52,000,000,000.00	\$280,021,731,538.30	\$332,021,731,538.30
2.5% Av. Discount Rate			
	SCC 2020-2050	SCC 2051-2080	Total SCC
No displacement	\$426,030,562,265.16	\$869,270,420,887.90	\$1,295,300,984,153.06
Partial displacement	\$77,259,428,571.40	\$367,095,918,144.60	\$444,355,346,716.00

Scott test, Ex. K, at line 134.

H. The Corps Must Evaluate Impacts to Waterways, Including but not Limited to Impacts to Forested Wetlands, Specific Water Crossings, Sensitive Areas.

As is discussed in greater detail below, the Project will cause significant adverse environmental impacts to waterways. *See, e.g., infra* Section V.C. The Corps’ EIS must evaluate the full range of direct, indirect, and cumulative impacts associated with the Project as well as project alternatives.

I. The Corps Must Evaluate Impacts to Species.

Enbridge’s application states that the Corps must consult with U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*) (“ESA”), because Line 3 may affect a Federally-listed endangered/threatened species or designated critical habitat. As part of, or in addition to, the Corps’ consultation pursuant to E.S.A section 7, the Corps, as the implementing agency, must analyze the project’s impacts to endangered or threatened species in its NEPA analysis.

If FWS undergoes formal consultation, the Corps must prepare a NEPA analysis that analyzes the impacts associated with the project and any incidental take of species. *In re Consolidated Salmonid Cases*, 688 F. Supp. 2d 1013, 1025 (E.D. Cal 2010) held that the Bureau of Reclamation’s (“Reclamation”) *implementation* of a biological opinion issued by the National Marine Fisheries Service (“NMFS”) was a major federal action pursuant to 40 C.F.R. § 1508.18. The court reasoned that because the ESA regulations gave Reclamation the discretion to determine “whether and in what manner to proceed with the action” in light of the Biological Opinion, its decision to move forward with the project and implement the Biological Opinion was a major federal action triggering NEPA. *Id.* at 1022 (quoting 50 C.F.R. § 402.15(a)); *see also San Luis & Delta-Mendota Water Auth. v. Salazar*, 686 F. Supp. 2d 1026, 1049 (E.D. Cal.

2009) (“Reclamation’s implementation of the BiOp is major federal action”); *Fund for Animals, Inc. v. Rice*, 85 F.3d 535, 546–47 (11th Cir. 1996) (Corps complied with NEPA in issuing a § 404 permit for a landfill that required FWS to issue an ITS).

And in *Sierra Club v. U.S. Army Corps of Engineers*, the court reaffirmed that the Corps’ authorization of “take of endangered species in connection with pipeline construction and operation across jurisdictional waters, and doing so only on the conditions that Enbridge take mitigating conservation measures and monitor species impact for the anticipated useful life of the pipeline, was regulatory approval amounting to significant federal action requiring environmental review under NEPA.” 803 F.3d 31, 46 (D.C. Cir. 2015)

Thus, following formal consultation, the agency requesting or initiating consultation must determine “whether and in what manner to proceed with the action in light of its section 7 obligations and the Service’s biological opinion.” 50 C.F.R. § 402.15(a). With respect to Line 3, that agency is the Corps.

J. The Corps Must Evaluate Alternatives.

The EIS must also inform federal agency decision-makers and the public of the “reasonable alternatives” that would “avoid or minimize adverse impacts or enhance the quality of the human environment.” 40 C.F.R. § 1502.1. This alternatives analysis is the “heart” of the EIS—the agency should “present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options.” *Id.* § 1502.14. The EIS must “[r]igorously explore and objectively evaluate all reasonable alternatives,” including the alternative of “no action.” *Id.* §§ 1502.14(a), (d).

As set forth above, *infra* Section IV.J., the alternatives analysis is particularly important in the CWA Section 404 context because the Corps must ensure that there are no less environmentally damaging practicable alternatives that exist. *Id.* § 230.10(a). Where, as here, a project is not “water dependent,” the law presumes that a less environmentally damaging practicable alternative exists and requires Enbridge to clearly demonstrate that practicable alternatives which would not involve discharge of fill material into special aquatic sites are not available. *Id.* § 230.10(a)(3).

1. The Corps Must Evaluate the No Action Alternative.

The CEQ NEPA regulations require agencies to include the no action alternative in an EIS. 40 C.F.R. § 1502.14(d); *see also Ctr. for Biological Diversity v. U.S. Bureau of Land Mgmt.*, 746 F. Supp. 2d 1055, 1090 (N.D. Cal. 2009). The “‘no action’ status quo alternative...is the standard by which the reader may compare the other alternatives’ beneficial and adverse impacts related to the applicant doing nothing.” *Kilroy v. Ruckelshaus*, 738 F.2d 1448, 1453 (9th Cir.1984) (internal citation and quotation omitted). The evaluation of the “no action alternative” for Line 3 must include the potential for Enbridge to achieve the project purposes through other means, including but not limited to upgrades to other existing pipelines, continued maintenance, and a reasonable oil-by rail scenario.

NEPA further requires the Corps to consider “predictable actions by others” when evaluating the no action alternative. *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026–01, 1981 WL 149008 (March 23, 1981); *Oceana v. Bureau of Ocean Energy Mgmt.*, 37 F. Supp. 3d 147, 171–74 (D.D.C. 2014); *Indigenous Env’tl. Network*, 347 F. Supp. 3d at 574; *Tenn. Env’tl. Council v. Tenn. Valley Auth.*, 32 F. Supp. 3d 876, 887 (E.D. Tenn. 2014). Thus, the Corps must evaluate the potential for the applicant and other entities to implement other actions, including non-pipeline alternatives, in the event that Project is denied.

a. The Corps Must Evaluate Utilization of Other Pipeline Upgrades.

The Corps must evaluate the reasonable “no action alternative” of implementing other upgrades / modifications to the Enbridge pipeline system, which could achieve the purposes of the proposed Line 3 expansion while causing less damage to the aquatic ecosystem.

Enbridge has explained these potential upgrades to its investors for several years, most recently in late 2018.⁹¹ In addition, testimony submitted to the MN PUC by Lorne Stockman describes these and other proposed upgrades, such as a reversal of the Line 13 pipeline and other projects, that Enbridge has estimated could result in capacity increases of its existing system by 300,000 bpd, 390,000 bpd, and even 500,000 bpd in recent years. Direct Testimony of Lorne Stockman at 32–36 (Sept. 11, 2017) (“Stockman test”) (attached as Ex. P).

As set forth in the attached brief of Honor the Earth, the MN EIS failed to consider these alternatives or their environmental impacts. The brief explains:

[Enbridge’s] Investor Presentations describe the Upgrade Projects as “**low cost**” expansions that are “**scalable, incremental, low risk, and highly executable**” and that “**match supply.**” The presentations also include charts that compare projected future western Canadian crude oil production to pipeline export capacity to show *how and when* these projects would address projected future import needs.

HTE Br, Ex. B, at 22–32 (emphasis in original) (quoting Enbridge’s Investor Presentations); *see also* The White Earth Band of Ojibwe, Red Lake Band of Chippewa, and Honor the Earth Joint Petition for Reconsideration of Order Granting Certificate of Need as Modified and Requiring Filings, State of Minnesota Public Utilities Commission, OAH 65-2500-32764, MPUC PL-9/CN-1-916, 78–85 (Sept. 25, 2018) (“HTE Petition for Reconsideration”) (attached as Ex. R).

⁹¹ *See* Guy Jarvis, *Liquids Pipelines*, Enbridge Investor Day 10 (2018) http://www.enbridge.com/~media/Enb/Documents/Investor%20Relations/2018/ENBDay/ENBDay2018_04_Liquids%20Pipelines.pdf (attached as Ex. O) (referring to “system delivery optimization” that would allow an immediate capacity increase of 50,000–100,000 bpd); 13 (referring to Mainline optimizations in 2020 that could add 200,000 bpd of capacity), 15 (referring to 300,000 bpd of available capacity from “system optimization and enhancements”), and 17 (referring to an additional 60,000 bpd of capacity in the Express line from drag reducing agents and pump station upgrades).

Despite this evidence, the MN EIS failed to evaluate any of these other pipeline upgrade projects as alternatives to the proposed project.⁹²

b. The Corps Must Evaluate Replacing or Repairing Damaged Sections of Line 3.

The Corps' EIS must evaluate the "no action" alternative of repairing damaged sections of Line 3 through the use of continued "integrity digs." The MN EIS falsely asserts that this alternative would somehow be more expensive than the proposed Line 3 replacement. For example, the EIS states:

Despite reducing pressure at the pump stations, along the entire line, and reducing the maximum allowable pressure, 4,000 integrity digs over the next 15 years along the U.S. portion of the line would be necessary if the Line 3 pipeline remained in service. According to Enbridge, constructing their proposed Project would be less expensive for the company than conducting the integrity dig program. Enbridge believes that installation of the proposed Line 3 pipeline would be less invasive than continuously conducting digs along the existing right-of-way to maintain and repair the existing Line 3 pipeline. Enbridge has estimated that it would cost \$30 to \$40 million per year to maintain the U.S. portion of the existing Line 3 pipeline. For comparison, Enbridge estimates maintaining the proposed Line 3 pipeline would cost approximately \$2 million (Enbridge 2014).⁹³

This paragraph is misleading. It claims that "*constructing* their proposed Project would be less expensive for the company than conducting the integrity dig program"; but then goes on to compare only the maintenance of the proposed Project to maintenance of the existing line through repairs and integrity digs. Clearly, the potential \$600 million price tag of the latter (\$40 million per year for 15 years) would be much cheaper than constructing the proposed Project. Enbridge's own website hails the Line 3 Replacement project as largest project in Enbridge history, and states that it will cost nearly \$7 billion with the US portion alone costing \$2.9 billion.⁹⁴

In fact, Enbridge's witnesses in the MN PUC proceeding admitted that if there was no need to increase imports (i.e., if Line 3 could remain at existing capacity), it would be far cheaper to continue to repair Line 3 than it would be to replace it. Direct Testimony of Laura Kennett, at 21 (Jan. 31, 2017) (attached as Ex. Y). The same witness stated that Enbridge could safely operate Line 3 indefinitely at its existing capacity. Cross Examination of Laura Kennett, at 51–52 (Nov. 1, 2017) (attached as Ex. Z).

If the Corps and/or Enbridge take the position that continued repair of Line 3 would not meet an alleged purpose/need of the project to increase capacity, it is critical that the Corps independently verify Enbridge's projections of demand. *See infra* Section V.E.

⁹² See MN EIS at 4-7-4-8.

⁹³ MN EIS at 2-4-2-5.

⁹⁴ Line 3 Replacement Program, Enbridge Inc., <https://www.enbridge.com/Line3ReplacementProgram.aspx>.

And even if we were to accept that there is a projected demand for a certain amount of increased pipeline capacity in coming years, the Corps must evaluate various reasonable combinations of alternatives that could meet that demand while causing minimal impacts to water resources. Those combinations include, but are not limited to, continuing to repair/maintain Line 3 at its existing capacity (390,000 bpd), using other pipeline upgrades to achieve necessary increases in demand; and limited use of railroad transportation from Alberta to U.S. refineries. *See supra* section IV.J.

c. The Corps Must Evaluate the Crude by Rail “No Action Alternative.”

Similarly, the EIS must evaluate an evidence based crude-by-rail “no action alternative”—whether and how the oil industry might use rail to transport crude oil from Alberta to refinery markets throughout the U.S. should Line 3 be denied. Enbridge’s railroad expert witness in the MN PUC hearing testified that railroad shipments from Alberta to U.S. oil refineries would be a predictable response by the Canadian oil industry to rejection of permit applications for Line 3. Testimony of William Rennie, 35–62 (Jan. 31, 2017) (attached as Ex. AA). In fact, the Canadian oil industry has already begun using railroads to increase crude oil imports from Alberta directly to U.S. refinery customers.⁹⁵

The MN EIS failed to conduct this analysis. Instead, it evaluated the impacts of an infeasible and illogical “rail bridge” alternative, where crude oil would be shipped from Gretna to Clearbrook and Superior via rail should the Line 3 expansion be denied, and which would threaten many of Minnesota waterways with oil spills in the event of a rail accident. This alternative is unrealistic, and is not supported by any consultation with railroad experts. It appears to have been created as straw man with a higher level of environmental risks, which when measured against Enbridge’s preferred alternative is designed to make the latter appear preferable. Thus, the Corps must evaluate in an EIS a reasonable and data-based rail alternative that could actually occur in the scenario where the Line 3 expansion is denied.

d. The Corps Must Verify Demand for Increased Capacity.

To the extent that Enbridge may claim any of these “no action alternatives” would fail to meet a projected increase in demand for crude oil imports from Canada, the Corps must independently evaluate Enbridge’s demand projections.

There is considerable evidence to suggest the projected capacity increase of Line 3 is not justified by future increased demand. For example, in the MN PUC proceedings, the record contained testimony from a multitude of experts across a wide variety of backgrounds that the denial of the Line 3 expansion would not adversely affect the future adequacy, reliability, or efficiency of energy supply. *See* YCI Br, Ex. H, at 2–9.

⁹⁵ Press Release, Cenovus Signs Rail Deals to Transport Oil to U.S. Gulf Coast (Sept. 26, 2018), <https://www.cenovus.com/news/news-releases/2018/09-26-2018-cenovus-signs-rail-deals-to-transport-oil-to-u.s.-gulf-coast.html>; Robert Tuttle, *Cenovus Signs Oil-by-Rail Deals Amid Canada Pipeline Pinch*, Bloomberg.com (Sept. 26, 2018), <https://www.bloomberg.com/news/articles/2018-09-26/cenovus-signs-crude-by-rail-contracts-amid-canada-pipeline-pinch>.

Record evidence in the MN PUC proceeding also casts doubt on whether future global petroleum demand will increase to the degree necessary to ensure that a market will exist for all produced Canadian crude oil. The evidence actually shows that a reduction in future global demand for crude oil is likely.

The record contains analyses about how the adoption of electric vehicles will reduce future global and North American demand for petroleum all of which show reductions in the millions of barrels of crude oil during the forecast period; studies quantifying future decreases in demand due to electric vehicles during the forecast period, including an analysis by Enbridge itself; studies quantifying the rate of increase in electric vehicle adoption during the forecast period; press reports describing public announcements by other countries that they intend to phase out sales of internal combustion engine vehicles during the forecast period; press reports describing public announcements by major automobile manufacturers that they intend to phase out and/or curtail production of internal combustion engine vehicles during the forecast period; and testimony about U.S., Canadian, and international policy efforts to reduce greenhouse gas emissions. *See* HTE Petition for Reconsideration, Ex. R, at 26–27.

The record also shows diminishing prospects for increase tar sands development in coming years. *See* HTE’s Petition for Reconsideration, Ex. R; Stockman test, Ex. P; Rebuttal Testimony of Lorne Stockman (Oct. 11, 2017) (“Stockman Rebuttal test”) (attached as Ex. S); Corrected Surrebuttal Testimony of Lorne Stockman (Oct. 23, 2017) (“Stockman Surrebuttal test”) (attached as Ex. T). For example, new project development in the tar sands of western Canada has essentially stopped, except for a few extraction projects that were sanctioned and began construction during the period of high oil prices from 2011 through 2014. Development has stopped due to the fact that oil prices were at or below \$50 per barrel from 2015 through most of 2017. Because most new projects have average “break even prices” of \$78, many new projects will be economically viable only if oil prices increase dramatically and remain at high levels, which is unlikely given the likelihood of reduced demand due to global adoption of electric vehicles and advancements in climate change policy. HTE Petition for Reconsideration, Ex. R, at 54; Stockman Rebuttal test, Ex. S, at 6.

A rapid expansion of tar sands development that was predicted just a few years ago now looks increasingly unlikely. Instead, the forecasts in the record show that production from all existing and approved but not yet completed tar sands projects will peak around 2022–23, adding a maximum of approximately 400,000 bpd of new tar sands production during this time, but then declining thereafter. HTE’s Petition for Reconsideration, Ex. R; Stockman test, Ex. P; Stockman Rebuttal test, Ex. S; Stockman Surrebuttal test, Ex. T.

In the MN PUC proceedings, rather than demonstrate a need or demand for increased amounts of Western Canadian crude oil that Line 3 would enable, which it could not do, Enbridge Energy instead pointed to ongoing “apportionment,” which is not an indication of demand. Apportionment, as defined by the ALJ, “means that Canadian oil shippers who use the Mainline System to transport their products are unable to ship all of the crude they seek to export into the United States.” ALJ Report, Ex. L, at 8. While this definition is generally correct, it fails to acknowledge that apportionment data is based on historical shipper “nominations”

(reservations) of pipeline capacity, where reservations are an indication of shipper preference for using the Enbridge Mainline System over other available shipping alternatives, such as other pipelines and rail. Historical shipper preference may be based a lower cost of using the Mainline System relative to other alternatives, such that historical apportionment data is not an indication of future need for an increase in overall crude oil import capacity into the U.S. Enbridge's apportionment data is merely an indication of historical shipper preference for use of Enbridge's existing pipeline system. Apportionment is also a poor substitute for direct forecasts of consumer demand, since the verification process used by Enbridge only requires that the shippers pre-identify a location for the oil to be stored upon arrival at its destination at the time a nomination is made. Once a batch of crude oil enters the Mainline System, its ownership can change up to 4,000 times in a month⁹⁶ (an average of 130 ownership transfers each day), because crude oil in pipelines is traded as a commodity. As such, the fact that a nominating entity (refineries or crude oil trading companies) was subject to apportionment does not indicate that the ultimate buyer of an apportioned batch of crude oil was unable to access the crude oil it needed. Apportioning high nominations by Shippers does not indicate a detrimental decrease in the oil available to refineries. Neither Enbridge nor any U.S. refinery has provided evidence showing that U.S. refinery access to crude oil has been adversely impacted even during times of high historical apportionment on the Mainline System. HTE Petition for Reconsideration at 37–46; see YCI Petition for Reconsideration, Ex. U, at 6–11.⁹⁷

The MN DOC was unable to corroborate Enbridge's claims that Minnesota refineries would be harmed by apportionment. Minnesota refineries are regularly operating near capacity, and the DOC, Division of Energy Resources was unable to find any correlation between months of high apportionment and a reduction in refinery utilization.

The ALJ Report agreed with the DOC-DER, and emphasized that the record does not establish harm to Minnesota refineries; to the contrary, the evidence shows that Minnesota refiners are currently receiving sufficient amounts of crude oil to meet their production needs... [and that] denial of the Project would not result in harm to Minnesota refiners. ALJ Report, Ex. L at 9, 207, 189–91, 193, 206, 231–32.

In short, the historical and forecast data in the record shows that it is unreasonable to forecast that demand for crude oil will increase in the U.S., the Midwest, the five-state area, or Minnesota. *Id.* To the extent that Enbridge claims a projected increase in crude oil demand as a part of the justification for the Line 3 Project, the Corps must independently verify those projections.

⁹⁶ Recross Examination of John Glanzer, at 78, 84–86 (Nov. 1, 2017) (attached as Ex. BB (containing relevant excerpts of hearing transcript)).

⁹⁷ Youth Climate Intervenor's Petition for Reconsideration of the Commission's Order Granting Certificates of Need as Modified and Requiring Filings (Sept. 25, 2018) ("YCI Petition for Reconsideration") (attached as Ex. U).

2. Route Alternatives

There are a substantial number of reasonable alternatives that must be evaluated by the Corps in an EIS, including the options described below.⁹⁸ The impacts of a number of these options compared Enbridge's proposed route are discussed in more detail below in Section IV. B.2.

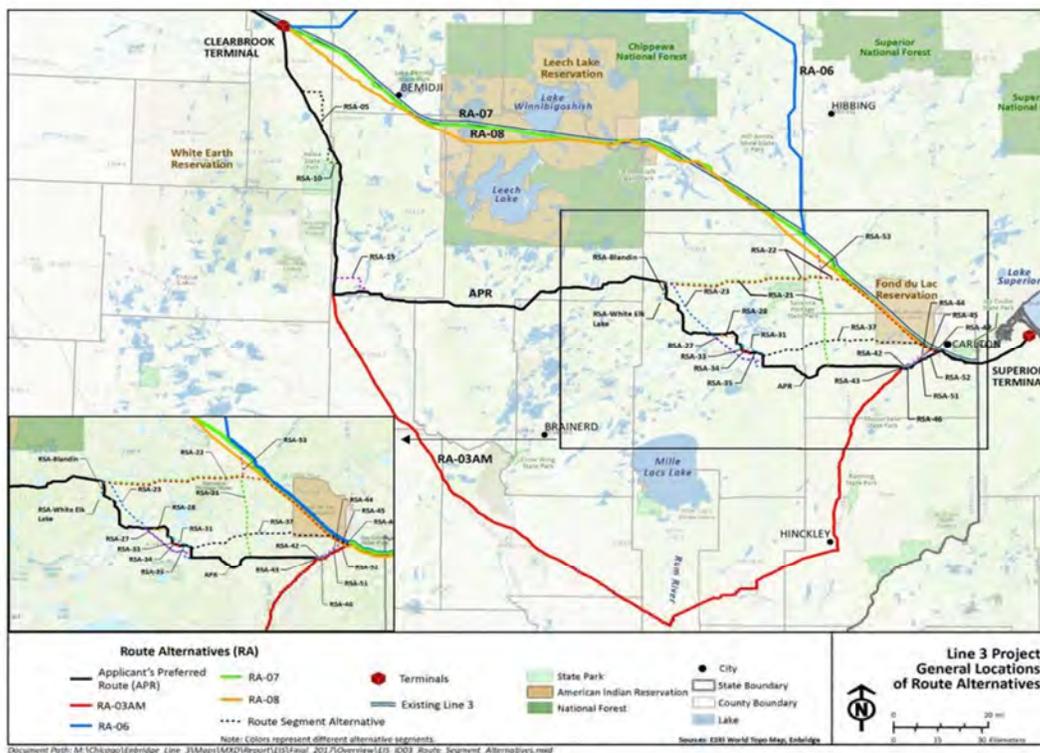


Figure 4.3-1. General Locations of Route Alternatives

a. RA-07 - In-Trench Replacement of Line 3

The Corps' EIS must evaluate the alternative of removing the existing Line 3 pipeline and installing the new pipeline mostly in the same trench along the length of the project (and/or in the same right-of-way). On its face, this alternative would appear to have fewer impacts to the aquatic ecosystem than the preferred alternative because it would not require the creation of a new right-of-way for any significant portion of the pipeline, thus eliminating the impacts described throughout these comments and in the Grobbel Report, Ex. A. This alternative would

⁹⁸ The above-signed commenters do not necessarily endorse any particular project alternative described herein. The Corps nevertheless is obligated to evaluate all reasonable alternatives in an EIS under NEPA and all practicable alternatives as part of its Section 404 review.

also have the benefit of allowing a full inspection, cleanup, and remediation of the soils and wetland areas through which the existing Line 3 pipeline crosses.

b. RA-03AM⁹⁹

The Corps EIS must evaluate RA-03M as an alternative and determine whether it would result in less environmental impact than Enbridge's preferred route.

Route alternative RA-03AM is an alternative between Clearbrook and Carlton. The MPCA originally proposed this as a "system alternative" that included a new terminal in Crookston, Minnesota, in part to avoid the Mississippi River Headwaters area as well as the Minnesota's Lakes region. This route alternative parallels an existing pipeline right-of-way from Clearbrook to Park Rapids, thereby focusing pipeline construction and operations impacts in an area already affected by a crude oil pipeline. Compared to some other alternatives, this option reroutes around fens, fish hatcheries, and to some extent communities, and avoids specific Wildlife Management Areas.¹⁰⁰

c. RA-06

The Corps' EIS must evaluate RA-06, another alternative to the Applicant's preferred route between Clearbrook and Carlton. RA-06 was proposed by scoping commenters to develop a route north of the Enbridge Mainline corridor to avoid the Mississippi Headwaters and crossing Minnesota's Lakes region.¹⁰¹

d. SA-04

The Corps' EIS must also evaluate system alternative 4 ("SA-04") as an alternative and determine whether it would result in less environmental impacts than Enbridge's preferred route. While Enbridge's preferred route would deliver oil to Clearbrook and Superior, SA-04 would not. Instead, SA-04 would deliver oil directly to Illinois, by-passing Minnesota and Wisconsin refineries that rely upon the Enbridge Mainline System.

3. Site-by-Site Analysis of Crossing Methods.

Finally, as discussed below, *supra* Section V.B.2., the Corps must conduct feasibility analyses of various crossing methods (e.g., horizontal directional drilling ("HDD") versus wet and dry crossing methods) at each water crossing along the pipeline route. Enbridge's application describes the various crossing methods and the respective degrees of protection that each provide; summarizes the number and type of water crossings; but then includes a series of maps and a spreadsheet that simply state which crossing method Enbridge plans to use at each location, with a potential back-up method for some locations. Enbridge does not provide any bases for its decisions to use particular crossing methods at each location, or whether more protective methods could be used.

⁹⁹ Friends of the Headwaters does not favor this alternative.

¹⁰⁰ MN EIS at 4-20.

¹⁰¹ *Id.* at 4-24.

V. THE PROJECT DOES NOT COMPLY WITH SECTION 404 OF THE CLEAN WATER ACT.

The CWA has the sweeping goals to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters,” 33 U.S.C. § 1251(a)(1), and “to increase the quality and quantity of the Nation’s wetlands,” *id.* § 2317(a). The Act prohibits the discharge of soil or other materials into wetlands unless authorized by a permit issued by the Corps, 33 U.S.C. § 1344(a); 33 C.F.R. § 322.3; parts 323, 325, and provides strict substantive limits on approving projects that degrade water quality or harm aquatic uses. First, the Corps may not issue a permit under Section 404 if there is any “practicable alternative” to the project with less impact on the aquatic ecosystem. 40 C.F.R. § 230.10(a). Second, the Corps cannot issue the permit unless there is a demonstration that any discharge from the project “will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern,” *id.* § 230.1(c), or if any discharge will result in significant adverse effects to water quality,” violating a water quality standard or toxic effluent standard. *Id.* § 230.10(c). Third, the Corps must determine that the project is in the “public interest” by weighing all “relevant” considerations and balancing all probable impacts of the proposed action against its alleged benefits. 33 C.F.R. § 320.4(a). Moreover, the Corps must independently verify all the information in the application. *See, e.g., Greater Yellowstone Coal. v. Flowers*, 359 F.3d 1257, 1269 (10th Cir. 2004); *see also* 40 C.F.R. §1506.5(a). Taken together, these requirements create a “very strong” presumption “that the unnecessary alteration or destruction of (wetlands) should be discouraged as contrary to the public interest.” *Buttrey v. United States*, 690 F.2d 1170, 1180 (5th Cir. 1982).

A. The Application Is Grossly Deficient and Fails to Demonstrate that the Project Meets any of the Requirements of Section 404.

Enbridge’s application largely consists of generic and conclusory statements that do not provide the information the Corps must have to evaluate the Project under Section 404. Enbridge has not shown that the Project as proposed is the practical alternative that will have the least impact on the aquatic ecosystem, that its planned methods of construction and operations will comply with the CWA, or that the Project is in the public interest. The items that Enbridge must provide include but are not limited to:

- A description of all reasonable alternatives, including systems alternatives, route alternatives, and alternative construction methods;
- A detailed analysis of the impacts to aquatic resources associated with all reasonable systems alternatives, route alternatives, and alternative construction methods;
- A detailed analysis of the practicability of all reasonable systems alternatives, route alternatives, and alternative construction methods;
- A detailed feasibility analysis for each crossing, including a description of the conditions, hydrology, and geology at each crossing, whether HDD is feasible at each

crossing, and the justification for each of Enbridge’s “Proposed Crossing Method” and “Alternative Crossing Method” listed on Attachment D of its application;¹⁰²

- Wetland delineation reports for all wetlands proposed for impact, including in-field alpha-numerical flagging;
- Wetland value replacement plan in accordance with Minnesota Statute § 103G.222;
- A detailed analysis of the Project’s impacts to water quality, including how the Project will comply with Minnesota’s laws and regulations implementing the CWA;
- A detailed analysis of how the Project is in the public interest, as defined by 33 C.F.R. § 320.4(a).

As is clear from this lengthy list, Enbridge has not provided close to enough information to allow the Corps to even begin to evaluate its application and independently verify the claims therein. The deficiencies in the application also make meaningful comment by the public on whether the Project complies with Section 404 impossible. The Corps must order Enbridge to supplement the application with the information needed to evaluate the Project under Section 404 and provide another opportunity for public review and comment.

B. Enbridge’s Preferred Route Is not the Least Environmentally Damaging Practicable Alternative.

Enbridge’s application does not demonstrate that the Project is the least environmentally damaging practicable alternative. The Corps is required to conduct an alternatives analysis and determine what projects “are available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 C.F.R. § 230.10(a)(2). The process for undertaking this analysis is clearly set out in the Corps’ guidelines implementing the CWA. First, the Corps must define the project’s “overall project purpose” is required. *Id.* § 230.10(a)(2). Second, the Corps must determine whether a project is “water dependent.” *Id.* § 230.10(a)(3). If the project is not water dependent, “the Corps [must] apply a presumption that a practicable alternative that has a less adverse environmental impact on the wetland[s] is available.” *Sierra Club v. Van Antwerp*, 362 F. App’x. 100, 106 (11th Cir. 2010) (citing 40 C.F.R. § 230.10(a)(3)). If the presumption applies, “the applicant must then rebut the presumption by ‘clearly demonstrate[ing]’ that a practicable alternative is not available.” *Id.* (alteration in original).

¹⁰² The Corps’ Public Notice claims that Enbridge’s Summary of Construction Methods and Procedures for Wetland and Waterbody Crossings “provides a summary of the criteria Enbridge applied to determine preferred crossing methods for each affected waterbody,” Public Notice at 7, but Attachment B of the permit application contains no such information. Enbridge’s materials contain a single generic paragraph entitles “Choosing a Construction Method” that unhelpfully describes that Enbridge “will select the method of pipeline installation and post-construction restoration in wetlands that depend on the season, saturation level, and stability of the soils at the time of construction.” Attachment B at 1. It then provides a table, which generally lays out the various methods of construction and some of their pros and cons, but makes no reference to any Project crossings or why particular methods are being chosen at particular locations. *See id.* at 3–5.

1. Numerous Alternatives Would Fulfill the Project's Purpose.

According to the Corps' Public Notice, the Project is needed to

improve public safety and protection of the environment by replacing the existing Line 3, an aging pipeline operating at reduced capacity with a large number of identified pipe defects and anomalies, with a new pipeline construction with the latest construction practices, technology and materials. The Project would enable Enbridge to better meet the demand for crude oil by allowing Enbridge to more reliably and efficiently transport an economical and secure supply of crude oil by restoring the capacity of the pipeline to its historic operating capacity of 760,000 bpd.

Public Notice at 5. The Public Notice further states that Enbridge's "geographic requirements" for meeting its purpose and need are that "the Project must cross into Minnesota in Kittson County, make deliveries to and interconnect with other Enbridge and third-party pipelines at the Clearbrook Terminal, and exist Minnesota in Carlton County to connect with the Superior Terminal in Wisconsin." *Id.*

However, just as in the NEPA analysis, the range of viable alternatives here cannot be arbitrarily constricted by adopting an overly narrow definition of the project's purposes. *Del. Riverkeeper Network v. U.S. Army Corps of Eng'rs*, 869 F.3d 148, 157 (3d Cir. 2017); *see also Jones v. Nat'l Marine Fisheries Serv.*, 741 F.3d 989, 1002 (9th Cir. 2013) ("[T]he Corps may not manipulate the project purpose so as to exclude alternative sites...."). Enbridge may not "define the project purpose narrowly 'in order to preclude the existence of any alternative sites and thus make what is practicable appear impracticable.'" *Friends of Santa Clara River v. U.S. Army Corps of Eng'rs*, 887 F.3d 906, 912 (9th Cir. 2018) (quoting *Sylvester v. U.S. Army Corps of Eng'rs*, 882 F.2d 407, 409 (9th Cir. 1989)).

As is discussed in greater detail above in Section IV.J., there are numerous alternatives other than the Project that would fulfill Enbridge's desire to address the integrity and safety issues associated with the continued operation of Line 3. Enbridge could upgrade other pipeline systems, replace or repair damaged sections of Line 3, transport crude by rail, or some combination of those options, to fulfill the same purpose as the Project. Moreover, Enbridge's application provides no explanation for why its preferred route bears any connection to meeting the project's purpose. The pipeline easily could take any number of other routes and still fulfill Enbridge's stated purpose.

2. Other Alternatives Would Have Fewer Impacts to the Aquatic Ecosystem.

Enbridge does not claim that its project is water dependent—nor could it—and the Corps' regulations therefore create a rebuttable presumption that there are alternatives presumed to have less adverse environmental impact than the Project. *See Sierra Club v. Van Antwerp*, 709 F. Supp. 2d 1254, 1260–61 (S.D. Fla. 2009), *aff'd*, 362 F. App'x. 100 (11th Cir. 2010) (quoting Army Corps of Engineers Standard Operating Procedures for the Regulatory Program (Oct. 15, 1999)); 40 C.F.R. § 230.10(a)(3). Enbridge's application does not come close to providing the "clear demonstration" that would rebut this presumption—indeed, the evidence cited in these

comments and presented in related Line 3 dockets clearly show alternatives that are less environmental damaging than what Enbridge proposes.

The discussion of alternatives in the application is a mere paragraph that fails entirely to discuss any alternatives at all. *See* App. at 22–23. Enbridge simply concludes that its preferred route “reduces the amount of greenfield impact by 38 miles and the overall length of the Project by 13 miles.” *Id.* at 23 (it is unclear what Enbridge is comparing its preferred route to in this sentence). But the miles of greenfield and the length of the Project do not alone determine the environmental impacts of a pipeline. Indeed, experts have rejected Enbridge’s approach that assessing an alternative’s impacts to the aquatic ecosystem should be based primarily on the length of the route and dismissed the idea that “the shortest pipeline route is the preferred option.” *See, e.g.,* Kuprewicz Surrebuttal test, Ex. F.

a. Numerous Systems Alternatives Would have Fewer Environmental Impacts than the Project.

As is discussed in greater detail above, the Project’s purpose could be fulfilled without building the Project at all. *See infra* Section IV.J.I. Enbridge itself described the ease with which it could make upgrades to its existing pipeline system that would allow it to achieve the same capacity increase that the Line 3 Project would achieve, if there is in fact demand for such an increase. *See* HTE Br, Ex. B, at 9–10. And Enbridge has made no showing that the repairs the company would need to make to the existing Line 3 would be more environmentally damaging than installing an entirely new 330-mile pipeline crossing 211 waterbodies and sixteen major watersheds within Minnesota, large sections of which would be through an entirely new right-of-way. Similarly, transporting the oil from Line 3 via existing rail-lines or roadways clearly would have substantially lower environmental impacts than the Project.

b. Numerous Route Alternatives Would Have Fewer Environmental Impacts than the Project.

Enbridge’s application provides no evidence that its preferred route would cause the least environmental damage. The burden is on Enbridge to not only show that its proposal is the least harmful to the environment but to rebut the *presumption* that the Project actually is the most environmentally damaging. MPCA evaluated the actual conditions along each proposed route and concluded that Enbridge’s preferred route was *not* the least environmentally damaging. Letter from Bill Sierks, Manager, Certification, Environmental Review, and Rules Section, Resource Management & Assistance Division, Minnesota Pollution Control Agency to Scott Elk, MPUC (Nov. 2017) (“MCPA letter”) (attached as Ex. V). MPCA analyzed the environmental damages associated with various alternatives according to several factors, including (1) the number of altered watercourses, (2) soil erodibility, (3) groundwater vulnerability, and (4) the extent of forested uplands and woody wetlands on each route. *Id.* 4–7. These factors are critical to determining alternatives’ true impacts to the environment. For example, the number of altered watercourses along a route is important, because unaltered watercourses provide higher levels of ecological function and diversity. Construction in unaltered watercourses, therefore, would result in greater ecological harm than construction in less valuable altered watercourses. *Id.* at 4–5. Areas with higher soil erodibility have a greater risk of sedimentation both during and after construction. Not only are waterways in areas with higher erodibility at risk for greater turbidity

due to the project, but the pipeline itself also is at risk of being exposed or undermined due to water movement.¹⁰³ Based on these factors, MPCA concluded that other routes, offer greater “potential to minimize potential adverse effects to surface water and groundwater resources” than the route Enbridge is proposing to the Corps.

The attached Grobbel Report also highlights that Enbridge has not shown that its proposed route would avoid high quality wetlands, threatened and endangered species and their habitats, and first-order tributaries and headwaters to the maximum extent possible and concludes that other routes would cause less damage to the environment. Grobbel Report, Ex. A, at 24. Three specific route alternatives are discussed in further detail below, but additional options also exist.

i. RA-07 Is Less Environmentally Damaging than Enbridge’s Proposed Route.

In the state level proceedings, the “in trench replacement” alternative was labeled RA-07. The MN EIS described this alternative and acknowledged that it would have less of an environmental impact:

Similar to the previous routes, RA-07 is an alternative to the Applicant’s preferred route between Clearbrook and Carlton. It was proposed by scoping commenters that the existing Line 3 pipeline be removed and that a new pipeline be installed in the same trench, allowing the use of the existing pipeline corridor without further expansion. This alternative would minimize the exposure of new areas of the state to pipeline construction and operations, while increasing overall pipeline capacity for deliveries to Superior. This alternative addressed concerns of Minnesota DNR, Minnesota PCA, and others about further development of a new corridor for other new or replaced oil pipelines and other infrastructure that could also use the Applicant’s preferred route in the future. RA-07 assumes removing and replacing the existing Line 3 in the same trench from Clearbrook to Carlton. However, the analysis assumed, for the purpose of directly comparing RA-07 to the other route alternatives, that RA-07 would follow the Applicant’s preferred route from Neche to Clearbrook, with the existing Line 3 abandoned along this stretch and the RA-07 pipeline placed within a new (25-foot) right-of-way parallel to Enbridge’s existing Mainline corridor. Similarly, east of Carlton, the analysis assumed that the RA-07 route would follow the Applicant’s preferred route, with the existing Line 3 pipeline abandoned and the RA-07 pipeline placed within a new (25-foot) right-of-way parallel to Enbridge’s existing Mainline corridor.¹⁰⁴

The ALJ Report noted that the MCPA studied the various routes and determined that RA-07 would have the least amount of environmental impact:

Following a close review of the various route and system alternatives evaluated in this proceeding, and after months of providing technical assistance to the EERA on the EIS,

¹⁰³ *Id.* at 5.

¹⁰⁴ MN EIS, at 4-25.

the MPCA concluded that RA-07 “represents the lowest overall potential environmental impact to surface water and groundwater resources...”

The MPCA’s analysis of route alternatives focused on impacts caused by:

(1) creation of new corridor rights-of-way; and (2) construction in sensitive areas or areas of known high surface or groundwater quality. The MPCA explained, “[i]n general, because of impacts due to [right-of-way] clearing, the use of existing and/or common or shared infrastructure corridors for pipeline projects will have fewer environmental impacts than a potential to minimize potential adverse effects to surface water and groundwater resources.”

ALJ Report, Ex. L, at 353–54 (citing MPCA letter, Ex. V).

In addition, the MPCA noted that the RA-07 “occupies areas of lesser groundwater vulnerability, while the [applicant’s preferred route] crosses (from Clearbrook eastward), a relatively high percentage of high or highest groundwater vulnerability.” The MPCA determined that “the [applicant’s preferred route] offers a less environmentally protective alternative” because it would “require more crossings of the Mississippi River and several of its tributaries, which are primary sources of drinking water for the downstream communities of St. Cloud, Minneapolis, and St. Paul.” *Id.* at 354 (citing MPCA Letter, Ex. V, at 7).

As the MPCA concluded: A review of the Final EIS and summary review of key GIS sensitivity layers above indicates that locating the Project in or as close to the RA-07/Existing Corridor as possible represents the lowest overall potential environmental impact to surface water and ground water resources. The existing Line 3 corridor has already experienced natural resource impacts, such as crossing of water bodies, alternation and loss of habitat, forest fragmentation and similar effects. RA-07 is either located in or closely follows the existing corridor.

Id.

The ALJ Report further noted that the Minnesota Department of Natural Resources (“MDNR”) similarly chose this route as the preferable option in a letter it submitted to the Commission, Letter from Luke Skinner, MDNR to Scott Elk, MPUC (Nov. 22, 2017) (“MDNR Letter”) (attached as Ex. W):

[F]ollowing a close review of the various route and system alternatives evaluated in this proceeding, and after months of providing technical assistance to the EERA on the EIS, the DNR likewise “determined that RA-07 does the best job of minimizing potential impacts to state managed natural resources.”

...

The MDNR noted that the APR “does a poor job of following existing rights of- way in comparison to RA-07 and RA-08.” And that RA-07 would require the fewest public water crossings compared to the other alternatives.

ALJ Report, Ex. L, at 354 (citing MDNR letter, Ex. W, at 6).

Based on the recommendations of the MPCA and the DNR, and based on the analysis in the MN EIS, the ALJ concluded that RA-07 would have the least amount of environmental impacts and explained its reasoning at length:

The ALJ concludes that, among the various routing options, in-trench replacement of a new pipeline along RA-07 is the superior alternative.

RA-07 is the best option because it would:

- avoid the detrimental and cumulative impacts of opening a new oil pipeline corridor through Minnesota;
- be co-located with existing Enbridge pipelines for 100 percent of its length;
- be shorter than all other route options, except for RA-08;
- minimize potential impacts to state-managed natural resources;
- have the lowest overall potential environmental impact to surface water and groundwater resources;
- not contribute to further fragmentation of wildlife habitat;
- have the least impact to homes and residences in the right-of-way;
- have the least impacts upon adjacent property values;
- require the least amount of acquisition of private property;
- require the fewest number of surface waters crossings;
- require the fewest additional acres of impervious surface;
- impact fewer acres and numbers of wild rice waterbodies than [Enbridge's proposed route];
- not affect Public Waters Wetlands between Clearbrook and Carlton County during construction;
- not cross any Public Water Wetland, calcareous fen or wetland enrolled in the Natural Resources Conservation Service program;
- avoid impacts to state-protected animals; and,
- limit the impacts to WAN areas to parcels that are already crossed by existing corridors.

Id. at 354–55.

Thus, there is considerable evidence in the record supporting RA-07 as the least damaging practicable alternative.

ii. SA-04

Numerous sources also endorsed alternative Route SA-04 as a less environmentally-damaging option than Enbridge's preferred route. The ALJ Report discussed the myriad ways in which SA-04 represents a less environmentally damaging alternative than the preferred route according to the MDNR:

- The preferred route would result in the loss of 2,202 acres of forests; SA-04 would result in the loss of just 161 acres.
- The preferred route would permanently impact 46 acres of rare native plant communities; SA-04 would impact 3.6 acres of rare native plant communities.
- The preferred route would have long-term/major impacts to 440 acres of forested and scrub/shrub wetlands; SA-04 would impact 34.2 acres.
- The preferred route has 23,198 acres of wildlife conservation within 0.5 miles; SA-04 has 38,353 acres within the same distance.
- The preferred route has 227 waterbody crossings in Minnesota; the SA-04 has 172 in Minnesota.
- The preferred route passes through a large number of streams, lakes, wetlands, and accompanying resources, which are generally of high quality. SA-04 lies primarily in an agriculture-dominated area and generally has surface water resources of poorer quality.
- The preferred route is located within 0.5 miles of 17 wild rice lakes, 17 trout streams, 8 lakes of high and outstanding biological significance, and 4 tullibee lakes. SA-04 does not cross such high-quality water resources.
- The preferred route crosses 25,765 acres of high vulnerability water table aquifers; SA-04 crosses 30,201 acres.
- The preferred route has 26,382 acres of high groundwater contamination susceptibility in Minnesota; SA-04 has 4,674 acres.

ALJ Report, Ex. L, at 215–16 (citing MDNR Letter, Ex. W, at 2–5). For these reasons, the MDNR supported SA-04 over Enbridge’s preferred route: “The potential degree/severity of impacts and quantity of sensitive resources potentially impacted indicate that the APR would have a greater impact on the natural environment [in Minnesota] than the SA-04 alternative.” MDNR Letter, Ex. W, at 5.

The MPCA also evaluated SA-04 in comparison to preferred route and found many ways in which the former would be superior, and ultimately concluded that “SA-04 has lower potential environmental impacts compared to the [applicant’s preferred route]”:

- SA-04 would have the lowest environmental justice impacts in Minnesota, both by low income population and miles in environmental justice areas of concern.
- SA-04 does not cross any tribal land and, therefore, would have the lowest impact on tribal lands.
- SA-04 offers lower potential for environmental effects on surface water and groundwater resources than [the applicant’s preferred route], and occupies significantly fewer areas of groundwater vulnerability.
- The majority of vegetative cover in the SA-04 corridor is hay/pasture and cultivated cropland, as opposed to forested uplands and woody wetlands found in [the applicant’s preferred route]. According to the MPCA, these agricultural areas tends to be less environmentally sensitive and would result in lesser habitat fragmentation during corridor clearing.

ALJ Report, Ex. L, at 217–19.

The Grobbel Report also notes that SA-04 is the only route that “avoids northern and central Minnesota and its sensitive Mississippi Headwaters and Minnesota Lakes regions.” Grobbel Report, Ex. A, at 28.

iii. RA-03AM

The Grobbel Report concludes that Route RA-03AM is less environmentally damaging than the Project, because it:

- Avoids the Mississippi Headwater and Minnesota Lakes Regions;
- Reroutes around fens, fish hatcheries, Wildlife Management Areas, and some communities; and
- Would primarily focus construction activities and operation impacts to areas already affected by crude oil pipelines.

Grobbel Report, Ex. A, at 25.

c. Enbridge Has not Shown that its Planned Methods of Construction Are the Least Environmentally-Damaging.

Enbridge not only must demonstrate that its project is preferable to the no action alternatives and alternative routes, but that its proposed method of construction at each waterbody or wetland crossing are the least environmentally damaging. In particular, the methods the company uses at each of its 211 crossings will make a significant difference as to the extent of the impacts to waterways if the Project is approved.

Enbridge’s application falls far short of demonstrating that it will be employing the most environmentally-protective construction methods. Its proposed methods of crossing the affected wetlands are based on incomplete and inadequately conducted wetland delineation surveys. *See Id.* at 14–16. Without this basic information, it is impossible for Enbridge to know the extent of the wetlands impact its Project will cause, or whether the construction method it has selected will avoid adverse environmental impacts.

Moreover, Enbridge has not provided any analysis or justification that supports its choice of installation method at each wetland and waterway crossing. As the Grobbel Report outlines, of the methods of construction that can be used, only horizontal direction drilling (“HDD”) avoids wetland and waterway impacts and limits vegetation disturbance. *Id.* at 15–16. However, Enbridge intends to use HDD at only 20 of 218 crossings, or 9% of the locations. Clearly, therefore, a less environmentally-damaging alternative would be to employ HDD at all, or at least substantially more crossings. However, Enbridge has not explained why it does not intend to use HDD at more, if not every, location. Moreover, it has proposed using installation methods, such as wet trenching, that are known to cause more damage to wetlands and waterways than other construction options. *See id.* Enbridge’s proposal therefore is not the least environmentally damaging alternative available.

3. Enbridge Has not Shown that Other Alternatives Are not Practicable.

Enbridge has not made any showing that other alternatives are not practicable. *See* 40 C.F.R. § 230.10. Whether an alternative is practical takes account of cost, existing technology, and logistics in light of the overall project. *Id.* § 230.3(1). But as is discussed above, Enbridge’s application contains almost no discussion of alternatives, and what little is provided fails entirely to address how the cost or logistics of its proposal compare to alternatives. *See* App. at 22–23. Enbridge has the burden of demonstrating that no feasible alternative exists. *See Utahns for Better Transp. v. U.S. Dept. of Transp.*, 305 F.3d 1152, 1163 (10th Cir. 2002). The Corps cannot blindly and uncritically accept Enbridge’s non-existent discussion of alternatives and its implicit and unsubstantiated position that no practicable alternative exists. *Friends of the Earth v. Hintz*, 800 F.2d 822, 835–36 (9th Cir. 1986).

In order to approve Enbridge’s application, the Corps must provide a meaningful analysis of practicability, where costs alone do not end the inquiry. *Del. Riverkeeper Network*, 869 F.3d at 159–60. Courts have rejected the Corps’ argument that a particular alternative was not practicable due to allegedly higher project costs and a lower economic efficiency. *Id.* A higher cost “does not mean the alternative is not ‘available’ or ‘capable of being done’... more information would be required to reach that conclusion.” *Id.* (citing 40 C.F.R. § 230.10(a)(2)). However, that additional information is entirely absent from Enbridge’s application. For example, because there is no feasibility analysis of crossing installation methods, there is no basis for concluding that HDD could not be used at every crossing, thereby substantially decreasing—although not eliminating—the environmental damage caused by the Project. The application simply does not provide the Corps with a basis for granting a Section 404 permit.

Even based on the wholly inadequate record before the Corps, Enbridge’s own public statements suggest that there are alternatives that would be feasible or cheaper than the Project, or both. For example, the alternative of repairing and replacing segments of the existing Line 3 is substantially less expensive than the Project. Enbridge has touted that the entire Project would cost nearly \$7 billion and that the U.S. portion alone would cost \$2.9 billion.¹⁰⁵ This drastically exceeds the \$30–\$40 million per year cost—or \$450–\$600 million over 15 years—of maintaining the existing line.¹⁰⁶ Enbridge also has made it clear to its investors that upgrades to its existing pipeline system would be “low cost” and “scalable, incremental, low risk, and highly executable.” HTE Br, Ex. B, at 22–32. The company’s own statements and projections, therefore, undermine Enbridge’s ability to clearly demonstrate that its Project is the only practicable option. Indeed, through a combination of various approaches, e.g., integrity digs, system upgrades, some use of crude-by-rail, the company could achieve the Project’s two stated purposes in a manner that is both lower cost and less environmentally damaging.

Moreover, although Enbridge has argued that some alternatives are impracticable partly because it might be difficult to gain approval for them to proceed, that has not been established

¹⁰⁵ Enbridge, Line 3 Replacement Program, <https://www.enbridge.com/Line3ReplacementProgram.aspx>.

¹⁰⁶ *See* MN EIS at 2-4.

sufficiently concretely for the Corps to reject alternatives that are less environmentally damaging.

For example, for the RA-07 alternative, where Line 3 would remain in the existing right-of-way across the Leech Lake Reservation, approval would be required from the Leech Lake Band of Ojibwe which, in fact, passed a resolution in opposition to Line 3 remaining on the reservation. It is important to note that the undersigned groups do not advocate for Line 3 to remain on the Leech Lake reservation against the Tribe's wishes. Of course, Leech Lake may decide not to renew the Line 3 right-of-way across the reservation, as is its right. But until that happens, the Corps is obligated to evaluate whether RA-07 would have less of an impact than the preferred route.

The ALJ Report discussed what it characterized as this complicated situation regarding the existing right-of-way across Leech Lake:

A true replacement of Line 3 would require Applicant to negotiate with the Tribes, obtain their approvals, and receive a renewal or extension of the BIA easements. But this is a complicated situation that Applicant has caused on its own by locating the lines through the Reservations in first place. Expense and difficulty in negotiating with the Tribes is a reality that Applicant has created for itself. Applicant's business decisions are not the responsibility of the Commission to fix by opening a new corridor for Applicant for the relocation of Existing Line 3 (and potentially future lines running through these Reservations), simply because negotiations with the Tribes may be protracted and difficult.

Therefore, while approvals from the Tribes and the BIA may be difficult to obtain for RA-06, RA-07, RA-08, the ALJ does not find this to be a basis to exclude these routing options from consideration.

It should be noted that an approval of RA-07 does not, in any way, infringe on the sovereignty of the various Indian tribes to disapprove permits or other approvals required for construction of the Project through land over which it has legal control. Just like the Commission cannot bind the BIA or require the BIA to grant easements for a route, the Commission does not have the authority to require either Leech Lake or Fond du Lac to permit the replacement of Existing Line 3. It would, however, likely encourage the Tribes and Applicant to accelerate discussions that are inevitable prior to regarding the renewal of easements through Reservation lands. Unless and until necessary tribal permits and BIA easements are actually denied, RA-07 continues to be a reasonable and viable route option for a true replacement of Line 3.

ALJ Report, Ex. L, at 352–35.

Thus, as was the case with the MN PUC approval, RA-07 remains a viable alternative to Enbridge's preferred route insofar as Corps permitting goes, unless and until Enbridge seeks a permit to cross Leech Lake and the Tribe denies that permit.

On a related note, the ALJ Report notes that the settlement agreements, resolutions, and easement agreements between the tribes and Enbridge for the other pipelines in the same right of way (including Lines 1, 2, 3, and 4, as well as Lines 13 and 67) will also have to be renewed by 2029. Should the Corps summarily reject RA-07 as a viable alternative simply because it would require tribal approval, it stands to reason that these six other pipelines would fail to gain approval within the next decade and would also have to be relocated in a new pipeline corridor outside the reservation. This makes it all the more important that the Corps evaluate the reasonably foreseeable cumulative impacts of siting numerous other pipelines in Enbridge's proposed right of way. *See infra* Section IV.E.

C. Line 3 Likely Would Cause Unacceptable Impacts to the Aquatic Ecosystem.

Enbridge's application does not demonstrate that discharges from its project will comply with water quality standards. On the contrary, there is substantial cause for concern that the Project will have unacceptably adverse impacts to ecosystems of concern. Failure to show that the Project actually will comply with water quality standards and be sufficiently protective of waterways to comply with the CWA's requirements makes the Project ineligible for a permit under Section 404. *See* 40 C.F.R. § 230.10(c).

1. The Project Would Cross Extremely Sensitive Areas.

The Project is slated to cross and disturb "large, high quality wetlands with significant vegetative species diversity, high aquatic organism habitat value, and/or stream crossings are proposed to be impacts by the Line 3 replacement within fifty-four (54) sensitive areas." Grobbel Report, Ex. A, at 8. The Report notes more than two dozen wetland crossings that will be "particularly damaging" and "impair[] aquatic resources." *Id.* In addition, the Project would cross the Mississippi Headwaters region, which "possess the highest surface water quality in Minnesota...[and] provide drinking water for more than 1 million downstream residents." *Id.* at 3-4.

The Project also will cause damage by crossing or passing within 1,000 feet of four "ecologically sensitive, unique and high quality calcareous fen wetlands" near Clearbrook. *Id.* at 9. MDNR characterizes calcareous fen wetlands as "rare and distinctive wetlands" that support a "disproportionately large number of rare plant species in Minnesota, four of which occur almost exclusively in this community."¹⁰⁷ Calcareous fen wetlands "are highly susceptible to disturbance" and under Minnesota law, "may not be filled, drained, or otherwise degraded, wholly or partially, by any activity, unless the commissioner of natural resources, under an approved management plan, decides some alteration is necessary."¹⁰⁸

Enbridge's proposed route would threaten important groundwater resources. The north and central portions of the Project contain "extensive, high quality groundwater resources and areas of sandy surficial soils—resulting in the high vulnerability of groundwater to contamination from surface spills of hazardous materials such as petroleum." Grobbel Report,

¹⁰⁷ MN DNR, Calcareous Fen Fact Sheet (Sept. 2017), https://files.dnr.state.mn.us/natural_resources/water/wetlands/calcareous_fen_fact_sheet.pdf.

¹⁰⁸ *Id.* (citing Minn. Statutes 103G.223).

Ex. A, at 5. The Project also would travel straight through and threaten the Straight River Basin—an important Minnesota aquifer. *Id.*

Another concern is the Project’s conversion of significant swaths of forested wetlands. Cutting trees and other vegetation from these wetlands results in “permanent conversion” of forested wetlands to shrub or scrub wetland types and a significant loss of critical wetland functions, including:

- Decrease in above-ground biomass;
- Loss of forest interior habitat;
- Decrease in structural diversity;
- Loss of visual screening and aural screening from human activity;
- Decrease in local climate amelioration;
- Loss of evergreen winter cover for wildlife;
- Loss of habitat for shade-tolerant or shade-loving plants;
- Loss of wildlife food sources (e.g., acorns);
- Increase in and replacement of native plants by invasive and exotic plant species.

Id. at 10.

The materials submitted to the Corps by former MDNR employee, Paul Stolen, highlight additional concerns, including the difficulties of installing a new project in certain areas in Minnesota with existing pipelines.¹⁰⁹ Sections of a pipeline through an area of Mud Lake with two older pipelines already in place, for example, had to be replaced shortly after they were installed, because they were not staying in place.¹¹⁰ Mr. Stolen also noted problems with crossing the LaSalle Creek Valley, including the potential for oil releases during the project life; the inability to do a “dry crossing,” as Enbridge proposes, because of site conditions; the need for huge staging areas that have not been included in Enbridge’s calculations impacts to wetlands; and the potential for Enbridge’s construction activities to mobilize sediment into LaSalle Creek and the first LaSalle Lake.¹¹¹

A report on the Project by Merritt Hydrologic and Environmental Consulting notes that Enbridge’s proposed route goes through “the heart of the highest quality lakes and streams in Minnesota.” Robert Merritt, Review of Enbridge Line 3 Draft Environmental Impact Statement, at 13 (attached as Ex. N). Among other concerns, Merritt highlights the proposed route would cross calcareous fens—special wetlands that support unique groups of plants, require continual supplies of groundwater rich in calcium magnesium bicarbonate, and that can easily be affected by any nearby activity. *Id.*

Merritt also notes the presence of numerous wild rice locations within ½ mile of the proposed route. *Id.* at 15. As is discussed extensively in the comments filed separately in this

¹⁰⁹ Letter from Paul Stolen, to U.S. Army Corps of Engineers, Attachment 1, at 5 (Feb. 8, 2019) (“Stolen Letter”).

¹¹⁰ *Id.*

¹¹¹ *Id.* at 8–10.

docket by Honor the Earth, these locations are irreplaceable and provide vital cultural and nutritional resources to the local Tribes. Enbridge’s application barely acknowledges potential harms to this critical resource.

2. The Project Would Result in a Loss of Wetlands.

Even with the compensatory wetland impact mitigation Enbridge proposes, the Project will result in a new loss of 883.5 acres of wetlands. Grobbel Report, Ex. A, at 17. The mitigation ratios Enbridge has proposed fall short across all types of wetlands:

- 0.5 acre compensated for every acre of lost forested wetlands;
- 0.5 acre compensated for every acre of lost shrub-scrub wetlands;
- 0.03 acre compensated for every acre of lost emergent wetlands; and
- 0.3 acre compensated for every acre of lost unconsolidated bottom wetlands.

Id. at 16. These ratios not only are far below the ratios used by other states in the Great Lakes regions, as is discussed in the Grobbel Report, *see id.* at 16–18, but also do not adhere to Minnesota’s own laws. The Wetland Conservation Law requires that impacts to existing wetlands be mitigated by replacement by wetland areas of *at least* equal public value. Minn. Stat. § 103G.222. Indeed, Minnesota requires replacement at ratios much higher than one-for-one, depending on the region in which the project is located and the type of land on which the project is being built.¹¹² Enbridge has not provided any evidence that its mitigation measures will come close to complying with Minnesota requirements and instead has shown that its Project will result in the significant and impermissible loss of hundreds of acres of wetlands.

Moreover, as the comments submitted by Mr. Stolen discuss, Enbridge likely has significantly underestimated the number of acres of wetlands the Project will affect.¹¹³ Enbridge’s application “says nothing about the nature of the impacts that could occur. Essentially, this means that Enbridge has erroneously equated actual impacts to wetlands with estimates of the area affected by construction.”¹¹⁴ Mr. Stolen explains that evidence from past projects show that the permanent impacts to wetlands go far beyond the construction area.¹¹⁵

3. The Project’s Proposed Crossing Methods Would Damage Wetlands and Waterbodies.

Enbridge proposes to cross 211 water bodies and 78.3 linear miles of wetlands, but provides no analysis or evidence that the method it plans to use at each location will be sufficiently protective. The company also assumes that its generic mitigation plans—developed without reference to any of the conditions Enbridge actually will encounter during this specific project—will suffice. But one of the most critical pieces of information needed to evaluate the

¹¹² *See generally*, MDNR, *Wetland Replacement Ratios* (Jan. 2015), available at http://www.bwsr.state.mn.us/wetlands/01-14-15_Wetland_Replacement_Ratios.pdf.

¹¹³ Stolen Letter, Attachment 1, at 5.

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 5–10.

impacts of the Project on waterbodies is how the company intends to cross each waterway and wetland segment and how the method chosen is best suited to the waterway or wetland. As is discussed in the Grobbel Report, different crossing methods involve significantly divergent construction techniques and, therefore, can have extremely different impacts to water quality, depending on where they are deployed and how they are executed. Grobbel Report, Ex. A, at 14–16.

For example, wet trench or open cut methods involve cutting the trench through the waterway while the water continues to flow and results in erosion and sedimentation from trench spoil placement, water quality degradation, and aquatic habitat impact. *Id.* at 14–15. The Grobbel Report characterizes as “suitable only for small, non-fishery streams or waterbodies with beaver dams,” *Id.* Nevertheless, Enbridge proposes to use this method in at least ten locations as the first and only option. *See* App. at Attachment D. The waterways slated for the wet open cut method include many that have been designated by Minnesota as public waters, all span a wide variety of widths, and include impaired waters and trout streams. *See id.* Enbridge does not explain why this crossing method should be employed in these locations, whereas other public and impaired waters would be crossed using HDD. *See id.* Enbridge also lists the wet open cut method as its backup for the majority of all the Project’s crossings. There is nothing in the application that gives any indication how using a crossing method appropriate for, at most, a small subset of waterways would be sufficiently protective of water quality to comply with water quality standards and the requirements of the Clean Water Act. *See* Grobbel Report, Ex. A, at 14.

Even use of HDD is associated with substantial damage to wetlands and waterways and can be an extremely problematic crossing method. As Mr. Stolen discusses, attempting HDD can result in massive frac-outs.¹¹⁶ A previous Enbridge project attempted to use HDD in the Clearwater River floodplain wetlands, and resulted in a drilling mud frac-out in the wetland.¹¹⁷ Comments submitted to the MN PUC by Friends of the Headwater discuss that “most of the mud from a frac-out remains in the environment.” Friends of the Headwaters, Response to MN DOC Line 3 Draft EIS, State of Minnesota Public Utilities Commission, Dockets CN-1-916, PPL-15-137, 31 (July 10, 2017) (attached as Ex. Q). During construction of the MinnCan project through the LaSalle Creek, a massive frac-out occurred where 24,500 gallons of slurry containing drilling mud was recovered. *Id.* Given that the “HDD was 25 feet below the wetland surface, it is likely that most of the mud was not recovered.” *Id.* And although most of the drilling mud is made of bentonite clay—and thus considered a wetland fill—companies add additives, which they refuse to disclose and can contaminate and pose unknown risks to wetlands and waterways if released. *See id.*

There is also substantial reason to doubt that Enbridge’s methods of construction would be sufficiently protective of water quality, because the company has not conducted appropriate wetland delineation surveys or developed appropriate construction plans. *See e.g.*, Grobbel Report, Ex. A, at 11 (noting absence of wetland delineation reports); *id.* at 10 (noting that planned crossings at two locations “are poorly planned”). It has no way of knowing with any

¹¹⁶ Stolen Letter, Attachment 1, at 7.

¹¹⁷ *Id.* at 6.

certainty that its choice of proposed crossing methods will actually be feasible at any particular location, let alone will prevent the kind of increase in sedimentation, bank destabilization, habitat destruction, and other problems associated with most methods of pipeline installation.

4. Enbridge Has Ignored Substantial Risks Posed by the Project to Waterways and Wetlands.

As is discussed above, one of the greatest risks the Project poses to water quality is an oil spill. *See supra* Section VI.F. There have been numerous disasters involving spills of the kind of petroleum product Enbridge wishes to transport in the Project, many of which have caused billions of dollars in damage and unknown degradation to water quality and the environment. The application contains absolutely no analysis of these risks or evidence that Enbridge has measures in place to adequately guard against such a spill.

Enbridge also has made no effort to study or assess how changes due to increasing global temperatures could increase the risks the Project poses to Minnesota's waterways. In addition to the climate impacts noted above, climate change is linked to more intense rain and storm events, which will increase erosion on land cleared for the right-of-way and sedimentation into surrounding waterways. This, in turn worsens turbidity and water quality and can further destabilize river banks already weakened by pipeline installation processes. Unstable banks and increased flow within the waterways themselves caused by more intense rain events can expose and threaten the integrity of the pipeline, increasing the risk of spills and the need for maintenance.¹¹⁸

D. There Is No Showing that Line 3 Is in the Public Interest.

Determining that the Project is in the public interest requires weighing its benefits against its costs. *Nat'l Parks Conservation Ass'n v. Semonite*, 311 F. Supp. 3d 350, 377 (D.D.C. 2018). Here, Enbridge has failed to provide the Corps with the information it needs to make that determination. Indeed, as is discussed above there is evidence that there are numerous less environmentally-damaging alternatives available that would result in exactly the same benefit Enbridge seeks in proposing the Project. Based on this record, the Corps cannot find that the Project is in the public interest, particularly given that the Project is not needed, is not responding to actual demand for oil, would have extremely significant climate change impacts, puts Minnesota's waterways at risk from construction and oil spills, and would negatively affect indigenous rights.

The Corps also is not bound by the determination made by MN PUC to approve the Project. *See id.* at 376 (quoting *Sierra Club v. USACE*, 772 F.2d 1043, 1054 (2d Cir. 1985)). The CWA requires the Corps to conduct its own "independently weighed" determination of the public interest. *Id.* at 377.

¹¹⁸ *See, e.g.*, J. M. Castro et al., U.S. Fish & Wildlife Serv., Risk-Based Approach to Designing and Reviewing Pipeline Stream Crossings to Minimize Impacts to Aquatic Habitats and Species, 31 River Res. & Applications 767, 769 (2015) (attached as Ex. EE).

E. The Corps Must Independently Verify the Information Enbridge Has Provided.

In reviewing the Project, the Corps is obligated to independently evaluate the limited information Enbridge has presented in its application. It cannot “blindly accept” Enbridge’s analysis. *See id.* at 377; *see also Sierra Club v. Van Antwerp*, 709 F. Supp. 2d at 1265–68 (finding that the Corps failed to independently evaluate the practicability of the alternatives). Extensive additional work is needed here to assess, for starters and among many other things:

- The purported demand for the proposed capacity increase of 370,000 bpd.
- The validity of Enbridge’s representations about the scope of the Project’s impacts, especially given the lack of underlying wetlands delineation reports;
- Whether the alternatives discussed here and in other comments are practicable and less environmentally-damaging than the Project;
- The feasibility of Enbridge’s proposed construction methods compared to the feasibility of other, less damaging methods;
- The impacts of the Project on sensitive resources, including wild rice waters, and whether and how those can be avoided; and
- The efficacy of Enbridge’s proposed mitigation measures.

The Corps should be especially skeptical of Enbridge’s representations, given not only how much information is missing from its application, but also because of Enbridge’s extremely troubling environmental record. Between 1999 and 2008, Enbridge has reported more than 600 releases from its pipeline network. Grobbel Report, Ex. A, at 19. The company “has a long history of pipeline ruptures, system and operator failures, poor inspection practices and inadequate staff training,” *id.* at 23, that belies the rosy picture being painted in the application. Given the potentially catastrophic impacts the Project could have, the Corps must independently verify every one of Enbridge’s claims.

VI. CONCLUSION

For the foregoing reasons, the materials Enbridge has submitted fall far short of meeting its burden under Section 404. The Corps should require Enbridge to correct these deficiencies and re-notice the application. In addition, if and when the Corps moves forward with Enbridge’s application, commenters respectfully request that the Corps (1) hold a public hearing on Enbridge’s application, (2) prepare an EIS as described throughout these comments, and (3) provide further opportunities for public comment.

Respectfully submitted,

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EXHIBIT H



Bay Mills Indian Community

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(906) 248-3241 Fax-(906) 248-3283



July 31, 2017

Lieutenant Colonel Dennis P. Sugrue
District Commander
U.S. Army Corps of Engineers
Detroit District
477 Michigan Ave.
Detroit, MI 48226

RE: July 12, 2017 Government-to-Government Consultation on Enbridge Inc.'s Application for Permit to Install 22 Support Structures on Line 5 in the Straits of Mackinac

Dear Lt. Col. Sugrue:

The Bay Mills Indian Community is a federally recognized Indian Tribe and signatory to the Treaty of March 28, 1836 (7 Stat. 491) by which the right to fish in the ceded waters of lakes Superior, Huron and Michigan—including the Straits of Mackinac—was expressly reserved for all time. Therefore, the Bay Mills Indian Community has much to lose with the current placement and operation of Line 5 in the Straits of Mackinac. The purpose of this letter is to express Bay Mills Indian Community's concerns with Enbridge Inc.'s permit application to install 22 additional support structures for Line 5 in the Straits of Mackinac, but also to touch on the broader scope of the issue and reaffirm our disapproval of the pipeline's placement in the Straits.

From our July 12, 2017 government-to-government consultation, the understanding was that Line 5 is currently in compliance with their 1953 easement (with the State of Michigan) requirement of having the pipeline supported every 75 feet. If so, what is the purpose of installing the proposed 22 supports? The proposed activities would constitute new construction, and not simply maintenance of the existing line. With this new construction, the Corps should require Enbridge to halt the use of Line 5 until they complete a full environmental assessment.

New construction activities of this magnitude in an area that harbors one of the most productive fisheries in the Great Lakes, would impact treaty-protected resources. The placement of 22 new support structures will disturb sediments surrounding the pipeline. These sediments may contain toxins

leached from the coal tar coating of Line 5. This is of concern as this area of the Straits is home to some of the most productive fishing grounds and vital fish nursery habitat in the Great Lakes. Enbridge's proposed actions could physically disturb fish spawning and nursery habitat, or expose precious fishery resources to toxins. Subsistence fishers would also be disproportionately exposed to these effects. Sediment and subsequent toxin resuspension was also a concern with Enbridge's October 2016 permit application to install four supports, but to date, little has been done to investigate these concerns.

In the broader scope, the Bay Mills Indian Community must reiterate its gravest concerns about the threat that Line 5 in the Straits of Mackinac poses to the entire Great Lakes region. Far too much is at stake to accept the risk of Line 5's continued operation in the Straits of Mackinac. Enclosed please find a copy of Bay Mills Indian Community's Resolution Number 15-3-16-B which calls for the decommissioning of Line 5 under the Straits of Mackinac.

Sincerely,



Levi D. Carrick Sr.
Tribal Chairman
Bay Mills Indian Community

cc:

Charlie Simon, Chief, Regulatory Office
Kerrie Kuhne, Chief, Permit Evaluation Western Branch
Katie Otanez, Regulatory Project Manager
Curtis Sedlacek, District Archaeologist and Tribal Liaison

enclosure



Bay Mills Indian Community

12140 West Lakeshore Drive
Brimley, Michigan 49715
(906) 248-3241 Fax-(906) 248-3283



RESOLUTION NO. 15-3-16-B

Support for Decommission of Enbridge Line 5 Oil Pipeline under the Straits of Mackinac

- WHEREAS: The Bay Mills Indian Community is the recognized successor to Sault Ste. Marie area bands which signed the Treaty of March 28, 1836 (7 Stat. 491), by which the right to fish in the ceded waters of Lakes Superior, Huron and Michigan--including the Straits of Mackinac-- was expressly reserved for all time, and
- WHEREAS: Enbridge Pipelines, Inc., operates a 645-mile, 30-inch diameter pipeline, named Line 5, which was constructed in 1953 and transports a variety of petroleum products, and
- WHEREAS: Line 5 splits into two 20-inch diameter parallel underground pipelines upon reaching the northern shore of the Straits of Mackinac, which cross the Straits west of the Mackinac Bridge for a distance of 4.6 miles, and which at any given time contains nearly one million gallons of crude oil, and
- WHEREAS: The Tribe is concerned about any discharge of petroleum products into the Straits, as it would adversely affect fishery shoaling, spawning and nursery areas in both Lakes Michigan and Huron which encompass the most productive fishing areas in the 1836 Treaty ceded waters, and
- WHEREAS: A catastrophic oil spill into the Straits would devastate the aquatic ecosystem, damage the shoreline of Lakes Huron and Michigan for hundreds of miles, and disrupt, degrade and diminish the tribal fishery reserved by treaty, and
- WHEREAS: Line 5 was designed to function for a 50-year period, which has already expired, and it is already subject to small ruptures, which have been documented as occurring along the upland portion of the Line, resources which the Bay Mills Indian Community has a treaty-protected right to enjoy, and
- WHEREAS: Enbridge has failed to adequately monitor and maintain its pipelines in this State, as is demonstrated by the 2010 pipeline rupture of oil into the Kalamazoo River, which contaminated 40 miles of that body of water, and

WHEREAS: Continued operation of Line 5 will ultimately result in a rupture of the pipeline, causing catastrophic damage to the waters of northern Lakes Michigan and Huron and the people who depend on them for their economic livelihood, their quality of life, their cultural and esthetic well being and their very existence, and

WHEREAS: The human and natural ecosystems of the Straits of Mackinac are both too complex and too fragile for a replacement pipeline for Line 5 to be successfully sited and constructed within the reasonably foreseeable future.

NOW, THEREFORE BE IT RESOLVED, that the Executive Council of the Bay Mills Indian Community hereby requests the Michigan Petroleum Pipelines Task Force to recommend that the Enbridge Line 5 Pipeline underlying the Straits of Mackinac be decommissioned.

AND BE IT FURTHER RESOLVED, that the Executive Council hereby requests that any regulatory body with oversight authority over the subject matter and/or geographic area to take any and all actions reasonable and necessary to mandate and enforce the decommissioning of Line 5 at the Straits of Mackinac

APPROVED:


Levi D. Carrick Sr., President
Bay Mills Indian Community
Executive Council

ATTEST:


Anthony J. LeBlanc, Secretary
Bay Mills Indian Community
Executive Council

CERTIFICATION

I, the undersigned, as Secretary of the Bay Mills Indian Community, do hereby certify that the above Resolution was adopted and approved at a meeting of the Executive Council held at Bay Mills, Michigan, on the 16th day of March, 2015, with a vote of 3 for, 0 opposed, 1 absent, and 1 abstaining. As per provisions of the Bay Mills Constitution, the President must abstain except in the event of a tie.


Anthony J. LeBlanc, Secretary
Bay Mills Indian Community
Executive Council

EXHIBIT I



MAY 27, 2020

Charles M. Simon
Chief, Regulatory Office
Department of the Army
Detroit District, Corps of Engineers
477 Michigan Avenue
Detroit, MI 48226-2550

VIA Email to Katie.L.Otanez@usace.army.mil

RE: ENBRIDGE LINE 5 PERMIT FILE NO. LRE-2010-00463-56-A19

On behalf of the Bay Mills Indian Community (Bay Mills) I am writing in response to your letter dated May 14, 2020 and the May 15, 2020 Public Notice regarding the permit application by Enbridge Energy, LP (Enbridge) to construct a tunnel, U.S. Army Corps of Engineers (USACE) File No. LRE-2010-00463-56-A19. Bay Mills requests formal government-to-government consultation, extension of the public comment period by 120 days, and that the USACE convene a public hearing.

Request for Government-to-Government Consultation

As you are keenly aware Bay Mills is a signatory to the March 28, 1836 Treaty of Washington (7 Stat. 491). In the 1836 Treaty Bay Mills reserved off-reservation fishing rights in the Great Lakes, including the Straits of Mackinac, that have been confirmed by the federal courts, *see United States v. Michigan*, 471 F. Supp. 192 (W.D. Mich. 1979), *aff'd*, 653 F.2d 277 (6th Cir. 1981), *cert. denied*, 454 U.S. 1124 (1981).

In an effort to protect these Treaty resources, Bay Mills is requesting formal consultation with USACE as soon as possible. As set out in the US Army Corps of Engineers Tribal Consultation Policy, October 4, 2012, consultation is defined as:

[o]pen, timely, meaningful, collaborative and effective deliberative communication process that emphasizes trust, respect and shared responsibility. To the extent practicable and permitted by law, consultation works toward mutual consensus and begins at the earliest planning stages, before decisions are made and actions are taken; an active and respectful dialogue concerning actions taken by the USACE

that may significantly affect tribal resources, tribal rights (including treaty rights) or Indian lands. *See* §3(b).

Due to the magnitude of the proposed construction and the far reaching impacts that the construction and continued operation of Enbridge's Line 5 will have on Bay Mills' treaty protected resources, Bay Mills requests consultation between USACE, Bay Mills and other impacted Tribal Nations. Government-to-government consultation should be a process of seeking, discussing, and seriously considering the views of Bay Mills, and seeking agreement with Bay Mills on the development of regulations, rules, policies, programs, projects, plans, property decisions, and activities that may affect Treaty rights, Tribal Resources, historic properties, and contemporary cultural practices. This requires true government-to-government collaboration between the USACE and Bay Mills, where high level Department representatives meet with Tribal leadership and staff. The Department should understand that a letter inviting consultation followed by a unilateral briefing given to Tribal Nations by the Department does not constitute consultation.

Request for Extension to Submit Public Comments

Bay Mills is also requesting that USACE extend the June 4 public comment period and the June 13 Bay Mills comment period by a minimum of 120 days beyond these scheduled deadlines.

Bay Mills received notice from USACE by letter dated May 14, 2020 informing Bay Mills that Enbridge had applied for permits related to a proposed oil pipeline tunnel beneath the Straits of Mackinac and that comments were due within 30 days of the letter. Bay Mills also obtained a copy of USACE's May 15, 2020 Public notice that provides a twenty-day public comment period, which is scheduled to expire on June 4, 2020. Due to the ongoing COVID-19 pandemic and resulting state of emergency, 20 and 30 day periods are without doubt insufficient to give this proposal the meaningful review and analysis it requires. Similar to the State of Michigan, Bay Mills declared a state of emergency¹ on March 23, 2020 due to the COVID-19 pandemic, which includes a shelter-at-home order to our tribal members and employees. While some Bay Mills employees are required to work as best they can from home, they are not in a position to review and provide substantive cultural and technical comments on permit applications submitted by Enbridge regarding the siting and construction of its pipeline tunnel to be located beneath the Straits of Mackinac. Bay Mills anticipates that employees will return to work in a phased approach over a period of 8 weeks and will not be fully operational until August 1, 2020 at the earliest. Accordingly, Bay Mills requests that the USACE extend the public comment period as well as the Bay Mills' comment period for at least an additional 120 days, or until no earlier than September 14, 2020.

Request to Convene a Public Hearing

Bay Mills requests the USACE convene a public hearing to consider Enbridge's application. A public hearing should be held in person to allow the many Tribal members the opportunity to provide public comments to the USACE. Public hearing participants will include tribal fishers and

¹ Resolution No. 20-03-23C Declaration for State of Emergency in Bay Mills Indian Community due to COVID-19 Pandemic on March 23, 2020, and Resolution No. 20-03-23E Shelter at Home Executive Order in Response to Declaration for State of Emergency in Bay Mills Indian Community due to COVID-19 Pandemic on March 23, 2020.

cultural practitioners who rely heavily on the various treaty protected resources for subsistence and commercial purposes, which are once again being placed in harm's way. Furthermore, an in person public hearing will allow our members that do not have access to reliable internet or electronic online forums the opportunity to participate and provide invaluable information to the USACE. Bay Mills strongly prefers an in person public meeting when it is safe and permissible to do so, but at a minimum USACE should convene a virtual meeting where public participation is maximized with accommodations made for community members who do not have internet access or required technology to attend virtual meetings.

Bay Mills looks forward to our government-to-government consultation with the hope of finding amenable solutions, if any, to protect the invaluable Treaty resources. And please let us know your response to our extension requests and call for a public hearing so that we can plan accordingly. Should you have any questions about this communication please do not hesitate to contact Bay Mills Legal Department at candyt@bmic.net or wgravelle@baymills.org.

Sincerely,



Bryan Newland, President
Bay Mills Indian Community

Cc by email:

Katie L. Otanez, Regulatory Project Manager, USACE
Curtis Sedlacek, Tribal Liaison, USACE

katie.l.oranez@usace.army.mil
curtis.h.sedlacek@usace.army.mil

EXHIBIT J

May 26, 2020

Kerrie E. Kuhne
Chief, Permit Evaluation Western Branch
Regulatory Office
Corps of Engineers, Detroit District
477 Michigan Avenue
Detroit, Michigan 48226-2550

Re: Request for Comment Period Extension and Public Hearing on Corps File No. LRE-2010-00463-56-A19

Dear Ms. Kuhne:

The undersigned environmental and civic organizations, businesses, and Tribes, representing millions of citizens throughout Michigan and the Great Lakes Basin, respectfully requests that the United States Army Corps of Engineers (USACE) extend the public comment period on Corps File No. LRE-2010-00463-56-A19 by a minimum of 120 days beyond the currently scheduled public comment deadline. We also write to request a public hearing be held to consider this application when it is safe to convene members of the public after the risk of COVID-19 transmission subsides.

On May 15, 2020, USACE public noticed Corps File No. LRE-2010-00463-56-A19. The application is for a proposed pipeline tunnel under the Straits of Mackinac between Mackinaw City and Saint Ignace, Michigan. The notice provides a twenty (20) day public comment period, which currently closes on June 4, 2020.

Twenty days is insufficient to give this proposal the meaningful review and analysis it requires. The proposal involves many complex technological and scientific, issues related to tunnel construction beneath in the bottomlands of the Great Lakes, petroleum transportation, and the ecology of the Great Lakes, including the Straits of Mackinac and adjacent wetlands. Development of thoughtful comments in the time provided is clearly unachievable and is therefore inconsistent with providing adequate or lawful public participation. We believe 120 days is an appropriate amount of time necessary for the public to comprehend the complexity, expansiveness, and potentially significant impacts of this project.

An additional confounding factor is that the public notice was issued when the State of Michigan is in the midst of a State of Emergency due to the COVID-19 pandemic. On April 30, 2020, Governor Gretchen Whitmer, finding that COVID-19 had created emergency and disaster conditions across the State of Michigan, issued Executive Order 2020-67 to continue the emergency declaration under the Emergency Powers of the Governor Act, as well as Executive Order 2020-68 to issue new emergency and disaster declarations under the Emergency Management Act. It is extremely challenging, if not impossible, for individuals to provide public comment or to devote resources toward engaging in this process when there are more pressing health and family concerns.

Given these difficult circumstances, we request that a public hearing be scheduled only after health officials confirm that the risk of transmission has subsided and stay-at-home orders have been lifted. This is especially critical for individuals who are affected by the proposed project and are vulnerable to

serious illness from COVID-19. Many residents in Northern Michigan are without reliable internet access or the ability to effectively participate in virtual hearings. To allow for meaningful public input on the application and the USACE's public interest review, a public hearing must be held in person.

We respectfully request that the U.S. Army Corps of Engineers extend the public comment period for at least an additional 120 days, or until no earlier than September 14, 2020, and for and for a public hearing to be held to consider Corps File No. LRE-2010-00463-56-A19.

Should you have any questions regarding this request, please feel free to contact Jennifer McKay, policy director Tip of the Mitt Watershed Council at jenniferm@watershedcouncil.org or 231-347-1181.

Thank you for considering this request.

Sincerely,

Bryan Newland, President
Bay Mills Indian Community

Rev Pinkney
Black Autonomy Network Community Organization

Larry Bell
Bell's Brewery, Inc.

Therese Povolo
Champion Hill Farm

Jane A. TenEyck, Executive Director
Chippewa Ottawa Resource Authority

Mary Brady-Enerson, Michigan Director
Clean Water Action

Kim Phillips
Clearwater Lakeshore Motel

David Kranker
David Kranker Creative

James N. Bull, Fund Development and
Environmental Policy Coordinator
Detroit Audubon

Charlie Wunsch
Edible Grande Traverse

Margrethe Kearney, Senior Attorney
Environmental Law & Policy Center

Nicholas Lefebre
Ethanolology Distillation

Liz Kirkwood, Executive Director
FLOW (For the Love of Water)

Jill Ryan, Executive Director
Freshwater Future

Timothy Fitzgerald Young
Food for Thought

Grant Piering
Grant Piering, LLC

Phil Roos
Great Lakes GrowthWorks

Chris Treter
Higher Grounds Coffee

Louise Nolta, Justice and Peace Coordinator
Holy Spirit Missionary Sisters, USA-JPIC

Edward L Michael, Govt Affairs Chair
Illinois Council Trout Unlimited

Nathan D. Griswold
Inhabitect, LLC

Jill Crafton , MN Division – IWLA National
Director
Izaak Walton League – Minnesota Division

Juliette King McAvoy
King Orchards

Christina Schlitt, President
League of Women Voters of Michigan

Peter Laing
MAWBY Vineyards

Sean Hammond, Policy Director
Michigan Environmental Council

Lisa Wozniak, Executive Director
Michigan League of Conservation Voters

Anne Woiwode, Chair, Executive Committee
Michigan Sierra Club

Mike Shriberg, Great Lakes Regional Executive
Director
National Wildlife Federation

Greg Reisig, Co-Chair
**Northern Michigan Environmental Action
Council**

Sean McBrearty, Campaign Coordinator
Oil and Water Don't Mix

Irene Senn, Coordinator
Religious Coalition for the Great Lakes

Richard Bergmann
Round Lake Group Hospitality

Le Roger Lind, President
Save Lake Superior Association

Lori Andresen, President
Save Our Sky Blue Waters

Travis Solberg
Solberg MFG

Bill Latka
Storylicious

Autumn Sands
Sustainable Research Group

Pete Kirkwood
The Workshop Brewing Company

Jennifer McKay, Policy Director
Tip of the Mitt Watershed Council

Jean Ross, Board President
Vote-Climate

Bill Wood, Executive Director
**West Michigan Environmental Action Council
(WMEAC)**

Dick Dinon
Wineguys

EXHIBIT K



Grobbel Environmental & Planning Associates

PO Box 58 Lake Leelanau Michigan 49653

February 21, 2019

Submitted via electronic mail to CEMVP-L3R-PN-Comments@usace.army.mil

Thomas Hingsberger
St. Paul District, Corps of Engineers
Regulatory Branch, CEMVP OP-R
180 Fifth St. E., Suite 700
St. Paul, Minnesota 55101-1678

Re: Comments on Application No. 2014-01071-TJH

Dear Mr. Hingsberger,

I. Introduction

At the request of the Sierra Club and Earthjustice, Grobbel Environmental & Planning Associates has provided these comments relative to the proposed replacement and partial re-routing of Enbridge Inc.'s Line 3. Enbridge's Line 3 is a fifty-seven (57) year old, 34-inch diameter steel pipeline which runs for 1,097 miles extending from Alberta, Canada to Superior, Wisconsin. The replacement of approximately 282 miles of the existing Line 3 in Minnesota with 330 miles of new 36-inch diameter, 0.515 inch thick pipeline¹ and its associated facilities is proposed from the Red River valve in North Dakota to the Minnesota/Wisconsin border. The pipeline project is subject to U.S. Army Corps of Engineers' (U.S. ACE) jurisdiction and review pursuant to Sections 10/404 of the federal Clean Water Act.² Known pipeline integrity issues exist within the existing Enbridge Line 3 including external corrosion, stress corrosion cracking, long seam cracking. The proposed replaced Line 3 may convey up to 760 thousand barrels of heavy, light and mixed crude oil per day.³

¹ The new Line 3 Pipeline is proposed within a 50 foot wide permanent right-of-way and 95 and 120-foot wide construction corridors.

² Federal Clean Water Act, as amended, 33 U.S.C. §1251 *et seq.* (1972) and its administrative rules.

³ It is acknowledged that a replaced Line 3 may convey up to 915,000 barrels per day if optimized.



II. Background

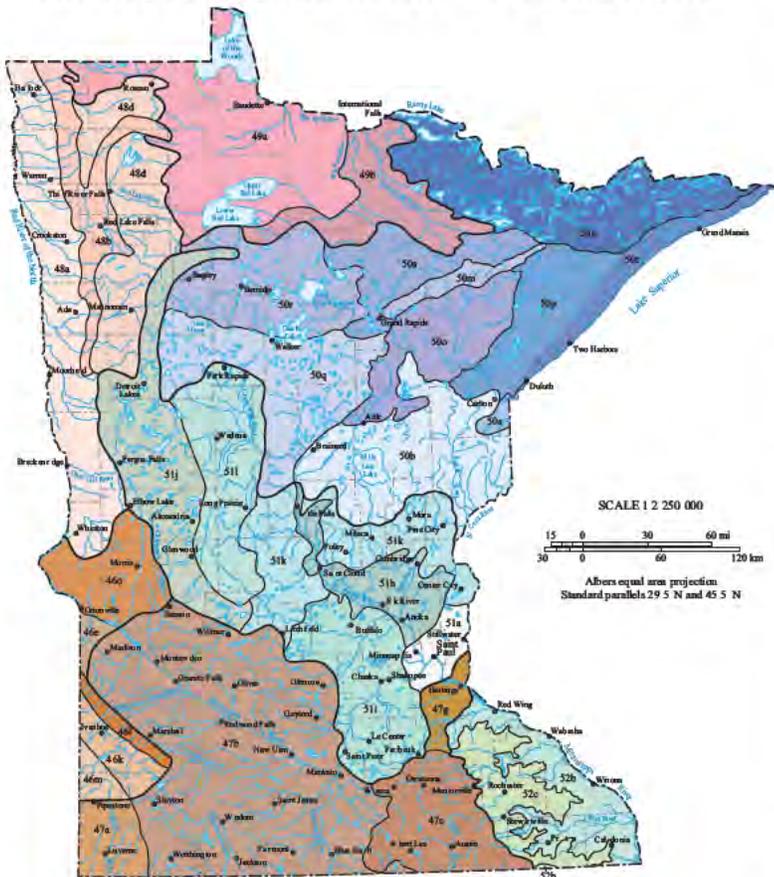
A. Proposed Line 3 Pipeline Route

Enbridge’s proposed replaced and relocated Line 3 route crosses agricultural land, forestland and fallow agricultural land and in part follows existing utility corridors across thirteen (13) counties in Minnesota and a short portion within Pembina County, North Dakota. From the North Dakota border a replaced Line 3 would follow the existing Line 3 route to the Clearbrook Terminal in in Clearwater County, Minnesota (MN). Then the route would turn south to generally follow an existing third party crude oil pipeline right-of-way to Hubbard County, MN. Line 3 would then run easterly generally following existing electric transmission lines until it joins the Enbridge right-of-way in St. Louis County, MN. This section of the pipeline route would pass through the Fond du lac Reservation to Enbridge’s Superior Terminal which is adjacent to Lake Superior at the MN/ Wisconsin border in Carlton County, MN.

Based on information and belief, Enbridge’s Line 3 currently conveys a form of crude oil mix developed in the Athabasca oil sand fields in northeastern Alberta, Canada consisting of a mixture of crude “bitumen,” silica sand, clay and water referred to as diluted bitumen or “dilbit.” Dilbit is a bitumen⁴ diluted with one or more

⁴ Bitumen a viscous, black, sticky tar-like substance refined from crude oil by fractional distillation.

MINNESOTA LEVEL III AND IV ECOREGIONS



Revised, 11 May 2007

lighter petroleum products, typically natural gas condensate such as naphtha.⁵

B. Northern and Central Minnesota

The portion of Minnesota through which a replaced Line 3 pipeline is proposed owes its land forms, wetlands and freshwater bodies and waterways to historic continental glaciation. The most recent of which covered this area with glacial ice during the Pleistocene epoch of the Quaternary glacial period approximately 10,000 years before present.

The proposed Enbridge Line 3 pipeline route in northwest Minnesota would cut through the Lake Agassiz Plain ecoregion which possesses important unbroken native prairies and grasslands. Northwest Minnesota also possesses numerous pothole wetlands within the Northern Minnesota Wetlands ecoregion.⁶

The proposed pipeline route would also cross the nationally important Mississippi Headwaters region within Northern Lakes and Forest ecoregion in central Minnesota. Due to its relatively little historic development when compared to other

⁵ "Dilbit Bitumen" is reduced in viscosity through addition of a diluent (or solvent) such as condensate or naphtha. A "diluent" is any lighter hydrocarbon, usually pentanes plus, added to heavy crude oil or bitumen in order to facilitate its transport on crude oil pipelines. "Condensate" is a mixture comprised mainly of pentanes and heavier hydrocarbons recovered as a liquid from field separators, scrubbers or other gathering facilities or at the inlet of a natural gas processing plant before the gas is processed. "Dilbit Blends" are made from heavy crude oils and/or bitumens and a diluent, usually natural-gas condensate for the purpose of meeting pipeline viscosity and density specifications, where the density of the diluent included in the blend is less than 800 kg/m³. If the diluent density is greater than or equal to 800 kg/m³, the diluent is typically synthetic crude and accordingly the blend is called synbit. "Synbit" is a blend of bitumen and synthetic crude oil that has similar properties to medium sour crude. Source: *Alberta Oil Sands Bitumen Valuation Methodology*, 2008-9995, Calgary, Alberta: Canadian Association of Petroleum Producers, Dec 2008. *Canada's Oil Sands: Opportunities and Challenges to 2015* (PDF) (Energy Market Assessment). Calgary, Alberta: National Energy Board. May 2004. pp. 115-118. ISBN 0-662-36880-0. Retrieved 14 Mar 2012.

⁶ A "pothole" wetland is a shallow pond and wetland feature dominated by grasslike "hydrophytic" or water-loving vegetation.

affected ecoregions, these areas possess the highest surface water quality in Minnesota.⁷ The Mississippi Headwater area encompasses about one-quarter of the state, and contains the headwater source of the Mississippi River. The Crow Wing, Pine, Sauk, Rum and other small rivers join with a small stream emanating from Itasca State Park, and is widely thought of as the source of the Mississippi River. These waters provide drinking water for more than 1 million downstream residents. Sandy soils in this region are overlain with deep forests interspersed with wetlands. These important freshwaters replenish groundwater which provides drinking water to local communities and are intimately connected to the area's high quality lakes and rivers and the aquatic life they support. North-central Minnesota is the State's land of lakes region, typified by numerous high quality inland lakes left behind following the last ice age. This region is characterized by broad, sandy jack pine barrens and pine plains - which are highly vulnerable to contamination from releases of hazardous substances.⁸ The proposed Line 3 pipeline route in the central portion of Minnesota traverses the Glacial Lakes Upham & Aitken, Itasca and St. Louis Moraine, Chippewa Plains, and Minnesota/Wisconsin Till Plains ecoregions.

The northeastern region of Minnesota within which a replaced Line 3 is proposed is the Big Woods ecoregion, adorned with high quality muskeg wetlands within sandy pine plains - also sensitive and highly vulnerable natural resources.⁹

C. Proposed Waterway Crossings

Enbridge's Line 3 replacement project as proposed would also cross two-hundred and eleven (211) waterbodies and sixteen (16) major watersheds within Minnesota.¹⁰ Watersheds proposed to be crossed in Minnesota include the Red River of the North-Tamarac River, Snake Rivers, Red River of the North-Grand Marais Creek, Red Lake River, Clearwater River, Mississippi Rivers-Headwaters, Crow Wing/Straight River subwatershed, Pine River, Leech Lake River, Mississippi River-Grand Rapids, Kettle River, Nemadji River and St. Louis River. Enbridge's Line 3 replacement project proposes to cross eighty-five (85) perennial streams, one-hundred and six (106) intermittent streams, and twenty (20) ephemeral streams. Fifty-six (56) of these watercourses are designated public waters by the State of Minnesota, and three (3) are considered navigable and thereby federally-regulated pursuant the CWA.¹¹ Importantly, five (5) Minnesota-designated trout streams (i.e., 2 in Hubbard County, and one each in Cass, Atkin and Carlton Counties), and three (3) wild rice waters (i.e., one

⁷ Review of Line 3 Draft Environmental Impact Statement, R. Merritt, P.G., Merritt Hydrologic and Environmental Consulting, LLC, undated, p. 11 quoting the Line 3 Project Draft Environmental Impact Statement (DEIS), p. 5-61.

⁸ *Ibid.*, pp. 16-20.

⁹ A "muskeg" wetland is a large, peat-accumulating acidic bog wetland.

¹⁰ Project Summary: U.S. Army Corps of Engineers, St. Paul District, Regulatory Branch, 180 5th Street E, Suite 700, Saint Paul, MN 55101, https://www.mvp.usace.army.mil/Enbridge_Line3/, and *U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application*, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018., p. 23.

¹¹ *U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application*, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018., p. 25.

each in Red Lake, Hubbard and Wadena Counties) are proposed to be crossed by the new Line 3.¹² Merritt (undated) reports that the proposed replacement Line 3 would or could potentially impact twenty-six (26) wild rice areas within 1/2 mile of the pipeline, and that potential impacts to wild rice areas are not adequately assessed.¹³ Emergent wetlands yielding wild rice are sensitive to water quality changes, such as increased sediment loading from construction activities causing erosion and deposition.¹⁴ *Discrepancies in the number of wild rice areas proposed for impact or potentially impacted by the project, and the methods for their identification should be adequately assessed and disclosed to the public prior to any final agency action in this matter.*

Enbridge has also proposed to cross twenty-one (21) waterbodies with pipeline construction access roads, and two (2) permanent bridges crossing waterways to access pipeline valve sites. Of these proposed waterway crossings, four (4) are proposed to be built with unspecified in-stream support technologies.¹⁵ *These in-stream crossing plans should be disclosed and adequately assessed prior to any final agency action in this matter.*

III. Environmental Impact Analysis

A. Bedrock Geology

The potential for damage to Enbridge's proposed Line 3 replacement from seismic activity is given no description or assessment in project scoping studies and documents. Enbridge's proposed route traverses four (4) geologic sub-provinces, including the Wabigoon, Quetico, Wawa and Penoken Orogen bedrock sub-provinces. Importantly, this proposed pipeline route also crosses four (4) major thrust faults, i.e., the Florain Batholith, Fourtown, Leech Structural Discontinuity and an unnamed thrust fault, and seven (7) other mapped geologic faults.¹⁶ *The structural integrity of the proposed replaced Enbridge Line 3 pipeline should be evaluated in association with these inherently unstable bedrock fault lines, and the likelihood of pipeline damage or integrity failure from seismic events should be evaluated and made available for public review prior to any final agency decision-making.*

¹² *Ibid.*, p. 25.

¹³ Review of Line 3 Draft Environmental Impact Statement, R. Merritt, P.G., Merritt Hydrologic and Environmental Consulting, LLC, undated, pp. 15-16.

¹⁴ Final Environmental Impact Statement, Exxon Coal and Minerals Co., Public Service Commission of Wisconsin, Wisconsin Dept. of Natural Resources, University of Wisconsin, Madison, 1986, 446 pages.

¹⁵ *Ibid.*, p. 26.

¹⁶ Geologic Map of Minnesota, Bedrock Geology, University of Minnesota, M. Jirsa, et al., 2011.

B. Groundwater Resources

The potential impact to groundwater resources, and groundwater connectivity to surface water and wetland resources is given little description or assessment in Line 3 replacement project scoping studies and impact assessment documents. *North and central portions of the proposed replaced Line 3 pipeline route possess extensive, high quality groundwater resources and areas of sandy surficial soils, resulting in the high vulnerability of groundwater to contamination from surface spills of hazardous materials such as petroleum.* The Minnesota Department of Natural Resources in March 2017 designated the Straight River Basin in Becker and Hubbard Counties as a Groundwater Management Area as “an area of specific concern where groundwater resources are at risk of...degraded (water) quality.”¹⁷

We concur with other’s findings that “(t)hough the (Minnesota DNR) identifies the Straight River Basin as one of the important Minnesota aquifers and significant scientific studies have been completed for the area, the DEIS ignores its importance. The (proposed) pipeline route is designed to travel through the heart of this highly sensitive...basin...The (Minnesota) DEIS must conduct a complete groundwater analysis of the potential impact from a spill within this...Pineland Sands outwash aquifer.”¹⁸ We highly recommend that the U.S. ACE adequately complete its own Environmental Impact Assessment (EIS) and undertake a meaningful analysis of the potential for groundwater and groundwater/drinking water impact from the proposed project, including the potential for catastrophic and smaller pipeline releases and other spills during construction.

¹⁷ Review of Line 3 Draft Environmental Impact Statement, R. Merritt, P.G., Merritt Hydrologic and Environmental Consulting, LLC, undated, pp. 22-25.

¹⁸ *Ibid.*, p. 25.



C. Known Impacts to Wetlands and Aquatic Resources

The Enbridge Line 3 replacement project would directly impact 1,046.5 acres of wetlands, with approximately one-mile of wetlands impacted adjacent to the Red River in North Dakota, and 10.8 acres of wetlands permanently impacted through the proposed construction of above-ground pump stations and valve sites. The replaced Line 3 will generally be buried to a depth of 4 feet within wetland and waterway crossings.

Generally-accepted engineering practices and common wetland policy and regulations require: a) the maximal avoidance of wetland impact, b) the minimization of unavoidable wetland impact (i.e., based upon a robust wetland crossing or fill site by site alternatives analysis), and c) the mitigation of significant wetland and/or aquatic resource impacts, such as near-site replacement wetland construction and/or wetland preservation at compensation ratios resulting in a net increase in wetland acreage. Enbridge proposes to construct a replaced

Line 3 pipeline impacting 1,400 distinct wetland areas.¹⁹ Referencing the U.S. Fish and Wildlife Cowardin Wetland Classification System, 58.2% of proposed wetland crossings are within palustrine²⁰ emergent (PEM), 23.7% are forested (PFO), 15.7% are shrub-scrub (PSS), and 2.6% are aquatic bed (PUB) wetland types. *We find that large, high quality wetlands with significant vegetative species diversity, high aquatic organism habitat value, and/or stream crossings are proposed to be impacted by Line 3 replacement within fifty-four (54) sensitive areas.*

These ecologically sensitive areas include but are not limited to wetlands at or near project markers #835-836, #842 (with a small stream), #843-843.5, #857.5, #859.5-860.5, #864.5, #876.5, #875.5 (at the Clearwater River), #884, #892, #895-895.5, #905.5, #909.5-910, #911-912, #914, #917, #919, #921.5, #922-922.5 (with a small stream), #924-924.5, #925, #931.5, #933, #937.5-938, #939, #940-941, #945.5-946.5 (with a small stream), #953-960.5 (within extensive glacial pothole area), #961-962, #963.5 (at Hay Creek), #966.5 (running adjacent to Long Lake), #974 (at the Straight River), #976 (at the Shell River), #981-981.5 (at the Shell River), #982.5, #983-983.5 (at the Shell River), #996.5, #998-999.5, #1000.5-1001.5 (at Big Swamp Creek), #1009, #1012.5-1060, #1020-1020.5, #1022.5 (with a small stream), #1022.5 (with a small stream), #1025.5-1026.5 (at Ada Brook/Blind Lake Creek), #1027-1037, #1041 (at Spring Brook), #1043, #1046-1048 (at Moose River), #1049-1051.5, proposed access roads in an extensive wetland area at #1054.5-1077, #1096 (at the Mississippi River), an extensive wetland area #1078-1129, and another extensive wetland area at #1110.5-1115.

Due to wetland diversity, size and/or riparian location/hydrologic connection to waterways, the following proposed wetland crossings are considered particularly damaging, impacting and impairing to aquatic resources:

- Marker #845.5;
- Markers #854.0-854.5;
- Markers 850.6-851.0;
- Markers #856.1-856.5;
- Markers 875.9-876.9;
- Markers #893.3-985.5;
- Marker #905.5;
- Marker #906.0-906.7;
- Marker #907.5;
- Markers #928.0-928.7;
- Markers #945.5-946.5;
- Markers #961-962;
- Marker #963.5 at Hay Creek;
- Marker #966.5 adjacent to Long Lake;
- Markers #1000.5-1001.5 at Big Swamp Creek;

¹⁹ It is noted that wetland delineation reports though alluded to by Enbridge's Line 3 replacement project application documents, based on information and belief were not publicly available. The disclosure of wetland delineation reports are required to verify wetland boundaries and types as characterized and presented by the Applicant.

²⁰ "Palustrine" wetlands are inland wetlands that lack flowing water.

Markers #1012.5-1060;
Markers #1027-1037 within a critical pothole and headwater area;
Markers 1034.2-1035.9;
Marker #1043 within a critical pothole headwater area;
Markers #1051.2-1051.5;
Proposed access roads in an extensive wetland area/Mississippi River at #1055.4-1069.6 ;
Markers #1074.6-1092.3 within Atkins and Carlton Counties;
Markers #1110.2-1113.7 within extensive wetland areas;
Markers #1114.6-1115.3;
Markers #1116.1-1118.5; and
Marker #1123.5.

It is highly recommended that pipeline route planning be improved to maximally avoid impact to the above wetland complexes.²¹ Others have also has noted that the proposed Line 3 pipeline route would cross or pass within 1,000 feet from four (4) ecologically sensitive, unique and high quality calcareous fen wetlands west of Clearbrook within post-glacial beach ridges formed by glacial Lake Agassiz.²² We concur that project scoping studies and impact assessment documents do not adequately identify, analyze or assess potential or known impacts to these important wetland resources.

Further, significant wetland impact is proposed through pipeline access road construction at Enbridge *Detailed Route Maps* pp. 367-369 (Atkin County), pp. 370-376 (Atkin County), pp. 380-393 (Atkin County), pp. 422-429 (Atkin County), pp. 437-442 (Atkin County), pp. 449-457 (Atkin County), pp. 470-472 (St. Louis County), pp. 478-480 (Atkin County), and pp. 488-494 (Atkins & St. Louis Counties).

It is strongly recommended that Enbridge further assess proposed pipeline access road crossings at these wetlands, maximally avoid these wetland areas, and fully minimize wetland impacts when unavoidable.

D. Proposed Enbridge Line 3 Waterway Crossings

Twelve (12) significant waterway crossings are proposed at project mile markers #863 (at the Red Lake River), #875.4 (at the Clearwater River), #941 (at a headwater of the Mississippi River), #963.7 at Hay Creek, #974.2 at the Straight River, #976.6 at the Shell River, #981.4 at the Shell River, #983.7 at the Shell River, #985.4 (at the Oxbox Pond/Shell River), #991.2 at the Shell River, #993.3 at the Crow Wind River, #1017.3 at the Pine River, and #1047.9 at the Moose River and its tributaries. Of these twelve (12) proposed river crossings, Enbridge proposes horizontal directional drilling (HDD) beneath stream/river beds at 9 of 12 or 75% of these locations.

²¹ Examples of appropriate, exemplary wetland avoidance and/or impact minimization are evidenced at pipeline routing plans at Marker #s 804; 829; 832.4-832.5, 839.5-840.4, 846.8, 852.0, 855.7-856.0, 858.1-858.5, 870.7-871.2, 877.1-877.5, 892.6-893.0, 971.9-972.0, 978.5-978.9, 1004.7-1004.8, 1006.2-1006.3, 1009.5-1010.0, 1021.5-1022, 1039.8-1040.7, 1078.0-1078.4, 1096.5-1097.0, and at pipeline access road maps p. 466.

²² Review of Line 3 Draft Environmental Impact Statement, R. Merritt, P.G., Merritt Hydrologic and Environmental Consulting, LLC, undated, p. 14.

Importantly, dry crossing pipeline installation is proposed at marker #976.6 at the Shell River, #981.4 at the Shell River, and #1017.5 at the Pine River. Also, wet open cut pipeline installation is proposed at #1047.9 at the Moose River and its tributaries.

It is noted that the proposed pipeline crossings at Marker #864.3 at the Red Lake River and #991.2 at the Shell River are poorly planned and if built should be modified to cross at a straight river segment, with a minimum crossing distance, and perpendicular to water flow. It is highly recommended that the HDD method be utilized at each of the above significant river crossings identified in this report to minimize the potential for unacceptable water quality and aquatic resources impact from pipeline stream/river crossings at these locations.

E. Forested Wetland Conversion

The proposed Enbridge pipeline would directly impact 1,046.5 acres of wetlands, 10.8 acres of wetlands are proposed to be impacted for the construction of above-ground pump stations and valve sites, and 82.0 acres from the construction of access roads. Of these proposed wetland impacts, 380.35 acres, or thirty-three percent (33%), are reportedly planned within forested wetlands.²³ The cutting of forested wetlands for pipeline and access road construction have been empirically documented to result in the permanent conversion of forested wetland types through the conversion to emergent and/or shrub-scrub wetland types.²⁴ Such forested wetland loss results in the loss of wetland functions including but not limited to: a) a decrease in above ground biomass; b) the loss of forest interior habitat; c) a decrease in structural diversity; d) the loss of visual and aural screening from human activity; e) a decrease in local climate amelioration; f) the loss of evergreen winter cover for wildlife; g) the loss of habitat for shade-tolerant or shade-loving plant species; h) the loss of mast production (e.g., acorns, etc.) for wildlife food; i) and increase in and replacement of native plant species with invasive and exotic plant species, etc. Deer and rabbit browse also inhibit forested wetland regeneration, and the regeneration of impacted forested wetlands takes decades - when successful.

It is highly recommended that the cutting or disturbance of forested wetlands be maximally avoided in this proposed pipeline project. Finally, it is highly recommended that site by site HDD alternative analyses be adequately performed prior to the permitting of proposed crossings of all waterways and important wetlands areas.

²³ U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018, p. 30-34.

²⁴ *The Effects of Converting Forest or Scrub Wetlands into Herbaceous Wetlands in Pennsylvania*, Schmid & Company, Inc. Consulting Ecologists, Media, PA, June 2014.

F. Pipeline Access Roads

Enbridge has not fully assessed the number and location of pipeline access roads. Specifically, Enbridge states,

“If public or privately-owned roads are not available, Enbridge may need to construct new roads. Prior to the use of private access roads, modifications to existing non-private roads, and construction of new access roads, Enbridge will obtain landowner permission, conduct environmental surveys and obtain applicable environmental permits and clearances.”²⁵

It is imperative that Enbridge fully assess the impacts of and disclose all proposed access roads for a proposed Line 3 replacement project so as not to “segment” the regulatory/permit review process, and to fully inform the public prior to final agency decision-making.

G. Minnesota Designated Trout Streams

Proposed Line 3 replacement route will reportedly cross four (4) designated trout streams.²⁶ A review of Minnesota Department of Natural Resources (MDNR) designated trout streams indicates that proposed pipeline crossings state designated trout streams at the Moosehorn River, Big Otter Creek, Little Otter Creek, and Silver Creek in Carlton County, MN.²⁷ High quality, cold and fast flowing trout streams, though not State-designated, undoubtedly also exist but are listed in Minnesota Lakes and Mississippi Headwater ecoregions proposed for Line 3 replacement. Importantly, the release of sediments and/or petroleum can be and would likely be catastrophic to naturally reproducing trout populations and the high quality waters they depend upon for their aquatic habitat.

H. Threatened and Endangered (T&E) Species

Enbridge has disclosed potential impacts to ten (10) federally-threatened and endangered species and critical habitat for four (4) species listed in Minnesota. These T& E species could be directly or indirectly impacted by wetland filling, habitat fragmentation, changes in plant communities and/or hydrology from the proposed project. Species evaluated by include the northern long-eared bat (*Myotis septentrionalis*, a federally-threatened mammal); Canada lynx (*Lynx canadensis*, a federally-threatened mammal); gray wolf (*Canis lupus*, a federally-threatened mammal); whooping crane (*Grus americana*, a federally-endangered bird); rufa red knot (*Calidris cantus rufa*, a federally-threatened plant); piping plover-Great Lakes district species (*Charadrius melodus*, a federally-endangered bird); rusty patched bumble bee (*Bombus affinis*, a federally-endangered insect); Dakota

²⁵ U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018, p. 9.

²⁶ Review of Line 3 Draft Environmental Impact Statement, R. Merritt, P.G., Merritt Hydrologic and Environmental Consulting, LLC, undated, p. 13.

²⁷ Minnesota Department of Natural Resources website, https://www.dnr.state.mn.us/fishing/trout_streams/northeast.html.

skipper (*Hesperia dacotae*, a federally-threatened plant); and Western prairie fringed orchid (*Platanthera praeclara*, a federally-threatened plant. Enbridge has also assessed federally-listed critical habitat for Poweshiek skipperling (*Oarisma poweshiek*); gray wolf (*Canis lupus*); *Dakota skipper* (*Hesperia dacotae*); and the piping plover - Great Lakes distinct species (*Charadrius melodies*).²⁸

Specifically, the gray wolf (Great Lakes distinct population) relies upon habitats in the project region which include hardwood forests, mixed forests, and grasslands. The gray wolf excavates dens or uses the dens of other animals, and breeds February to late June. The Northern long-eared bat relies upon summer habitat in the project region, roosting underneath tree bark, in tree cavities, or in crevices of both live and dead trees. The Northern long-eared bat breeds in fall near their hibernacula (i.e., in August and September) and give birth in summer (i.e., May to July). The Northern-long eared bat spends winters in caves and mines (October to April). The Dakota skipper prefers native prairies (lowland and upland) with a high diversity of wildflowers and grasses. The Dakota skipper lays its eggs in June and July, and hatches in ten (10) days. Dakota skipper larvae are dormant in fall, and pupation usually occurs in the month of June. The Poweshiek skipperling prefers native prairies and fen wetlands containing a high diversity of wildflowers and grasses. Its eggs are laid mid-June to mid-July, and they hatch in nine (9) days. The rusty patched bumble bee relies upon grasslands and tall grass prairies with areas that provide flowers, nesting sites such as abandoned rodent cavities or grass clumps, and over-wintering sites in undisturbed soil for hibernating queens. The rusty patched bumble bee's eggs are laid in spring. The Western prairie fringed orchid occurs in mesic-wet tall grass native prairie, herbaceous wetlands, and dune complexes. The plant emerges in May, and flowers in early to mid-July.

Importantly, Enbridge has primarily relied upon internet searches and the application of models and algorithms to assess the potential impact to these state and/or federally-protected species. Moreover, Enbridge states that they “will submit an Applicant-Prepared Biological Assessment to the U.S. ACE to support its (Endangered Species Act) Section 7 consultation with the U.S. Fish & Wildlife Services (U.S. FWS) in fall 2018.”²⁹ *Based on publicly available information and belief, such threatened and endangered species in-field inventories and biological assessments have generally not been performed and/or not disclosed to the U.S. ACE and so unavailable for public review and comment.*

²⁸See *U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application*, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018, Table 12.1-1, pp. 39-40.

²⁹ *Ibid.*, p. 39.

To evaluate potential T&E species impacts, Enbridge performed a desktop assessment relying upon querying five (5) publicly-available databases of protected species past occurrence within or near the project area and the likelihood for species “takes” and/or impact to critical T&E species habitat.³⁰ These databases included the U.S. FWS’ Information for the Planning and Consultation (IPaC) system; Minnesota Natural Heritage Information System (NHIS) elemental occurrence locations and species-specific survey data; the Wildlife Action Network (WAN); Minnesota Biological Survey Sites of Biodiversity Significance (MBS), and Minnesota Scientific & Natural Areas databases. These databases were then evaluated for the likelihood of T&E species occurrence using the U.S.G.S. Gap Analysis Program (GAP) - a computer model. *Importantly, the project Final Environmental Impact Statement concludes that 13 of 21 of the protected T&E species assessed occur within the Line 3 pipeline region.*³¹ *However based on information and belief, only limited in-field T&E species surveys have been completed to date by agents for Enbridge.* For example, agents for Enbridge in 2014 found that thirty-three (33) waterbody crossings have potentially suitable habitat for protected mussels, and then they recommended subsequent in-field surveys. Enbridge reportedly completed mussel field surveys at sixteen (16) sites along the proposed replacement Line 3 route.³²

According to the federal ESA, it is illegal to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct” with regard to an endangered or threatened species.³³ In addition, the body parts and products of endangered or threatened species cannot be imported, exported, or sold. Under Section 7 of the ESA, the federal lead agency must consult with the U.S. FWS when any action may affect a federally listed species. If the agencies determine that the action may affect a federally listed species, a Biological Assessment would be prepared to assist the agencies in making a formal determination on whether the action is likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of their critical habitat. U.S. ACE is currently preparing a Biological Assessment for the Line 3 Project in response to Enbridge’s application for a CWA 404 Individual Permit (i.e., the federal action). Thus,

³⁰ The method used to evaluate direct and indirect impacts from pipeline construction on federally-listed species, the region of interest (ROI) was the area within 1 mile from the centerlines of the pipeline routes. For the state-listed species the ROI was the area within 0.5 mile from the pipeline centerlines. Impacts were evaluated by considering the area directly and indirectly affected by the Applicant’s preferred route and the route alternatives between Clearbrook and Carlton, Minnesota. Direct impacts for Enbridge’s preferred route was evaluated based on construction footprints consisting of the construction work area, ATWS, access roads, pipe yards, pipeline permanent right-of-way, valve pads and driveways, and pump stations within Minnesota. Animals were considered affected when they occurred within 0.5 mile of the route centerlines; plants were considered affected when they occurred within construction work areas and permanent rights-of-way.

³¹ Line 3 Project Final Environmental Impact Statement (FEIS), Chapter 5, Introduction Existing Conditions, Impacts, and Mitigation – Certificate of Need & Natural Environment Existing Conditions, Impacts, and Mitigation – Certificate of Need, pp. 5-358.

³² *Ibid.*, p. 5-320.

³³ *Ibid.*, pp. 5-310 through 5-426.

the U.S. FWS' formal determination on whether the project would jeopardize the continued existence of any federally-listed species or would result in destruction or adverse impact to critical habitat has yet to be made.

If any federally-listed species is likely to be adversely affected, but the project does not jeopardize the existence of a species or adversely modify critical habitat, U.S. FWS will develop a Biological Opinion identifying the proposed project activities, action area, anticipated impacts, and Reasonable and Prudent Measures. Reasonable and Prudent Measures are the actions U.S. FWS believes are necessary to minimize the proposed project's effect on federally listed species. The Applicant would comply with RPMs identified by U.S. FWS to protect federally-listed species.

We find that the Applicant has failed to perform an adequate in-field inventory or assessment of the presence of and potential impact to threatened and endangered (T&E) species within the project footprint. It is recommended that additional valid and reliable in-field surveys of T&E species be completed by the Applicant during the spring, summer and fall of 2019 to more fully assess and characterize the potential impact on these protected species. The results of this survey should be disclosed to federal and state regulatory agencies prior to final agency decision-making regarding project permitting.

IV. Recommendations

A. Proposed Pipeline Installation Methods

An independent review of Enbridge's proposed pipeline maps documents a total of two hundred and eighteen (218) river/stream crossings. Of the proposed river/stream crossings, #151 or 69.2% are proposed as using the dry crossing installation method; #25 or 11.5% are proposed using the wet open cut method, #19 or 8.7% are proposed using the horizontal bore method; #3 or 1.4% are proposed using the well push pull method; and #20 or 9.2% are proposed using the horizontal directional drilling method (HDD). Enbridge reports that their method of pipeline installation for specific proposed river/stream crossings are based upon an assessment of the planned construction season, soil saturation level, and the stability of soils at the time of construction.³⁴ *We highly recommend that Enbridge adequately assess and further justify the use of any pipeline installation method other than HDD for all water and wetland crossings.*

These pipeline river/stream crossing methods can be summarized as follows:³⁵

- **Wet trench/open cut** - trenching through a wetland/waterway/waterbody while water continues to flow in the work area. This method is considered suitable only for small, non-fishery streams or

³⁴ *Summary of Construction Methods and Procedures for Wetland & Waterbody Crossings*, Enbridge Energy, Limited Partnership, Line 3 Replacement, September 2018, page 1.

³⁵ Adapted from Enbridge Energy LLP, Line 3 Replacement Project, *Summary of Construction Methods and Procedures for Wetland and Waterbody Crossings*, 2018, pp. 1-8.

waterbodies with beaver dams. This method generally requires the use of concrete weights or coatings to counter pipeline buoyancy in saturated soils (due to density differences) and to attempt to secure the pipe will not float and/or rupture. *We do not consider this method to be adequately environmentally protective as it interrupts stream flow and results in erosion/sedimentation from trench spoil placement, water quality degradation and aquatic habitat impact.*

- **Dry crossing** - a stream/river is dammed and up-stream flow is diverted around a work area and discharged downstream during pipeline crossing installation. This method is generally suitable for low flow streams with definite banks and fish passage is not a concern and is preferred in non-permeable or clay-rich soil areas and for crossing meandering streams. *We do not consider this method to be adequately protective of water quality or aquatic habitat as it releases sediment, inhibits fish and other animal passage, results in fish and other aquatic organism fatalities, and is susceptible to mechanical and pump failures. Importantly, stream bed scour must also be adequately prevented at diverted stream flow discharge points during the period of stream diversion. We also find that adequate detail is not provided in this proposal application to assess the adequacy of proposed discharge point energy dissipation method(s).*
- **Wet push pull method** - a trench is excavated from timber mats or on tracked pontoons advancing along a pipeline route, pre-assembled pipe is floated and sunk into the trench and then backfilled. Generally suitable for pipeline installation is within saturated wetland soils with low to moderate-bearing strength. *We do not consider this method to be adequately protective of water quality or aquatic habitat as it can result in dredge spoils spreading and sediment discharge into wetlands/waterways, and spoil/pipeline settling.*
- **Conventional ager bore method** - entails drilling bore holes from north sides toward a common center with or without a borehole casing. Best suited for pipe crossings of narrow wetlands or ditches adjacent to roads or railroads. *This method is considered unsuitable for high water table areas (i.e., wetlands), loose sands/gravels, or adjacent to steep slopes.*
- **Horizontal directional drilling (HDD)** - This method avoids trench excavation across the bottom of a waterway or wetland, and significantly reduces soil and waterway disturbance and the need extensive tree cutting typical of open trench wet push pull methods. Although stressed by Enbridge, in our opinion the use of the HDD method would not be significantly inhibited in this project by the presence of unsuitable substrate, artesian groundwater flow, steep slopes, or steep banks along water ways.³⁶ The HDD method is suitable and recommended for all proposed high quality/high diversity wetland crossings, shrub-scrub and forested wetland crossings, and all major river/stream crossings. This methods involves drilling a small diameter pilot bore hole beneath a wetland/waterway along a proscribed arch; cutting/reaming the pilot hole with circulated drilling clay-based drilling mud to accommodate the planned pipe diameter; pipeline welding, X-ray analysis, coating and hydrostatic testing; and pulling the welded pipeline through the bore hole from an entry point to an exit point. *We*

³⁶ *Ibid.*, p. 5.

highly recommend the use of this method as it maximally avoids wetland/waterway/waterbody disturbance/impact and limited vegetation disturbance within maintenance easement corridor. As public and private groundwater wells, water in-takes and springs are interpreted to be largely absent from proposed Line 3 waterway crossings, HDD is the preferred and recommended pipeline crossing method for this project, if permitted.

B. Best Management Practices (BMPs)

BMPs require the preparation and submittal of wetland delineation reports for all wetlands proposed for impact, including in-field alpha-numerical flagging.³⁷ *Based on publicly-available information and belief, such wetland delineation reports have not been submitted to regulatory agencies for this project.*

Empirical study of wetland crossings for construction projects in Minnesota document the impact to wetlands, including soil subsidence and soil rutting and ponding, from the use of heavy equipment. BMPs such as the use of wood mats with geotextile fabric, expanded metal and deck-spans with safety grating, and PVC pipe mats significantly reduced wetland impacts.³⁸ Enbridge proposes pipeline installation year-round through wetlands with moderate- to high-bearing strength soils using timber mats or the equivalent.³⁹

1) Wetland Restoration

Recommended additional BMPs include requiring the de-compacting of soils in all construction areas, replacing hydric/topsoils, removal of large rocks and boulders, repairs to any agricultural drain tiles systems, application of soil amendments (if any), fencing and other structural repairs, and the restoration and/or replacement of impacted plants with native wetland vegetation.

2) Wetland Mitigation

Enbridge proposes compensatory wetland impact mitigation for this Line 3 project at 255.79 acres, while impacting a total of 1,139.3 acres or an overall ratio of 0.23:1. Specifically, Enbridge proposes mitigation ratios for wetland types as forested wetlands (PFO) at 0.5:1 acres; shrub-scrub wetland (PSS) at 0.5:1 acres; emergent wetlands (PEM) at 0.03:1 acres; and unconsolidated bottom (PUB) at 0.3:1 acres.

³⁷ *Wetland & Waterbody Construction & Mitigation Procedures*, Federal Energy Regulatory Commission, Office of Energy Projects, Washington, DC, May 2013, www.ferc.gov, p. 4, and Environmental Protection Plan, Enbridge Energy LLP, Line 3 Replacement, September 2018.

³⁸ See *FOCUS: Options for Temporary Wetland and Stream Crossings* (GTR-202) Journal of Forestry, USDA Forest Service, Madison, WI, August 1999; Mason, L.E. and P.H. Greenfield, *Portable Crossings for Weak Soil Areas and Streams*, Transportation Research Record 1504, Washington, DC: National Research Council, pp. 118-124, 1995; and Hislop, L.E., *Portable Surfaces for Crossing Unstable Aggregate and Native Soil Roadbeds*, Masters Thesis, Oregon State University, 1996.

³⁹ Enbridge Energy LLP, Line 3 Replacement Project, Summary of Construction Methods and Procedures for Wetland and Waterbody Crossings, 2018, pp. 1-3.

These proposed wetland mitigation ratios are unacceptable resulting in a net loss of 883.51 acres of wetland from the proposed project. Federal ratios for wetland compensatory mitigation are intended to ensure “no net loss” of wetland acreage, and are site-specific determinations to ensure that proposed wetland impact compensation is proportionate to proposed aquatic resource losses or degradation. U.S. ACE compensatory mitigation ratio guidelines are as follows:

Impacted Wetland or Other Waters of the U.S.	Restoration and/or Enhancement	Preservation
Common, pristine, non-fragmented	1:1	2:1
Plentiful within its watershed, least biodiversity, relatively low biodiversity and productivity	1:1	1.5:1
Rare, high quality, very sensitive, special plant populations, and/or T&E species habitat	2:1	3:1

Source: <https://www.poa.usace.army.mil/Portals/34/docs/regulatory/HOWWetlandCategoriesRatios.pdf>.

Consistent with other Great Lakes states regulations,⁴⁰ the following wetland compensation mitigation ratios are highly recommended be required for this project:

Cowards Wetland Classification⁴¹

- PFO - 2:1 replacement ratio;
- PSS - 1.5:1 replacement ratio;
- PEM - 1.5:1 replacement ratio;
- PUB - 1.5:1 replacement ratio; and

- 2:1 replacement ratio for wetlands that border inland lakes and waterways;
 - 5:1 replacement for wetlands that are rare or imperiled on a statewide basis;
 - 5:1 replacement ratio for wetland impacts of 5 acres or more within a contiguous wetland;
 - 10:1 mitigation ratio for mitigation in the form of the preservation of an existing wetland
- The U.S. ACE may increase the ratio if the replacement wetland is of a different ecological type than the impacted wetland.

If the U.S. ACE determines that an adjustment would be beneficial to the wetland resources, they may increase or decrease the number of acres of wetland mitigation by 20 percent; and The U.S. ACE should double the required ratios if an after-the-fact permit is issued.

⁴⁰ See Michigan administrative rules - Wetland Mitigation Banking, R 281.951 - 281.961 pursuant to Pat 303: Wetland Protection Act, P.A. 451 of 1994, as amended.

⁴¹ Cowardin, L.M., et al., (1979) “Classification of Wetlands and Deepwater Habitat of the United States,” U.S. Department of Fish and Wildlife Service, (1995-06-01).

Enbridge does not specify proposed compensatory wetland mitigation ratios for wetlands it plans to permanently fill for proposed pipeline access roads.⁴² *It is highly recommended that such compensation ratios be disclosed as part of this permit review process, and be subject to public review and comment prior to any final U.S. ACE decision in this matter.*

Finally and based on information and belief, Enbridge has not fully assessed the extent and location of wetland impacts from this project. Specifically, Enbridge states,

“Enbridge conducted wetland delineation surveys along the Designated Route between 2013 and 2018 to identify the wetlands that will be affected during Project construction...Enbridge will conduct remaining wetland delineations along the Designated Route in 2018, or prior to construction.”⁴³

It is imperative that Enbridge fully disclose all wetland impacts for a proposed Line 3 replacement project so as not to “segment” the regulatory/permit review process, and to fully inform the public prior to final agency decision-making.

Exemplary of the practical and scientific difficulty in creating “new” wetlands when wetland loss through development and construction is permitted, the U.S. EPA audited the State of Michigan’s wetland mitigation program finding that the program is “not successful in producing adequate replacement wetlands...” with a measured success rate of thirteen (13%) percent.⁴⁴

C. Waterway Crossing BMPs

Empirical studies in Pennsylvania and Michigan document the impact to surface water quality and aquatic habitat from sedimentation during access road stream crossing construction.⁴⁵ Specifically, increased levels of fine sediment loading, reduced stream basal area, nutrient contamination, soil and bank disturbance, and increased herbaceous vegetation succession/conversion were documented as being statistically significant in 814 stream crossings studied. Impacts were significant up to 331 feet downstream of crossings, and especially

⁴² U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018., pp 34-35.

⁴³ U.S. Army Corps of Engineers - St. Paul District Supplementary Information for Application, Enbridge Energy, Limited Partnership - Line 3 Replacement, September 2018, p. 29.

⁴⁴ Michigan Department of Environmental Quality, Michigan Wetland Mitigation and Permit Compliance Study - Final Report (Feb. 2001), available at <http://www.deq.state.mi.us/documents/deq-lwm-wetlands-MITIGATIONREPORTFINAL09-14-01.pdf>; and Environmental Law Center, Environmental Law Institute, State Wetland Program Evaluation: Phase 1, January 2005, pp. 67-79.

⁴⁵ Hassler, C.C., *Modular Timber Bridge for Temporary Stream Crossings*, Technical Release 90-R-61, Washington DC: American Pulpwood Associations, 1990; Mason, L.E. and P.H. Greenfield, *Portable Crossings for Weak Soil Areas and Streams*, Transportation Research Record 1504, Washington, DC: National Research Council, pp. 118-124, 1995; and White Water Associates, Inc., *Total Ecosystem Management Strategies (TEMS)*, 1995 Annual Report, Amasa, Michigan, 1996.

acute in small, shallow and relatively low flow headwater streams.⁴⁶

We find that Enbridge has not adequately assessed likely impacts from the proposed use of wet cut and push pull pipeline installation methods at specified crossing locations, and the potential impacts especially in small tributaries/headwaters and during low flow and drought periods.

To be sufficiently protective of waterway and wetland crossings, it is highly recommended that regulators require: 1) geotechnical analyses at all proposed wetland crossings to assess the ability of hydric soils to support proposed pipeline for the entire period of its use (interpreted to be 50-60 years based on Enbridge's record); 2) the required use of permanent bank to bank free span bridges/structures (i.e. without in-stream supports of any kind) across all river/stream crossings to minimize water quality and aquatic resource impact during pipeline installation; and 3) the maximal requirement of both technologies be fully utilized to enable pipeline integrity inspection and maintenance over the lifetime of the proposed pipeline.

V. Enbridge's Compliance Record

Between 1999 and 2008 Enbridge reported more than 600 releases from its pipeline network, resulting in spilling of 5,544,000 gallons (132,000 barrels) of hydrocarbons into agricultural lands, wetlands and waterways in the U.S. and Canada.⁴⁷ The U.S. Pipeline and Hazardous Materials Safety Administration cited Enbridge thirty-one (31) times, including two (2) corrective action orders from 2002 to 2010 for failure to properly inspect equipment or train its employees.⁴⁸

Data from the U. S. Pipeline and Hazardous Material Safety Administration (U.S. PHMSA) shows that the U S portion of the pipeline network owned by Enbridge and its joint ventures and subsidiaries suffered 307 hazardous liquids incidents from 2002 to August 2018 – around one spill every twenty (20) days on average.⁴⁹ There is no comparable national data set in Canada or a consistent format for data collection or release.

Importantly, Enbridge is responsible for the largest terrestrial spill of crude oil in U.S. history. At 5:58 p.m. on July 25, 2010 Enbridge's Line 6B ruptured 0.6 miles downstream of the City of Marshall, Michigan along Talmadge Creek in Kalamazoo County, a tributary to the Kalamazoo River. This pipeline rupture released more than 1 million gallons of tar sands bitumen to the environment, and was exacerbated by Enbridge's failure to halt the release for 18 hours after its occurred, even increasing Line 3 pressure after the release - assessing

⁴⁶ See FOCUS: Options for Temporary Wetland and Stream Crossings (GTR-202) Journal of Forestry, USDA Forest Service, Madison, WI, August 1999.

⁴⁷ News: The Enbridge Dirty Dozen, by A. Nikiforuk, TheTycee.ca, July 31, 2010.

⁴⁸ *Ibid.*

⁴⁹ See also Donaghy, T & K Stewart 2017 Four Proposed Tar Sands Oil Pipelines Pose A Threat To Water Resources. Greenpeace, August www.greenpeace.org/usa/wp-content/uploads/2017/08/TarSandsPipelineSpillReport.pdf. This report updates Enbridge spill information previously shared in the 2017 report. The latest PHMSA data also includes a total of 15 incidents from TransCanada and 472 from Kinder Morgan, from 2002 to present.

wrongly that a “bubble” had developed within the ruptured pipeline. This malfeasance along resulted in the release of approximately 1 million gallons of tar sands crude oil in Michigan waterways and wetlands. This oil spill results in coating of wildlife with oil, contaminating the drinking water source of 100 homeowners, and the closure of thirty-five (35) miles of the Kalamazoo River to the public⁵⁰, and contaminated up to twenty-five (25) river miles. Enbridge managing the pipeline flow in Edmonton, Canada reported discounted residents reports to 911 and emergency responders reportedly did not find the release. The release was not slowed/halted for 18 hours, i.e., at 11:17 a.m. on July 26, 2010 after the pipeline rupture upon the report of the release by Michigan utility workers. The U.S. National Transit Safety Board (NTSB) investigated and reported that Line 6B rupture was due to pipeline corrosion fatigue, and that the 40-year old pipeline had 15,000 known defects since 2005. Environmental cleanup of the Kalamazoo River spill reportedly has cost upwards of \$1.2 billion.



⁵⁰ Kalamazoo River was closed from Saylor’s Landing Public Access to Ceresco Public Access from from July 2010 to June 2012.

Other Enbridge spill and other notable events include but are not limited to:⁵¹

- *January 2001* - Enbridge's Energy Transportation North Pipeline in Canada leaked 23,900 barrels of crude oil into wetlands near Hardisty, Alberta. An aging pipeline was identified by regulators as a "high priority location" four (4) months prior to the release.
- *July 2002* - A 34-inch diameter Enbridge pipeline ruptured in wetlands west of Cohasset, Minnesota. To prevent 252,000 gallons (6,000 barrels) of crude oil from reaching the Mississippi River, Enbridge set the oil on fire. The plume of smoke reportedly extended one (1) mile high. The U.S. NTSB found that the pipeline rupture was caused by "inadequate loading of the pipe for (crude oil) transportation."
- *January 2003* - A pipeline failure resulted in a spill of 189,000 gallons (4,500 barrels) of oil at Enbridge's terminal near Superior, Wisconsin. Approximately 21,000 gallons (500 barrels) of oil reportedly flowed into the Nemadji River, a tributary of Lake Superior.
- *April 2003* - A gas explosion leveled an Etobicoke strip mall near Toronto and killed seven (7) people. This Enbridge mishap represents the the largest number of human fatalities ever recorded in a single pipeline incident in Canadian history. Ontario's Technical Standards and Safety Authority charged Enbridge with failure to provide accurate information, and failure to ensure their contractors compliance with the law.
- *February 2004* - Maintenance workers found a slow leak of crude oil from the Line 2 pipeline near Grand Rapids, Minnesota resulting in the release of 42,000 gallons (1,003 barrels) of crude oil and groundwater contamination.
- *April/May 2004* - U.S. pipeline regulators fined Enbridge for improperly inspecting oil and gas pipelines in Michigan, Indiana and Illinois, Minnesota and Wisconsin.
- *January 2007* - 63,000 gallons (1,500 barrels) of crude oil spilled from Line 14 near Atwood, Wisconsin due to pipe seam failures dating from the line's 1998 construction, a problem that had previous been identified by inspectors during the construction phase.
- *January 2007* - A pipeline near Stanley, North Dakota ruptured releasing 9,030 gallons (215 barrels) of oil. Regulators cited and fined Enbridge for exceeding the pipeline's pressure limits/standards.
- *February 2007*- Enbridge spilled approximately 176,000 gallons (4,190 barrels) of oil in separate incidents in Clark and Rusk County, Wisconsin. As in Enbridge's Talmadge Creek/Kalamazoo River spill, one of the releases couldn't be halted until an operator in Canada shut down the pipeline. Workers reported damaged the same pipeline in the second incident, filling 20 feet deep hole with oil and contaminating groundwater. The company was reportedly fined \$100,000 for failure to comply with safety standards.

⁵¹ Adapted from News: The Enbridge Dirty Dozen, by A. Nikiforuk, TheTycee.ca, July 31, 2010; and Dangerous Pipelines: Enbridge's History of Spills Threatens Minnesota Waters, Greenpeace Reports, November 2018.



- *November 2007* - Line 3 exploded killing two (2) workers near Clearbrook, Minnesota. Line 3 had reportedly leaked two (2) weeks prior to and was being repaired at the time of this explosion. The explosion resulted in the release of 13,650 gallons (325 barrels) of crude oil and a hike in crude oil prices nationally, and shut-down four (4) other pipelines delivering 1.5 million barrels of crude oil/day. The U.S. PHMSA reportedly fined Enbridge \$2.4 million for exceeding pipeline pressure standards and violating safety procedures.
- *May 2008* - Alberta undertook a “high risk enforcement action” against Enbridge for utilizing “valves, flanges and fittings” on its Midstream pipeline that were unsuitable for this pipeline’s maximum operating pressure.
- *January 2009* - Enbridge agreed to pay a fine of \$1 million to Wisconsin for more than 500 violations of wetland and waterway regulations during the construction of its \$2 billion Southern Access pipeline. This Enbridge pipeline delivers 16,800,000 gallons (400,000 barrels) of tar sands bitumen from Alberta to

Chicago for export. Wisconsin's attorney general was quoted as saying "the incidents of violation were numerous and widespread and resulted in impacts to the streams and wetlands throughout the various watersheds." Enbridge reportedly attributed these problems on "bad weather."

- *January 2009* - A valve ruptured on a pipe at the Enbridge Cheecham Terminal tank farm, releasing 168,000 gallons (4,000 barrels) of oil near Anzac, Alberta. The leak reportedly went undetected for three (3) hours.
- *January 2010* - A 54 year-old Enbridge pipeline delivering crude oil from western Canada to Cushing, Oklahoma and Chicago leaked 3,000 barrels (126,000 gallons) near Neche, North Dakota. The U.S. PHMSA reported had warned Enbridge that older pipelines were susceptible to failure. U.S. PHMSA has reportedly cited Enbridge 58 times for poor performance.
- *January 2010* - 3,748 barrels (157,000 gallons) spilled near Neche, North Dakota.
- *September 2010* - A pipeline near Romeoville, Illinois, a suburb of Chicago, leaked for four (4) days releasing 7,538 barrels (317,000 gallons). According to the accident report, the spilled oil "migrated into nearby storm water and septic sewer systems, and reached both a local stormwater retention pond and water treatment plant."
- *May 2012* - Two (2) people were killed and three (3) people were injured in a two vehicle collision with an Enbridge pipeline resulted in the release of 63,000 gallons (1,500 barrel) oil and a fire in New Lenox, Illinois.
- *July 2012* - 73,000 gallons (1,729 barrels) of crude oil spilled from Line 14 near Grand Marsh, Wisconsin. The pipeline reportedly "blew like an oil well" and sprayed oil a distance of 1,000 feet across livestock pasture. The incident was deemed to be due to pipeline seam failures.
- *April 1, 2018* - Enbridge's Line 5 along the bottomlands of the Straits of Mackinaw in Michigan was struck by a tug boat dragging its anchor, and the continued operation of this pipeline is the currently subject of bitter debate and litigation over pipeline removal or spill risk mitigation measures.

Clearly and as evidenced above, the Applicant has a long history of pipeline ruptures, system and operator failures, poor inspection practices and inadequate staff training resulting in environmental contamination, ecological and wildlife impairment, inadequate demonstration of insurance coverage for environmental remediation and ecological restoration from pipeline releases, and the loss of human life. For these and other reasons documented in this report, we strongly urge that the U.S. ACE deny this Line 3 replacement application as proposed. At the very least, the U.S. ACE must evaluate the potential for crude oil spills to impact various water resources along the proposed pipeline route.

VI. Pipeline Alternative Analyses

The State of Minnesota Commerce Department's DEIS alternatives analysis included the: 1) continued use, repair and maintenance of the existing Line 3; 2) use of other existing pipelines to convey Line 3's product volume; 3) use of the alternative pipeline system route SA-04; 4) crude oil transport by rail; 5) crude oil transport by truck; 6) use of existing Line 3 as supplemented by rail transport; 7) use of existing Line 3 as supplemented by truck transport; and 8) no action alternatives. Enbridge's alternative pipeline route review, including pump stations and mailing value locations, focused on four (4) primary routes referred to as RA-03AM; RA-06; RA-07; and RA-08.⁵² *Section 404 of the federal Clean Water Act requires that wetland impact be avoided to the extent practicable, and that the least impacting practicable alternative be implemented for unavoidable wetland impacts.*⁵³ *Importantly, based on information and belief, the Applicant has not provided sufficient data to compare direct, indirect or cumulative wetland, protected plant and animal species, and aquatic ecosystem impacts from the preferred and other routes and system alternatives. The U.S. ACE should independently complete a detailed EIS study to assess the direct, indirect, and cumulative environmental impacts from the potential and additional practicable project alternatives before making an independent determination as which alternative would result in the least amount of environmental impact to aquatic ecosystems. Based on our review of the FEIS document's alternatives and cumulative environmental impact analyses, Enbridge's application, and other project documents, there are several alternatives to Enbridge's proposed Line 3 project that would have fewer environmental impacts than Enbridge's preferred alternative.*

A. Route Alternatives

Route RA-07 alternative would primarily replace the existing Line 3 within its current trench from Clearbrook Terminal to Carlton, MN. This "in trench replacement" alternative would avoid impacting new areas within a relocated pipeline route, while increasing overall pipeline capacity as sought by Enbridge.⁵⁴ The RA-07 alternative would have far less direct and less indirect impact to aquatic ecosystems than Enbridge's preferred alternative as it would not require the creation of a new pipeline right-of-way and new route for any significant portion of the pipeline, thereby eliminating many of the environmental impacts described in this report. This alternative is also preferred by the Minnesota Department of Natural Resources, Minnesota Pollution Control Agency and others as it would provide an opportunity for other new or replaced pipelines within the existing trench for other companies' use. The RA-07 route alternative from Clearbrook to Carlton would cross fourteen

⁵² See Line 3 Project Final Environmental Impact Statement, Chapter 4: Alternatives to the Proposed Project, pp. 4-1 through 4-42; and Chapter 7: Route Alternatives, pp. 7-1 through 7-94; and Appendices.

⁵³ 33 C.F.R. § 320.4(r), and 40 C.F.R. §§ 230.5(c) and 230.10(a).

⁵⁴ Line 3 Project Final Environmental Impact Statement, Chapter 4: Alternatives to the Proposed Project, p. 4-25.

(14) trout streams as compared to the Applicant's preferred route which would cross twelve (12) trout streams, and within 0.5 mile of 2,372.5 acres of lakes of biological significance as compared to 452.6 acres along the Applicant's preferred route.⁵⁵ However, the existing pipeline right-of-way that RA-07 would follow currently has seven (7) other pipelines in it, which will remain regardless of the U.S. ACE's decision on Line 3. In other words, Enbridge's preferred route would create a new pipeline right-of-way impacting an *additional* 12 trout streams and 2,372.5 acres of lakes of biological significance, whereas RA-07 would not impact any additional areas. This alternative would however remain within the existing right-of-way through the Leech Lake Band of Ojibwe Indians, regarding which the Leech Lake Band is on-record as opposing. RA-07 would also require three (3) new pump stations west of Carlton, upgrades to four (4) pump stations from Clearbrook to Carlton, and according to Enbridge would require the placing of twenty-two (22) new main line valves "near water crossings, significant environmental resources and populated areas."

RA-03AM would place a new Line 3 south of the proposed pipeline route from the Clearbrook Terminal to Carlton just southwest of the Superior Terminal at Duluth. The RA-03AM route alternative from Clearbrook to Carlton would cross sixteen (16) trout streams as compared to the Applicant's preferred route which would cross twelve (12) trout streams, and within 0.5 mile of 264.4 acres of lakes of biological significance as compared to 452.6 acres along the Applicant's preferred route.⁵⁶ Importantly, this alternative route would parallel an existing pipeline right-of-way from Clearbrook to Park Raids, thereby focusing pipeline construction and operation impacts in areas already impacted by a crude oil pipeline and avoiding and minimizing new direct and indirect environmental impacts.⁵⁷ This route would also have less cumulative environmental impact as it would avoid the Mississippi Headwater and Minnesota Lakes regions, and reroute the pipeline around fens, fish hatcheries, Wildlife Management Areas, and some communities.

Route RA-06 would place a new Line 3 north of the proposed pipeline route between Clearbrook Terminal to Carlton. This route would have significantly less environmental impact than Enbridge's preferred alternative as it would avoid the wetland, waterway and water body rich Mississippi Headwater and Minnesota Lakes regions.⁵⁸ The RA-06 route alternative from Clearbrook to Carlton would cross thirteen (13) trout streams as

⁵⁵ Appendix L: Table L-1. Trout Streams Potentially Affected by the Applicant's Preferred Route and Route Alternatives between Clearbrook and Carlton, Minnesota (number), Line 3 Project Final Environmental impact Statement, p. L-7, and Table L-2. Lakes of Biological Significance within 0.5 mile of the Applicant's Preferred Route in Minnesota and Route Alternatives between Clearbrook and Carlton, Minnesota (acres), Line 3 Project Final Environmental impact Statement, p. L-9.

⁵⁶ Appendix L: Table L-1. Trout Streams Potentially Affected by the Applicant's Preferred Route and Route Alternatives between Clearbrook and Carlton, Minnesota (number), Line 3 Project Final Environmental impact Statement, p. L-7, and Table L-2. Lakes of Biological Significance within 0.5 mile of the Applicant's Preferred Route in Minnesota and Route Alternatives between Clearbrook and Carlton, Minnesota (acres), Line 3 Project Final Environmental impact Statement, p. L-9.

⁵⁷ Line 3 Project Final Environmental Impact Statement, Chapter 4: Alternatives to the Proposed Project, p. 4-20.

⁵⁸ *Ibid.*, p. 4-24.

compared to the Applicant's preferred route which would cross twelve (12) trout streams, and within 0.5 mile of 112.9 acres of lakes of biological significance as compared to 452.6 acres along the Applicant's preferred route.⁵⁹ This route alternative, however, would transect the Fond du Lac Indian Reservation, Chippewa National Forest, and George Washington State Forest.

Route RA-08 would place a new Line 3 south of U.S. Highway 2 in Beltrami, Cass, Itasca and St. Louis Counties, MN. The RA-08 route alternative from Clearbrook to Carlton would cross eleven (11) trout streams as compared to the Applicant's preferred route which would cross twelve (12) trout streams, and within 0.5 mile of 1,428.5 acres of lakes of biological significance as compared to 452.6 acres along the Applicant's preferred route.⁶⁰ Route RA-08 would likely have less overall environmental impact than Enbridge's preferred alternative as it would not require an entirely new pipeline corridor between Clearbrook and Superior, MN. Specifically, the Route RA-08 alternative would place a new pipeline along an existing natural gas pipeline near the RA-07 alternative, and would reduce the length of pipeline crossings through the Chippewa National Forest and the Leech Lake Band of Ojibwe Indian Reservation.⁶¹ This route alternative, however, would cross through the Leech Lake Band of Ojibwe and Fond du Lac Indian Reservations and the Chippewa National Forest. Finally, we find that project proponents have not adequately assessed the likely social and cultural impacts resulting from the RA-08 route alternative.

B. System Alternatives

Based on the FEIS and other project documents, Enbridge has acknowledged the existence of project alternatives that could allow Enbridge to ensure pipeline safety and meet crude oil demand without constructing an entirely new and costly Line 3 pipeline. For example, Enbridge could continue to repair damaged or compromised sections of Line 3, which the company has stated would allow it to safely operate the existing Line 3 at its current operating capacity going forward. In addition, Enbridge has announced several proposed modifications to other pipelines in the Enbridge system (located in the same right-of-way as Line 3) that could allow it achieve significant increases in capacity sufficient to meet increased crude oil demand. Each of these alternatives, or some combination thereof, could allow Enbridge to achieve the goals of the project without engaging in the construction of a major new pipeline through much of the state of Minnesota. As such, these alternatives would appear to result in fewer environmental impacts than Enbridge's preferred route if

⁵⁹ Appendix L: Table L-1. Trout Streams Potentially Affected by the Applicant's Preferred Route and Route Alternatives between Clearbrook and Carlton, Minnesota (number), Line 3 Project Final Environmental impact Statement, p. L-7, and Table L-2. Lakes of Biological Significance within 0.5 mile of the Applicant's Preferred Route in Minnesota and Route Alternatives between Clearbrook and Carlton, Minnesota (acres), Line 3 Project Final Environmental impact Statement, p. L-9.

⁶⁰ *Ibid.*

⁶¹ *Ibid.*, p. 4-24.

implemented.

In addition, the FEIS evaluated a system alternative that would allow oil shippers to bypass Enbridge's Clearbrook and Superior Terminals altogether; and instead ship oil via a more southerly route directly to downstream oil markets.

1. System Alternative SA-04

System Alternative SA-04 would by-pass Minnesota and Wisconsin refineries and intersect with with Alliance pipeline corridor in northeast North Dakota until crossing into Minnesota near Wheaton in Traverse County. SA-04 would locate sixty-eight percent (68%) of pipeline through North Dakota, Iowa and Illinois, avoiding the Mississippi Headwaters and Minnesota Lakes regions. In Minnesota SA-04 would parallel the Alliance pipeline right-of-way and the Minnesota River to near Mankato, and connect with the regional pipeline system closer to major refineries in central Illinois. The System SA-04 Alternative would operate in and impact sixteen (16) areas of known occurrences of rare and T& E plant species, as opposed to ninety-one (91) protected plant species occurrences within the Applicant's preferred route.⁶² SA-04 would however operate in and impact thirty-four (34) areas of known occurrences of rare and T& E animal species, as opposed to fifteen (15) protected animal species occurrences within the Applicant's preferred route.⁶³ As other environmental impacts of the SA-04 alternative are not detailed in documents reviewed herein, it is not possible to make a meaningful comparison of potential environmental impacts relative to Enbridge's preferred alternative.

C. Summary of Alternatives Analysis

In summary, the following Line 3 alternatives, if implemented, would each result in less environmental impact to aquatic ecosystems than would Enbridge's proposal:

- implementing modifications to the product conveyance within Enbridge's existing pipeline network to achieve capacity goals while building no new pipelines;
- upgrades and repairs to the existing Line 3 pipeline within the existing route;
- replacing the existing Line 3 pipeline within the "same-trench";
- more fully developing and maximally utilizing the RA-03AM route;
- twinning an adequately repaired existing Line 3 with a new pipeline within the same right-of-way;

⁶² Appendix M: Number of Occurrences of Rare Plants for the the Applicant's Preferred Route and System Alternative SA-04.

⁶³ Appendix M: Number of Occurrences of Rare Animals for the the Applicant's Preferred Route, Existing Line 3 and System Alternative SA-04.

- the adequate exploration of the feasibility and prudence of utilizing pipeline route alternative SA-04, running through North Dakota, Iowa and Illinois - the only route alternative that significantly reduces environmental justice impacts⁶⁴ and also avoids northern and central Minnesota and its sensitive Mississippi Headwaters and Minnesota Lakes regions;
- and/or a combination of crude by rail and pipeline transport to best respond to changing markets conditions.⁶⁵

*Notably, given the importance of groundwater to supply surface and drinking water resources in the project area(s), the presence of numerous hazardous and toxic substances within crude oil, and the substantial time requirements for and economic costs of groundwater remediation, it is highly recommended that the potential for groundwater impact from an accidental release be more fully assessed and meaningfully considered within the assessment of any project alternative. Lastly, we concur with the MPCA comment that the environmental impacts from pipeline decommissioning/abandonment/removal also be meaningfully assessed and considered with the review of all pipeline project alternatives.*⁶⁶

VII. Additional Recommendations

- *Additional analysis is required by the Applicant and its agents to fully evaluate conveyance alternatives and pipeline routes to identify the alternative with the least environmental, cumulative environmental and environmental justice impacts. Specifically, high quality wetland areas, T&E species and habitat, first-order tributaries/headwaters, and culturally important lands and federal trust land should be maximally avoided. Only then, unavoidable impacts to these sensitive environmental and important cultural resources should be maximally mitigated.*
- *Additional analysis is required by the Applicant and its agents to fully and meaningfully assess the greenhouse gas impacts, i.e., to be consistent with Minnesota goals, in route alternatives analyses and implementing enhanced project greenhouse gas emissions (GHG) conditions, if a project alternative is permitted.⁶⁷ We strongly recommend the implementation of following GHG conditions, if a project is permitted: a) conserving one and one-half (1.5) acres for every acre of natural habitat impacted; b) planting and maintaining two (2)*

⁶⁴ Seirks, Bill, Minnesota Pollution Control Agency (MPCA) comments on behalf of MPCA to S. Ek, Minnesota Public Utilities Commission (MPUC), dated May 9, 2018, pp. 1-2. See also Seirks, Bill, MPCA to S. Ek, MPUC, dated November 22, 2017, pp. 1-8.

⁶⁵ See “Crude by Rail, Option Value, and Pipeline Investment,” Thomas R. Covert Ryan Kellogg, Working Paper 23855, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138, September 2017, <http://www.nber.org/papers/w23855>.

⁶⁶ Seirks, Bill, Minnesota Pollution Control Agency (MPCA) comment on behalf of MPCA to S. Ek, Minnesota Public Utilities Commission, dated May 9, 2018, p. 3.

⁶⁷ *Ibid.*, p. 2. We agree with the MPCA comment that a carbon neutral footprint strategy should be implemented in the permitting any pipeline alternative, but urge that these conditions be enhanced. For example, conditions of approval for the 2nd upgrade of Line 67 included conserving an acre for every acre of natural habitat impacted, planting a tree for every tree removed, and funding the generation of a kilowatt-hour of renewable energy for every kWh the project consumes.

native tree species representative of the habitat impacted for every one (1) tree removed; and c) the generation of one and one-half (1.5) kilowatt-hours of renewable energy for every kWh the project consumes.

- Additional analysis is required by the Applicant and its agents to fully and meaningfully assess the cumulative environmental impacts from a catastrophic pipeline release - as occurred in Enbridge's Line 6B in Kalamazoo County, Michigan. This assessment should detail the likely environmental impacts and cumulative environmental impacts from the large-scale release of dilbit and any other crude oil type and/or petroleum products the pipeline may convey over its life time.*
- If permitted in whole or in part, this project must not result in the discharge of sediments and associated nutrients to waterways. Best practices should be utilized and alternatives adequately assessed to maximally avoid water quality degradation, wetland impact, fish and wildlife habitat impairment, and T&E species and habitat degradation.*
- Enbridge has not completed or not adequately completed wetland delineation surveys along the proposed pipeline route, and thereby has not fully assessed the wetland impact for the project. It is imperative that Enbridge fully disclose all proposed wetland impact so as not to "segment" the regulatory/permit review process, and to fully inform the public prior to final agency decision-making.*
- Enbridge has not fully assessed the number and location of pipeline access roads. It is imperative that Enbridge fully disclose all proposed access roads for the project so as not to "segment" the regulatory/permit review process, and to fully inform the public prior to final agency decision-making.*
- Proposed pipeline routes should be further and more carefully analyzed to maximally avoid wetlands, stream crossings, important cultural lands, and sensitive natural resources. Unavoidable wetland impacts should be adequately mitigated, and BMPs such as horizontal directional drilling (HDD) should be maximally utilized to avoid fish passage impacts and wildlife habitat fragmentation at unavoidable wetland and waterway crossings.*
- Additional detailed alternatives analyses should be provided for proposed pipeline installation methods and the locations of all proposed significant wetland crossings. Such alternative analysis must be predicated upon a robust assessment of wetland avoidance, the minimization of unavoidable wetland impacts, and adequate wetland mitigation impact measures for permitted impacts.⁶⁸*
- Hazardous materials/fuels/lubricants, concrete coating operations, and stream flow diversion pumps should be secondarily-contained, and should not be stored or placed during pipe line construction within 100 feet of wetlands, waterways, waterbodies or groundwater wells.⁶⁹*

⁶⁸ *Ibid*, pp. 21-22, and *Wetland Ways: Interim Guidelines on Wetland Protection and Conservation in British Columbia*, Wetland Stewardship Partnership, March 2009, p. 7-7.

⁶⁹ *Wetland & Waterbody Construction & Mitigation Procedures*, Federal Energy Regulatory Commission, Office of Energy Projects, Washington, DC, May 2013, www.ferc.gov, p. 6.

- *Where meandering or multiple stream channels and headwaters exist, a pipeline should be rerouted or more carefully routed to minimize the number of water crossings.*⁷⁰
- *Access road locations should be further and more carefully analyzed to maximally avoid wetlands, stream crossing and other sensitive natural resources, and unavoidable wetland impacts should be adequately mitigated, and BMPs such as free-span bridges without in-stream supports should be maximally utilized to avoid fish and other aquatic organism passage impacts and wildlife habitat fragmentation at unavoidable stream, creek and other waterway crossings.*
- *Maximally utilize free-span bridge structures without in-stream supports for equipment and pipeline crossings of large wetland areas, waterways and T&E species habitat.*⁷¹
- *Detailed, site-specific construction plans with proposed project timelines and scaled drawings should be provided identifying all major water crossings.*⁷²
- *To minimize environmental and ecological impacts, proposed access road width should be maximally reduced to single-tracks and incorporate periodic small turn-out/pass-by locations to allow two-way traffic on single lane access roads.*
- *To further minimize environmental and ecological impacts, the proposed pipeline construction right-of-way width should be reduced to less than 75 feet.*⁷³
- *Construction activities, if permitted, should be carefully timed at sensitive areas to minimize impacts on fish and wildlife, i.e., migration, breeding periods, etc.*
- *To minimize stream and wetland sedimentation construction activities near sensitive natural resources, especially first-order streams, headwater areas and near tributaries, should be suspending during periods of significant precipitation, i.e., more than a 25-year storm event.*
- *To minimize the introduction of invasive and exotic plant species, all construction equipment should be thoroughly cleaned prior to an after work in wetlands, near streams/creeks, and in any sensitive natural resource areas.*
- *All disturbed soil areas should be immediately stabilized following construction activities, using erosion*

⁷⁰ *Ibid*, p. 10.

⁷¹ *Ibid*, p. 12.

⁷² *Ibid*, p. 16.

⁷³ *Ibid*, p. 22.

matting/fibre mats (as appropriate), an annual rye cover crop, and native plant species. Pre-construction native plant diversity, community, and structure, i.e., forb, shrub and tree layers, should be re-established following construction activities.

- *Finally, surface water quality and flow, and high quality diverse wetlands should be maintained, and siltation/sedimentation maximally avoided at all proposed waterway and large wetland crossings through the maximal use the horizontal directional drilling method (HDD) for pipeline installation.⁷⁴*

Thank you for the opportunity to provide these comments. If you have any questions please contact me at 231-499-7165 or cgrobbel@grobbelenvironmental.com.

Sincerely,

Grobbel Environmental & Planning Associates



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cc Doug Hayes, Sierra Club
Moneen Nasmith, Earthjustice

⁷⁴Access Pipeline Fact Sheet #9 - Water Crossings, Access Pipeline, Northeast Expansion, www.accessexpansion.com, p. 1.

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EDUCATION

Ph. D. Environmental Policy and Law, Michigan State University, Resource Development Department, College of Agriculture and Natural Resources, 1998, GPA 3.96.

M.S. Environmental Policy and Law / Hydrogeology - Michigan State University, Resource Development Department, College of Agriculture and Natural Resources, 1986, GPA 3.93.

B.S. Environmental Science / Forestry with High Honor - Michigan State University, Resource Development Department, College of Agriculture and Natural Resources, 1983, GPA 3.82.

PROFESSIONAL EXPERIENCE

Principal/Senior Associate – Grobbel Environmental & Planning Associates, Traverse City, Michigan.

1998 to Present Founder and president of the environmental consulting and land use planning firm, Grobbel Environmental & Planning Associates. Project experience includes watershed management and protection planning; community master planning, police power and zoning ordinance development; land use and environmental planning; ecological assessment; wetland determination, restoration and delineation; soil/groundwater investigation and remediation; risk assessment, management and communication; brownfield redevelopment; innovative stormwater treatment system design and construction; litigation support and expert witness; and all aspects of business development, media relations, financial management, marketing and administration.

Assistant/Adjunct Professor – Department of Community Sustainability/CARRS/Resource Development Department, College of Agriculture & Natural Resources, Michigan State University, Traverse City and East Lansing, Michigan.

1992 to 2017 Design and teaching of college undergraduate courses entitled: CSUS 425 Environmental Impact Assessment; CSUS 465 Environmental and Natural Resources Law; CSUS 200 Introduction to Sustainability; CSUS 320 Environmental Planning and Management; ESA 225 Land and Environmental Issues in Law; RD 336 State Environmental Law; RD 491 Environmental Ethics; and RD 430 Natural Resources Law. Director of MSU undergraduate environmental studies program at the University Center in Traverse City, Michigan

Land Use Programs Consultant – Tip of the Mitt Watershed Council, Petoskey/Traverse City, Michigan.

2002 - 2004 Land use programs consultant undertaking master planning, zoning ordinance audit and development, site conservation design/development, site plan review, and land use training and education programs. Duties also include environmental planning; ecological assessment; soil and groundwater investigation; wetland determination, assessment, delineation and restoration; risk assessment, management and communication; brownfield redevelopment; litigation support and expert witness; and all aspects of technical services development, marketing and administration.

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Northwest Michigan Land Use Agent – MSU Extension, Grand Traverse County, Michigan.

1999 - 2003 Developer, co-author and coordinator of MSUE's award winning Citizen Planner statewide land use training program in Michigan. Design and teaching of college credit and adult learner non-credit courses in land use planning and law, environmental law and policy, community development, wetlands and watershed management, *etc.* Member of Leelanau County Agricultural Alliance, Antrim-Grand Traverse County farmland preservation task force involved in undertaking surveys and geographic information system mapping toward county administered farmland preservation programs.

Director of Education and Land Stewardship – Leelanau Conservancy, Leland, Michigan.

1998 - 1999 Design and delivery of land use, conservation and environmental education programs for school children, landowners, professionals and local and regional units of government. Implementation of the Leelanau Geography Project, including the training of middle school teachers from ten (10) area public and private schools. Communication and outreach to visual, print, audio and electronic media. Design and implementation of web pages for Leelanau Conservancy and regional environmental education consortium. Writing and administration of numerous grants.

Co-owner/Senior Project Manager - Compliance, Inc. Environmental Engineering, Traverse City and Detroit, Michigan.

1996 - 1998 Founder of Southwest Detroit office for Compliance, Inc. Regulatory specialist and senior project manager for the investigation and remediation of sites of environmental contamination, brownfield redevelopment, air permitting, emergency response, expert witness and leaking underground storage tank programs. Recipient of Kresge Foundation brownfield redevelopment project grant, and board member for Cluster 5 (Southwest Detroit) of Detroit's Community Reinvestment Strategy initiative.

Regulatory Specialist/Project Manager - Environmental Solutions, Inc., Traverse City, Michigan.

1992 - 1996 Regulatory specialist and project manager for the investigation and remediation of sites of environmental contamination.

Environmental Enforcement Specialist - Michigan Department of Environmental Quality, Environmental Response Division, Lansing, Michigan.

1991 - 1992 Liaison to the Department of the Attorney General in the enforcement and litigation of state environmental regulations.

Environmental Quality Analyst - Michigan Department of Environmental Quality, Environmental Response Division, Gaylord, Michigan.

1989 - 1991 Compliance and enforcement of state hazardous waste, solid waste and leaking underground storage tank (LUST) regulations for eight county region. Responsible for coordination of Part 201 and LUST programs for the eight (8) county Gaylord District.

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Water Quality Specialist - Michigan Department of Natural Resources, Land and Water Management Division, Lansing, Michigan.

1988 - 1989 Production supervisor and design assistant for the Michigan Statewide Groundwater Data Base geographic information system.

U.S. Peace Corps – Returned Peace Corps Volunteer.

1987 - 1988 Worked in the development of agro-forestry systems, soil conservation and environmental education projects in Guayas Province, Ecuador.

Consultant - Michigan Department of Natural Resources, Groundwater Quality and Land and Water Management Divisions, Lansing, Michigan.

1986 - 1987 Staff planner and development specialist for the prototype computerized Michigan Statewide Groundwater Data Base.

SELECT PROFESSIONAL PUBLICATIONS & PRESENTATIONS

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Presenter of “**Environmental Issues with Hydraulic Fracturing: Unconventional Natural Gas Development of Collingwood Shale**” numerous conferences and presentations through-out Michigan, 2010 – 2014.

Panelist: “**Risks of Hydraulic Fracturing: Unconventional Natural Gas Development of Collingwood Shale**,” Michigan State University Extension, Traverse City, Michigan, June 24, 2010.

Instructor of “**Planning and Zoning Essentials**” Michigan Association of Planning, February 25, 2010, Perry Davis Hotel, Petoskey, Michigan.

Presenter of “**Role of Local Government in Protecting Wetlands**” at the Planning Michigan Conference, Michigan Association of Planning's 2009 Planning Conference, October 2, 2009, Mt. Pleasant, Michigan.

Presenter of “**Role of Local Government in Michigan Wetland Regulation**” at the Michigan Wetlands: Celebrating the 25th Anniversary of the Wetland Protection Act Conference, Michigan Department of Environmental Quality, Michigan Department of Natural Resources, Northwestern Michigan College, Water Studies Institute, and U.S. Environmental Protection Agency, May 20-22, Traverse City Michigan.

Presenter of “**Groundwater Disputes: Case Studies and Solutions**” at the 10th Annual Michigan Environmental Health Professionals Conference, October 12-15, 2003, Shanty Creek, Bellaire, Michigan.

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Presenter of “**Farmland Preservation Tools and Techniques and Landowner Options**” at the 52nd Annual Benzie-Manistee Horticultural Show, March 18-20, 2003, Crystal Mountain, Thompsonville, Michigan.

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Presenter "**Riparian Rights**" for HARBOR, Inc. at the Little Traverse Township Hall, Emmet County, Michigan, March 25, 2003.

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Presenter "**Planning and Zoning - How to Stay Out of Court**" at the Annual Michigan Society of Planning Conference, Community, Culture, Change: Planning Michigan, Kalamazoo, October 2 through 5, 2002.

Presenter of "**Michigan's Environmental Regulatory Legacy**" at the 2001 Kickoff: Michigan Groundwater Stewardship Program, Michigan Department of Agriculture, Michiganiana, Boyne City, Michigan, October 25, 2000.

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Presented an **Environmental Regulatory Update: Issues Related to Commercial Lender Liability** for Old Kent Bank, March 11, 1994 and June 7, 1995.

Presented Guidelines for the **Purchasing, Handling and Disposal of Hazardous Materials** with Benson, McCurdy & Wotila, P.C. for Northern Michigan Purchasing Agents in Kalkaska, Michigan on March 9, 1994.

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Guest Lecturer in **Environmental Justice Studies** – University of Michigan, School of Natural Resources, Ann Arbor, Michigan, Spring 1998.

Guest Lecturer in **Environmental Justice and the Law** – Cooley Law School, Lansing, Michigan, Fall 1997.

Guest Lecturer in **Environmental Studies** – Western Michigan University, Kalamazoo, Michigan, 1994 through 1999.

FURTHER EDUCATION

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Training – **Wetland Plant Identification**, Wetland Training Institute, Dr. Mollenberg, Lansing, Michigan, May 21-24, 2002.

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Training – **Special Wetland Area Management Project**, Geographic Information System Wetland Data Northwest Michigan Council of Governments, Traverse City, Michigan, August 31, 2000.

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Training - **Computer Technologies and Groundwater Resource Data Management**, U.S. EPA, Atlanta, Georgia, August 1986.

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Seminar - **Underground Storage Tank Management**, Department of Engineering Professional Development, University of Wisconsin, 1989.

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Seminar - **Clean Air Act Amendments, Sec. 112(R) - Process Safety Management and Risk Management Compliance**, Michigan Association of Environmental Professionals Howell, Michigan, December 1994.

Workshop - **Waste Minimization and Energy Efficiency Workshop** - Michigan Departments of Commerce and Natural Resources, Traverse City, Michigan, May 1995.

Training - **Risk-Based Corrective Action (RBCA) Applied at Petroleum Sites (ASTM E38-94)**, ASTM by Foster Wheeler Environmental Corporation, Bellevue, Washington, July 14-15, 1995.

Conference – **Restructuring Rural Society and Rural Sociology**, Environmental Justice, 58th Annual Meeting, Rural Sociological Society, Ritz-Carlton Hotel, Pentagon City, Virginia, August 17-20, 1995.

Conference – **Michigan Chapter of the American Planning Association and the Michigan Society of Planning Officials**, 4th Annual Joint Conference, “Planning Michigan For the People, By the People”, Amway Grand Plaza, Grand Rapids, Michigan, September 22-25, 1999.

Seminar - **Innovative Septic Technologies**, Michigan State University Engineering Department, Michigan State University Extension and Northwest Michigan Council of Governments, Traverse City Library, Traverse City, Michigan, August 25, 2000.

CHRISTOPHER P. GROBBEL

Academic Achievement:

Phi Theta Kappa National Honor Society
Golden Key National Honor Society
Alpha Zeta Agriculture and Natural Resources Honor Society
Numerous MSU scholarships and assistantships – 3/84 through 3/86.
MSU graduate student fellowship – 9/92 through 8/98.

Professional Certifications:

OSHA 40-Hour Site Safety Training
OSHA 8-Hour Site Safety Training
OSHA Hazardous Waste Site Supervisory Safety Training

Qualified Underground Storage Tank Professional #190, State of Michigan, Department of Environmental Quality.
Michigan Association of Planning, certified instructor.

Professional Associations:

Michigan Association of Environmental Professionals, member.
National Association of Environmental Professionals, member.
National Ground Water Association, member.
Society of Wetland Scientists, member.
Michigan Association Planning, certified instructor and former education committee member.
American Planning Association, member.

EXHIBIT L



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO ATTENTION OF

C-14J

May 8, 2020

David H. Coburn
William T. Hassler
Steptoe & Johnson LLP
1330 Connecticut Ave, NW
Washington, DC 20036

Re: *United States v. Enbridge Energy, Limited Partnership, et al.*, Civ. No. 1:16-cv-00914,
Consent Decree, **Demand for Payment of Stipulated Penalties**

Dear David and Bill:

Pursuant to Paragraphs 164.e, 167, and 168 of the Consent Decree in the above-referenced matter, the United States Environmental Protection Agency (“EPA”) hereby demands payment from Enbridge of stipulated penalties in the amount of \$6,772,150 for violations of the Consent Decree. This demand is being made by EPA with the assent of the United States Department of Justice.

As you know, EPA identified several instances in which Enbridge failed to comply in a timely manner with certain requirements of Section VII (Injunctive Measures) of the Consent Decree. By this letter, EPA demands payment of stipulated penalties totaling \$3,697,150 for such violations. The violations, and the amount of the stipulated penalty assessed for each listed violation, are described below (“the Second Set of Stipulated Penalties”).¹

1. \$78,750 for adding three Crack features on Line 4 DR-FW to the Dig List 21 Days after the applicable deadline under the Consent Decree (see Paragraphs 37 and 47 of the Consent Decree). This amount accrued from July 31, 2018, the Dig List deadline, through August 21, 2018, the date the features were added to the Dig List.
2. \$100,800 for recalculating the pressure restrictions for seven features on Line 6A PE-AM eight Days after the applicable deadline under the Consent Decree (see Paragraph 49.c of the Consent Decree). This amount accrued from September 5, 2018, the original Dig List

¹ The First Set of Stipulated Penalties in the amount of \$1,863,000 was collected via the May 2, 2018 Stipulation and Agreement Regarding Assessment and Payment of Stipulated Penalties Relating to Timeliness of Certain In-Line Inspections.

deadline, through September 13, 2018, the date the recalculated pressure restrictions were approved.

3. \$1,701,000 for adding three Corrosion features on Line 6A AM-GT to the Dig List 240 Days after the applicable deadline under the Consent Decree (see Paragraphs 37 and 50 of the Consent Decree). This amount accrued from April 9, 2018, the Dig List deadline, through December 5, 2018, the date the features were added to the Dig List.
4. \$1,011,600 for determining a pressure restriction for one Corrosion feature on Line 6A AM-GT 238 Days after the applicable deadline under the Consent Decree (see Paragraph 52.b of the Consent Decree). This amount accrued from April 11, 2018, two Days after the Dig List deadline, through December 5, 2018, the date the pressure restriction was calculated.
5. \$6,000 for completing the identification of intersecting features on the Line 3 CR-PW segment three Days after the applicable deadline under the Consent Decree (see Paragraph 58 of the Consent Decree). This amount accrued from September 4, 2018, 30 Days after the Initial ILI Report, through September 7, 2018, the date the threat integration was completed.
6. \$799,000 for the failure to establish and maintain 24-hour Alarm capability on the Line 67 FW-PW segment for 173 Days (see Paragraphs 92, 96, and 103 of the Consent Decree). This amount accrued from February 16, 2018, 270 Days after the Effective Date of the Consent Decree, through August 8, 2018, the date the issue was corrected.

In addition, EPA identified numerous instances in which Enbridge failed to comply in a timely manner with Consent Decree provisions relating to certain intersecting or interacting features on Lakehead System pipelines. More specifically, Enbridge failed to complete timely identification and evaluation of thousands of “shallow dent” features on Lakehead System pipelines to determine whether such dents met dig selection criteria specified in Paragraph 58 and Table 5 of the Consent Decree. As a result, Enbridge failed to excavate and repair or mitigate shallow dents with indications of metal loss, cracking, or stress risers, as contemplated by Paragraph 58 of the Consent Decree. Between the date of entry of the Consent Decree and March 30, 2019, Enbridge conducted at least ten different ILIs that triggered a duty to look for intersecting dent/corrosion features. EPA assessed stipulated penalties in the amount of \$3,075,000 for such violations (“the Third Set of Stipulated Penalties”).

Altogether, EPA demands payment from Enbridge of stipulated penalties in the amount of \$6,772,150 for the violations of the Consent Decree described above. EPA reserves the right to demand stipulated penalties for other violations of the Consent Decree.

As provided by Paragraph 167 of the Consent Decree, stipulated penalties shall be paid within 30 days of receiving a written demand. Therefore, Enbridge shall pay the Second Set of Stipulated Penalties within 30 days of receiving this written demand. However, because the Third Set of Stipulated Penalties have been assessed in conjunction with the proposed Fifth Modification of the Consent Decree, Enbridge shall pay the Third Set of Stipulated Penalties within 30 days of

approval and entry of the proposed Fifth Modification by the Court.

Stipulated penalties should be paid in the manner set forth in Paragraph 169 of the Consent Decree. Consistent with Paragraph 169 of the Consent Decree, the Financial Litigation Unit of the U.S. Attorney's Office for the Western District of Michigan will send Enbridge written FedWire EFT instructions upon written confirmation from Enbridge that it intends to pay the amount demanded hereunder.

If you have any questions, please contact me at 312-353-4410.

Sincerely,



Matthew Russo
Assistant Regional Counsel

cc: C. Mymko, Enbridge
D. Purvis, Enbridge
S. Willey, DOJ
J. Warren, DOJ
C. Garypie, EPA R5/ORC
K. Peaceman, EPA R5/ORC
L. Welles, EPA OECA/OCE/WED
C. Tierney, EPA OECA/OCE/WED

EXHIBIT M



CORPORATE HEADQUARTERS: P.O. BOX 47 ■ WAUKESHA, WI 53187-0047
PHONE: 262-506-6700 ■ TOLL FREE: 866-899-3204 ■ FAX: 262-506-6124 ■ www.atcllc.com

April 30, 2019

Ms. Jane TenEyck
Executive Director, Chippewa Ottawa Resource Authority
179 W. Three Mile Road
Sault Ste. Marie, MI 49783

Re: American Transmission Company-Straits Cable Replacement Project

Dear Ms. TenEyck and CORA Board Members,

In an incident that occurred on April 1, 2018, some of American Transmission Company's submarine electric cables crossing the Straits of Mackinac were severed. After reconfiguring the remaining functional cables, ATC was able to reestablish one of the two electric circuits. ATC has initiated a project to add a second circuit across the Straits, which is necessary for electric reliability in the area. ATC is proposing to remove all existing cables and installing new solid dielectric submarine cables, which would contain no mineral insulating oil, eliminating future risk of a release.

There has been some discussion by others about a possible utility tunnel under the Straits. You have asked whether ATC is willing to enter into an arrangement to put its cable in such a tunnel. The answer is that a tunnel is not an acceptable solution for ATC, for the following reasons:

Timing. ATC needs to restore its second circuit as soon as possible. By installing its own cables, ATC can have its system intact by 2021. A tunnel of uncertain timing, later in the decade, does not serve the public.

Safety. ATC does not believe that installing high voltage electric lines in close proximity to high pressure oil or gas lines is a good idea.

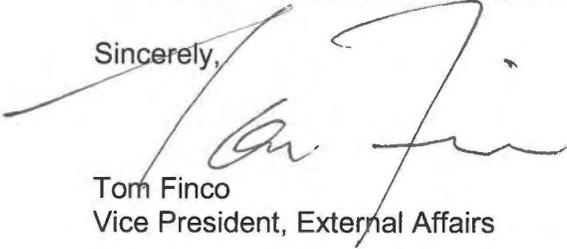
Practicality. A cable capable of transmitting 138,000 volts is physically large and would need several splices or joints to cross the entire Straits. Each splice location would need significant space in the tunnel for welders. Nothing we have seen suggests that a reasonably sized tunnel would be feasible.

April 30, 2019
Page 2

Economics. Increasing the size of the tunnel to accommodate both oil and electric lines would dramatically increase its cost. ATC believes that its proposed project, while not inexpensive, would be more economical than locating within a tunnel.

Please feel free to contact me with any further questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Finco". The signature is written in a cursive style with a large, sweeping initial "T".

Tom Finco
Vice President, External Affairs

cc: Crystal Koles, ATC Environmental Project Manager
John Garvin, ATC State and Federal Government Affairs Director

EXHIBIT N

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application for the Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac, if Approval is Required Pursuant to 1929 PA 16; MCL 483.1 et seq. and Rule 447 of the Rules of Practice and Procedure, R792.10447, or the Grant of other Appropriate Relief.

AFFIDAVIT OF BRYAN T. NEWLAND

Bryan T. Newland, being first duly sworn, deposes and states as follows:

1. I am the duly elected President of Gnoozhekaaning, “Place of the Pike,” or the Bay Mills Indian Community, which is a federally recognized Indian Tribe with a government organized under the provisions of the Indian Reorganization Act of 1934, 25 U.S.C. §5101, *et seq.*

2. The Bay Mills Indian Community is the modern day successor in interest to six bands of Ojibwe people who were identified by the negotiators for the United States as living near Sault Ste. Marie in the Treaty of March 28, 1836, 7 Stat. 491.

3. At the time of the Treaty, the bands relied heavily on the fishery resources found in the Upper Great Lakes for their subsistence, and as an item of commerce with the citizens of the United States.

4. Band representatives joined with Ojibwe and Ottawa band representatives in Washington D.C. in early March, 1836, at the request of the United States to negotiate a treaty of cession.

5. The Ojibwe and Ottawa signed the Treaty on March 28th, and ceded to the federal government over 14 million acres of land and, in addition, the waters of Lake Superior lying eastward of the Chocolay River, the northern portion of Lake Huron to the mouth of the Thunder Bay River, and the waters of Lake Michigan from Ford River south of Escanaba to Grand Haven on Lake Michigan's southeastern shore, and including all the waters connecting the three lakes.

6. Although our ancestors were willing to provide land to the United States, they carefully protected the traditional lifeway and its reliance on the environment's natural resources for food, shelter, medicines, and for trade. This was embodied in Article Thirteenth of the Treaty, which reserved the right to hunt, and the other usual privileges of occupancy until the land was required for settlement.

7. Commercial and subsistence fishing continue to be the primary occupation of members of the Bay Mills Indian Community from Treaty times until the present day. Over half our member households rely on fishing for all, or a portion of their annual income.

8. This right to fish has been fiercely protected by the Bay Mills Indian Community and its members, including litigation regarding: the continued existence of the Treaty right; the member's right to use traditional fishing gear such as gillnets; and the limitations on the State's power to regulate the exercise of the treaty right to fish. The first round ended in the 1976 decision of the Michigan Supreme Court that the right to fish in the ceded waters of Michigan's Great Lakes, expressly reserved by Article Thirteenth, continue to exist, and that the State's power to regulate treaty-protected fishermen was limited to those restrictions exclusively necessary to protect the resource

from depletion. The case is *People v. LeBlanc*, 399 Mich. 31; 248 NW2d 199 (1976); it began with a call from Bay Mills member Albert LeBlanc to the local DNR office in 1972, stating that he had set a gill net in Lake Superior. Mr. LeBlanc was issued a citation for using an illegal fishing device and the battle began.

9. The next round was waged in federal court, and began in 1973 with the filing of a lawsuit against the State of Michigan by the United States, as trustee for the Bay Mills Indian Community, which asserted that the State's regulation of treaty-protected fishing activities by the Tribe's fishers impaired and interfered with the Tribe's treaty rights, in contravention of the laws and treaties of the United States. That litigation, known as *United States v. Michigan*, Case No. 2:73 -cv- 26 (W.D. Mich.) resulted in a decision in 1979 in which the Tribe's treaty rights were held paramount to the fishing regulations of the State; the case is reported at 471 F. Supp. 192 (W.D. Mich. 1979). The case has been on-going since then, as additional Tribes were federally recognized and management and regulatory frameworks were developed through a combination of negotiated agreements and court orders. The United States, the Tribes and the State are currently engaged in negotiations for a new management and allocation agreement which will replace the current one, which expires in August 2020.

10. The legal history of the Treaty fishing controversies is recited not only to emphasize the existence of Tribal rights regarding the fishery, but also to serve as evidence that the right to fish, and the need for a natural environment in which fish can thrive, is of the utmost importance to the Tribe and its members, and will be fiercely protected.

11. At present, the Tribe is deeply concerned that environmental stressors such as climate change, invasive species, chemical pollutants and habitat destruction will combine to have a significant and perhaps permanent adverse impact of the fishery. The operation of current Line 5, and the prospect of the siting and construction of a tunnel in the Straits of Mackinac for the transport of petroleum products, is the most obvious and most preventable risk to the fishery resources throughout northern Lakes Michigan and Huron.

12. I have personal knowledge of the allegations in the Bay Mills Indian Community's Petition to Intervene in this case.

13. The factual allegations in the petition regarding the Bay Mills Indian Community, its members and its interests are true to the best of my knowledge, information and belief.

14. If called as a witness, I can competently testify as to the facts in the Petition to Intervene.



Bryan T. Newland

EXHIBIT O

ATTACHMENT A

TO

AUGUST 1, 2017, TRIBAL COMMENTS

ON

DYNAMIC RISK ALTERNATIVES ANALYSIS

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN

NATIONAL WILDLIFE FEDERATION,)	
)	
Plaintiff,)	
)	Case No. 2:16-cv-11727
v.)	
)	Hon. Mark A. Goldsmith,
ADMINISTRATOR OF THE PIPELINE)	District Judge
AND HAZARDOUS MATERIALS)	
SAFETY ADMINISTRATION,)	Hon. R. Steven Whalen,
)	Magistrate Judge
Defendant.)	
_____)	

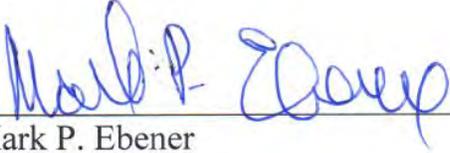
Declaration of Mark P. Ebener

Mark P. Ebener, being duly sworn, states that he is competent to testify to the matters stated and that the following statements are made on personal knowledge regarding facts that would be admissible in evidence:

1. Declarant states that he is employed as the Fishery Assessment Biologist for the Inter-Tribal Fisheries and Assessment Program ("ITFAP") of the Chippewa Ottawa Resource Authority ("CORA"); that he has a bachelor of science (1977) and masters degree (1980) in Fisheries Management from the University of Wisconsin-Stevens Point; and that he has been employed by Native American Inter-Tribal Natural Resource Agencies as a Great Lakes Fishery Biologist for 35 years. (The details are on the attached document which is incorporated by reference.)

2. Attached to this notarized document is a document also titled "Declaration of Mark P. Ebener". Declarant attests that all of the statements in the attached document are true, that they are based on his personal knowledge, and that he is competent to testify to those stated facts and conclusions.

3. Also attached to this notarized document is another document titled "Fish harvest reported by CORA commercial fishers, summarized by grid, 2005-2015." This was prepared by ITFAP based on records maintained by ITFAP and CORA; Declarant attests that the harvest information depicted is accurate based on records maintained by ITFAP and CORA.


Mark P. Ebener

STATE OF MICHIGAN
COUNTY OF Chippewa

Signed and sworn before me in Chippewa County on July 14, 2016 by Mark P. Ebener.


_____, Notary Public
Chippewa County, Michigan
Commission Expires: Sep. 26, 2021
Acting in Chippewa County, Michigan

MATTHEW KAGARISE
NOTARY PUBLIC, STATE OF MI
COUNTY OF CHIPPEWA
MY COMMISSION EXPIRES Sep 26, 2021
ACTING IN COUNTY OF Chippewa



Declaration of Mark P. Ebener

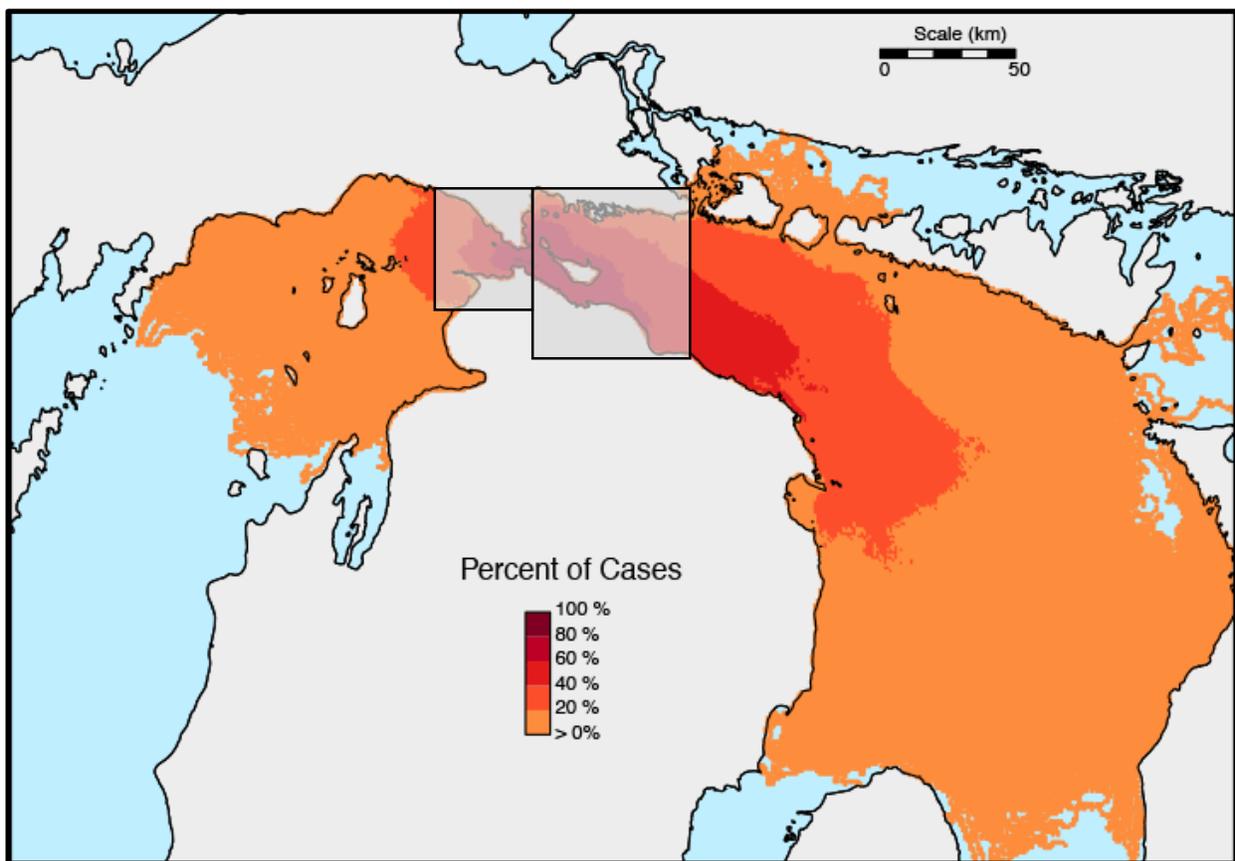
I am employed as the Fishery Assessment Biologist for the Inter-Tribal Fisheries and Assessment Program (ITFAP) of the Chippewa Ottawa Resource Authority, but since the Sault Ste. Marie Tribe of Chippewa Indians handles the financial contract for my organization, I am technically an employee of the Sault Ste. Marie Tribe of Chippewa Indians. I have a Bachelor of Science (1977) and Master's degree (1980) in Fisheries Management from the University of Wisconsin-Stevens Point. I was employed as Assessment Biologist for the Inter-Tribal Fisheries Program from 1981 to 1984, then from part of 1984 to 1990 I was employed as Great Lakes Biologist for the Great Lakes Indian Fish and Wildlife Commission in Odanah, Wisconsin. I returned to my current position as Assessment Biologist in November 1990. Thus, I have been employed by Native American Inter-Tribal Natural Resource Agencies as a Great Lakes Fishery Biologist for 35 years.

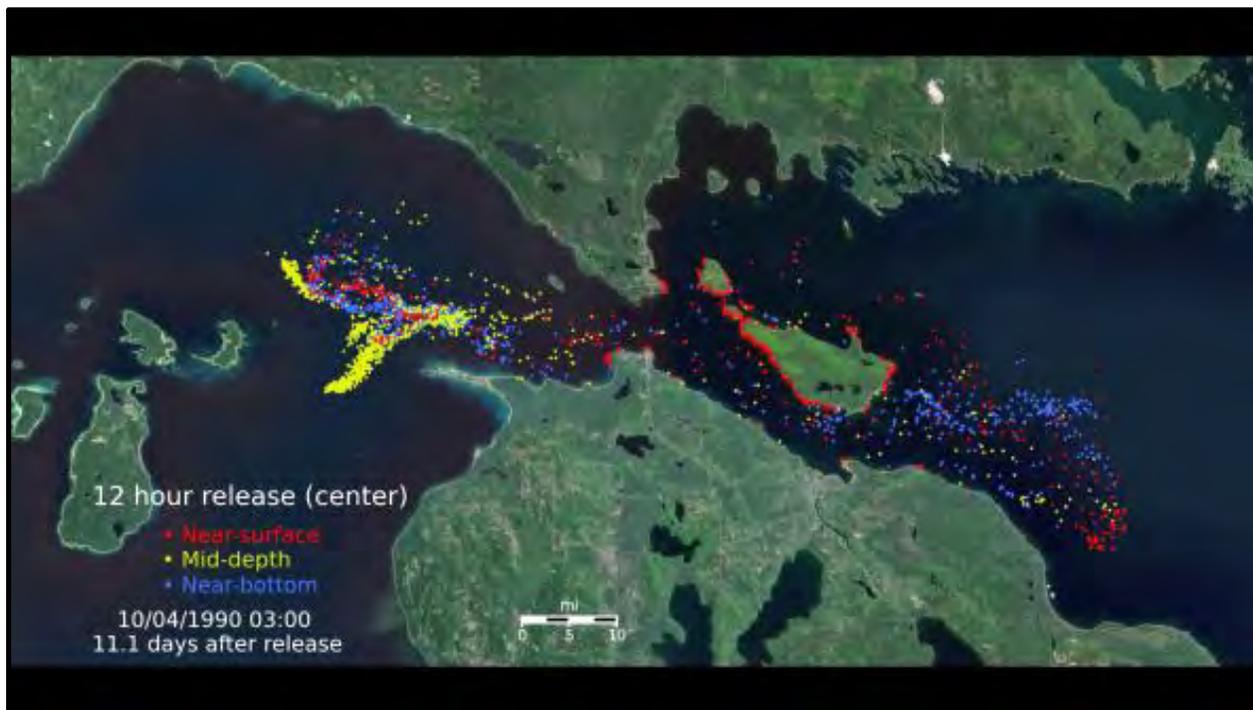
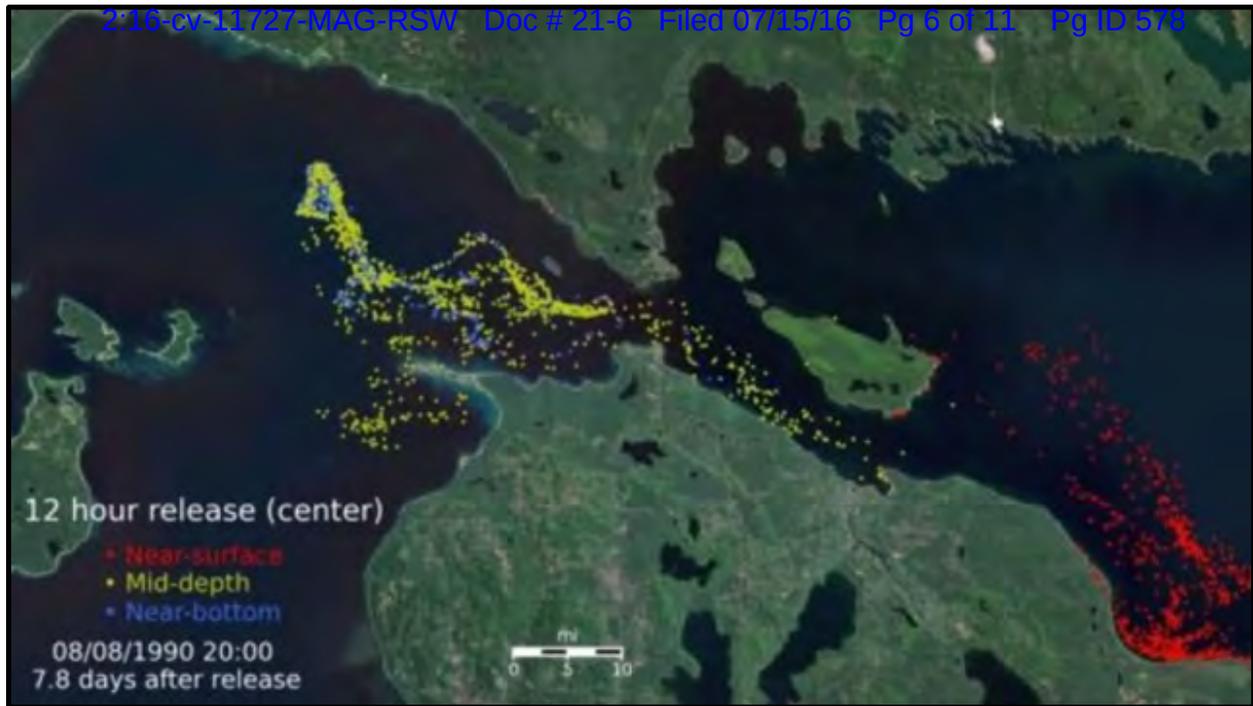
I have conducted numerous research and assessment projects on Great Lakes fishes during my 35 years as a professional fishery biologist both independently for the Chippewa Ottawa Resource Authority and cooperatively with researchers from other state, federal, university, and tribal organizations. The vast majority of my work has focused on lake whitefish and lake trout, but I have also studied Great Lakes walleye, cisco, yellow perch, and Chinook salmon. I have authored or co-authored over 25 scientific papers based on data our staff has collected, or as part of collaborative studies with other researchers.

My primary responsibility at ITFAP is to coordinate collection of information to describe the status of fish species important to the CORA fishery. I also serve on the Modeling Subcommittee for the 1836 Ceded waters, whose primary responsibility is to estimate safe harvest limits of whitefish and lake trout in each of the management units in the ceded waters. I also serve on two international technical committees whose responsibilities are to coordinate research and assessment on fish populations and their habitat, and to advise state, federal, and tribal governments on management of fish and their habitat in Lakes Superior, Huron, and Michigan. I was chairman of the Lake Superior Technical Committee for 14 years and chairman of the Lake Huron Technical Committee for five years. I also served on the Lake Michigan Technical Committee.

This is my assessment of the potential effects of an oil spill from Line 5 on the fishery resources in the 1836 Treaty-ceded waters. Before I get into specifics, I will point out that the commercial fisheries and some fish populations in the Prince William Sound area of Alaska have not recovered from the oil spill of the Exxon Valdez in 1989. I did a simple Google search and found at least five articles of how all the oil from the Exxon Valdez has not been cleaned up in Prince William Sound as of 2014 and these articles document how some fisheries and the local economy have also not recovered from the spill. I suspect we would see the same effect here in the 1836 Treaty-ceded waters of Lakes Huron and Michigan as a consequence of a leak from Line 5. It would be naïve to believe otherwise.

My evaluation of the effects on fish populations and their habitat because of an oil spill from Line 5 is based on my experience as a fishery biologist working for Native American Tribes in the upper Great Lakes of North America; specifically lakes Superior, Huron, and Michigan. My evaluation is also based on some of the results from University of Michigan computer simulations that estimated the spatial and bathymetric extent of an oil spill from Line 5 into northern lakes Michigan and Huron. These simulations were based on a water flow model and current patterns in the Straits of Mackinac for a release of oil from Line 5 that lasted for 8 to 12 hours. Based on these simulations, I am defining the affected areas as all waters of northern Lake Michigan east of a line drawn south from Epoufette, Michigan to Ile aux Galet and all waters of northern Lake Huron west of a line drawn south from Detour, Michigan to Forty Mile Point. I am defining these areas as Northern Lake Michigan and Northern Lake Huron.



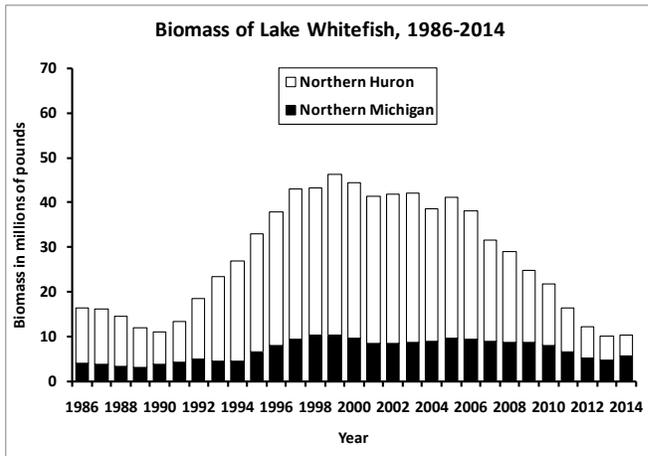


Lake whitefish (*Coregonus clupeaformis*) is the primary target of the CORA commercial fishery and the species made up 79% by weight of the total commercial harvest from the 1836 ceded waters during 2006-2015 based on CORA commercial fishery statistics summarized by our staff. Lake whitefish sustain themselves solely through natural reproduction, but spawning does not take place throughout Northern Lake Michigan and Northern Lake Huron. Rather lake whitefish spawning is concentrated in shallow rock and gravel areas adjacent to the shorelines. As such, lake whitefish spawning sites would be highly vulnerable to an oil spill. In the

Northern Lake Michigan area specific spawning locations include the areas around Green Island, Pt. aux Chenes, and Epoufette along the southern shore of the Upper Peninsula of Michigan and along the shoreline of the northern Lower Peninsula of Michigan from Cecil Bay and Big Stone Bay west to Waugoshance Point and then south through Sturgeon Bay. In Northern Lake Huron lake whitefish spawn along nearly the entire southern Upper Peninsula shoreline from Detour west to just north of St. Ignace wherever there are small rocky and gravel areas. Lake whitefish also spawn in large aggregations from Cheboygan, Michigan southeast along the northeastern portion of the Lower Peninsula of Michigan to 40 Mile Point; again wherever rocky and gravel areas are found along the shoreline.

Nearly the entire area of Northern Lake Michigan and Northern Lake Huron is lake whitefish habitat that is used by all life stages. Lake whitefish eggs are laid on shallow rocky/gravel areas in water less than 10 ft. deep typically from late October through early December where they incubate throughout the winter. Young lake whitefish hatch just after ice out from mid to late April through mid to late May. These young lake whitefish occupy very shallow sandy areas less than 5 ft. deep adjacent to the spawning shoals through roughly early July. Thereafter, the young lake whitefish move to deeper water. Juvenile and adult lake whitefish live throughout Northern Michigan and Northern Huron occupying waters of typically 30 to 200 ft. deep.

Northern Lake Michigan and Northern Lake Huron are very productive areas for lake whitefish with biomass levels typically exceeding 10 million pounds annually. Statistical-catch-at age estimates of the total biomass of lake whitefish age-4 and older in Northern Lake Michigan and Northern Lake Huron ranged from 10 to 47 million pounds annually and averaged



28 million pounds during 1986-2014. The annual CORA commercial harvest from Northern Lake Michigan and Northern Lake Huron ranged from 1 to 4 million pounds and averaged 3 million pounds during 1986-2014. Lake whitefish harvests from Northern Lake Michigan and Northern Lake Huron made up 37% to 76% of the total annual CORA commercial lake whitefish harvest from the 1836 ceded waters and averaged 58% during 1986-2014. Thus, Northern Lake Michigan and Northern Lake Huron are very important fishing grounds for the

CORA fishery and the habitat in these areas produces more than ten millions of pounds of lake whitefish annually for harvest by the tribes.

I believe declines in biomass of lake whitefish due to an oil spill will have a huge negative effect on the CORA commercial fishery for over a decade. Egg incubation and larval abundance in nearshore habitat will be most affected by an oil spill and these habitats will be

rendered basically useless for many years. Juvenile and adult lake whitefish may be less directly affected by an oil spill than eggs and larvae, but their food resources will be affected, thus I suspect that growth of these fish will be negatively affected by the spill. Juvenile and adult lake whitefish consume a broad array of indigenous food items such as zooplankton, clams, snails, darters, larval and adult mayflies, caddis flies, and midges, Mysis, Diporeia, and ostracods. Juvenile and adult lake whitefish also consume invasive species such as dreissenid mussels, Bythotrephes, and small rainbow smelt and alewife. Most of the indigenous prey of lake whitefish live on the lake bottom (they are benthic) and as such will be negatively affected by an oil spill. Reductions in abundance of benthic prey will most certainly reduce food consumption by juvenile and adult lake whitefish and will reduce their growth rates and possibly their body condition. Large reductions in body condition were observed on lake whitefish from Northern Lake Michigan and Northern Lake Huron during the late 1990s and early 2000s after arrival of dreissenid mussels to the Great Lakes, and this reduction in body condition reduced marketability of lake whitefish by the CORA commercial fishery. I expect a repeat of this process if an oil spill occurs.

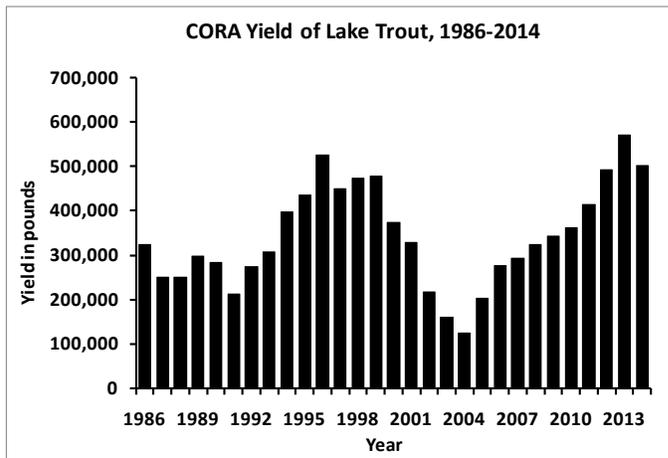
Lake trout (*Salvelinus namaycush*) is the second most commonly harvested fish species by the CORA fishery and the species made up 15% by weight of the total CORA harvest during 2006-2015 based on fishery statistics summarized by our staff. Lake trout populations are sustained through both natural reproduction and stocking of hatchery-reared fish. Lake trout are indigenous to the Great Lakes and historically they were the top fish predator in the Great Lakes prior to becoming extirpated in all but Lake Superior by 1960. Since then, federal, state, provincial, and tribal governments have been trying to promote rehabilitation and recovery of lake trout population throughout the Great Lakes by controlling fishery harvests, stocking hatchery-reared fish, and controlling populations of the invasive sea lamprey. Through 2015, lake trout populations have fully recovered in Lake Superior, they are becoming self-sustaining in the main basin of Lake Huron, and they are just now starting to sustain themselves in Lake Michigan. Northern Lake Michigan populations of lake trout are composed of 94% hatchery-reared fish, whereas Northern Lake Huron populations are composed of 35% naturally produced fish based on our monitoring of the populations in both lakes during 2010-2015. The 2000 Consent Decree negotiated between CORA member tribes and the State of Michigan and U.S. federal government was designed to promote recovery of lake trout populations in the 1836 ceded waters, so much of the current management focuses on protecting lake trout through refuges, harvest limits, reductions in gill net effort, lake trout stocking, and sea lamprey control. An oil spill from Line 5 would have direct effects on agreements contained in the Consent Decree and would create a huge setback in the process to rehabilitate lake trout populations.

Lake trout spawn primarily on offshore reefs in Northern Lake Michigan and Northern Lake Huron, but they also spawn to a lesser extent in shallow rocky areas along the shoreline of both areas. In Northern Lake Huron lake trout currently spawn in offshore areas such as the Martin, Pomery, and Tobin reef complex near Cedarville, Michigan, and Spectacle and Reynolds reefs which are located between Detour and St. Ignace anywhere from 5 to 10 miles from shore. Lake trout also spawn along the shoreline near Detour, Hammond Bay, and Bois Blanc

Island. Historically, lake trout spawned on Graham and Majors Shoals, which are both located directly in the Straits of Mackinac just east of the Mackinac Bridge, but I am unsure of the current status of lake trout spawning on either of those shoals. In Northern Lake Michigan lake trout spawn along the shoreline of the northwest portion of the Lower Peninsula from Cecil Bay to Waughoshance Point and south through Sturgeon Bay.

Nearly the entire area of Northern Lake Michigan and Northern Lake Huron is lake trout habitat that is used by all life stages. Lake trout eggs are laid on rocky substrates in water of 5 to 30 ft. deep typically from mid-October through mid-November where they incubate throughout the winter. Young lake trout hatch after ice out from mid to late April through mid to late May. These young lake trout occupy rocky areas on the spawning shoals, but as they age through their first summer they move off the rocky spawning shoals to deeper, more soft bottomed areas. Juvenile and adult lake trout live throughout Northern Lake Michigan and Northern Lake Huron occupying waters of typically 30 to 350 ft. deep.

As with lake whitefish, both Northern Lake Michigan and Northern Lake Huron are productive areas for lake trout. The CORA commercial harvest of lake trout from both areas combined ranged from 124,000 to 572,000 pounds annually and averaged 343,000 pounds each year during 1986-2014. The annual CORA commercial harvest of lake trout from Northern



Lake Michigan and Northern Lake Huron represented 36% to 56% of the total CORA yield of lake trout from the 1836 ceded waters. Since the 2000 Consent Decree the CORA commercial yield of lake trout in Northern Lake Michigan and Northern Lake Huron has been limited to within certain bounds by total allowable catches that are established annually by the parties to the agreement. In Northern Lake Huron the annual CORA total allowable catch has ranged from 69,000 to 414,000 pounds during 2001 to 2015.

In Northern Lake Michigan the total allowable catch has been much more constant at 453,000.

Lake trout that spawn along shorelines, particularly in Northern Lake Huron through Hammond Bay, will be severely affected by an oil spill model for Line 5 based on the simulations from the oil spill model. In particular, lake trout spawning in the Cheboygan to Hammond Bay area will most affected because these fish spawn near shore and the spill will cover rocky substrates where eggs are deposited nearshore. Offshore spawning populations of lake trout will be somewhat affected by the oil spill as simulations indicated that oil may be found near the lake bottom at the Reynolds and Spectacle Reef spawning sites.

An oil spill from Line 5 will also affect yellow perch, walleye, and round whitefish (i.e. menominee) populations in Northern Michigan and Northern Huron. These species in the aggregate made up less than 2% of the annual CORA commercial harvest during 1986-2014, but yellow perch and walleye, in particular, are high value species and as such are important to the fishery. The effect of an oil spill from Line 5 on yellow perch, walleye, and menominee will be concentrated in Northern Lake Huron from the Mackinac Bridge through the South Channel to Cheboygan and Hammond Bay. This area contains spawning grounds for all three species, particularly from Cheboygan through Hammond Bay. Yellow perch spawn directly in front of Cheboygan and throughout the South Channel as do menominee. Walleye spawn in the Cheboygan River and inhabit the South Channel through much of the year. Many of the walleye that inhabit the South Channel come from a population that spawns in the Saginaw River, but lives in the Straits of Mackinac for part of the year. Thus a spill from Line 5 will affect much more than fish populations in the Straits.

Fish harvest reported by CORA commercial fishers, summarized by grid, 2005-2015 average.

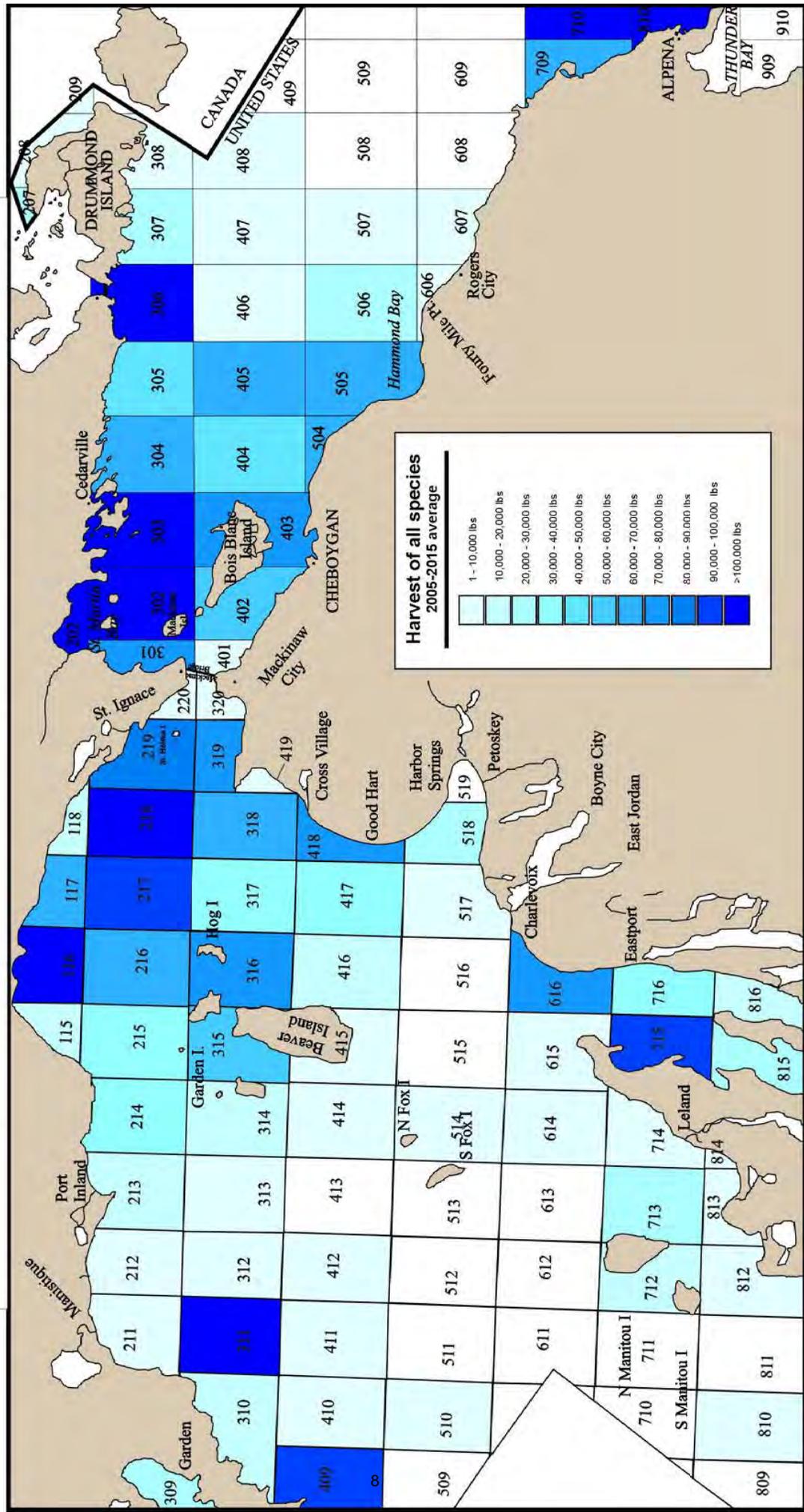


EXHIBIT P

RISK BASED APPROACH TO DESIGNING AND REVIEWING PIPELINE STREAM CROSSINGS TO MINIMIZE IMPACTS TO AQUATIC HABITATS AND SPECIES

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ABSTRACT

Extensive new pipeline systems proposed to transport natural gas and oil throughout North America will potentially result in thousands of new stream crossings. The watercourses encountered at these crossings will range from small, ephemeral headwater streams to large, perennial mainstem rivers; from dynamic gravel bed streams to stable bedrock channels; and from steep, source reaches to low gradient, response reaches. Based on past experience at pipeline crossings, the potential for both short and long term negative impacts on aquatic habitat and species is substantial. In assessing potential hazards to aquatic habitat and species, the diverse physiography and ecology of the stream affected, combined with the number and range of new pipelines proposed, pose significant challenges for project developers charged with collecting, stratifying, evaluating, analysing, interpreting, and presenting stream crossing data in formats that are accessible, usable and useful. It is equally challenging for project reviewers to detect, distill and summarize potential project impacts and then identify reasonable options for their avoidance, minimization, and mitigation. To address these concerns, the US Fish and Wildlife Service, in conjunction with Ruby Pipeline, LLC, developed a pipeline crossing framework and risk analysis approach to stratify potential aquatic impacts, based on both stream characteristics and project types. In this approach, pipeline crossings are ranked in terms of relative short and long term risk to aquatic habitat and are then analysed, designed, and monitored in ways appropriate to their risk. This approach allows project developers and reviewers to focus resources and monitoring on the crossings that present the highest risks to aquatic habitat and species, while expediting design and construction, and minimizing the monitoring of low risk crossings. Published 2014. This article is a U.S. Government work and is in the public domain in the USA.

KEY WORDS: aquatic habitat; impact analysis; pipelines; risk analysis; risk screening matrix

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INTRODUCTION

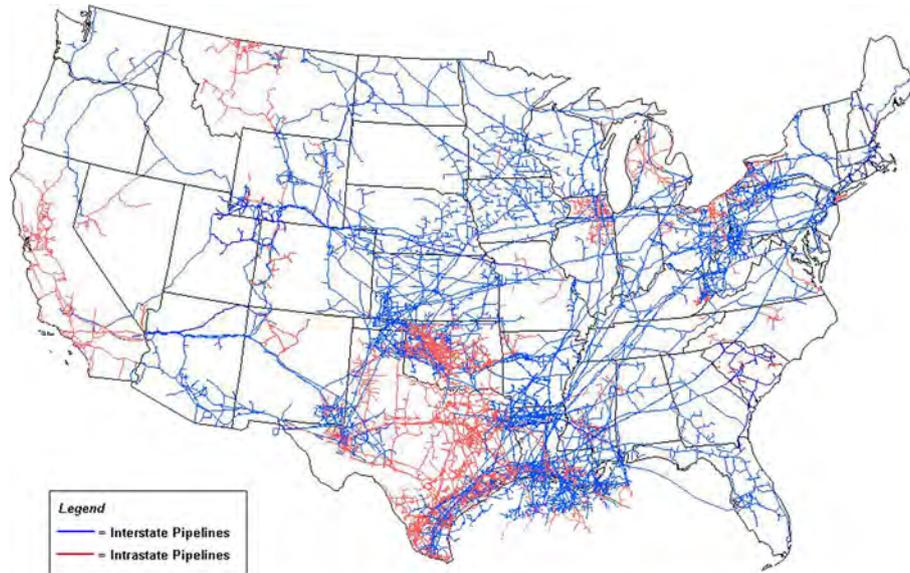
Background

New discoveries of natural gas and oil fields, together with increasing use of hydrocarbons, are driving the demand for more extensive pipeline networks not only throughout North America (Figure 1) but also globally. In the Pacific Northwest (PNW), at least five separate pipeline projects have been proposed in the last 5 years. Only one, the Ruby Pipeline that traverses Oregon, Nevada, Utah, and Wyoming, crossing over 1200 waterbodies, has been completed to date, but several others are in the planning and permitting phases. For example, the Enbridge Northern Gateway Pipeline in Western Canada would cross approximately 780 waterways in three key salmonid watersheds (Levy, 2009). The need for increased oil and gas transmission is not only being addressed using new pipelines; existing pipelines are also being upgraded for this purpose. An example of a recently refurbished pipeline

is the Western Route Export Pipeline that traverses Azerbaijan and Georgia, linking the Caspian Sea to the Black Sea (Hydrocarbons-Technology, 2014).

Linear transmission systems cross cut the landscape and thus intersect a wide variety of sensitive aquatic habitats that will potentially be affected by these pipeline crossing activities (Reid and Anderson, 1999). These include both short-term, construction-related impacts, such as increased turbidity, direct modification of aquatic habitat, and the potential for hydrocarbons to enter the stream through equipment failures and spills (Reid and Anderson, 1999; Reid *et al.*, 2002a, 2002b), and long-term impacts that are more directly associated with the stream's response potential, such as channel incision and lateral migration (Thorne *et al.*, 2014). Additionally, stream crossings constructed decades ago are being rebuilt or repaired to reduce the risk of rupture and extend pipeline design life. In other cases, the stream channels themselves have moved laterally or vertically, exposing an existing pipeline. Clearly, the effects of proposed and existing pipeline crossings on aquatic systems are significant because each pipeline may have hundreds, or even thousands, of stream crossings (Levy, 2009) and because each pipeline is a permanent infrastructure that

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Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

Figure 1. US natural gas pipeline network in 2009, not including the recently completed Ruby Pipeline from http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/ngpipelines_map.html. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

must be maintained over time. Past risk evaluation efforts have focused primarily on the short-term, construction-related impacts, especially to fisheries resources (Reid and Anderson, 1999; Reid *et al.*, 2002a, 2002b; Reid *et al.*, 2004; Lévesque and Dubé, 2007; Rempel and Porter, 2008), while the approach reported here concentrates more on long-term, physical effects to the aquatic environment.

While pipeline failures are relatively uncommon, the impacts to aquatic habitats and species can be substantial. For example, during a 25- to 50-year flood event in 2011, Exxon Mobil's Silvertip Oil Pipeline in Montana was exposed because of stream bed erosion and then ruptured, releasing an estimated 50 000 gallons of oil into the Yellowstone River (Atkins, 2012). In 1994, extreme flooding along the San Jacinto River in Texas resulted in eight pipeline ruptures during a single event, including ruptures because of the formation of new channels in the floodplain, and releasing 1.47 million gallons of petroleum into the river (NTSB, 1996). A broader study of pipeline failures in Alberta, Canada, over a 15-year period found an average of 762 pipeline failures per year, for a total of 12 191 failures (Levy, 2009). Predicting stream crossings that are at the highest risk for failure is, therefore, of primary importance to government agencies charged with protecting aquatic habitats and species, as well as water quality.

Existing frameworks and tools

A variety of pipeline evaluation tools have been developed and exist primarily in the form of conference proceedings and agency or consultant reports (Reid *et al.*, 2008; Rempel

and Porter, 2008) or are for a specific pipeline project (Atkins, 2012). Examples include the following:

- (1) the Canadian Fisheries Risk Assessment Tool that is under development by Fisheries and Oceans Canada (Rempel and Porter, 2008);
- (2) CROSSING – a decision support tool for pipeline crossings and construction impacts (Reid *et al.*, 2008) that focuses on suspended sediment concentrations and deposition rates;
- (3) the Yellowstone River Pipeline Risk Assessment that was developed as a result of the pipeline rupture in 2011 (Atkins, 2012); and
- (4) the Performance Measurement Framework for Pipeline Water Crossing Construction developed to evaluate completed crossings (Reid *et al.*, 2002a).

One of the most extensive and complete risk assessment methodologies currently available was developed in 2005 by the Canadian Association of Petroleum Producers, the Canadian Energy Pipeline Association, and the Canadian Gas Association (CAPP, 2005). Through this collaborative effort, the Risk Management Framework for Development Projects Impacting Fish Habitat was developed for pipeline projects. This has two components: the Pathways of Effects and the Risk Determination Matrix (CAPP, 2005). The framework and tools developed by CAPP, 2005 are excellent for reducing short-term impacts because of pipeline construction but differ from the proposed methodology in that it is narrowly focused on fisheries resources; the current effort is more widely focused on all aquatic resources and

longer term, cumulative impacts. Hence, the CAPP, 2005 framework and tools and this current effort are complementary resources.

US regulatory framework

Each country has different regulatory requirements and controls. It is not within the scope of this paper to address the different regulatory environments found within North America or globally; however, we present the US federal regulatory environment as a case study.

For interstate and major US intrastate pipelines, the US Federal Energy Regulatory Commission (FERC) is the lead federal agency managing environmental impact minimization, while the US Department of Transportation is responsible for pipeline safety once pipeline construction is complete, regardless of the product carried in the pipeline. FERC both issues licenses and provides guidance for interstate and intrastate pipeline projects. FERC guidance attempts to balance the requirements of a fixed feature (the pipeline) in a landscape that is subject to both human and natural dynamic conditions. However, the geologic, ecologic, and climatic complexity of the USA makes it impossible to provide crossing design guidance that is applicable to all streams in all landscapes; hence, the capability to modify guidance depending on regional and local needs is essential.

For example, current FERC guidance for Wetland and Waterbody Construction and Mitigation Procedures (Procedures; FERC, 2013) is national in scope and general in nature and therefore does not provide sufficiently detailed and specific information at a regional level to adequately protect aquatic systems with numerous species in complex geographic and ecologic settings. Specifically, within the FERC (2013) Procedures, streams are designated into three broad categories—major, intermediate, and minor—based on wetted channel width at the time of construction, with progressively more latitude in design, construction, and oversight as channel size decreases. Hence, relatively large rivers may be identified as intermediate or even minor streams, especially in the arid west. Further, FERC Procedures allow some streams to be treated as uplands under the following conditions:

Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques... (FERC, 2013, page 6)

A few components of the FERC Upland Erosion Control, Revegetation, and Maintenance guidance (FERC, 2003) pertain to all waterbody crossings, including the following: (i) vegetation removal within right of way (RoW) during construction, except for streambank buffers; (ii) perpendicular stream crossings to the extent possible; and (iii) pipeline burial depth sufficient to maintain pipeline safety (FERC, 2013, 2003; CFR § 192.317), generally resulting in pipeline burial of 3 to 5 ft.

While the FERC Procedures do address some predictable pipeline impacts, especially during construction, the guidance does not address the longer term stream response potential, which is highly dependent on characteristics of the stream system rather than the pipeline. Therefore, depending upon the crossing location, stream and catchment characteristics, timing, extent of activities, and application of Best Management Practices (BMPs—construction conservation measures intended to reduce impacts to the environment), impacts to aquatic species will vary but may include simplification of habitat, loss of aquatic species passage, removal of spawning gravel, increased suspended sediment and turbidity, loss of side channels, disconnection from the floodplain, or change in hyporheic flow patterns (Reid *et al.*, 2002b). These impacts may occur at the project site or may propagate upstream, downstream, or laterally into the floodplain.

It is the ability of a stream system to adjust over time and space in response to changes in flow, sediment, and vegetation that creates and maintains aquatic and riparian habitat (Skidmore *et al.*, 2011). Hence, promoting this adjustment is of interest to federal, state, and local resource agencies. It is this same adjustability that may result in pipeline exposure, substantially increasing the potential for pipeline rupture, which is of prime importance to pipeline companies. Pipelines are strong in compression and weak in tension; thus, an exposed, unsupported pipe is at unacceptably high risk of rupture. Balancing the necessary level of stream stabilization to avoid pipeline exposure, while allowing for stream adjustability to provide habitat for species, is the challenge faced by pipeline companies and the agencies issuing permits for pipeline projects.

Because specific, detailed information about individual site conditions, construction implementation, BMPs, site restoration, and monitoring and maintenance is not required by FERC, it is currently impossible to predict the potential impacts of a proposed crossing on the aquatic environment based solely on the information provided to FERC (FERC, 2013, 2003) by the pipeline applicant. To address this need, the US Fish and Wildlife Service (FWS), in cooperation with Ruby Pipeline, LLC, developed the Waterbody Crossing Framework (herein referred to as the Framework) and the Pipeline Risk Screening Matrix (Risk Matrix). The Risk Matrix focuses on potential physical changes that may affect aquatic species and their habitats, especially in the long term.

FRAMEWORK

Pipelines often cross hundreds or thousands of streams and wetlands. Thus, for the purpose of design by project proponents and review by permitting agencies, it is helpful to first organize data sets and then stratify the crossings into relative

levels of risk to aquatic resources so that the time allocated to designing each crossing is scaled on the level of risk. To facilitate the organizational process through which crossings are (i) evaluated for risk, (ii) allocated to the appropriate level of design, (iii) implemented, and then (iv) monitored, the FWS developed a generic waterbody crossing risk analysis framework (Framework; Figure 2). The risk categories established by the proposed Framework include low-risk crossings that may be addressed by prescriptive designs and subsample monitoring, medium-risk crossings where standardized designs and stratified subsample monitoring are appropriate, and high-risk crossings requiring bespoke designs and individual monitoring. To group crossings by risk indicates the need for a minimum level of data and assessment at each crossing; otherwise, it is impossible to assess risk to habitat and species.

The Framework is composed of four linked phases:

- (I) Basic Stream Data,
- (II) Risk Matrix (described below),
- (III) Site Restoration, and
- (IV) Implementation Monitoring,

with several subphases. While the Framework is represented as a linear process in Figure 2, there are feedback loops between the four phases, and the process iterates as more

data become available. In this context, Phase I is key to the success of the later phases and provides the benchmark against which everything else is measured.

The Framework has a progressive design that builds from a basic stream database for all proposed crossing sites. Once the basic data have been compiled, a qualitative, comparative risk assessment is completed and stream crossings are assigned to a preliminary risk category. As additional data become available, from either remote sensing or field data collection, the risk initially assigned may be adjusted. Where data are sparse or lacking, the Risk Matrix is designed to default to the highest category of risk. Hence, gathering additional data should always result in a relative decrease in the risk assigned to a crossing – an important point of principal discussed further in subsequent sections. The design approach and specificity of BMPs appropriate are designated for each risk category. Following the selected design and BMPs, the pipeline stream crossings are constructed, and the sites are restored to their pre-disturbance condition (site restoration). Site selection for monitoring is also based on the stream data (baseline data for monitoring) and the assigned risk category, with high-risk crossings requiring individualized monitoring and low-risk crossings needing only subsample monitoring.

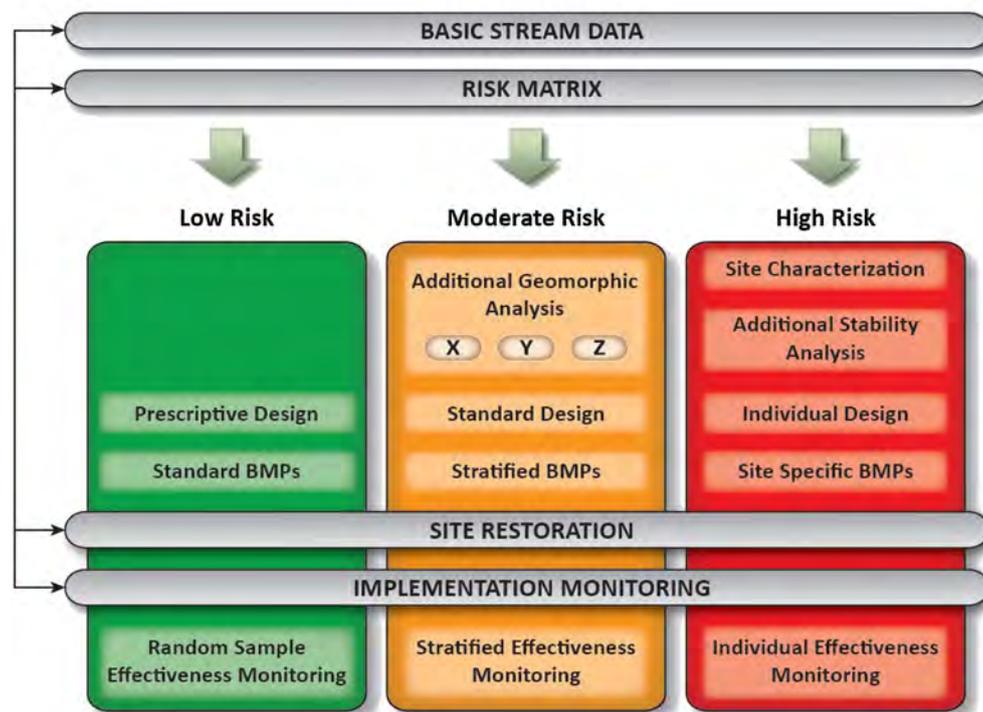


Figure 2. Generic waterbody crossing framework developed by the FWS. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

BASIC STREAM DATA

Evaluation of environmental impacts at each waterbody crossing occurs within the wider context of permitting, construction, and maintenance decisions based on consideration of pipeline integrity, constructability, and impacts to fish and wildlife, water quality and other protected resources. Decisions must be supported by data, and a comprehensive project data set is often generated for this purpose. We have outlined an integrated data set recommended for stream crossings that includes the data typically required for major categories of permits [e.g. Clean Water Act sections 401 (water quality) and 404 (wetlands)], for crossing design and construction, site reconstruction and revegetation, and long-term pipeline maintenance in the vicinity of dynamic stream crossings (Table I).

The recommended data set is intended to provide the information necessary to establish baseline conditions for site restoration and monitoring and to support risk analysis and crossing design. Baseline data are also necessary for geomorphic analysis, estimation of impacts, and selection of crossing-specific methods or BMPs. Each of these considerations is included to some degree in the application of the Risk Matrix. Data are further separated into site versus reach-scale properties, and whether the data can be obtained or generated through a desktop study or require field observations and measurements. While collection of data in the field is usually expected (and guidance on this is provided), we recognize that advances in remote-sensing and geographic information system technologies are quickly increasing both the amount of environmental data that is available remotely and our capacity to analyse it. Furthermore, professional experience and expert judgment regarding data quality, reliability and resolution, combined with local knowledge of site conditions, may alter the approaches, technologies and resolutions recommended for data collection.

RISK MATRIX

The 'Pipeline Screening Risk Matrix' is an outgrowth of a broader effort sponsored by the US federal government to more efficiently and effectively evaluate risk associated with stream management and restoration projects. The River Restoration Analysis Tool (RiverRAT) provides a thorough and comprehensive approach to the review and evaluation of proposed stream actions and projects (Cluer *et al.*, 2010; Skidmore *et al.*, 2011). As a part of this effort, a risk screening tool was developed to help National Oceanic and Atmospheric Administration (NOAA) Fisheries and US FWS reviewers to match the time and effort spent in reviewing project proposals to the risk to listed species (Skidmore *et al.*, 2011; Thorne *et al.*, 2014). In a similar

manner, the Pipeline Screening Risk Matrix described here is intended to facilitate a qualitative analysis of relative risk to aquatic habitat at stream crossings.

During the initial stages of pipeline project development, the Risk Matrix can be applied as a desktop exercise. However, as project development progresses, and certainly before construction, the risk analysis must be refined using site-specific, field observations and measurements.

Description of the pipeline risk screening matrix

The screening tool takes the form of a two-axis matrix (Figure 3) in which the

x-axis=risk to resource as a result of stream response potential
y-axis=risk to resource as a result pipeline crossing impact potential

The principle underlying the Pipeline Risk Screening Matrix (adopted directly from the RiverRAT Project Screening Risk Matrix) is that pipeline crossings should do no long-term harm to aquatic habitat on-site, upstream, or downstream and that short and long-term negative impacts will be avoided where possible, minimized to the greatest extent possible, and mitigated where necessary (Thorne *et al.*, 2014).

Explanation of the axes

The *x*-axis represents the risk to natural resources associated with the stream's sensitivity to disturbance and response potential (Knighton, 1998). Disturbances may be natural, such as those caused by a flood or drought, or anthropogenically driven engineering interventions, land use modifications, management actions or restoration projects (Thorne *et al.*, 2014). Using catchment, landscape, stream and channel indicators, reviewers make an initial assessment of the overall risk to resources because of the intrinsic sensitivity of the fluvial system within which the pipeline is to be implemented (Sear *et al.*, 2010). Risk is considered to be greatest at crossings where disturbance and instability are widespread, the flow regime is flashy, the riparian corridor is damaged or missing, and the erosion resistance of the bed and/or bank materials is low. Additionally, impacts at high-risk crossings are more likely to persist for long periods because of the intrinsic sensitivity of the stream. Because the level of risk is associated with the stream's inherent sensitivity, risk along this axis cannot be reduced unless the pipeline is moved to another, more resilient, location.

The proposed action is represented by the *y*-axis. When implementing a pipeline project in or near a stream system, some level of habitat disturbance is inevitable (Sear *et al.*, 2010). This axis gauges the degree of disturbance using the level of floodplain and channel disruption, selected construction method, and presence of artificial bed and bank

Table I. Basic data needs

Basic data needs for risk-based design and review of waterbody crossings			
Data type	Where obtained	When needed	Intended use
Brief description of the data needed and the appropriate scale/resolution Reach—stream length of at least 20x channel width Site—within the project area of interest (e.g. corridor and regulatory buffers)	Office—GIS, lidar, photos, maps, reports Field—on-the-ground site visits	Permit review—at the time of permit application and/or initiation of consultation Pre-construction—up to the time of ground disturbing activities covered by a permit	Risk Matrix—data are needed to complete a risk analysis; the specific evaluation factor(s) is listed Geomorphic analysis—data are needed to perform (1) project stratification based on channel width, valley width, and channel slope, and (2) appropriate channel types for moderate-risk projects Design—more detailed data are needed to perform specific technical analyses on high-risk projects Site restoration—data are needed to ensure the project site is restored to pre-project conditions, herein referred to as 'stream simulation' Implementation monitoring—baseline data are needed for shorter term monitoring to determine if designs, BMPs, construction specifications, and performance criteria were adhered to during construction Effectiveness monitoring—baseline data are needed for longer term monitoring to determine if the desired physical/biological outcomes were achieved
Drainage area	Office	Permit review	Risk Matrix: flashiness index (discharge estimate) Design: hydrologic analyses to determine channel size, frequency of out-of-bank flow, elevation of the floodplain where applicable, flow and sediment rating curves
Stream type (reach)	Office or field—observation of bedrock, colluvial, or alluvial	Permit review	Risk Matrix: landscape sensitivity/stream type, bank characteristics, bed characteristics, and construction method Geomorphic analysis: appropriate channel types Design: threshold versus mobile bed channel, boundary conditions
Stream slope (reach)	Office Field	Permit review Pre-construction	Risk Matrix: landscape sensitivity factor, bed characteristics (vertical scour potential) Geomorphic analysis: appropriate channel types Design: hydraulics, sediment transport Site restoration: stream simulation
Channel dimensions (site)	Office—estimate of channel width at ordinary high water Field—measurement of channel width, average depth, cross-sectional area at OHW. One cross section per aquatic habitat unit Office	Permit review Pre-construction	Implementation monitoring Risk Matrix: channel disturbance, riparian corridor, landscape sensitivity/stream type Geomorphic analysis: channel confinement, appropriate channel types Design: hydraulics, sediment transport, channel stability Site restoration: stream simulation
Valley width (reach)	Office	Permit review	Implementation monitoring Effectiveness monitoring Risk Matrix: riparian corridor, landscape sensitivity/stream type, floodplain disturbance Geomorphic analysis: channel confinement, appropriate channel types Design: sinuosity and slope range

(Continues)

Table I. (Continued)

Basic data needs for risk-based design and review of waterbody crossings			
Data type	Where obtained	When needed	Intended use
Floodplain dimensions (reach)	Office—estimate of floodplain width Field—measurement of floodplain width and elevation Field	Permit review Pre-construction Permit review	Risk Matrix: riparian corridor, landscape sensitivity/stream type, floodplain disturbance Geomorphic analysis: channel confinement, appropriate channel types Design: hydraulics, sediment storage Site restoration: stream simulation and floodplain connectivity Implementation monitoring Effectiveness monitoring Risk Matrix: bed characteristics, artificial bank/bed stabilization Geomorphic analysis: appropriate channel types Design: sediment transport, hydraulics, channel stability Site restoration: stream simulation Implementation monitoring Effectiveness monitoring
Bed materials (site)	Field	Permit review	Risk Matrix: bank characteristics, artificial bank/bed stabilization Geomorphic analysis: appropriate channel types Design: bank stability, channel stability, channel migration zone, hydraulics Site restoration: stream simulation Implementation monitoring Effectiveness monitoring
Grade controls (reach)	Field	Permit review	Risk Matrix: bed characteristics, landscape sensitivity/stream type, artificial bank/bed stabilization, construction method Geomorphic analysis: appropriate channel types Implementation monitoring: to ensure that natural grade control has not been effected
Riparian corridor (reach)	Office—estimate of riparian width for each side of the channel Field—composition, density, and distribution	Permit review Pre-construction	Risk Matrix: riparian corridor, bank characteristics, artificial bank/bed stabilization Geomorphic analysis: appropriate channel types Design: channel and floodplain roughness, hydraulics, channel stability, streambank stability Site restoration: typical species, density, structure of riparian vegetation and planting plan Implementation monitoring: species composition, stocking levels Effectiveness monitoring: survival rates and invasive species
Discharge (site)10-year2-yearbaseflowconstruction	Office—regression equations or similar	Permit review	Risk Matrix: flashiness index, channel disturbance, landscape sensitivity/stream type Design: hydraulics, sediment transport, channel size, floodplain elevation, aquatic species passage Site restoration: stream simulation, stability of bed and bank materials Implementation Monitoring
Channel sinuosity (reach)	Office or field	Permit review	Geomorphic analysis: appropriate channel types Design: hydraulics, sediment transport, channel slopeSite restoration: stream simulation Implementation and effectiveness monitoring

(Continues)

Table I. (Continued)

Basic data needs for risk-based design and review of waterbody crossings			
Data type	Where obtained	When needed	Intended use
Large wood loading (site)	Field—measurement of size class and configuration	Pre-construction	Geomorphic analysis: appropriate channel types Design: channel and floodplain roughness, channel stability, vertical scour, flood elevations Site restoration: stream simulation Implementation and effectiveness monitoring
Streambank erosion (reach)	Field	Pre-construction	Geomorphic analysis: appropriate channel types Design: sediment transport, channel stability, streambank stability, channel migration zone Implementation and effectiveness monitoring
Mass wasting (reach—upstream only)	Field	Pre-construction	Geomorphic analysis: appropriate channel types Design: sediment transport, channel stability, channel migration zone Implementation and effectiveness monitoring
Aquatic habitat units (site)	Field	Pre-construction	Geomorphic analysis: appropriate channel types Design: stream simulation Implementation and effectiveness monitoring

stabilization. Because the degree of risk is related to project design and decision-making, reduction of risk on the y-axis is possible through, for example, realigning the crossing, modifying construction techniques, and, where possible, avoiding the need to introduce artificial constraints on the stream. There may, however, be trade-offs between mitigating the risks on the y-axis and design requirements for crossings on streams that are intrinsically sensitive to disturbance (that is, with high x-axis risks). It follows that increased risk of reducing resource values that depend on natural adjustments in dynamic, alluvial channels may be unavoidable because of the need to reduce or eliminate the potential for vertical and/or lateral instability at crossings.

Explanation of the risk factors

X-axis risk factors related to stream response potential. A full explanation of the x-axis risk factors can be found in Thorne *et al.* (2014). However, a brief explanation is provided herein to allow this paper to stand alone.

Scale of problem. The spatial extent of existing stream-related problems causing instability, whether it is site, reach or catchment in scope, affects the level of risk both to natural resources and the effectiveness of an intervention. Addressing a reach-scale problem with a site-scale restoration treatment may temporarily improve habitat, but the long-term viability of the project is reduced.

Landscape sensitivity/stream type. This risk factor is relevant at the reach scale and should be evaluated in the context of the geomorphology of the surrounding landscape unit (i.e. a stream reach having a similar channel pattern, slope and degree of valley confinement). At this scale, the stream's sensitivity to disturbance depends largely on its capacity to accommodate abrupt changes in the flow regime and/or sediment supply without abrupt or disproportionate morphological responses that destroy habitat. This factor is of overriding importance in bedrock and colluvial channels, where the influence of the remaining risk factors is small because the channel is substantially less responsive to disturbance over engineering timescales. Conversely, if the channel is on an alluvial fan, the site response potential is likely to be high even if the other risk factors are all rated low.

Riparian corridor (for streams with slopes <4%). The riparian corridor defines the area within which the stream interacts with the natural vegetation on its banks and floodplain in adjusting its channel morphology in response to natural or artificial disturbance (Rapp and Abbe, 2003). The capacity to adjust within dynamic equilibrium allows an alluvial stream to accommodate disturbances without abrupt changes in channel morphology, but this requires that the channel is hydraulically and geomorphologically connected to a floodplain. Consequently, this risk factor is

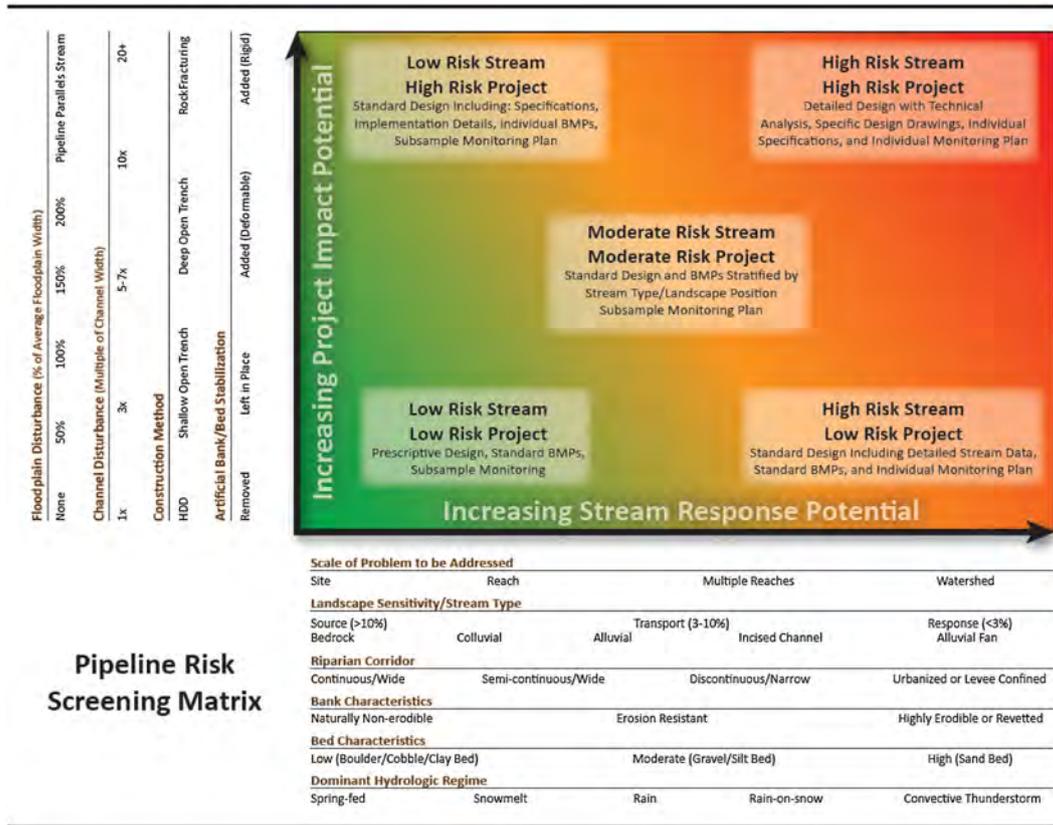


Figure 3. Pipeline risk screening matrix. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

only applicable to stream reaches with average channel slopes of less than 4% as steeper channels naturally lack functional floodplains (Castro, 1997; Montgomery and Buffington, 1998).

Bank characteristics (lateral scour potential). Streambanks may be naturally erosion resistant (because of the character of the native bank materials and the binding effects of dense vegetation) or highly erodible because of weak soils, geotechnical instability, or the removal of riparian vegetation (Thorne and Osman, 1988). In this context, streambanks that have been artificially revetted are classed as high risk because the presence of artificial protection indicates past bank retreat and naturally erodible/unstable bank materials (which prompted the need for a revetment).

Bed characteristics (vertical scour potential). The potential for rapid reductions in bed elevation through local scour, general scour and degradation is naturally limited in boulder and gravel-bed streams because of the low mobility of the bed particles and propensity for bed armoring. Conversely, channels with erodible bed materials such as sand and silt are naturally prone to rapid vertical adjustments. Channels featuring artificial grade controls are also ranked as high risk because the introduction of such measures is evidence

of the potential for vertical channel instability (Little and Murphey, 1982).

Dominant hydrologic regime. The range of discharges experienced in a reach depends on the hydrologic regime, which is controlled by climatic and catchment conditions (precipitation, geology, elevation, topography, soils and vegetation). The hydrologic regime can profoundly affect stream response potential. For example, spring-fed stream systems have low flow variability and are relatively stable and predictable, while stream systems that are driven by rapid run-off from convective storms have highly variable discharges that promote channel change, making them less predictable and more responsive to disturbance. If the hydrologic regime is predicted to shift because of climate change, then the regime with the highest relative risk should be applied.

Y-axis risk factors related to project impact potential

Floodplain disturbance (average floodplain width/disturbed width). This risk element is relevant only to alluvial streams with floodplains, which generally limits its applicability to streams with gradients less than 4% (Castro, 1997; Montgomery and Buffington, 1998). In alluvial streams,

resilience to disturbance decreases as the proportion of the floodplain that is disturbed increases. For example, if the average floodplain width within the reach of interest is approximately 100 ft (Figure 4, red line), then a perpendicular pipeline crossing would affect 100% of the average width of the floodplain. However, if the crossing was relocated to a narrower area of the floodplain within the same reach (Figure 4, green line), then the degree of floodplain disturbance would be reduced. Alternatively, if the crossing was placed at a wider part of the floodplain (Figure 4, blue line), then the extent of disturbance would be greater. The worst-case scenario, in terms of floodplain disturbance, would be a pipeline paralleling the stream within the floodplain.

Channel disturbance (construction corridor/stream width). This risk element scales the potential for the pipeline crossing to adversely impact stream habitat based on the ratio of the long-stream extent of channel disturbed to the channel width at ordinary high water. For instance, for a construction corridor 75 ft wide crossing a stream with a width of 150 ft, the channel disturbance index would be 0.5; however, the index would be much higher (5) for a smaller stream with a width of only 15 ft. The risk is higher for the smaller stream because more habitat units (i.e. pools and riffles) are likely to be impacted by pipeline installation.

Construction method. The selected crossing construction method greatly influences project impact potential. Horizontal directional drilling (HDD) is generally considered to be low risk because of minimal impacts to the stream, while rock fracturing is considered to be high risk because of the potential for streamflow to be diverted below ground through fissures created by the fracturing process. Trenched crossings have intermediate risk because of direct



Figure 4. Effect of different pipeline alignments on degree of flood plain width disturbance. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

disturbance to the stream channel and floodplain, the level of habitat disturbance increasing with the depth to which the trench must be excavated.

Artificial bank/bed stabilization. This factor considers the degree to which the proposed action or project may impede the capability of the stream to accommodate future changes in flow and sediment regimes because of, for example, extreme floods, catchment land use change, or climate change. Risks are higher in streams where channel morphology, sediment transfer, and stream processes are constrained than in non-constrained systems because constrained streams lack the multiple degrees of freedom necessary to absorb disturbance (Hey, 1978).

In this context, the potential risk to resources associated with channel stabilization measures is lower for temporary, deformable bed and bank stabilization structures than for permanent, rigid ones. Deformable structures are designed to provide short-term stability (5 to 10 years) before degrading, which allows vegetation to re-establish. Construction materials for deformable structures typically include large wood, soil lifts, brush mattresses, natural geotextiles, and other forms of live materials. Rigid structures are generally designed to last longer (50+ years) and are typically composed of non-degradable materials such as rock, concrete, and synthetic geotextiles.

Determining the overall level of risk

Once all of the relevant risk factors have been assessed, reviewers and designers can screen crossings based on the overall level of risk. Risks associated with the stream and project attributes may be assessed in at least three different ways depending upon the underlying assumption:

- (1) The risk associated with each factor poses a critical, independent threat of harm to the natural resource; thus, the overall risk category is defined by the highest individual risk factor on each of the x and y -axes.
- (2) No factors are individually critical; thus, the overall risk category is defined by the average of the attributes on each of the x and y -axes.
- (3) Some factors are more important than others; thus, the overall risk category is defined by weighting the factors on each of the x and y -axes.

Rather than using a default approach in deciding upon selection of the overall risk category, consistent, critical thinking and transparent, evidence-based decision-making is required for each project. Responsibility for correctly categorizing relative risk must rest with the individual making the decision. The Risk Matrix can be helpful in making that decision *understandable*, *explicable*, and *consistent*, but it should not be solely relied upon for *justification*.

Likewise, a numerical method to rank relative risk can be added, but this should not replace best professional judgment or be a surrogate for field data.

Once the general level of risk has been assessed, the temporal aspects of disturbance can be evaluated in terms of short and long-term effects. The left side of the Risk Matrix, where the stream response potential is low, represents scenarios where the selection of crossing location, floodplain and channel alignment, and construction type dominates the overall impact. Hence, careful pipeline route planning, along with crossing design that minimizes direct impacts during construction, is of paramount importance. Because the stream has a low response potential, the focus is on reducing short-term impacts using standard BMPs. Long-term impacts are less of a risk, and randomized subsample monitoring provides a sufficient basis for post-project appraisal, maintenance and adaptive management.

The right-hand side of the Risk Matrix, which indicates high stream response potential, represents scenarios where risks related to the catchment context and stream type dominate overall impact. Hence, while minimization of construction impacts remains important, the potential for longer term responses in the stream system means that adverse impacts to habitat and species may be the greater risk. The high response potential at such crossings necessitates intensive investigations to understanding stream geomorphology and ecology and, in the case of pipelines with all but the lowest crossing impact potentials, requires individual crossing design elements, customized BMPs, and site specific post-construction monitoring.

Level of review/design/monitoring

Once projects have been screened and allocated to one of nine general categories, the level of additional data collection, analysis, design, review, and monitoring can be determined (Figure 3).

Prescriptive designs are very general and include the design approach but do not include any site-specific drawings. They are intended to be widely applicable and rely heavily upon minimization of construction footprint, impacts (e.g. dewatering/rewatering or staging of equipment) and implementation of BMPs.

Standard designs are more specific to the stream type. For example, a standard crossing design could be developed for laterally confined stream channels with slopes ranging between 4 and 6% that lack floodplains and feature step-pool bed morphologies. BMPs appropriate to this specific catchment context and stream type would also be developed.

Site-specific, detailed designs are developed individually for high-risk crossings and include both the range and depth of analysis required to reduce risks to an acceptable level at that particular site.

APPLICATION: CONTEXT

Pipeline projects are typically undertaken in several phases, regardless of what product the pipe will be carrying. The phases include the following:

- (1) route selection,
- (2) environmental permitting,
- (3) construction,
- (4) site restoration, and
- (5) monitoring, maintenance and adaptive management.

Route selection and land easements

One of the most challenging, and often contentious, issues in any pipeline project is route selection. Route selection involves consideration not only of physical factors but also of social and economic issues. Once pipelines are permitted, they are granted considerable legal standing to obtain desired rights of way, but permit issuance is generally contingent on the general location of a proposed pipeline. Hence, route selection is often an exercise in avoidance of impacts to natural, archaeological, and human resources. Consideration of costs related to construction and long-term operation of the pipeline also necessitates avoidance to the extent possible of existing and proposed future infrastructure, natural geohazards or other difficult surface or subsurface conditions. This complexity leads to the development of alternative routes during the early stages of project formulation, which are then reduced to a manageable number to carry into more detailed analyses.

If land easements are not secured early in the route selection process, alternative development and risk analyses can be significantly impeded if site access is denied by property owners. In such cases, maps, aerial photos, lidar-based topography, and other remotely sensed data are employed, and a worst-case scenario for site conditions must be assumed for initial risk screening and analysis.

Environmental permitting

Once route selection has been reduced to a few feasible alternatives, the necessary federal, state, and local permits are acquired. Permitting agencies may, depending upon their regulatory authorities, focus on minimizing direct impacts to aquatic and riparian habitat, with an emphasis on maintaining channel and floodplain form and, by inference, habitat forming and maintaining processes. There is also a need to minimize off-site impacts, particularly with respect to water quality. Impact minimization is typically framed as reducing the disturbance footprint, but with dynamic stream crossings, a more sophisticated approach and context-specific design that recognizes stream sensitivity may be required.

Problematic site conditions, such as incising or laterally mobile streams with highly erodible bed and/or bank materials, need to be identified early in the project development process because unforeseen morphological responses may result in adverse impacts both on site (migration barriers and habitat destruction) and offsite (head cutting and degradation upstream and elevated sediment delivery downstream, leading to system-wide instability), leading to the potential for long-term habitat loss with limited potential for morphological recovery or revegetation. It follows that key aspects of the crossing need to be sufficiently characterized to allow for site evaluation and restoration that supports the level of design necessary to minimize short-term impacts and ensure long-term stability to minimize the need for future maintenance and adaptive management.

By adequately characterizing conditions and preliminary plans for crossing design and restoration, the proponents of a pipeline project can expedite the permitting process because reviewers with relevant services and agencies can identify any remaining issues and alert the proponent so that the initial design can be modified as necessary to meet the outstanding mitigation and monitoring requirements.

Construction

Pipeline construction requires both an appropriate design and application of sound professional judgment and field skills to match the pipeline installation to landscape and local conditions, while also providing adequate site restoration. Consequently, the key to ensuring successful pipeline installation lies in assembling crossing design and construction teams that possess not only a robust understanding of options available for crossing the stream but also the practical experience necessary to deal with unpredictable site-specific problems as they arise.

The primary stream crossing construction methods for pipelines identified in the FERC Procedures (FERC, 2013) and used within the North America are dry ditch and open cut (Lévesque and Dubé, 2007). Dry-ditch crossing methods are categorically approved by FERC for streams up to 30 ft wide and may be constructed according to FERC by one of three different techniques: dam and pump, flume, or HDD (discussed below). Dam and pump and flume methods isolate a section of stream using a temporary coffer dam and divert the entire streamflow over or around the construction area and allow for trenching of the crossing in dry or nearly dry conditions (Figure 5). The open-cut crossing method involves excavation, emplacement, and backfilling of the pipeline trench with no effort to isolate flow from construction activities and is used on minor, intermediate, and major waterbody crossings (CAPP, 2005), however, FERC, (2013) limits the construction window with equipment in flowing water to 24 h for minor waterbodies and 48 h for intermediate



Figure 5. Typical flumed stream crossing. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

waterbodies. FERC requires review and written approval of a detailed, site-specific construction plan and scaled drawings for each major waterbody crossing (FERC, 2013).

For any method requiring a ditch or trench to be excavated in the stream bed, excavation and backfilling are generally accomplished with equipment working in or near the stream (Figure 6). A section of pipe is pulled across the bottom of the trench to the opposite bank, floated across the stream, or carried into place and submerged into the trench. The trench is then backfilled, and the bed and banks of the stream are restored and, if necessary, revegetated or artificially stabilized. During the work, sediment barriers, such as silt fencing, staked straw bales, or trench plugs, are typically installed to prevent backfill and sediment-laden water from entering the stream from adjacent upland areas.

However, not all crossings require direct disturbance of stream bed or banks. While included in FERC guidelines as a 'dry-ditch' method, HDD is an alternative method by which a pipeline is installed beneath obstacles or sensitive areas without causing a surface disturbance. Pipelines are installed in an arc under the stream; therefore, entrance and exit points can be sited well beyond active streambank margins and often beyond FERC-required buffers. Properly designed, this process involves minimal disturbance of the



Figure 6. Backfilled crossing. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

ground surface at the entry and exit points of the HDD and no disturbance to the ground or the stream between these points. At the crossing midpoint, the pipeline is often several tens of feet below the channel bed. The feasibility and length of crossing that can be constructed by HDD is limited by factors such as access to suitable entry and exit points, subsurface conditions (geology and sediments), and pipe diameter. Use of HDD avoids most of the risks associated with construction of excavated crossings, and site restoration is limited to reinstating and revegetating the ground surface around the crossing entrance and exit points.

Site restoration

Site restoration methods and techniques depend on site conditions, stream type and channel stability prior to crossing construction, the properties of the bed and bank materials, the potential for vegetation regrowth, and how the channel is expected to respond to floods and other potentially destabilizing events during the design life of the crossing. Site restoration does not necessarily imply that a site will be returned to its pre-disturbance condition; this would be inappropriate if, for example, the stream was unstable or environmentally degraded prior to crossing construction. Consequently, site restoration may have dual and potentially conflicting aims of increased channel stability and improved habitat conditions. In such cases, restoration goals must be carefully set to avoid unacceptable environmental impacts while stabilizing the channel sufficiently to protect the pipeline throughout its design life and minimizing future maintenance requirements.

Site characterization provides a benchmark against which site restoration success can be measured. Setting minimum acceptable boundaries for channel stability and target trajectories for the environmental recovery allows designers to evaluate alternative restoration strategies. Experience shows

that rigid engineering structures (bed sills and bank revetments) may be essential to protect the pipeline from bed incision or bank line retreat at or around the crossing. In such cases, the potential for local site restoration is severely limited and may not represent a prudent use of resources, making off-site mitigation a more appropriate approach.

Monitoring and maintenance

FERC and pipeline company inspections and monitoring emphasize safety and focus on detecting and avoiding the possibility of pipeline exposure, while permitting agencies are usually more focused on the possibility of adverse impacts on the environment as a result of operation of the pipeline and especially product leakage or spillage as a result of a pipeline rupture. For example, FERC often requires 3 years of vegetation monitoring to ensure soil stability along the pipeline, while pipeline companies aerially inspect their transmission projects at least annually and within a month following flood events of a magnitude sufficient to erode stream beds and banks, which informs maintenance needs (Floyd Robertson, Kinder Morgan, personal communication, August 14, 2013). Regulatory agencies, such as the FWS, may require specific monitoring of the ecological attributes of crossings, such as fish passage and riparian shade. However, a large number of federal, state, and local permits are required for pipeline construction and operation, and in practice, monitoring requirements vary between agencies.

The Framework presented here provides a vehicle with which to consolidate the diverse but overlapping monitoring and maintenance requirements of FERC, the pipeline companies, and the permitting agencies. Once basic data needs and monitoring requirements have been identified, including data resolution and temporal and spatial scales, derivation of an integrated monitoring plan becomes feasible. This has the added advantage that it supports production of a single, consolidated plan, rather than a plethora of customized plans prepared for each entity.

Because the Framework provides a single, well-documented baseline description of habitat conditions at the pipeline crossing, this constitutes an excellent foundation from which to build a comprehensive monitoring plan. The initial baseline condition can be refined and updated following pipeline construction, as field observations reveal further information and engineering adjustments are made. A thorough post-construction survey of the crossing 'as built' then provides the detailed, quantitative data against which all future surveys can be compared.

APPLICATION: CASE STUDY

The Ruby Pipeline Project (Project), completed in 2011 by Ruby Pipeline, LLC (Ruby), was the first project to use both

the Framework and the Risk Matrix. Ruby worked directly with FWS to help create, refine and improve both the Framework and the Risk Matrix and continues to provide feedback to FWS on their efficacy and limitations.

(a) Basic stream data collection

The Ruby Project comprises approximately 675 miles of 42-inch diameter natural gas pipeline, along with associated compression and measurement facilities, extending between Opal, Wyoming and Malin, Oregon (Figure 7). There are a total of 849 stream crossings on 773 individual streams. Flow at 130 of the crossings is perennial; it is intermittent at 177 and ephemeral at 542. Ruby completed desk-based, remotely-sensed and field surveys for all these crossings during 2008 and 2009. Throughout that period, Ruby consulted with the FWS using the Framework to match basic stream data collection to the needs of FERC and the permitting agencies as well as the pipeline company (Table I).

(b) Initial screening

Once the basic stream data were collected, Ruby worked with the FWS to identify crossings that could be screened out from both further data collection and risk analysis because their potential for generating adverse impacts on habitat and channel stability was negligible.

Crossings screened out in this way included the following:

- perennial and intermittent crossings that required state-mandated fish passage designs
 - these crossings were already subject to a high level of technical and engineering review.

- irrigation canals not located in valley floors
 - these are stable channels that could be scheduled for construction when not in use, are maintained by other entities, and post-construction impacts would not be expected.
- swales and other unchanneled, fluvial features
 - these crossings have no distinct stream channel or bank features and, thus, present no risks related to scour or lateral erosion.
- crossings on very small waterbodies
 - these streams generate insufficient stream power to erode their channel boundary materials because of their low discharges and low channel slopes (as described below).

While crossings of streams with fish passage concerns, irrigation canals, and swales were screened out on the basis of qualitative assessment, those screened out because of the small size of the waterbody were eliminated on the basis of a quantitative analysis based on their bankfull discharge and depth, channel gradient, and bed grain size relative to the grain size predicted for sediment transport at bankfull discharge (MACTEC, 2010). This small waterbody screening procedure was applied to 488 crossings. Based on this quantitative analysis, 439 crossings were screened out from further assessment because they

- had insufficient stream energy to erode the channel boundaries;
- were high (>10%) gradient, non-alluvial cascades, in which channel adjustments are unlikely to propagate upstream or downstream;
- had channel boundaries that were immobile at bankfull flow; or



Figure 7. Ruby Pipeline route. This figure is available in colour online at wileyonlinelibrary.com/journal/rra

- were sufficiently small that they posed no hazard to the pipeline even if scour and lateral erosion were to occur (specifically bankfull discharge $<2.5 \text{ ft}^3$ per second, bank height $<0.5 \text{ ft}$).

(c) Use of the Risk Matrix

Further assessments were performed for the 340 crossings remaining after initial screening using the Risk Matrix: 35 in Wyoming, 128 in Utah, 122 in Nevada, and 55 in Oregon. Stream and site response risk variables were assessed based on field data, photographs, and topographic maps. Where construction involved blasting, the crossing was assessed as high risk on the y-axis regardless of the risk levels associated with other project risk factors. This is because the degree of modification of the bed and bank can be more extreme and less controllable with blasting than with normal excavation and grading. For factors assessed as lying between two categories (e.g. moderate and high), risk was categorized at the higher level. In cases where the information necessary to assess the level of risk associated with a factor was missing, the factor was categorized as being of high risk.

In terms of stream response potential (the x-axis of the Risk Matrix), approximately 30% of crossings were assessed as low risk, 34% as moderate, and 36% as high risk. Streams assessed as high risk tended to lack a riparian corridor and/or had fine-grained bed materials. For example, an ephemeral tributary to Eagle Creek located in Elko County, Nevada, was assessed as having a high stream response potential because of evidence of channel incision, lack of a riparian corridor, and a silt bed. Conversely, Spring Creek, a perennial stream located in Elko County, Nevada, was assessed as having a low stream risk because its stream type was classed as being colluvial. If the channel of a watercourse is classed as bedrock or colluvially controlled, then the remaining risk factors are less applicable because the stream is not fully alluvial and the risk associated with stream response potential is generally assessed as low.

In terms of project impact potential (the y-axis of the Risk Matrix), 75% of crossings were assessed as being of low project risk, 16% as moderate, and 9% as high. Blasting was the only factor that resulted in crossings being assessed as being of high project impact potential. For example, Maggie Creek, a perennial stream located in Elko County, Nevada, was assessed as having a high project risk because there was a high probability that blasting would be required as part of construction.

Only one crossing, on Rattlesnake Creek, a perennial stream in Elko County, Nevada, was identified as being of high risk in terms of its potential for both stream response and project impact. The factors responsible for this outcome were that the stream was found to lack a riparian corridor and that constructing the crossing was predicted to be likely to require blasting.

The outcomes of application of the Risk Matrix allowed Ruby and the FWS to focus attention on the streams and crossings with higher risks, while construction of streams and crossings that posed lower risks could be addressed in a more prescriptive manner and their crossing designs expedited.

(d) Baseline and effectiveness monitoring

Baseline (pre-construction) monitoring was completed by Ruby at all crossing sites and included establishment of permanent survey markers for the entire monitoring area, surveying of channel long profiles and cross sections, and photographic documentation from marked photo points. It was followed by implementation monitoring to provide the basis for post-construction effectiveness monitoring and appraisal. Implementation monitoring helps determine if a project was implemented as planned and designed, while effectiveness monitoring evaluates if the project had the desired physical and/or biological effect. To date (2013), one season of effectiveness monitoring has been completed for the project.

The physical and biological effectiveness of crossings will be routinely monitored for 5 years following construction through a programme of annual, visual evaluations. For crossings assessed as low risk, effectiveness monitoring will be based on a randomly selected, 10% sample. Crossings on streams with moderate risk in terms of stream response potential have been grouped according to following characteristics:

- (1) limited riparian corridor,
- (2) requirement for fish passage,
- (3) construction required blasting, and
- (4) construction required HDD.

and a random sample of 25% of the crossings within each category will be monitored for effectiveness.

All crossings assessed as being high risk will be monitored for effectiveness. To test the reliability of the ephemeral channel screening procedures discussed in the preceding texts, ten of the excluded crossings screened out in the initial site assessment have been randomly selected for further survey, analysis and effectiveness monitoring. In addition, future monitoring will include visual evaluation and reconnaissance level surveys performed at 2, 5, 10, 15, and 20 years following construction.

To date (2013), just one season of physical and biological effectiveness monitoring has been completed, and the results indicate that no mass wasting occurred at any of the sites during the first year post-construction, while bank erosion extended along less than 20% of the channel within the RoW at 76% of monitored crossings. However, the bank erosion performance target for the project is for at least 80%

of crossings to meet this criterion within 5 years. At the great majority (85%) of the crossings where more than 20% of the bank lines were found to be eroding, erosion was associated with cattle grazing (i.e. overgrazing, vegetation trampling, and mechanical damage to the bank). It is anticipated that the target for bank erosion will be met because of continued vegetative recovery during subsequent growing seasons, coupled with fencing to exclude livestock and, where necessary, engineering measures to protect the banks at crossings where persistent erosion and/or poaching prevents natural revegetation.

Effectiveness monitoring further established that 1-year post-construction fish passage has been unaffected at monitored crossings along the Ruby Pipeline.

SUMMARY AND CONCLUSIONS

Expanding production of natural gas and oil is driving demand for new or improved pipelines, and past experience at waterbody crossings indicates that the potential for negative impacts to aquatic habitat and channel stability is substantial. To avoid adverse impacts to aquatic species while reducing the likelihood of pipe exposure, a risk-based approach to crossing design and permitting is appropriate. Stratifying crossings according to risk allows the allocation of time and resources to support pipeline design and permitting to be matched to the level of risk. Effort may then be focused on design and review higher risk waterbodies and crossings, with standard methods used to expedite treatment of lower risk streams and crossings.

The Waterbody Crossing Framework (referred to as the Framework) and the Pipeline Risk Screening Matrix (Risk Matrix) reported in this paper were designed by the US FWS in cooperation with Ruby Pipeline, LLC, to provide a robust but flexible and time-efficient approach to crossing design, review and monitoring. While the Framework and Risk Matrix were developed for the conservation of aquatic habitat and species, they are easy to adapt for other uses, including evaluation of geomorphic risks, such as channel incision and bank erosion, associated with pipeline exposure and failure. Similarly, while these tools were developed for natural gas pipelines in the PNW region of the USA, their applicability extends to any existing or proposed pipeline, regardless of geographic location or product being transported.

The Framework and Risk Matrix were both shown to be effective for structuring the evaluation of relative risk because of project implementation and stream response potential, but there is certainly room for improvement. The need for extensive field data to implement the Risk Matrix is a major limitation, especially when sites are inaccessible because of landownership or physical restrictions, as is

commonly the case during the route selection process. Without the actual field data, risk factors must be assumed to be high, which may result in unnecessary rerouting of the pipeline. It can be anticipated that increased availability and applicability of LiDAR and improvements in other remote sensing technology will reduce the need for field intensive data collection.

A further limitation is that the Framework and Risk Matrix do not directly address climate change or predicted changes in the landscape because of development or land management, which is a significant limitation given the average life span of a pipeline.

Finally, additional research on how individual risk factors are evaluated and weighted would provide a more quantitative assessment of risk. This could be accomplished through forensic analysis of actual pipeline failures. Additional data analysis would also reduce the risk of overmonitoring factors that are actually low risk and missing high-risk factors.

The approach has been applied to hundreds of stream crossings along the Ruby Pipeline, demonstrating its practical utility, and experienced being gained during post-construction monitoring continues to provide insight into the efficacy and usefulness of these newly developed tools. Whether a pipeline is local or regional in nature, the Framework provides an efficient way to organize data, apply a risk-based approach, and stratify sites for future monitoring in a transparent and logical manner.

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