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Frank Bibeau

Honor the Earth

PO Box 63, 607 Main Ave.

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FOR IMMEDIATE RELEASE

RE: Enbridge violated water protection rules again while MNDNR stands by.

Dear Mr. Bibeau:

Environmental and water resource protections fail without sincere prevention efforts, without clear plans that follow the rules, without the early detection of problems, or transparent acts.

Can you imagine a massive pipeline project designed to move millions of barrels of tar sands crude where the pipeline fails to follow approved construction plans? Or can you imagine a project subject to detailed State and Federal Environmental Permits that violates the terms of the permits then fails to disclose its intentional violations until all the work is done? Or can you imagine a State regulator who trusts the Contractor enough not to review inspection records for five months and misses severe and possibly irreversible environmental damage? These scenarios are now the latest chapter of the story of Enbridge Line 3 and MNDNR oversight.

Last January, Enbridge, its contractors, consultants, and "independent" inspectors minimized severe problems and took advantage of Minnesota's lack of timely regulatory oversight. The Minnesota Department of Natural Resources did not learn of the severe aquifer issues for many months and did not take action to stop the problems for eight months.

Following the recent disclosures of unreported "frac outs" releasing drilling mud to the Clearwater and Mississippi Headwaters and the June surprise of Line 3's 50-fold increase in water use in an extreme drought, we find Minnesota's groundwater is being impaired by Line 3 while we watch. Once again, the environment has suffered, and we and Minnesota's water-dependent ecosystems must settle for our regulators granting forgiveness to Enbridge because they failed to protect our water resources.

Enbridge contractors ruptured a sensitive and timeless artesian aquifer on land in mid-winter. Clearbrook's artesian aquifers form springs in the Lost River headwaters of Assiniboine ceded territory (1889 Chippewa Treaty). The springs never freeze, and pure, cold, clear water flows the medicine of life to the surface year-round.

Last January, the ruptured aquifer welled up with water along in the deep trench of the petroleum pipeline, and the aquifer started to lose its natural flow in the springs, and the is losing the flow into the rare calcareous fens. The uncontrolled groundwater flow and the pipeline springs have continued unabated for eight months.

The loss of pure groundwater has now totaled 24.2 million gallons, 106,000 gallons a day, enough to sustain multiple springs and many acres of groundwater-dependent wetlands and extreme drought. On September 16, the Minnesota Department of Natural Resources (MNDNR) finally issued a Restoration Order to fix the rupture within 30 days and restore the drought-stricken fen, hoping to restore all the nearby springs to keep the clean water out of the pipeline trench.

Upwelling hydraulic forces and geologic factors make restoring a ruptured aquifer complex uncertain, and Enbridge or the MNDNR seem never to address the cultural value attached to the water from the ancient natural artesian springs.

After a multi-year history of regulatory permit failures from the MNDNR and MPCA, the stage was set for another disaster when Enbridge willfully ignored design documents, regulatory warnings and ignored permit conditions at the Clearbrook pipeline crossings. The next six months left a legacy of inspectors failing to report alarming water and quicksand hazards, leaving regulators unaware of another Line 3 water disaster. The litany of regulatory failures and unabated environmental problems draws us to conclude that the Line 3 pipeline should have never been permitted. Line 3 construction has already proven to be a clear and present danger to the future of our water resources.

Enbridge, the Independent Environmental Monitors, and the MNDNR have proven not to be trustworthy stewards of our water. Considering the litany of failures and lack of transparency, the only reasonable outcome is to stop all activity except inspections and corrective actions. Because of the history of regulatory default, all Line 3 construction and pipeline activation activity should be seized under the control of the Court.

The Nature and Hazards of Confined Artesian Aquifers at Clearbrook Terminal

In the headwaters of Silver Creek/Lost River/Clearwater River Watersheds, deeply buried bedrock are draped by alternating layers of impervious glacial till and highly permeable beds of glacial sands and gravel that give rise to artesian springs. The Line 3 route at Clearbrook is on the northern margins of Minnesota's Groundwater Province 4, with ground moraines of glacial till and where buried sands and gravels from artesian aquifers and sustain fens, springs, wetland seeps, lakes, and streams.

A review of the water well records from the Minnesota Well Index and geotechnical borings along Line 3 shows the Line 3 route has a 35-to-50-foot layer of impervious, clay-rich glacial till at the surface over a thick layer of sand and gravel. The sands and gravels are highly productive artesian aquifers. To control the upwelling pressure, thirty- and fifty-foot-deep wells in the immediate area are drilled with heavy drilling mud. Deep excavations or wells drilled without heavy mud are often lost during construction when the water pressure pushes to the surface and quickly turns the wellbore into quicksand as the water moves upward to the surface. Entire Townships around Clearbrook demonstrates upwelling hydraulic pressure where the surrounding lands are known for artesian wells, springs, groundwater-supported wetlands, and calcareous fens.

Deep excavations that rupture the seal formed by the 30-foot thick glacial till rapidly become a construction hazard. Artisan water appears to boil to the surface and liquify the surrounding soils into mud and quicksand. The breach of powerful artesian forces threatens to swallow heavy equipment and become an immediate and uncontrollable hazard. A new unnatural "boiling sand" spring formed in the pipeline trench.

On January 21, the Enbridge contractors excavated within ten feet of the top of the Clearbrook Artesian Aquifer. The over pressured aquifer ruptured near the existing pipelines, and uncontrollable water rushed to the surface. The Contractor

lost all ability to contain the water, and project managers faced a significant problem.

To install the pipeline, Enbridge contractors needed an 18-foot-deep bore pit. The Contractor installed a 28-foot-deep steel sheet pile wall to control the artesian flow, a 110-foot wall on either side of the pipeline route, and a steel plate on the east end where the boring would tunnel under the existing hot pipes. With five dewatering wells, they could lower the water level in the walled-off trench and install the Line 3 connection to the Clearbrook terminal. But once they stopped dewatering, the soils between the sheet piles again turned to quicksand, and a large boiling sand spring appeared. Once they pulled the sheet pile, a new aquifer rupture occurred 60 feet west of the original rupture—the difficulty of stopping the uncontrolled flow magnified.

Water appropriation and water quality discharge standards were violated, and the prospect of quickly restoring the sealed cap over the artesian aquifer diminished by the day. In my 35 years of Minnesota groundwater management experience, the uncontrolled artesian flow has repeatedly proven to be among the most challenging construction hazards to solve.

Irregular Design, Permitting, Construction, Inspection, and Reporting

During the Line 3 water appropriations permitting, the MNDNR raised concerns about groundwater-supported wetlands and artesian aquifers, especially the risk on rare calcareous fens located just east of the Clearbrook terminal. In November 2020, the MNDNR reviewed the local construction plans and issued a "No Effect Concurrence" to Enbridge for the Clearbrook area fens. Enbridge gave assurances that the groundwater flows sustaining the fens would be protected because the approved design called for an 8- to 10-foot-deep bore pit, 20 to 28 feet above the top of the pressured aquifer.

In less than 50 days, Enbridge Project Managers and contractors faced the prospect that the designed bore pit at the Clearbrook Terminal was not deep enough to allow boring beneath two existing pipelines. Line 3 had to make a "hot crossing" beneath two high-pressure pipelines, and they needed a 16 to 18-foot bore pit in a 50-foot-long trench box. Reality-based field decisions overrode the approved design plans and permits. The 18-foot-deep trench immediately ruptured the artesian aquifer as it approached the east end of the trench near the hot crossings.

Rather than reporting the aquifer breach, the massive water appropriations, and the muddy water discharge to the surrounding stream and wetlands, Independent Environmental Monitors (IEM's) overlooked the design changes and permit violations. The Monitors did not report any changed conditions other than "difficult dewatering."

Enbridge's failure to report the aquifer breach violated their water appropriation permits, water discharge permits, and wetland permits.

The approved Environmental Monitor Control Plan (EMCP) required the IEM's to notify the State Agencies of "Modified Construction Activities" and Modification to Permit Requirements." The failure to report and revise permits violated the letter and intent of the EMPC and violated multiple environmental permits. (Section 6.0, pg. 15 of EMPC. Section 6.1, pg. 15-16 of EMPC)

Attached as Exhibit 1, a timeline for the ruptured aquifer, the 28 reported frac-outs, and the amended water appropriations is a chronological compilation of unauthorized Enbridge activities and MNDNR inactivity. The chronology demonstrates obfuscation by both the company and their "Independent" monitors keeping information from State Agencies while allowing continuing uncontrolled water appropriation and shows just how slow the MNDNR was to respond.

The history of the aquifer rupture, frac-outs, and excessive water appropriations in the drought reveals an intentional and blatant disregard for the permits and protecting Minnesota waters.

Permitting and Regulatory Failures:

Enbridge and MNDNR Disconnection Puts and Aquifers at Risk

The core principles of environmental and water resource protection are prevention guided by accurate plans, design and permit compliance, and early detection and reporting of problems. All three principals failed at the Clearbrook terminal, Line 3 aquifer rupture, frac-outs, and water appropriation amendments. The MNDNR was faced with a massive undertaking and failed.

MNDNR permit conditions for water use, MPCA permits for water discharge, and Corps of Engineer permits for wetlands were designed based on accurate design and operation standards submitted in advance by the applicant. These factors are meaningless if permit conditions are not understood, ignored, or intentionally violated by the Permit holder. Permits and regulatory tools and are

just as useless if regulators fail to make the permits and rules understandable to both permit holders and inspectors. If contractors look away from permit conditions, the regulators are in the dark. If the regulations are either unaware or waived permits, there can be no enforcement and no deterrence against future violations. The actions of both Enbridge, their "Independent Monitors," and the MNDNR produce mistrust that can only be resolved with an effective and independent third-party review. The independent monitors need proper knowledge and rules to assess the environmental damage and restoration needs. The Clearbrook artesian aquifer breach demonstrates that we should distrust all the actors because every level of permit and regulatory failure has occurred.

The hydrologic conditions at Clearbrook Terminal were well understood after decades of local groundwater investigations and Line 3 geotechnical borings. MNDNR, MPCA, and Enbridge say they know the risks to groundwater-dependent wetlands and calcareous fens, but that knowledge has never translated to adequate protections.

Line 3 developers requested routine and moderate dewatering permits that never addressed the likely uncontrolled flow with deep excavations or the need for larger volumes of water with frequent frac-outs. The result is hundreds of thousand gallons a day disgorging from Clerbrook's shallow artesian aquifer or pumped into the ground when doing the pipeline borings.

While MNDNR understood the aquifer and fen risks, they granted a "no impact concurrence" for the fen because only shallow excavations were envisioned. It is unclear whether the MNDNR reviewed the artesian character of the Clearbrook artesian aquifer with Enbridge and the Independent Environmental Monitors failing to advise contractors on preventing an uncontrolled aquifer disaster.

At the same time, Enbridge Project Managers and contractors should have known the necessity of deeper excavation to cross existing pipelines. They should have known and anticipated the artesian pressure from the Clearbrook aquifer. The deep bore pit plans were not in the Enbridge design review documents. While permit writers and hydrologists relied on the design documents, prevention failed again when contractors changed plans without considering the known artesian risks.

Prevention requires high situational awareness and accurate reporting; contractors, inspectors, and regulators need to be constantly apprised of onsite

conditions, especially in high-risk settings, and they must report related problems. The approved Environmental Monitoring Plan requires Inspectors to routinely upload Inspection records to a password-protected portal that regulators can review. Failures occur whenever inspection reports are not timely, when they are not accurate, when the inspection reports obfuscate the facts, and when regulators fail to do a timely review. The same problems occurred when the aquifer ruptured, frac-outs, and 50-fold expansion in water appropriations during a drought. The institutional measures to prevent and minimize environmental impact failed with the aquifer rupture.

Digging deep pits in artesian settings and near groundwater-dependent ecosystems was the first compliance failure that went unreported. Poor project design calling for bore pits to cross actively flowing pipelines set up the disappointment that could have been prevented. Appropriate well-designed modifications that protect the environment. Many consultants, contractors, and the MNDNR have experience controlling subsurface flow. Onsite drillers controlled the flow with heavy drilling mud designed to contain the pressure, and excavators either dewater the risky area in advance, surcharge the flow or create a grouted seal over the top of artesian aquifers. Appropriate modifications can only be approved if the Permitted party discloses the changes required in the permit; here, permit compliance failed.

When the water came welling up and created quicksand in the pipeline trench, the Contractor abandoned the deep bore pit effort in fear of losing their equipment. The failure to report the problem was a severe violation where the blame is shared by Enbridge, the Contractor, the Independent Environmental Monitors, and the MNDNR regulators. The Contractor trying to avoid stop-work orders or design delays first made a hasty decision and then felt compelled to hide the problem from regulators for months. The environmental monitors failed their regulatory responsibility to identify and report the aquifer breach forcing a nine-month delay in restoring the aquifer.

As a geologist with pipeline construction experience, I can envision the Contractor hoping the artesian pressure would rapidly decline as it often does in minor confined aquifers with limited volume. But hope is not a regulatory compliance strategy, proven when dealing with a large regional aquifer with over 25 feet of head pressure.

Other serious violations occurred at Coldbrook, which are regulated by the MPCA and the Corp of Engineers. Discharge of silt and mud into streams and wetlands violates Construction Site Stormwater Permits and wetland protections. Failure to timely notify the pollution is a violation itself; continuing the work compounds the violations.

In addition serious violations have assaulted our aquifers with the frac-outs and 5 billion gallons of water appropriations during a drought.

Conclusion: Failed Promises Destroy Trust

Eight months of large volume flows from a ruptured regional aquifer are now exceeding 100,000 gallons per day, depleting the aquifer, reducing the hydraulic head threatening groundwater-dependent ecosystems. Frac-outs have a yet undefined risk to aquifers and surface water resources, and massive water withdrawals during extreme drought may impact both aquifers and surface waters. The attached chronology was compiled from Permit history, the MNDNR timeline in the Clearbrook Restoration Order, the Clearbrook Remedial Action Plan, the frac-outs, and amended Water Appropriation Permits. As an experienced environmental risk manager, I see the public documents as sanitized versions of a severe violation and a complete failure to protect our water resources.

Enbridge, their contractors and consultants, the Independent Environmental Monitors, and the MNDNR regulators failed to meet their obligations and created an ongoing risk. Even with the failures, there are only minor consequences related to the actual costs of fixing the problem; there are no penalties for over five months of evasion and no deterrence that makes it risky to violate the law.

The only fix to the abuses is for a Court or a Regulator to put a hard stop to all activities except independent inspection, remote sensing for upwelling water from aquifer ruptures and frac-outs, and disclosing all irregular design changes. Our water resources are at risk; no other actions should be allowed. Once the total damages have been restored, heavy fines and penalties must be levied for every unreported infraction.

Sincerely:

Jeffrey S. Broberg, LPG, MA, Minnesota Licensed Professional Geologist #13009

CC: Steve Morse and Sara Wolff, Minnesota Environmental Partnership

References:

MNDNR Restoration and Replacement Order

Barr Engineering Remedial Action Plan

Enbridge Environmental Monitoring Plan

Minnesota Well Index well logs

Enbridge Dewatering Permit 2018-****

Exhibit 1:

Chronology of Violation and Regulatory Failure

Derived from MNDNR Violation History and Barr Flow Remediation Plan

Dec. 2019: Approval of Environmental Monitor Control Plan. Enbridge Energy Limited partnership – Line 3 Replacement Project.

December 28, 2020: MNDNR issued Water Appropriations Permit 2018-3420 to Enbridge for 510,000,000 Gallons.

November 12, 2020, MNDNR issued Enbridge "No Effect Concurrence" for excavation 8-10 feet deep that would have an impact on the hydrology of fen

January 21, 2021: Enbridge abandons plans for shallow excavation due to existing pipelines and dug to 18 feet and ruptured artesian aquifer creating uncontrolled flow.

January 26, 2021: IEM noted "unmanageable dewatering conditions" and the need for SWPPP to direct new flow across the roadway

February 2, 2021: Borehole excavation or entry pit encountered "excessive GW infiltration."

February 8, 2021: 110-foot sheet pile wall installed within wetland dewatered with five wells, installed 50-foot long trench box in bore pit for "hot crossing" of existing pipelines.

Trench water discharged to dewatering bags and dewatering structures

Enbridge installed Line 3 "hot crossing" of two pipelines in dewatered sheet pile and trench box area

Uncontrolled flow area expands with the removal of the sheet pile wall

February 20, 2021. IEM notes "turbid water discharge for five well points."

Discussed with the lead inspector, environmental monitor, and ERM technical director

March 13, 2021. IEM documented sediment flow to wetlands and discussed with EI Team

March 15, 2021. IEM and Lead Env Inspector conducted site review and documented 2" of clay

March 16, 2021, Enbridge "issued an unacceptable report for improper dewatering structure" No cleanup and continued pumping

"Following months," according to MNDNR, Enbridge cleaned sediment from wetland but did not resolve uncontrolled flow

Failure to identify the problem as uncontrolled flow or aquifer rupture

No notifications of Level 2 modifications or need for amended permits

June 4, 2021: MNDNR issues Amended Water Appropriations Permit #2018-3420 for 4,982,768,568 gallons, 9.8 times larger than the original permit request.

June 15, 2021, MNDNR staff discussed the potential for uncontrolled flow

June 16, 2021, MNDNR email to Enbridge requesting information on uncontrolled flow and restoration plan

On June 17, 2021, MNDNR noticed Enbridge not recommencing work at Clearbrook hot crossing until the uncontrolled flow plan was approved. (Note that the line segments were already completed by the time DNR sent notice.)

June 2021: Five unreported Frac-outs

July 7, 2021, Merjent disclosed 3.8 million gallons of uncontrolled flow since January and disclosed 45 ftX12 ft X18' excavation and sheet pile installation

response to 6-16 DNR request described as "findings of fact #13."

July 8, 2021, Lead IEM and MNDNRr reviewed and summarized inspection reports to date and discovered the initial January 26 report and disclosure of completion of pipeline boring but no backfill due to uncontrolled flow.

July 8, 2021, Enbridge submitted Groundwater Investigation Plan to MNDNR for comment and review

Enbridge reported a second surface emergence of uncontrolled flow from outside the former sheet pile area 60 feet northwest of the original uncontrolled flow.

Enbridge reported uncontrolled overland flow at ground level elevation 1339. Surface flow is 28 feet above the artesian aquifer.

Uncontrolled flow created the risk of bank sloughing, road overtopping, and water quality concerns from the release of turbid water

Enbridge reported uncontrolled flow reached a nearby stream

Uncontrolled flow extends from Milepost 909.1 to 910

July 12, 2021, Enbridge submitted the revised GW Investigation Plan

On July 14, 2021, DNR informed Enbridge to deny the request to continue work in the area until the uncontrolled flow plan was approved.

July 27-Aug 4, 2021 Drilling 6 borings in area of uncontrolled flow. two borings penetrated the artesian aquifer

July 2021: 19 unreported frac-outs

August 1-4: Two unreported Frac-outs

Aug 5-Aug 21, 2021: water level monitoring

August 9: MNDNR reveals 28 unreported frac-outs from June 1 to August 4.

August 15, 2021, Draft Remedial Action Plan for ruptured aquifer submitted to MNDNR

Aug 17-18, 2021 Enbridge/Barr Final Remedial Action Plan report on an uncontrolled flow mitigation plan

RAP shows fens are supported by upwelling artesian water

Uncontrolled flow is upgradient of fens

RAP proposes installing high-volume wells in the artesian aquifer to stop the flow at the surface and reduce upward pressure in the aquifer allowing grout injection into the ground to stop the flow

September 6, 2021. uncontrolled flow reported to be 24,200,000 gallons from January 21 to September 5, 227 days, (Avg flow of 106,608 gallons/day from an area measuring 1400 to 1650 square feet)

September 16, 2021, MNDNR Restoration and Replacement Order

By October 16, 2021, complete all work to stop the uncontrolled flow

Notify MNDNR Commissioner within 24 hours of completion

By October 16, 2021, Enbridge, to report a revised estimate of water loss from March 19 to September 16, must continue groundwater monitoring following cessation of flow.

By October 16, 2021, submit Draft Calcareous Fen Management Plan for MNDNR review and approval

By October 16, 2021. Submit $250,000 in mitigation funds to MNDN for independent monitoring of calcareous fens

By October 16, 2021, Submit $300,000 in mitigation funds to MNDNR for initial mitigation of direct loss of groundwater resources

By October 16, 2021. End of the appeal period.

By November 1, 2021, Submit $2,750,000 on "one or more single order instruction escrows for the benefit of MNDNR to use at its sole discretion to provide funds to perform restoration actions" for fens and compensatory mitigation with conditions for withdrawal

The order provides for the addition of escrow funds if necessary

By December 1, 2021. Enbridge must demonstrate that it has visually reinspection all locations across the entirety of Line 3 where Enbridge deviated from planned or permitted construction trench depths. Must identify additional unidentified breaches of artesian aquifers.

Monitor for uncontrolled flow for 12 months after cessation of uncontrolled flow