

November 12, 2020

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RE: 2014-01071-TJH
Enbridge Line 3 Replacement Project in Minnesota
Kittson, Marshall, Pennington, Polk, Red Lake, Clearwater, Hubbard, Wadena, Cass, Crow Wing,
Aitkin, St. Louis, and Carlton Counties
Section 401 Water Quality Certification

Dear Chad Konickson and Barry Simonson:

This 401 Water Quality Certification (401 Certification) determination is submitted by the Minnesota Pollution Control Agency (MPCA) under authority of Section 401 of the Clean Water Act (CWA) (33 USC 1341), Minn. Stat. chs. 115, 116, and Minn. R. chs. 7001.1400-1470, 7050, 7052, and 7053. It is in response to Enbridge Energy, Limited Partnership's (Enbridge) request for 401 Certification for the portion of their proposed Line 3 Oil Pipeline Replacement Project (Project) within the State of Minnesota outside the exterior boundaries of the Fond du Lac Reservation. To review Enbridge's request for 401 Certification and associated attachments, visit: <https://www.pca.state.mn.us/regulations/401-certification-enbridge-line-3>

Section 401 of the CWA requires that before a federal permit may be issued for an activity which may result in a discharge into Waters of the United States, the applicant must provide to the federal permitting agency a certification (or waiver of certification) from the state in which the discharge originates. The certification must state that the discharge will comply with state water quality standards. Any conditions included in a state certification become conditions of the federal permit. In Minnesota, the state 401 Certification authority is the MPCA. Section 401 of the CWA does not limit the MPCA to review of discharges solely within Waters of the United States, but rather opens the Project to review of impacts to all areas subject to applicable state water laws and regulations. Because the CWA authorizes states to administer authorized programs, such as Section 401, under the state's definition of waters of the state (Minn. Stat. 115.01, subd. 22), Minnesota reviews all waters impacted by the Project.

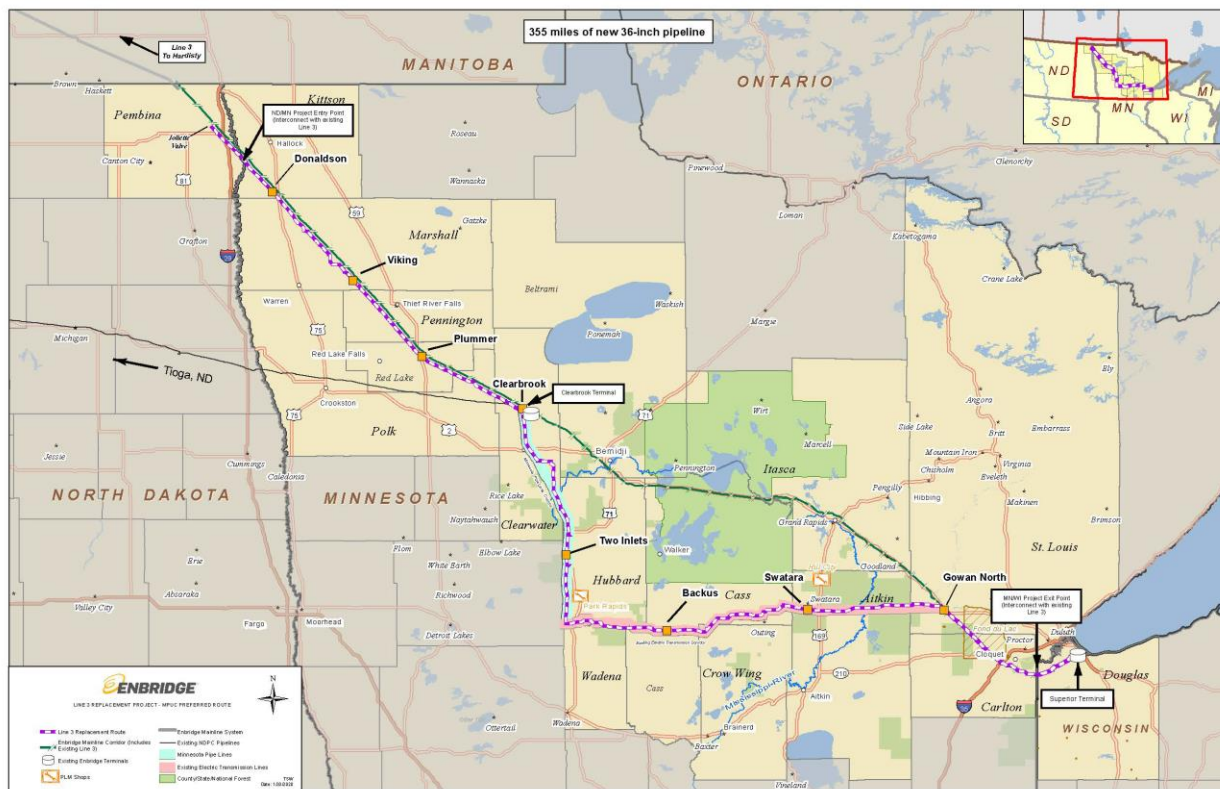
Project description

Enbridge proposes to cross Waters of the United States and discharge dredged and fill material into Minnesota wetlands and streams for the purpose of constructing a new 36-inch-diameter underground oil pipeline and associated facilities¹. The proposed activities will occur within a route approved by the Minnesota Public Utilities Commission (PUC) on May 1, 2020. The PUC is the Minnesota unit of government with decision authority over oil and gas pipeline route decisions (Minn. Stat. ch. 216G).

¹ The terms "stream" and streams" are used interchangeably with "waterbody" and "waterbodies" in this 401 Certification determination.

The route extends from the Red River of the North near Mattson, Minnesota, to the Minnesota/Wisconsin border near Wrenshall, Minnesota. The operation of the new pipeline will replace the operation of Enbridge's existing, 34-inch-diameter pipeline built in the 1960s, which is corroding and operating at only 51% capacity due to safety issues. The new pipeline will transport crude oil from Alberta, Canada to Superior, Wisconsin. As shown in the figure below, the proposed Project crosses portions of the following Minnesota counties: Kittson, Marshall, Pennington, Red Lake, Polk, Clearwater, Hubbard, Wadena, Cass, Crow Wing, Aitkin, St. Louis and Carlton.

Figure 1. Proposed Replacement Line 3 Route



The PUC-approved designated route for the Project's construction is as follows: From the Red River of the North (Kittson County) to Enbridge's Clearbrook Terminal (Clearwater County), it will be built in close proximity to Enbridge's existing Line 3 pipeline along the Enbridge Mainline System right-of-way. From the Clearbrook terminal to south of Park Rapids (Hubbard County), it will be constructed in a new right-of-way in close proximity to an existing Minnesota Pipe Line Company right-of-way. From Hubbard County eastward to St. Louis County, it will be built in a new right-of-way (referred to as greenfield) that generally follows an existing electric transmission line corridor, until it rejoins the Enbridge Mainline System right-of-way in St. Louis County. The Project will then be constructed eastward along the Enbridge Mainline System right-of-way through the Fond du Lac Reservation, then to the Minnesota-Wisconsin border in Carlton County, and ultimately to an existing terminal in Superior, Wisconsin. The Project requires between 25 and 50 feet of new right-of-way width, depending on the specific location. Attachment 1 lists the specific townships, ranges, and sections the Project will cross, using Public Land Survey System references.

The Project includes the following activities:

- Constructing a new 36-inch diameter Line 3 crude oil pipeline that will span approximately 330 miles, which will replace the existing 34-inch diameter Line 3 that is approximately 282 miles in length;
- Expanding the footprint of, and making mechanical upgrades to, the existing Clearbrook Terminal in Clearwater County;
- Expanding four pump stations at the following existing facilities: Donaldson (Kittson County), Viking (Marshall County), Plummer (Red Lake County) and Clearbrook (Clearwater County);
- Installing four new pump stations and associated electrical service at the following locations in the new corridor extending south and east of Clearbrook: Two Inlets (Hubbard County), Backus (Cass County), Swatara (Aitkin County) and Gowan North (St. Louis County);
- Constructing 38 mainline valves near major rivers, additional environmentally sensitive areas, population centers and pump stations, together with construction of permanent roads to access each valve site;
- Constructing small Cathodic Protection System facilities and electrical services to protect the buried pipeline from corrosion;
- Constructing new access roads to gain access to construct the Project, where existing public or private roads are not available; and
- Permanently deactivating and removing the existing Line 3 pipeline from service, after the new Line 3 pipeline is operational, in accordance with Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations, which generally includes the following: (a) purging the pipeline of oil; (b) cleaning, isolating, and segmenting the pipeline as needed from specified infrastructure; (c) completing all required remediation at water bodies, roads and railroads and other permitted crossings in coordination with permit and certification authorities; (d) continued monitoring of the existing, deactivated Line 3 right-of-way. (Note: The Project, as described in Enbridge's application for 401 Certification, does not include a proposal to impact state waters for the purpose of removing portions of the permanently deactivated existing Line 3 pipeline. The application states that Enbridge may seek to remove exposed segments of the permanently deactivated Line 3 pipeline in the future, including in areas where landowners have requested removal, but only after the required regulatory permits and authorizations – including, potentially, separate 401 Certifications – have been obtained.)

The purpose of the Project, as identified in Enbridge's application for 401 Certification, is to improve public safety and better protect the environment by replacing the existing Line 3, an aging pipeline with a large number of pipe defects and anomalies operating at reduced capacity, with a new pipeline that will be constructed with the latest construction practices, technology and materials. This will help Enbridge transport crude oil to meet their customers' demand using a more secure and reliable pipeline. It will also allow the company to restore throughput of the line to its original operating capacity of 760,000 barrels per day. Enbridge states that the restored operational capacity of the line will further allow the company to more efficiently operate and optimize their Enbridge Mainline System, resulting in an estimated reduction of the company's power usage on a per barrel basis.

Summary of impacts to aquatic resources

In summary, as more comprehensively explained in Enbridge's associated submittals to MPCA in support of the company's request for 401 Certification for the portion of the Project outside of the Fond du Lac Reservation, the Project proposes to cross 221 streams. In addition, the Project proposes to temporarily

impact 726.95 acres of wetland, permanently convert 211.81 acres of wetland to a different wetland type, and permanently fill 6.01 acres of wetland.

Pipe installation methods. As identified in the company's application, Enbridge proposes to use seven different methods for installing the pipeline across aquatic resources. Five of these are open trench methods: Open-Cut (non-isolated); Push-Pull; Dry (isolated) - Dam and Pump; Dry (isolated) - Flume; and the Modified Dry crossing. The other two are trenchless methods: Bore and Horizontal Directional Drill (HDD). Each crossing method varies in terms of the impacts to the waters they will have. In general, trenchless methods are less degrading and may not impact waters at all, while the open trench methods must use appropriate best management practices (BMPs), often based on flow or size of the waterbody, to ensure impacts are minimized. Sections 2, 3, and Appendix A of the company's [Environmental Protection Plan, dated November 2020 \(Attachment H of AA\)](#) describes each crossing method more comprehensively.

Stream crossings. Of the 221 streams that will be crossed, 56 are designated Public Waters in the Minnesota Public Water Inventory and three streams are considered Rivers and Harbors Act Section 10 Navigable waters (33 U.S.C. 403). The Project also crosses two Restricted Outstanding Resource Value Waters: the Gully 30 calcareous fen near Milepost (MP) 894; and the Mississippi River at MPs 941 and 1069.6. As shown in Table 7.1.1-1 of Enbridge's [Antidegradation Assessment \(AA\)](#), and as justified in [Attachment G](#) of the AA, Enbridge Proposes to install the pipeline using: the HDD construction method at 21 stream locations; the Bore method to cross 22 streams; the Dry (isolated) open trench method to cross 154 streams; the Modified Dry open trench method to cross 23 streams; and the Push-Pull method to cross 1 stream.

Mitigation to compensate for stream crossing impacts. Enbridge will use the Minnesota Stream Quantification Tool (MNSQT), including the MNSQT Debit Tool, to determine the Project's functional loss to streams resulting from impacts to streambeds due to open trench crossing methods and permanent impacts to riparian buffers. The MNSQT and Debit Tool were developed cooperatively by the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers (USACE), MPCA, the Minnesota Department of Natural Resources (MDNR), and the Minnesota Board of Water and Soil Resources to inform stream mitigation decisions. These tools calculate the functional lift (credit) or loss (debit) to streams changed by a particular activity. The MNSQT Debit Tool derives a "debit" based on the difference between the Existing Condition Score and Proposed Condition Score (impacted condition). Ultimately, this information on functional loss to the stream site is used for identifying the linear footage of stream restoration activity needed to compensate for project impacts. Enbridge will provide a monetary amount to the MPCA for use in a stream restoration project or projects within watershed(s) impacted by the Project to address this linear footage "debit." This monetary amount is based on an estimated average cost for stream restoration of \$400/Linear foot.

Wetland impacts. As noted above, the Project will permanently fill 6.01 acres of wetland as a result of constructing new aboveground pump stations and valves. In addition, the Project will temporarily impact 726.95 acres of wetland and permanently convert 211.81 acres of forested or scrub-shrub wetland plant community to an herbaceous plant community.

Mitigation to compensate for wetland impacts. In October 2018, Enbridge submitted a request for 401 Certification. The 2018 request included a draft compensatory mitigation plan. The MPCA reviewed the draft compensatory mitigation plan and concluded it did not adequately compensate for the Project's

wetland impacts because the ratios proposed were insufficient to adequately offset the lost or impacted existing uses of affected wetlands. As a result, insufficient mitigation was one basis for the MPCA's denial of the 2018 401 Certification request. In November 2019, Enbridge submitted a new request for 401 Certification. The MPCA, MDNR, and USACE have collaboratively developed compensatory mitigation ratios that apply to this Project and other linear projects. The compensatory mitigation ratios are documented in the Interagency Compensatory Wetland Mitigation Guidance (Interagency Guidance). The Interagency Guidance includes categories of "special" wetlands and differentiated baseline compensatory mitigation ratios for normal (non-special) and special wetlands, be they shallow-open water, aquatic bed, or unconsolidated plant communities, emergent, scrub-shrub, or forested communities. The Interagency Guidance also provides mitigation ratio multipliers for replacement out of Bank Service Area (BSA) and for replacement out of kind. The Interagency Guidance provides ratios such that mitigation is sufficient in quality and quantity to ensure replacement of the lost surface water. Enbridge's compensatory mitigation proposal complies with the Interagency Guidance, as described in the Project's [Compensatory Wetland Mitigation Plan](#), dated October 2020 (Attachment P of the AA).

Decision

The MPCA has thoroughly examined information identified as relevant to water quality considerations, including: [Enbridge's Application for Activities Affecting Water Resources in Minnesota](#), dated September 21, 2018; the [Final Environmental Impact Statement](#) for the Project, dated December 9, 2019; Enbridge's [request/application for 401 Certification](#), dated November 15, 2019, which included an [Antidegradation Assessment \(since updated\)](#) and associated attachments in support of the company's request; other information Enbridge has submitted to the MPCA, including additional information Enbridge provided to the MPCA to supplement their November 15, 2019, submittal; and other information MPCA identified as relevant. In addition, the MPCA reviewed and considered all public comments submitted and held a Contested Case Hearing to inform its decision on five disputed issues of material fact. The MPCA bases its certification decision upon an evaluation of this information. The MPCA certifies the Project and has determined that the Project as certified will satisfy the antidegradation standards in Minn. R. pt. 7050.0265 and 7052.0300. The MPCA has determined there is reasonable assurance that the activity will be conducted in a manner that will not violate applicable water quality standards, provided Enbridge complies with the following conditions:

A. Compliance with terms and conditions contained in additional permits and final plans, specifications, and procedures.

- 1. MPCA National Pollutant Discharge Elimination System Permit (NPDES)/State Disposal System (SDS) Construction Stormwater (CSW) General Permit (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, 7052, 7090).** Enbridge must acquire and comply with all terms and conditions of the MPCA NPDES/SDS Construction Stormwater General Permit for discharging storm water during the Project's construction activity. Both the owners and operators of construction activity disturbing one acre or more of land are responsible for obtaining this permit prior to commencing construction activities. A detailed Stormwater Pollution Prevention Plan, containing both a temporary and permanent Sediment Erosion Control Plan, must be prepared prior to submitting an application for the NPDES/SDS Construction Stormwater General Permit.
- 2. MPCA NPDES/SDS Industrial Wastewater Permit (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must acquire and comply with all terms and conditions of the NPDES/SDS Industrial Wastewater Permit, which regulates the following discharges to waters of the

state: water used to test the structural integrity of new pipeline (hydrotest waters); and, buoyancy control water used when pipe installation is done using HDD or the push-pull method.

- 3. Known Contaminated Sites Management Plan (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Prior to conducting any grading, excavating, or other construction activities that will result in a disturbance to the soil within one-quarter mile of the five locations along the Project's corridor at which historical crude oil-impacted soil will, or may be, encountered, as described in section 6.4 and 7.2.2.5 of the AA, Enbridge must propose to the MPCA for approval a Known Contaminated Sites Management Plan (KCSMP). The KCSMP, which must, in part, describe how contaminated soil will be managed (removed, handled, and disposed of following extraction) during the Project's pipeline construction activities, and how non-contaminated soils will be used to backfill excavated areas, must be approved by the MPCA before Enbridge is authorized to begin any grading, excavating or construction activities that will result in a disturbance to the soil in these areas. The KCSMP will not be approved by MPCA if the plan would violate any condition of this 401 Certification.
- 4. MPCA NPDES/SDS Contaminated Groundwater Pump-Out General Permit No. MNG790000 (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Prior to conducting any potential dewatering activities within one mile of locations where the groundwater is known to be contaminated, as described in sections 6.4 and 7.2.2.5 of the AA, Enbridge must acquire the [MPCA NPDES/SDS Groundwater Pump-out General Permit No. MNG790000](#), which regulates the discharge of groundwater extracted at cleanup and redevelopment sites. This includes discharges which have been contaminated by past or present activities, from both known and unknown sources of contamination. Enbridge must comply with all terms and conditions of this general permit during the dewatering activities.
- 5. Plans, specifications, and procedures (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** In addition to the conditions and requirements in this 401 Certification and the MPCA NPDES/SDS permits referenced above, Enbridge must follow the plans, specifications, and procedures identified in the following final documents for the Project that have been furnished to the MPCA by Enbridge. If conditions or requirements in the 401 Certification or the MPCA NPDES/SDS permits conflict with any content of the following documents, Enbridge must follow the conditions in the 401 Certification or the MPCA NPDES/SDS permits.

 - [Antidegradation Assessment](#) (dated November 2020);
 - [Receiving Waterbodies Tables](#) (Attachments C-1 and C-2 of AA, dated November 2020);
 - [Wetland Impact Tables](#) (Attachment D of AA, dated November 2020);
 - [Downstream Waters that Support Natural Wild Rice Stands](#) (Attachment E of AA, dated November 2020);
 - [Water Quality Data Received from MPCA](#) (Attachment F of AA, dated November 2020);
 - [Anticipated Water Quality Parameters of Concern and Water Body Crossing Justifications](#) (Attachment G of AA, dated November 2020);
 - [Environmental Protection Plan](#) (Attachment H of AA, dated November 2020);
 - [Blasting Plan](#) (Attachment I of AA), dated November 2020);
 - [Winter Construction Plan](#) (Attachment J of AA, dated November 2020);
 - [Hydrofracture Reports](#) (Attachment K of AA, Summary Report dated October 2020);
 - [Drilling Mud Additives Information](#) (Attachment L of AA, dated January 2020);

- [Site-specific HDD Inadvertent Release Response Plans](#) (Attachment M of AA, dated November 2020);
- [Post Construction Wetland and Waterbody Monitoring Plan](#) (Attachment N of AA, dated November 2020);
- [Sensitive Waters and Riparian Vegetation Communities](#) (Attachment O of AA, dated November 2020)
- [Compensatory Wetland Mitigation Plan](#) (Attachment P of AA, dated October 2020)
- [Contaminated Sites Management Plan](#) (Attachment R of AA, dated February 2020)
- [Environmental Monitoring and Control Plan](#) (dated October 2020)
- [Independent Environmental Monitor Staffing Plan](#) (dated October 2020)
- [Operational Monitoring Plan](#) (dated November 2020)

6. Independent, third party environmental monitors (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Enbridge must provide independent, third party environmental monitors (Monitors) for the Project who must report directly to, and be under the exclusive control of, the MPCA and other resource agencies as set forth in the Independent Environmental Monitor Staffing Plan (IEMSP). Per the IEMSP, Enbridge must provide a minimum of four Monitors per spread, for a total minimum of 24 Monitors for the Project. Further, prior to commencing the Project's construction activities, Enbridge must arrange and hold at least one meeting with the MPCA and the Lead Independent Environmental Monitors for the purpose of ensuring the requirements of the MPCA's regulatory approvals for this Project, including the 401 Certification and the MPCA NPDES/SDS permits, and the MPCA's expectations of the Monitors is understood.

B. Conditions on construction and crossing methods.

7. Boundaries of construction area limits (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Prior to commencing any of the Project's construction activities, Enbridge must flag or stake the boundaries of the authorized construction area limits in a manner that ensures all individuals can readily identify the boundaries of the authorized construction area limits and ensures the construction activities will only occur in areas authorized by the permitting/certifying agencies. Enbridge must also ensure that all aquatic resources (wetlands, ditches, lakes, or streams) in the vicinity of the construction area that are not authorized to be impacted by the project are clearly identified.

8. Linear feet of open trench and number of spreads (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). To minimize the possibility of significant erosion and potential discharges to waterbodies caused by weather events, Enbridge must perform the authorized work in segments, referred to as spreads. A map of the Project's six spreads is included in Attachment 2 to this certification. Enbridge must limit the cumulative amount of excavated open trench within each spread to no more than three days of anticipated welding production, which must not exceed more than 14,000 linear feet. The trailing end of each trench must be backfilled and BMPs must be in place as the leading edge of the trench is opened. Each open spread must be fully equipped and staffed to operate independently of any other open spread. Within each spread, site-specific activities, such as HDD, bores, road bores, valve work and pumping station construction activities, may be performed independent of open trench work.

- 9. HDD drilling mud and drilling mud additives (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must only use drilling mud and drilling mud additives that have been approved for use by the MPCA as identified in Table L-1 of the [Drilling Mud Additives Information](#) (Attachment L of AA). Further, prior to using any of the drilling muds or additives for the Project's HDD activities, Enbridge or contractors acting on its behalf, must first show the product to one of the Independent Environmental Monitors who must be present during HDD construction activities, so the Monitor can verify the product has been approved by the MPCA. Enbridge or contractors acting on its behalf must also inform the Monitors of the location where the drilling mud and drilling mud additives will be disposed, in light of the applicable requirements (Environmental Protection Plan, section 11.5) after the HDD crossing is complete, which the Monitors must also verify.
- 10. Sand used for Project's sand bags (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must ensure all sand used in sand bags for the Project's trench breakers and pillows, or for any other portion of the Project, is free of pollution and contaminants, and must not contain invasive plant or animal propagules.
- 11. Polyurethane (foam) products prohibited (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052) .** Enbridge must not use Polyurethane foam products during the Project's construction activities, including, but not limited to, the Project's trench breakers or pillows used underneath and around the pipeline.
- 12. Salt deicing products prohibited (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must not use any chloride-based deicers, including but not limited to sodium chloride (NaCl), magnesium chloride (MgCl₂), and calcium chloride (CaCl₂), for deicing during the Project's construction activities.
- 13. Aquatic resource crossings (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052) .** Enbridge must cross all streams and wetlands using the proposed crossing methods specified in the following documents:

 - a. [Receiving Waterbodies Tables](#) (Attachments C-1 and C-2 of the AA; and
 - b. [Wetland Impact Tables](#) (Attachment D of AA)

The use of an alternative crossing method specified in either of the tables listed above requires prior approval of MPCA. The use of a crossing method, proposed or alternative, that is not specified in either of the tables listed above is prohibited.

- 14. Site-Specific Restoration Plans required (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must propose to the MPCA for approval a Site-Specific Restoration Plan (SSRP) for each of the sensitive waters identified as such in Attachment O ([Sensitive Waters and Riparian Vegetation Communities](#)) of the AA. Enbridge must not commence trench crossing activities at any sensitive water crossing for which Attachment O identifies a SSRP must be provided to the MPCA until after the MPCA has approved the sensitive water's SSRP.

15. HDD right-of-way (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). To minimize impacts on aquatic resources associated with removal of vegetation, Enbridge must clear no more than 30 feet of vegetation within the 50-foot permanent right-of-way along the HDD drill path (as shown in Figure 4.5-1 of Appendix A of the [Environmental Protection Plan](#)). No grading or trenching may occur along the drill path.

Exceptions:

- (A)** Additional clearing to facilitate the installation of free-span engineering bridges at the following locations is permissible: Mississippi River (MP 941.0), Pine River (MP 1017.4) and East Savanna River (MP 1085.8). The installation of these bridges must be installed following the plans, specifications, and procedures described in Enbridge correspondence to MPCA, dated September 17, 2020 (Attachment 3). Enbridge must not conduct grading or stump removal along the HDD paths at these locations except at the limited locations where the bridges will be installed as specified in Attachment 3.
- (B)** Grading and trenching the HDD drill path for the sole purpose of preventing an inadvertent release of drilling mud from reaching any state waters, and to facilitate the immediate removal of any such drilling mud, is permissible; however, this must only occur when it is not feasible to use alternative containment methods that do not require grading and trenching. If such an inadvertent release occurs, Enbridge must then return the impacted area to its original grade and replace the vegetation accordingly. In addition, to aid in stabilizing soils and reducing erosion potential, Enbridge must minimize removal of vegetation on stream banks and maintain roots of vegetation removed. Enbridge must also comply with terms of agreements they have with any landowner that further restricts removal of vegetation.

16. HDD drilling mud discharges to waterbodies and wetlands prohibited (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). This 401 Certification does not authorize Enbridge to discharge drilling mud into waters of the state. Such discharges are considered a violation of applicable statutes (Minn. Stat. ch. 115) and applicable water quality standards (Minn. R. 7050). For this reason, Enbridge must ensure all plans and procedures prepared for this Project's HDD stream crossing activities, including, but not limited to, the Environmental Protection Plan (AA Attachment H) and the [Site-specific HDD Inadvertent Release Response Plans](#) (AA Attachment M), are followed. Further, if an inadvertent discharge of drilling mud to waterbodies or wetlands occurs during the Project's HDD construction activities, Enbridge must immediately cease the HDD crossing activity, report the discharge to the Minnesota Duty Officer (651-649-5451 or 1-800-422-0798) and the MPCA, contain and recover the discharge as rapidly and as thoroughly as possible, and dispose of the discharged drilling mud at an authorized location.

17. Reports required for all HDD crossings following installation (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). For each of the Project's HDD stream and wetland crossings, within 30 days of completion of the HDD crossing, Enbridge must provide a written summary report to the MPCA that describes: information listed in part 11.7 of the [Environmental Protection Plan \(AA Attachment H\)](#); the success of the HDD crossing; the degree to which there were any inadvertent releases of drilling mud to either land or waterbodies; and the efforts employed to report, contain, and recover any inadvertent releases of drilling mud, together with information related to where the mud was disposed.

18. Best Management Practices (BMPs) for construction activities in wetlands, including dewatering (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Prior to commencing the Project's construction activities in any wetland, and based on saturation levels of each respective wetland at the time of construction and the weather forecasts Enbridge must monitor, Enbridge must install in-wetland BMPs that will prevent, during construction activities, impacts to aquatic resources outside of the area in which wetland impacts are authorized. Enbridge must ensure a trained person, or persons, will inspect the in-wetland BMPs throughout the construction site at least once every day to ensure integrity and effectiveness. Enbridge must immediately repair, replace, or supplement all non-functional in-wetland BMPs with functional BMPs as needed to prevent any unauthorized impacts to state waters. The Antidegradation Assessment, dated November 2020, the [Environmental Protection Plan \(AA Attachment H\)](#) and the Environmental Plan Sheets that are described in Attachment H identify the in-wetland BMPs that must be used on-site during the Project's construction, together with the required daily inspection frequency.

Dewatering. When conducting the Project's construction dewatering activities that discharge to a wetland location, which must only occur when it is not feasible to discharge to upland areas, Enbridge must use BMPs to first treat the discharged water to avoid causing visible turbidity, material discoloration, or other nuisance conditions beyond the BMP treatment area in violation of [Minn. R. 7050.0210, subp. 2](#), or other applicable water quality standards and requirements. The Antidegradation Assessment, dated November 2020, the [Environmental Protection Plan \(AA Attachment H\)](#) and the Environmental Plan Sheets that are described in Attachment H identify the on-site BMPs that Enbridge must use for this purpose. In addition, when Enbridge must conduct a construction dewatering discharge into a wetland, Enbridge, or contractor(s) acting on its behalf, must select a discharge location, in consultation with an Independent Environmental Monitor, that will be to the portion of wetland that is least inundated and furthest away from any deeper inundated portion of the wetland, to the extent prudent and feasible. Further, Enbridge, or contractor(s) acting on its behalf, must not direct dewatering discharges into any wetland location with greater than 6 inches of a surface inundation at the time the dewatering activities begin. Enbridge must also provide a person or persons to monitor all dewatering activities into wetlands throughout the duration of the dewatering, to ensure compliance with this condition. As part of the required dewatering BMPs, Enbridge must also have portable treatment systems (e.g., sand or carbon) available at the dewatering site that must be used if the other proposed BMPs fail to adequately treat the discharge. The portable treatment systems must be sufficiently sized to treat all dewatering volume if other proposed BMPs fail. Following the completion of dewatering activities at each location, residual sediment that may have accumulated within the wetland must be removed so that no greater than one-half inch of newly deposited sediment remains.

C. Conditions related to impaired waters, wild rice waters, and seasonal restrictions.

19. CWA Section 303(d) impaired waters (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Enbridge must take actions to ensure that the Project's construction activities do not contribute to any existing water quality impairment. The following waterbodies within the Project area are identified as impaired in the [MPCA's 2018 CWA Section 303\(d\) Impaired Waters List](#). For these waterbodies, Enbridge must use the crossing methods identified below:

- Red River of the North (MP 801.8): Mercury in fish tissue, Mercury in water column, Arsenic, Turbidity (HDD crossing method);

- Tamarac River (MP 828.6): Aquatic macroinvertebrate bioassessments, Fishes bioassessments (HDD crossing method);
- Middle River (MP 835.9): Turbidity, Dissolved Oxygen (DO), Aquatic macroinvertebrate bioassessments (HDD crossing method);
- Snake River (MP 843.2): Aquatic macroinvertebrate bioassessments, DO, *E. coli* (bacteria), Fishes bioassessments (HDD crossing method);
- South Branch Snake River (MP 847.2): Fishes bioassessments (Dry open trench crossing method);
- Red Lake River (MP 864.3): Mercury in fish tissue (HDD crossing method);
- Clearwater River (MP 875.4): Turbidity, Mercury in fish tissue (HDD crossing method);
- Lost River (MPs 904): *E. coli* (bacteria) (Dry open trench crossing method);
- Silver Creek (MPs 907.1, 907.4 and 907.7): Fecal coliform (bacteria), Aquatic macroinvertebrate bioassessments (Dry open trench crossing method);
- Clearwater River (MP 922.3): Mercury in fish tissue, DO (HDD crossing method);
- Walker Brook (MP 924.2): DO (Modified dry open trench crossing method);
- Mississippi River (MP 941.1): Mercury in fish tissue (HDD crossing method);
- Straight River (MP 974.2): DO (HDD crossing method);
- Shell River (MP 976.6) and 981.4: Fishes bioassessments (Dry open trench crossing method);
- Shell River (MP 991.2): DO (HDD crossing method);
- Crow Wing River (MP 993.3): Mercury in fish tissue (HDD crossing method);
- Moose River (MP 1048): DO (Modified dry open trench crossing method); and
- Mississippi River (MP 1069.7): Mercury in fish tissue, Total Suspended Solids (HDD crossing method).

20. HDD crossing at Red River of the North (MP 801.8) (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). In order to reduce the potential for an inadvertent release of drilling mud into this waterbody during the HDD construction activities, for which Attachment K of the AA identifies an elevated risk of an inadvertent release at approximately 1,035 feet and 1,540 from the entry points, Enbridge must submit a plan to the MPCA for approval that explains the specific procedures and procedures Enbridge, or contractor(s) acting on its behalf, will implement to prevent such a release from occurring, to the extent prudent and feasible. The plan must identify whether, and how, the annular pressure can be reduced during each stage of the HDD drilling process (i.e., pilot hole, reaming, and pullback), as Enbridge proposed to MPCA in October 2019. If the annular pressure cannot be reduced during the reaming and pullback stages, as has recently been discussed, the plan needs to identify other methods that Enbridge proposes to employ to reduce the risk of inadvertent releases during the HDD construction activity. The MPCA must review and approve this plan before Enbridge is authorized to commence the HDD construction activities at this location.

21. Seasonal prohibition on construction in known wild rice waters and in close proximity to known downstream wild rice waters (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). From April 1 through July 15, Enbridge must not conduct construction activities in the known wild rice waters identified in Table 5.4-1 of the [AA](#), or in areas up to 25 miles upstream of wild rice waters as shown in the [Downstream Waters that Support Natural Wild Rice Stands](#) (Attachment E of AAE). **Exception:** The seasonal prohibition on construction activities in the Straight River (MP 974.2) is from April 1 to June 15. This prohibition does not apply to waters crossed using the bore crossing method, nor does it apply to placing support structures for temporary bridges in these waters.

22. Seasonal prohibition on construction activities in wetlands (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). In order to protect aquatic life use during sensitive periods, Enbridge must not conduct construction activities from April 1 through June 15 in any sensitive wetland not permitted for permanent fill impacts, as identified in Attachment O ([Sensitive Waters and Riparian Vegetation Communities](#)) of the Antidegradation Assessment. Further, Enbridge must not conduct construction activities in any wetland not permitted for permanent fill impacts from April 1 through June 1. **Exception:** This prohibition does not apply to performing work necessary for Enbridge to maintain compliance with the NPDES/SDS CSW General Permit requirements. Specifically, Enbridge is authorized to drive over construction mats installed in wetlands prior to April 1, using the equipment and staff identified in Table 1 (Equipment and Personnel by Spread), to inspect and repair BMPs. However, Enbridge must not create new construction mat lanes in areas where none existed prior to April 1 until after the seasonal prohibition concludes.

Table 1. Equipment and Personnel by Spread		
Crew Type	Number of Crews per Spread	Equipment
Spreads 1A and 1B		
Environmental	8	<ul style="list-style-type: none"> • 8 Posi-track loaders • 8 UTV/6 wheelers • 8 Ditchwitch trenches • 8 Flatbed Trucks • 8 Trailers • 16 Pickup trucks
Utility	3	<ul style="list-style-type: none"> • 3 Posi-track loaders • 3 UTV/6 wheelers • 3 Flatbed trucks • 3 Trailers • 6 Pickup trucks • 3 Farm tractors (70-100 horsepower) • 3 Mulchers • 3 Tow behind mulchers
Spreads 2 and 3		
Environmental	4	<ul style="list-style-type: none"> • 8 ¾-ton trucks • 4 1-ton trucks • 4 2-ton trucks • 4 Tag trailers • 4 UTV/side-by-sides • 4 Marookas • 4 Straw blowers • 2 320 or 314 excavators • 2 85 mini excavators • 4 Walk behind trenchers • 4 Skid steer w/ trenchers • 1 Long stick excavator (in case of an emergency repair) • 1 D6 dozer (in case of an emergency repair)
Spread 4		
Environmental	4	<ul style="list-style-type: none"> • 8 ¾-ton truck or smaller • 4 1-ton trucks • 4 Tag trailers • 4 CAT 257-299 skid steers or comparable • 4 CAT 311-CAT 319 / JD 135-JD 180 excavators or comparable

		<ul style="list-style-type: none"> • 4 Skid steer trencher attachments • 4 Skid steer broom attachments • 4 Skid steer grapple attachments • 4 Rollers - walk behind / trench / ditch • 2 Long stick excavators (in case of an emergency repair)
Spread 5		
Environmental	4	<ul style="list-style-type: none"> • 8 ¾-ton truck or smaller • 4 1-ton truck • 4 Tag trailer • 4 CAT 257-299 skid steer or comparable • 4 CAT 311-CAT 319 / JD 135-JD 180 excavator or comparable • 4 Skid steer trencher attachment • 4 Skid steer broom attachment • 4 Skid steer grapple attachment • 4 Rollers - walk behind / trench / ditch • 1 Long stick excavator (in case of an emergency repair)

If a situation arises where Enbridge must arrange to deploy additional equipment and staffing not identified in Table 1, to repair or implement additional BMPs as required by the NPDES/SDS CSW General Permit requirements or for other unanticipated reasons, Enbridge may propose to the MPCA to do so. If such a situation arises, the MPCA must provide approval to Enbridge before Enbridge is authorized to deploy the additional equipment and staffing. Further, this seasonal prohibition does not apply to Enbridge’s Environmental Compliance Management Team, Independent Environmental Monitors or resource agency staff who must be able to access these locations.

23. Seasonal prohibition on HDD crossings (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Due to the risk of an undetected inadvertent release of drilling mud into an ice-covered stream, Enbridge must not conduct HDD stream crossing construction activities when the stream is covered with ice, unless otherwise pre-approved by the MPCA and MDNR on a case-by-case basis. Further, Enbridge must not manually create open water conditions in streams that would otherwise be ice-covered at the HDD crossing locations, unless otherwise approved by MPCA and MDNR on a case-by-case basis.

D. Compensatory mitigation required.

24. Compensatory mitigation for wetland impacts (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Enbridge must provide mitigation for the loss of existing uses resulting from the Project’s physical alteration to wetlands (Minn. R. 7050.0186 and 7050.0265), in accordance with the Interagency Compensatory Wetland Mitigation Guidance provided to Enbridge in October 2019. As noted above, Enbridge has proposed a [Compensatory Wetland Mitigation Plan](#), dated October 2020 (Attachment P of AA). The plans identifies that mitigation will occur through the use of wetland mitigation bank credits. The MPCA has determined the proposed mitigation for the Project’s wetland impacts exterior to the Fond Du Lac Reservation is acceptable. Prior to conducting any of the Project’s construction activities that result in impacts to wetlands, Enbridge must provide documentation to the MPCA demonstrating that the required compensatory mitigation has been provided.

- 25. Compensatory mitigation for stream crossing impacts (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must provide mitigation to compensate for the Project’s functional loss to streams, resulting from impacts to streambeds due to open trench crossing methods and permanent impacts to riparian buffers. Enbridge must provide this mitigation in the form of a monetary payment to the MPCA prior to conducting any of the Project’s construction activities that result in impacts to streambeds or riparian buffers. This monetary payment and associated earnings will be used to fund a stream restoration project or projects within watershed(s) impacted by the Project. The monetary amount must be determined by modeling the functional loss caused by the stream crossings using the Minnesota Stream Quantification Tool (MNSQT) and Debit Tool to determine the Existing Condition Score (ECS) and Proposed Condition Score (PCS) as follows:
- The streams crossed by the Project are assumed to have an ECS of .80, .90, or 1.0 (pristine conditions), dependent on location;
 - The MNSQT Severity Impact Tier of 1 and 2 must be applied to greenfield, other utility, and existing pipeline crossing sites, respectively;
 - The MNSQT Debit Calculator must be used to determine the Functional Foot Loss (FFL);
 - The FFL must be translated to the length of stream required for mitigation using a typical Functional Lift Restoration to Level 3 of 0.25 FFL/Linear Foot; and
 - The mitigation stream length must then be translated to a mitigation monetary amount using an estimate of \$400/Linear Foot.

The ECS, PCS, and Severity Tiers applicable to this Project using the MNSQT and Debit Tool, based on information provided by Enbridge are shown in Table 2 below. Using the typical Functional Lift Restoration to Level 3, the mitigation stream length for the Project has been determined to be 8,608 feet of stream.

Table 2. Output table for the MNSQT Debit Tool results based on information from Enbridge.

ECS	PCS	Number of Crossings	Stream Length	Impact Severity Tier	Debits (FF)	Debits per foot (FF/LF)	Stream Length Needed	Length Needed (Miles)	Functional Lift Restoration Level	
0.80	0.58	117	5850	Tier 2	-1287	0.15	12,030	2.3	Low Lift	
0.80	0.67	11	550	Tier 1	-71.5	0.25	8,608	1.6	Typical Lift Level 3	
1.00	0.72	29	1450	Tier 2	-406	0.4	4,511	0.9	More common Lift Level 5	
1.00	0.84	5	250	Tier 1	-40	0.55	3,281	0.6	Huge Lift Level 5	
0.90	0.76	5	250	Tier 1	-35					
0.90	0.65	25	1250	Tier 2	-312.5					
Total Debits (FF) -->					-2152					

E. Post-construction requirements.

26. Removal of temporary access roads (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Enbridge must ensure that all material (e.g., bridges, bridge supports, construction mats) placed in wetlands and waterbodies to create temporary access roads as authorized by this 401 Certification, is removed and the wetlands and waterbodies are restored to their pre-construction conditions. This 401 Certification does not authorize permanent impacts associated with temporary access roads in wetlands and waterbodies, regardless of preference of a landowner, road authority, or governmental agency.

27. Minn. Stat. 115E.04 Prevention and Response Plans (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). Before the new Line 3 Replacement Pipeline is operational, Enbridge must submit to the MPCA for review the oil and hazardous substance discharge prevention and response plan as required and described in Minn. Stat. 115E.04.

28. Post Construction Wetland and Waterbody Monitoring Plan and financial assurance (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). As identified above, Enbridge has prepared a [Post Construction Wetland and Waterbody Monitoring Plan](#) (PCMP), dated November 2020 (Attachment N of AA). The purpose of the PCMP is to monitor state waterbodies and wetlands in and near the area in which the Project has been constructed to determine if additional impacts to Minnesota's aquatic resource impacts have occurred as a result of the Project's construction. If additional impacts have occurred, Enbridge must then conduct remedial action to restore the water to its preconstruction status, or provide additional compensatory mitigation. In addition, the PCMP identifies that financial assurance must be provided in an amount and manner that is acceptable to the MPCA, in consultation with Enbridge, USACE, and MDNR, to ensure a high level of confidence that the restoration of Minnesota's aquatic resources to pre-construction conditions will be successfully completed in accordance with the performance standards specified.

The MPCA has determined that the PCMP is acceptable. Before Enbridge is authorized to begin the Project's construction activities that impact waterbodies and wetlands, the financial assurance required in this condition must be in place.

29. Monitoring for leaks/anomalies after replacement Line 3 is operational (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). After the pipeline is operational (i.e., transporting oil), Enbridge must immediately report to the MPCA any safety-related conditions related to Line 3 or related to monitoring results from upstream and downstream locations for surface waterbodies located within 30 feet of any identified safety-related condition on Line 3. Surface water monitoring must continue from the initial field reconnaissance until the safety related condition has been resolved through further evaluation, repair, or other mitigative measures. More specifically, Enbridge must follow the plans and procedures described in the [Operational Monitoring Plan](#).

30. Discharges from Line 3 to waters of the state prohibited (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052). After the new Line 3 is operational, Enbridge must not discharge any grade of crude oil or crude oil-related product (e.g., diluted crude oil/bitumen) from

the Replacement Line 3 into state waters, including groundwater. Should any such discharges be discovered, Enbridge must immediately notify the [Minnesota Duty Officer](#) (651-649-5451 or 1-800-422-0798) and inform the MPCA of steps taken to immediately contain and cleanup the discharge, as required.

F. General requirements.

- 31. Communication with contractors (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must provide the following to each primary contractor working on Line 3 construction, monitoring, decommissioning, or other activities: a copy of this 401 Certification and copies of all required BMPs necessary to comply with conditions of this 401 Certification; and any written demarcation of surface waters or wetlands. The applicant must also ensure that there is a mechanism in place requiring each primary contractor to provide the same information to each subcontractor, at any level, responsible for fabricating or providing any material for the Project or performing work at the Project site. In addition, copies of these documents and any other relevant regulatory authorizations related to impacts to waters or wetlands must be available at open work sites in each of the Project's six spreads for use by contractors and staff responsible for completing the Project work and must be available within 72 hours when requested by MPCA.
- 32. Oversight of contractors (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge is responsible for ensuring that all terms and conditions of this 401 Certification, including the plans and documents referenced within it, are followed. As such, Enbridge must provide sufficient oversight of its contractors and subcontractors who are conducting construction activities on its behalf to ensure the work is performed in full compliance with the 401 Certification and will not result in a violation of applicable MPCA water quality standards.
- 33. MPCA inspection and access to site (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** At any time, the applicant must allow representatives from the MPCA or Independent Environmental Monitors, upon presentation of credentials, to inspect the project site and the authorized activity to ensure that the project is constructed, and BMPs maintained, in accordance with this 401 Certification.
- 34. Notification to MPCA of additional impacts (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** Enbridge must inform the MPCA of any proposed additional water quality impacts this project may have to waters of the state, before the impacts occur, to allow the MPCA to determine if further review or authorization is required. This includes, but is not limited to, any additional fill, excavation, dredging, additional structures, and temporary or permanent impacts not shown in the final plans or expressly authorized by the USACE Section 404 permit or this 401 Certification. **Enbridge must immediately notify the MPCA of a violation of this certification, such as unauthorized direct or indirect impacts to waters of the state.**
- 35. General conditions incorporated (MPCA authority: Minn. Stat. ch. 115; Minn. R. chs. 7001, 7050, and 7052).** This 401 Certification includes and incorporates by reference the general conditions of Minn. R. 7001.0150, subp.3.

Disclaimers:

The MPCA coordinates with several regulatory programs to review the anticipated impacts of large linear pipeline projects. This 401 Certification does not release Enbridge from obtaining all necessary federal, state, and local permits, nor does it limit more restrictive requirements set forth through any such program. Further, this 401 Certification does not eliminate, waive, or vary Enbridge's obligation to comply with all other laws and state water statutes and rules through the construction, installation, and operation of the project, including, but not limited to, the NPDES/SDS permitting program, and Minn. R. ch. 7050.

This 401 Certification does not authorize Enbridge to impact state waters for the purpose of removing portions of the permanently deactivated existing Line 3 pipeline. Enbridge must first apply for and receive the required regulatory permits and authorizations – including, potentially, separate 401 Certifications – prior to being authorized to impact state waters to facilitate the removal of exposed segments of the permanently deactivated Line 3 pipeline, including those areas where landowners have requested removal.

This MPCA decision is made, in part, on Enbridge's representations that all necessary environmental reviews and related decisions have been completed, or will be completed prior to any final 401 Certification decision, as required by Minn. Stat. ch. 116D and Minn. R. ch. 4410. If environmental review for this project is needed and has not been completed, the MPCA does not have legal authority to issue a 401 Certification. In that situation, the MPCA reserves the right to make a 401 Certification decision after completion of the environmental review process.

This 401 Certification does not release Enbridge from any liability, penalty, or duty imposed by Minnesota or federal statutes, regulations, rules, or local ordinances, and it does not convey a property right or an exclusive privilege.

The MPCA reserves the right to modify or revoke this 401 Certification as provided in Minn. R. 7001.0170 and 33 U.S.C. §1341. Pursuant to Minn. R. 7001.1450 and 33 U.S.C. §1341(a)(3), failure to comply with any of the conditions in this 401 Certification may result in the MPCA invalidating or revoking this 401 Certification.

If you have any questions or require additional information regarding this 401 Certification, please contact the MPCA at 651-757-2900.

Sincerely,



Laura Bishop
Commissioner

Attachments:

Attachment 1 – Township, Range and Sections Crossed by the Line 3 Project in Minnesota
Attachment 2 – Enbridge Line 3 Replacement Spread Map Overview

Chad Konickson and Barry Simonson

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November 12, 2020

Attachment 3 – Enbridge Correspondence to MPCA, dated September 17, 2020

cc: Dave Pfeifer, U.S Environmental Protection Agency
Craig Jarnot, USACE – St. Paul Regulatory
Bobby Hahn, Enbridge

Attachment 1

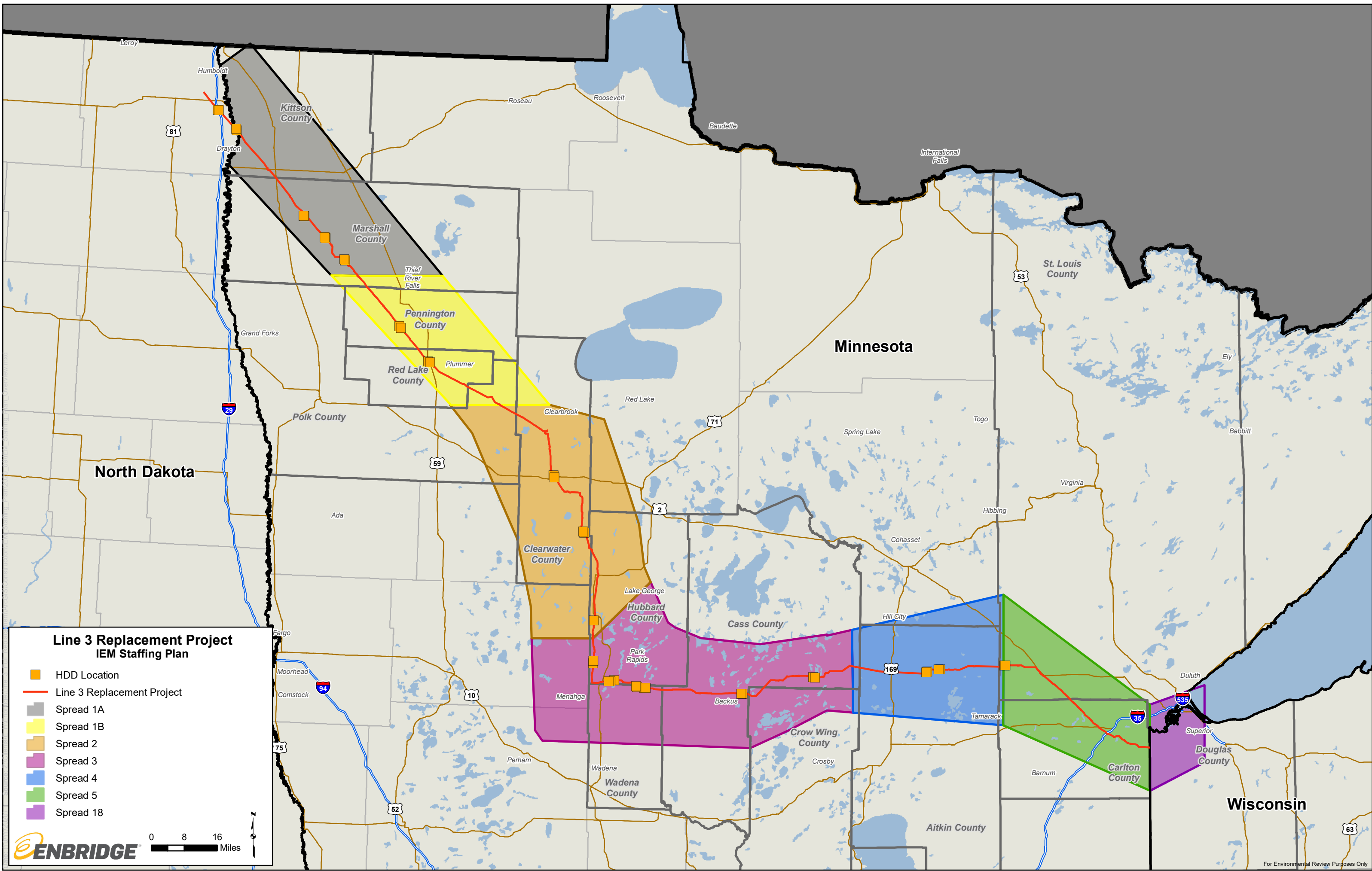
Township, Range and Sections Crossed by the Line 3 Project in Minnesota		
Township	Range	Section(s)
48	15	31
48	16	19, 27, 28, 29, 30, 34, 35, 36
48	17	6, 7, 8, 9, 13, 14, 15, 16, 17, 22, 23, 24
48	18	1
49	18	6, 7, 8, 16, 17, 21, 22, 26, 27, 35, 36
49	19	1
50	19	7, 8, 16, 17, 21, 22, 26, 27, 35, 36
50	20	1, 2, 12
51	20	19, 20, 21, 27, 28, 34, 35
51	21	19, 20, 21, 22, 23, 24
51	22	19, 20, 21, 22, 23, 24
51	23	22, 23, 24, 27, 28, 29,30
51	24	25, 26, 27, 28, 29, 31, 32
51	25	31, 32, 33, 34, 35, 36
51	26	31, 32, 33, 34, 35, 36
51	27	25, 26, 27, 28, 36
138	28	6
138	29	1, 7, 8, 9, 10, 11, 12, 14, 15
138	30	7, 8, 9, 10, 11, 12
138	31	5, 6, 8, 9, 10, 11, 12
138	32	1, 2, 3, 4, 5, 6
138	33	1, 2, 3, 4, 5, 6
138	34	1
139	25	1, 2, 3, 4, 7, 8, 9
139	26	11, 12, 14, 15, 19, 20, 21, 22
139	27	13, 14, 15, 19, 20, 21, 22, 24
139	28	24, 25, 26, 27, 28, 29, 31, 32
139	34	31, 32, 33, 34, 35, 36
139	35	5, 6, 7, 18, 19, 30, 31, 32, 33, 34, 35,36
140	35	6, 7, 18, 19, 20, 29, 32
141	35	5, 8, 17, 20, 29, 31, 32
142	35	5, 8, 17, 20, 29, 32
143	35	5, 8, 17, 20, 21, 29, 32, 33
144	35	19, 29, 30, 32
144	36	2, 11, 12, 13, 24
145	36	2, 11, 14, 23, 26, 35, 36
146	36	7, 8, 9, 10, 14, 15, 23, 26, 35
146	37	2, 3, 11, 12
147	37	5, 8, 16, 17, 21, 27, 28, 34
148	37	6, 7, 8, 17, 20, 29, 32
149	37	29, 30, 32
149	38	6, 7, 8, 9, 15, 16, 22, 23, 24, 25

MPCA 401 Certification L3










149	39	1, 2, 3
150	39	19, 28, 29, 30, 33, 34
150	40	6, 7, 8, 9, 14, 15, 16, 23, 24
150	41	1, 2
151	41	19, 28, 29, 30, 33, 34, 35
151	42	4, 5, 9, 10, 14, 15, 23, 24
152	42	30, 31, 32
152	43	4, 5, 9, 10, 14, 15, 23, 24, 25
153	43	18, 19, 20, 29, 32, 33
153	44	2, 3, 11, 12, 13
154	44	18, 19, 20, 28, 29, 33, 34
154	45	2, 11, 12, 13
155	45	7, 17, 18, 20, 21, 28, 33, 34, 35
155	46	1, 2, 3, 4, 12
156	46	7, 17, 18, 20, 21, 28, 33
156	47	1, 2, 12
157	47	6, 7, 8, 16, 17, 21, 22, 26, 27, 35, 36
157	48	1
158	48	5, 6, 8, 9, 15, 16, 22, 23, 26, 35, 36
159	48	31
159	49	4, 5, 9, 10, 14, 15, 23, 25, 26, 36
160	49	30, 31, 32
160	50	4, 5, 9, 10, 14, 15, 23, 24, 25

ATTACHMENT 2

Enbridge Line 3 Replacement Spread Map Overview



**Line 3 Replacement Project
IEM Staffing Plan**

-  HDD Location
-  Line 3 Replacement Project
-  Spread 1A
-  Spread 1B
-  Spread 2
-  Spread 3
-  Spread 4
-  Spread 5
-  Spread 18



ATTACHMENT 3

Enbridge Correspondence to MPCA, dated September 17, 2020, related to Installation of Engineered Bridges at Mississippi River (MP 941.0), Pine River (MP 1017.4) and East Savanna River (MP 1085.8)



MEMO

Date:

September 17, 2020

To:

Melissa Kuskie, Minnesota Pollution Control Agency

From:

Bobby Hahn

Subject:

Horizontal Directional Drill Engineered Bridges

Enbridge originally proposed installing engineered bridges at some of the horizontal direction drill (“HDD”) locations. Enbridge communicated in its response to comments on the Minnesota Department of Natural Resources (“MDNR”) License to Cross Public Waters application that it would no longer consider bridges at some locations (Tamarac River at milepost [“MP”] 828.6; Snake River at MP 843.2; and Clearwater River at MP 875.4) and continued to analyze bridge design at the remaining locations (Mississippi River at MP 941.1; Shell River at MP 985.3; Pine River at MP 1017.4; and East Savannah River at MP 1086.0). Since submittal of those comment responses, Enbridge has also removed the bridge at the Shell River at MP 985.3 from the Project design.

The MDNR provided feedback indicating it was agreeable to the installation of bridges at the remaining HDD locations: Mississippi River (MP 941.0), Pine River (MP 1017.4) and the East Savanna River (MP 1086.0).

Enbridge has determined that installation of these bridges is preferable to the community, security, and transportation impacts that will occur should bridges not be used. The bridges will allow for all crews (except for the clearing crews) to remain on the construction right-of-way and avoid the need to access public roads around the feature being crossed. Enbridge will also be able to avoid spread moves that require disassembly of heavy equipment and multiple travel trips around the spread moves (for a distance of 3 to 12 miles round-trip, depending on location) to transport and reassemble equipment.

Attachment A includes site-specific drawings for each of these proposed bridges. The bridge supplier for these engineered bridges will be selected closer to construction. At these HDD crossings, a bridge will be built on site from pre-engineered and ready-to-assemble components. The design will consist of steel bracing, panels and decking. Although the bridges will require a small cleared area in order to set the bridge, the bridge will be located within the 30-foot-wide cleared area to minimize the need for additional vegetation clearing. The bridge will have an approximately 18-foot travel lane, with a total width of 25 feet. The length of the bridge will be site-specific but will be set back at least 10 feet from the top of bank to allow for all work to occur outside of the ordinary high water level. Where the bridge crosses a designated Canoe Route (Mississippi River at MP 941.1 and Pine River) the bridge will be positioned 3 feet higher than the 50-year flood elevation. The placement of the bridge will not affect the course, current or cross-section of the waterbody.

In order to facilitate the installation of these bridges Enbridge will need to install a construction mat road along the HDD path to not only develop a travel lane but create a safe working area to assemble the bridge. Prior to placing the construction mats, heavy vegetative areas may need to be mowed and/or trimmed leaving the root system intact; equipment will depend on site specific conditions at the time of installation. Further, to ensure that the construction mat road can withstand construction traffic safely, areas along the alignment may need leveling to create a flat working surface. The construction mats will be hauled via truck to the site and placed with a forwarder, excavator, and/or front end loader to create the travel lane and working surfaces.

Upon completing the access road to the designated working area where the bridge will be constructed, a wider working pad will be installed. To facilitate the secure placement of each end of the bridge, an abutment will need to be constructed on each side. Bridge headers will be installed 10 feet back from the top of bank. Each crossing will have engineered abutment requirements, based on site specific conditions (e.g., soils, ground water, overall span, weight requirements, access). Enbridge's preferred method will involve driving sheet piling to refusal depth in a rectangular area approximately 10 feet by 24 feet. Within the sheet piled area construction mats will be placed to create a flat surface to secure each end of the bridge. Once the mats are placed the sheeting will be tied together via plates or H-beams secured by welding to eliminate any potential for shifting. Other engineered abutment options may include concrete, gabion baskets, screw piles, and any combination thereof.

Once the abutments are constructed, the bridge construction can begin. The modular design of the bridges allows the onsite crews to assemble the sections together on the previously constructed working area. The sections will be bolted together and as sections are being built cantilevered over the body of water supported by an appropriately sized crane. Depending on ground conditions (determine at time of construction) a smaller crane may be required, thus needing to assemble a bridge twice the length of the crossing to act as a counterweight as the bridge is suspended across. Once the bridge is supported on each side by the abutments, the bridge will be secured, anchored via cabling, and earthen berms constructed to facility the gradual ramp up to the bridge (due to height requirements above the waterbody ramps will need to be constructed). Where earthen berms are required, Enbridge will either utilize the soil from the graded abutment material (see below) or will source clean fill and maintain separation from natural grade via geotechnical fabric or weed free straw barrier. The assembly of the bridge will take a combination of side booms, excavators, front end loaders, and cranes on each side of the crossing.

No grading will be required to install the engineered bridge at the Mississippi River (MP 941.0). However, limited grading will be needed at both the Pine River and East Savanna River. At the Pine River (MP 1017.4), due to the slope outside of the ordinary high water level on the west side of the river, approximately 15 feet from the water's edge and 5 feet outside the delineated wetland, Enbridge will need to excavate down and level an area to install the bridge header.

At the East Savannah River (MP 1086.0), the manmade earthen berms on either side of the river (10 feet from the bank on the west side, and 25 feet from the bank on the east) will need to be excavated and removed. Due to the height of the berms and the height of the bridge it will not be possible to safely maneuver equipment up onto the bridge if the berms remained in place. Berms will be rebuilt after the bridge was removed.

**Mississippi River
Milepost 941.0**

Milepost	MDNR License Application ID Number	Waterbody Name	County	Top-of-Bank Header-to-Header (feet)	Waterbody Width (feet) ^b	OHWM Depth (feet) ^c	Drawing Number
941.0	28	Mississippi River	Clearwater	65.0	35.0	3.5	B-3-5.84-23061-A-110

Crossing Location: The first Mississippi River Crossing is in Clearwater County at MP 941.0, and is situated just south of County Rd 40 and east of County Road 2. The bridge would be located on private land on either side of the crossing. The topography near the river is a relatively flat wetland area, with solid banks 1 to 2 feet down on both sides of the river.



DIRECTION
SE (T)

47.33873°N
095.21030°W

ACCURACY 887 ft
DATUM WGS84

Mississippi River MP'D941 Looking SE from the proposed downstream header.

D940.9
Mississippi
River

HDD Access

6/13/19,
12:27:10 PM

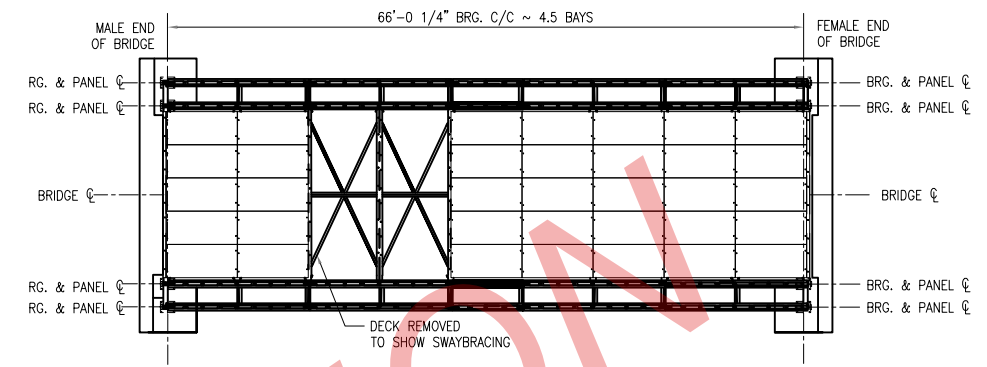
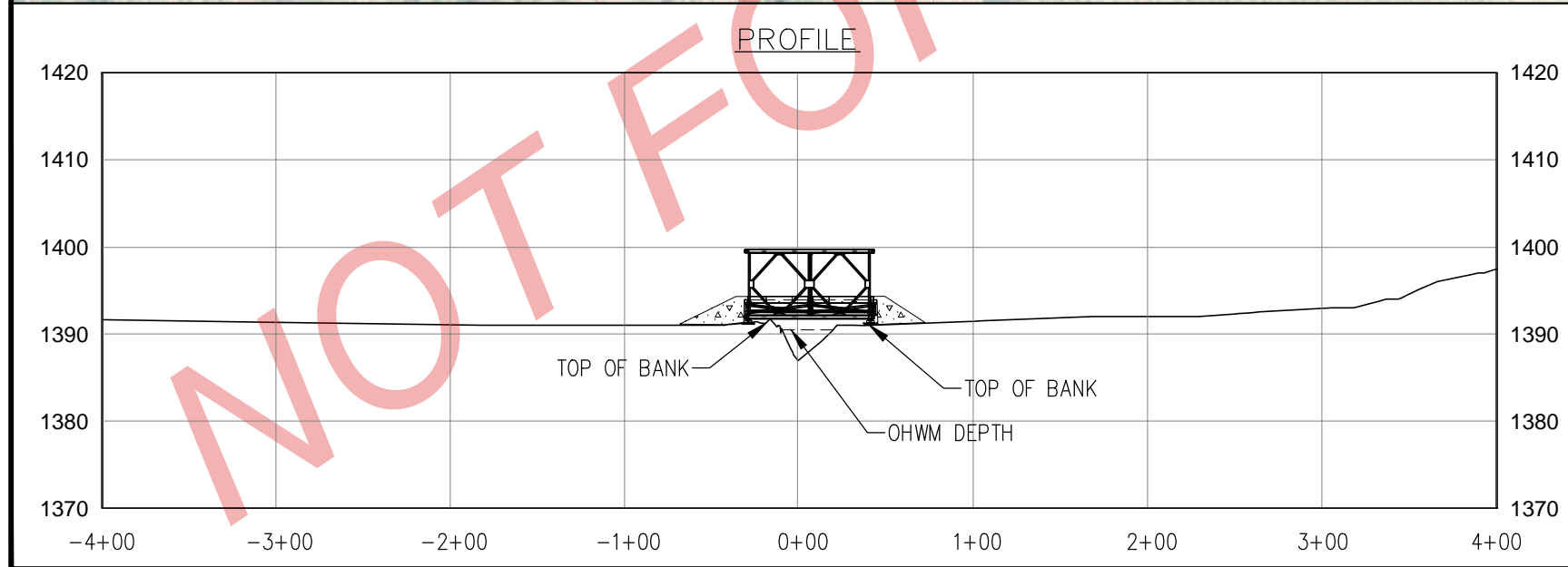
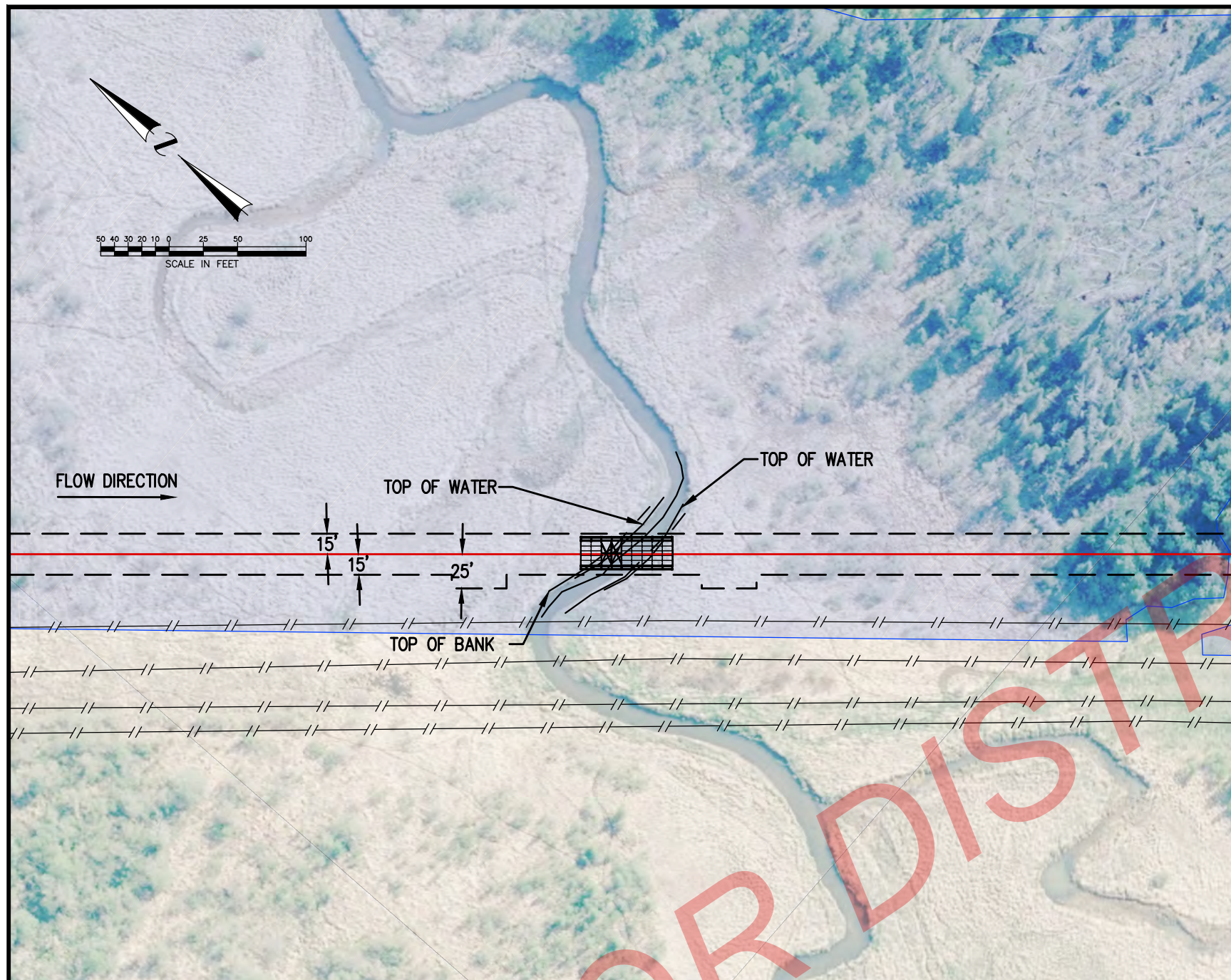
Bridge Description: A modular bridge would be built on site from pre-engineered and ready to assemble components. The design would consist of steel bracing, panels and decking. The bridge would have an approximately 18 foot travel lane, with a total width of 25 feet. The length of the bridge at this site would be 65 feet, allowing for a setback of at least 10 feet from the edge of bank on the upstream side and 20 feet on the opposite side, and on stable ground. Because the Pine River is designated as a Public Canoe Route, the bottom of the bridge will be at least 3 feet above the 50 year flood elevation.

Bridge Installation Method: Access to set the bridge would be easiest from the NW, coming off of CR-40 approximately 900 feet to the crossing location. The 30 foot ROW would be matted appropriately to allow safe passage of the Mainline Construction equipment. A 30 by 40 foot work space would be used on each side of the water body to set the bridge in place. Clearing of an additional 15 feet by 30 feet for this ATWS would be needed outside of the 30 foot wide ROW, but would be within the original 50' easement. Excavators, cranes and/or side booms would be stationed in these workspaces and used to position the bridge over the water body. The bridge and any support headers would be set 10 feet back from the edge of bank and secured by cables attached to temporary anchors on either side of the river. As this bridge will require no in-stream support, all work would occur outside the Ordinary High Water Mark and placement of the bridge would not affect the course, current or cross-section of the waterbody

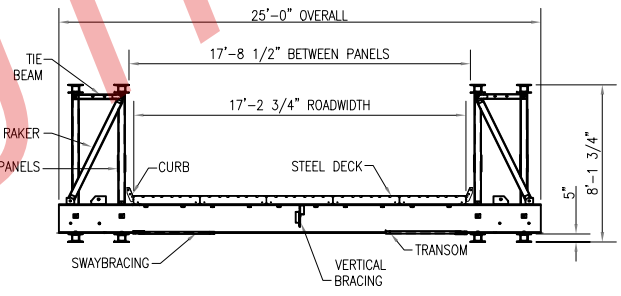
Need of Bridge/Justification: Enbridge is proposing to install a bridge at this crossing location to avoid a large spread move that would result in impacts to local roadways, residents, and communities along the spread move travel path. At this location, the spread move is approximately 11 miles round trip, with an estimated 45-55 truckloads needed to complete the move. Currently, crews are planning to exit the ROW at CR-40. Due to the light load rating for the bridge just east of this location, the trucks would need to follow the road west to CR-2, turn south for 3 miles until turning left again onto 206th street. Crews would then follow this road until turning north onto Clearline Rd and driving one mile back to the ROW. A map of this travel path is included, below:



Installation of a bridge will allow all crews except for the clearing crews to remain on the construction right-of way and avoid the need to access public roads. Spread moves also require that Enbridge disassemble heavy equipment and make multiple travel trips around the spread moves to transport and reassemble equipment. Enbridge is also working with the MPCA to plan for inadvertent release of HDD drilling mud at all HDD locations. The construction of a mat road to the waterbody and a bridge across the feature would also provide for more rapid response to a release, should one occur.



PLAN
NTS



SECTION
NTS

STREAM CLASSIFICATION:

REFER TO ENVIRONMENTAL PROTECTION PLAN (EPP) AND ENVIRONMENTAL ALIGNMENT SHEETS (EAS) FOR ALL STREAM CLASSIFICATION AND RESTRICTED ACTIVITY PERIOD (RAP) DETAILS
 DESIGN WATER LEVEL ELEVATION, S90.22M (PROVIDED BY AMEC)
 CROSSING 1,100 YEAR DESIGN DISCHARGE (Q100), 62.0M³ / S (PROVIDED BY AMEC)
 CROSSING 1,2 YEAR DESIGN DISCHARGE (Q2), 6.2M³ / S, HIGH WATER MARK ELEVATION, S89.4M (PROVIDED BY AMEC)

CONSTRUCTION NOTES:

- CONTRACTOR WILL BE RESPONSIBLE FOR THE DESIGN OF THE TEMPORARY BRIDGE AS PER CONSTRUCTION NOTES THAT ARE LISTED BELOW.
- CL. TEMPORARY BRIDGE, ROADS AND THE LIKE USED FOR CONSTRUCTION SHALL BE DESIGNED AND CONSTRUCTED IN COMPLIANCE WITH MOST RECENT LOCAL GOVERNMENT AND ENVIRONMENTAL PERMITS AND PLANS. THE FOUNDATION AND INSTALLATION OF THE TEMPORARY BRIDGE SHALL PROVIDE FOR THE SAFE PASSAGE OF CONSTRUCTION VEHICLES, EQUIPMENT AND MATERIALS, MINIMIZE SOIL EROSION AND PROVIDE FOR PROPER DRAINAGE AS OUTLINED IN THE ENVIRONMENTAL PROTECTION PLAN (EPP).
- C2. PRIOR TO THE INSTALLATION AND USE OF A STRUCTURE GREATER THAN A SPAN OF 3 METERS, THE CONTRACTOR SHALL ENSURE THAT THE STRUCTURAL DOCUMENTATION SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
 - DESIGN, PLANS & SPECIFICATION SHEETS STAMPED BY A LICENSED PROFESSIONAL ENGINEER
 - STRUCTURES LOADING CAPACITY
 - INSTALLATION, REMOVAL AND MAINTENANCE INSTRUCTIONS
 - MATERIAL CONDITION REPORTS
- C3. SIGNS SHOWING MAXIMUM LOADS AND SPEED LIMITS SHALL BE POSTED ON BOTH SIDES OF ALL BRIDGES, VISIBLE TO APPROACHING VEHICLES AND EQUIPMENT. ENBRIDGE RESERVES THE RIGHT TO EXECUTE INSPECTIONS VERIFYING THE CONTRACTOR IS IN COMPLIANCE WITH THEIR DOCUMENTS.
- C4. TEMPORARY "WARNING-PIPELINE CONSTRUCTION AHEAD" SIGNS MUST BE PLACED 100M UPSTREAM AND DOWNSTREAM OF THE CROSSING ALONG THE WATERWAY. SIGNS MUST BE POSTED DURING FULL DURATION OF CROSSING CONSTRUCTION AND LEGIBLE AT A MINIMUM DISTANCE OF 50M.
- C5. BRIDGE LOCATIONS ARE SHOWN 7-10M FROM CENTRELINE, CONTRACTOR MAY ADJUST LOCATION AS NEEDED FOR CONSTRUCTION PURPOSES PROVIDED THAT SUPPORTS ARE PLACED OUTSIDE THE WATER LEVELS (UNLESS SPECIAL APPROVAL IS RECEIVED) AND ALL BRIDGE LOAD DESIGN CONDITIONS ARE MET. CONTRACTOR MUST RECEIVE ENBRIDGE APPROVAL FOR FINAL BRIDGE LOCATION.
- C6. BRIDGE MUST BE DESIGNED TO HANDLE ALL REQUIRED LOADS DURING CONSTRUCTION.
- C7. HIGH VISIBILITY PAINT IS TO BE APPLIED TO THE EDGES OF THE BRIDGE AND THE RAILINGS.

DESIGN AND DRAWING NOTES:

1. GROUND PROFILE AND PLAN INFORMATION ARE DERIVED FROM SURVEY CONSULTANT DRAWING # 3638S-EAGLEX-32-18-3-WS-22-R3, DATED SEPTEMBER 14, 2016.
2. THE SCALES OF THIS DRAWING ARE CONSIDERED RELIABLE ONLY AT ANSI D (22"x34") SIZE.
3. CHAINAGES ARE BASED ON THE ON HORIZONTAL MEASUREMENTS.
4. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
05. BRIDGE DESIGN BASED ON DRAWINGS SUPPLIED BY RAPID SPAN STRUCTURES LTD. AND IS FOR INFORMATION ONLY.

ISSUED FOR REVIEW
 7/2/2019

A	ISSUED FOR REVIEW	AM	07/02/19	NKD	MB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D



DWN. BY:	AM	DATE	07/02/19	PROPOSED 36in. LINE 3 REPLACEMENT CROSSING OF MISSISSIPPI RIVER ENBRIDGE M.P. D941.1
CHK.	NKD			
PROJ. ENGR.				
PROJ. MGR.				
CLIENT APP.		SCALE	NOTED	DWG. NO. B-3-5.84-23061-A-110



**Pine River
Milepost 1017.3**

Milepost	MDNR License Application ID Number	Waterbody Name	County	Top-of-Bank Header-to-Header (feet)	Waterbody Width (feet) ^b	OHWL Depth (feet) ^c	Drawing Number
1017.3	44	Pine River	Cass	100.0	75.0	1.5	B-3-5.84-23063-A-1354

Crossing Location: The Pine River HDD is in Cass County and is situated west of State Highway 84 and north of N River Rd. SW. The bridge would be located on private land on either side of the crossing. The topography consists of rolling hills in uplands with a steep bank leading to the upstream side of the crossing.





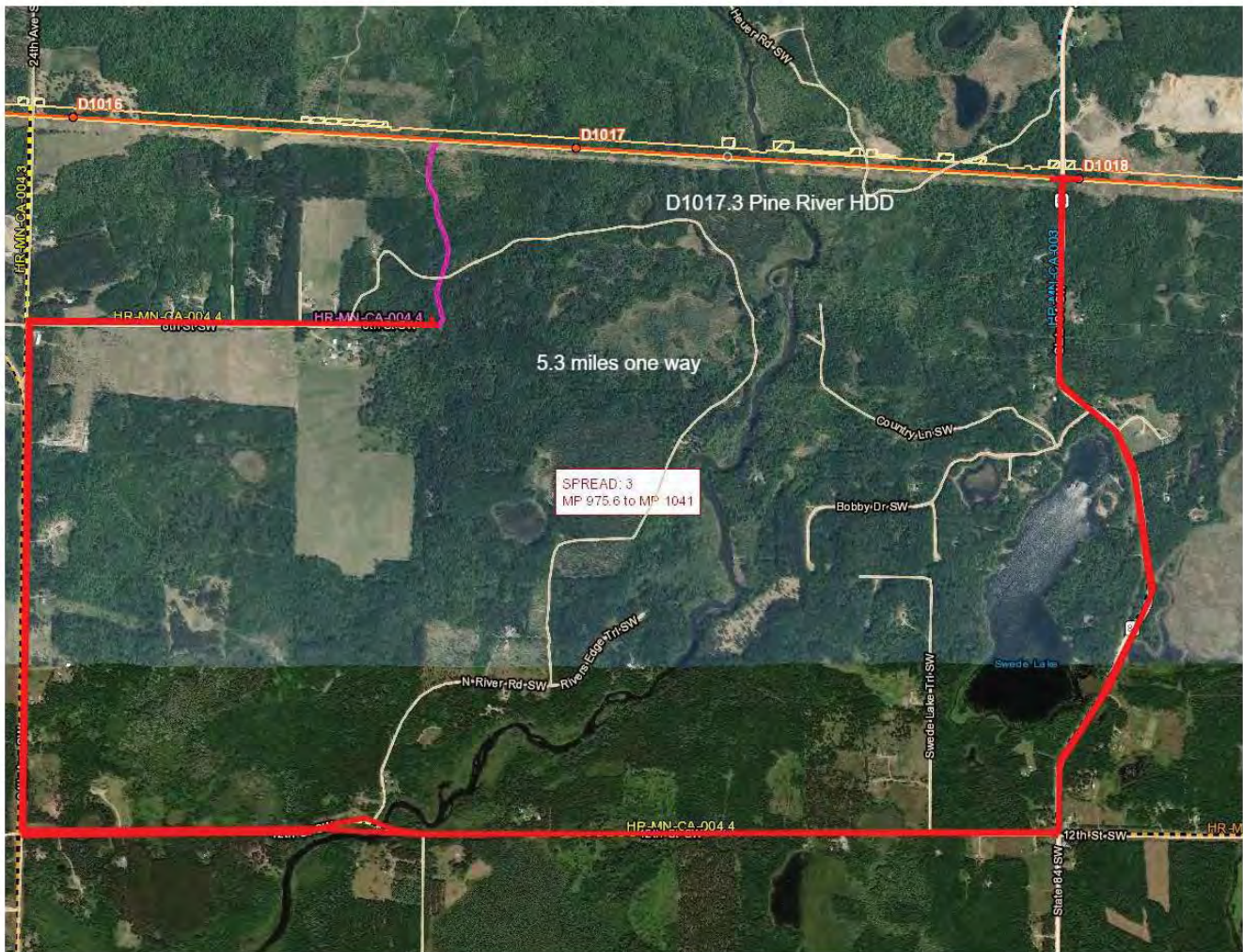
Pine MP D1017.34 Looking W from the proposed downstream header.

Bridge Description: A modular bridge would be built on site from pre-engineered and ready to assemble components. The design would consist of steel bracing, panels and decking. The Bridge would have an approximately 18 foot travel lane, with a total width of 25 feet. The length of the bridge at this site would be 100 feet, allowing for a setback from the steep banks of at least 20 feet from the edge on each side. Because the Pine River is designated as a Public Canoe Route, the Bridge will be at least 3 feet above the 50 year flood elevation.

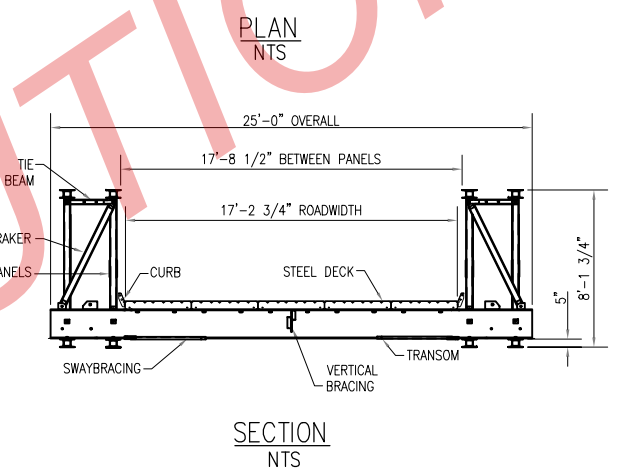
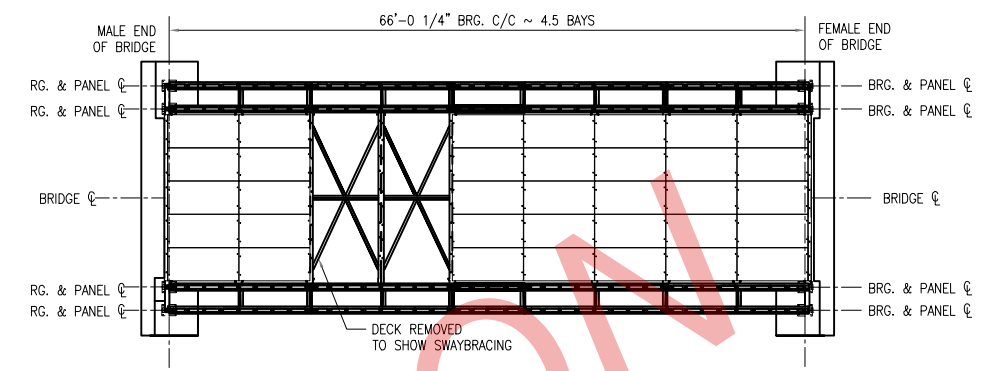
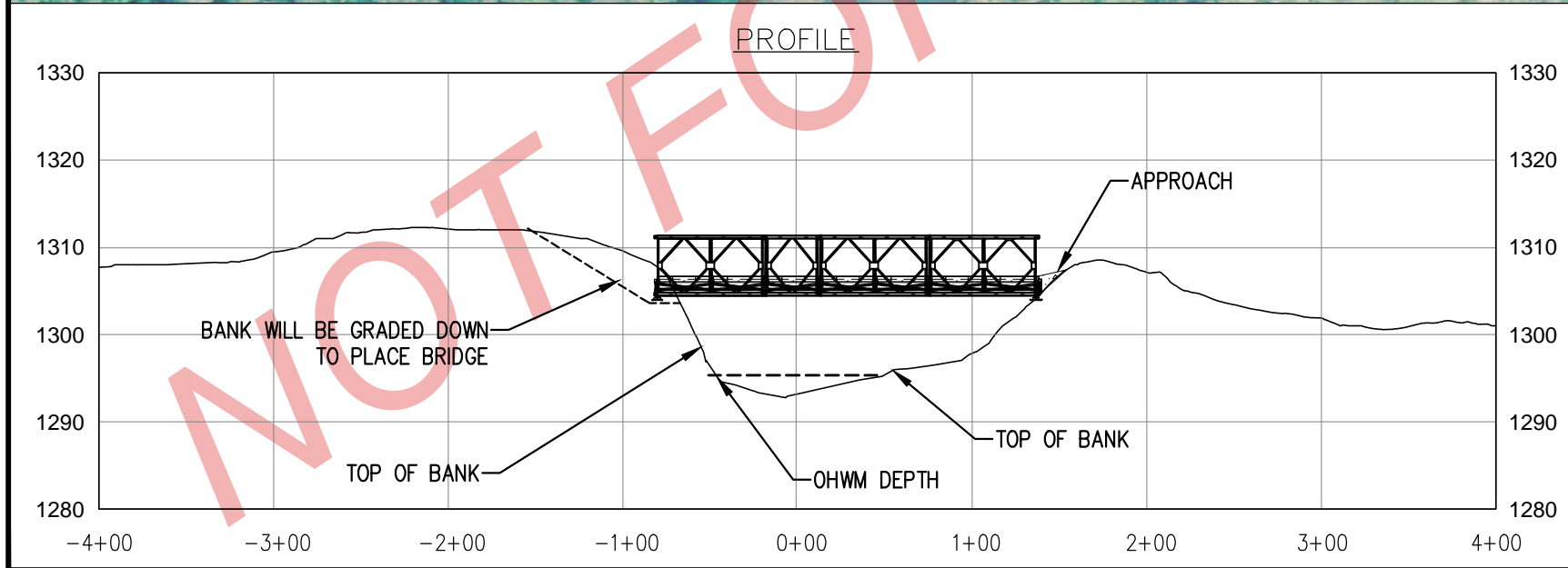
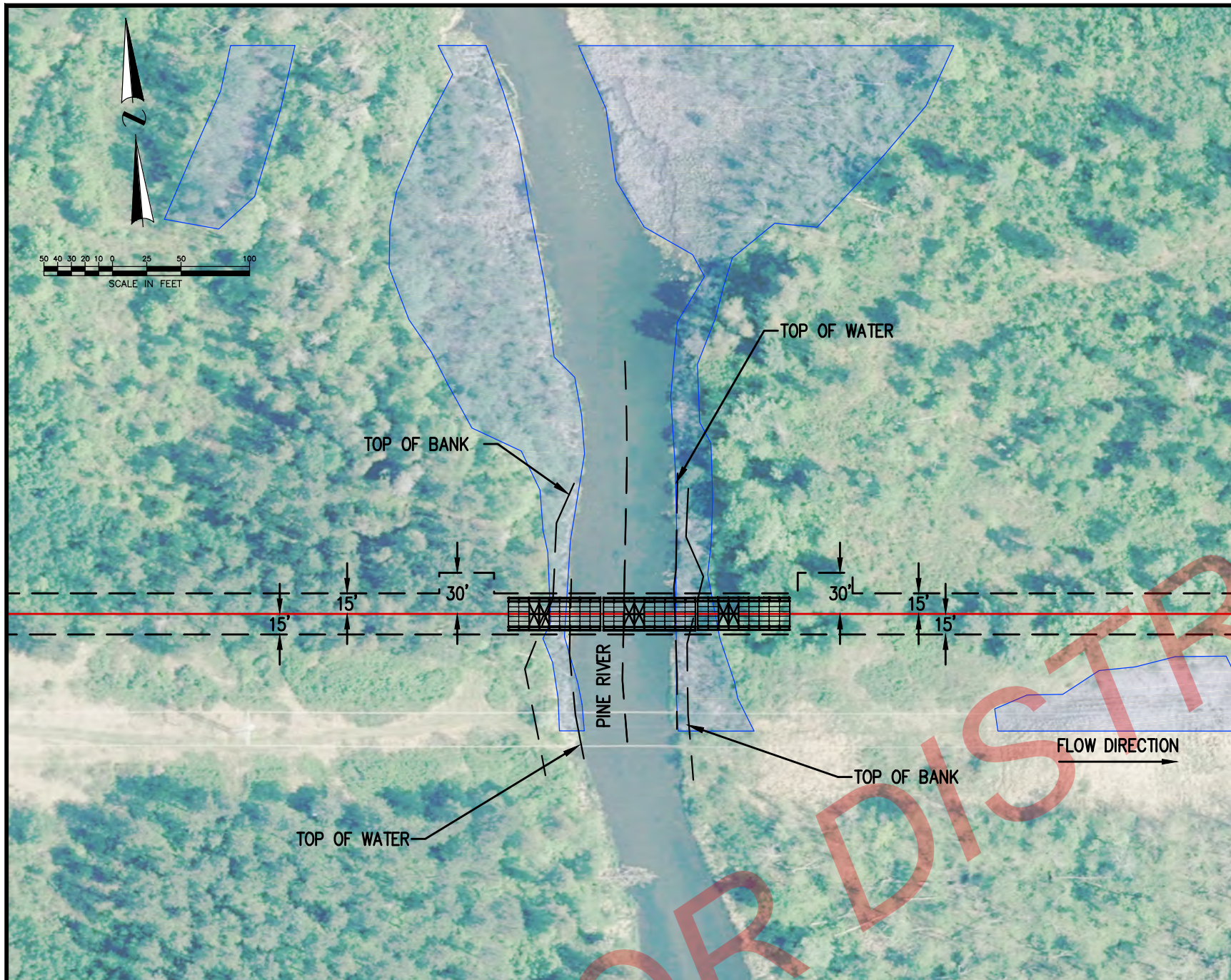
Bridge Installation Method: Because of a sharp decline on the upstream side of the crossing, and to utilize the access off of Highway 84, the bridge would be set from the west side of the waterbody. The 30 foot ROW would be matted appropriately to allow safe passage of the Mainline Construction equipment and a 30 by 40 foot work space would be used on each side to set the bridge. Clearing of an additional 15 feet by 30 feet for this ATWS would be needed outside of the 30 foot wide ROW, but would be within the original 50' easement. Excavators, cranes and/or side booms would be used to position the bridge over the water body. The bridge and any support headers would be set 20 feet back from the edge of bank and secured by cables attached to temporary anchors on either side of the river. As this bridge will require no in-stream support, all work would occur outside the Ordinary High Water Mark and placement of the bridge would not affect the course, current or cross-section of the waterbody

Need of Bridge/Justification: Enbridge is proposing to install a bridge at this crossing location to avoid the spread move that would result in impacts to local roadways, residents, and communities along the spread move travel path. At this

location, the spread move is approximately 10.5 miles round trip, with an estimated 45-55 truckloads needed to complete the move. Trucks would exit the right-of-way off of Access Road 362.1 until it meets 8th St SW. Crews would then travel on 8th St SW for almost a mile before heading south on 24th Ave SW. Turning East onto 12th St SW and traveling 2 miles until turning north on State Highway 84 and back to the right-of-way. After unloading the trucks would need to turn around before taking the same route back around to reach the other side of the crossing. A map of this travel path is included below:



Installation of a bridge will allow all crews except for the clearing crews to remain on the construction right-of way and avoid the need to access public roads. Spread moves also require that Enbridge disassemble heavy equipment and make multiple travel trips around the spread moves to transport and reassemble equipment. Enbridge is also working with the MPCA to plan for inadvertent release of HDD drilling mud at all HDD locations. The construction of a mat road to the waterbody and a bridge across the feature would also provide for more rapid response to a release, should one occur.



STREAM CLASSIFICATION:
 REFER TO ENVIRONMENTAL PROTECTION PLAN (EPP) AND ENVIRONMENTAL ALIGNMENT SHEETS (EAS) FOR ALL STREAM CLASSIFICATION AND RESTRICTED ACTIVITY PERIOD (RAP) DETAILS
 DESIGN WATER LEVEL ELEVATION, S90.22M (PROVIDED BY AMEC)
 CROSSING 1,100 YEAR DESIGN DISCHARGE (Q100), 62.0M³ / S (PROVIDED BY AMEC)
 CROSSING 1,2 YEAR DESIGN DISCHARGE (Q2), 6.2M³ / S, HIGH WATER MARK ELEVATION, S89.4M (PROVIDED BY AMEC)

CONSTRUCTION NOTES:
 CONTRACTOR WILL BE RESPONSIBLE FOR THE DESIGN OF THE TEMPORARY BRIDGE AS PER CONSTRUCTION NOTES THAT ARE LISTED BELOW.
 C1. TEMPORARY BRIDGE, ROADS AND THE LIKE USED FOR CONSTRUCTION SHALL BE DESIGNED AND CONSTRUCTED IN COMPLIANCE WITH MOST RECENT LOCAL GOVERNMENT AND ENVIRONMENTAL PERMITS AND PLANS. THE FOUNDATION AND INSTALLATION OF THE TEMPORARY BRIDGE SHALL PROVIDE FOR THE SAFE PASSAGE OF CONSTRUCTION VEHICLES, EQUIPMENT AND MATERIALS, MINIMIZE SOIL EROSION AND PROVIDE FOR PROPER DRAINAGE AS OUTLINED IN THE ENVIRONMENTAL PROTECTION PLAN (EPP).
 C2. PRIOR TO THE INSTALLATION AND USE OF A STRUCTURE GREATER THAN A SPAN OF 3 METERS, THE CONTRACTOR SHALL ENSURE THAT THE STRUCTURAL DOCUMENTATION SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
 - DESIGN, PLANS & SPECIFICATION SHEETS STAMPED BY A LICENSED PROFESSIONAL ENGINEER
 - STRUCTURES LOADING CAPACITY
 - INSTALLATION, REMOVAL AND MAINTENANCE INSTRUCTIONS
 - MATERIAL CONDITION REPORTS
 C3. SIGNS SHOWING MAXIMUM LOADS AND SPEED LIMITS SHALL BE POSTED ON BOTH SIDES OF ALL BRIDGES, VISIBLE TO APPROACHING VEHICLES AND EQUIPMENT. ENBRIDGE RESERVES THE RIGHT TO EXECUTE INSPECTIONS VERIFYING THE CONTRACTOR IS IN COMPLIANCE WITH THEIR DOCUMENTS.
 C4. TEMPORARY "WARNING-PIPELINE CONSTRUCTION AHEAD" SIGNS MUST BE PLACED 100M UPSTREAM AND DOWNSTREAM OF THE CROSSING ALONG THE WATERWAY. SIGNS MUST BE POSTED DURING FULL DURATION OF CROSSING CONSTRUCTION AND LEGIBLE AT A MINIMUM DISTANCE OF 50M.
 C5. BRIDGE LOCATIONS ARE SHOWN 7-10M FROM CENTRELINE, CONTRACTOR MAY ADJUST LOCATION AS NEEDED FOR CONSTRUCTION PURPOSES PROVIDED THAT SUPPORTS ARE PLACED OUTSIDE THE WATER LEVELS (UNLESS SPECIAL APPROVAL IS RECEIVED) AND ALL BRIDGE LOAD DESIGN CONDITIONS ARE MET. CONTRACTOR MUST RECEIVE ENBRIDGE APPROVAL FOR FINAL BRIDGE LOCATION.
 C6. BRIDGE MUST BE DESIGNED TO HANDLE ALL REQUIRED LOADS DURING CONSTRUCTION.
 C7. HIGH VISIBILITY PAINT IS TO BE APPLIED TO THE EDGES OF THE BRIDGE AND THE RAILINGS.

DESIGN AND DRAWING NOTES:
 1. GROUND PROFILE AND PLAN INFORMATION ARE DERIVED FROM SURVEY CONSULTANT DRAWING # 3638S-EAGLEX-32-18-3-WS-22-R3, DATED SEPTEMBER 14, 2016.
 2. THE SCALES OF THIS DRAWING ARE CONSIDERED RELIABLE ONLY AT ANSI D (22"x34") SIZE.
 3. CHAINAGES ARE BASED ON THE ON HORIZONTAL MEASUREMENTS.
 4. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 05. BRIDGE DESIGN BASED ON DRAWINGS SUPPLIED BY RAPID SPAN STRUCTURES LTD. AND IS FOR INFORMATION ONLY.

ISSUED FOR REVIEW
7/2/2019

A	ISSUED FOR REVIEW	AM	07/02/19	NKD	MB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
DWN. BY: AM		DATE: 07/02/19		PROPOSED 36in. LINE 3 REPLACEMENT CROSSING OF PINE RIVER ENBRIDGE M.P. D1017.4	
CHK. NKD					
PROJ. ENGR.					
PROJ. MGR.					
CLIENT APP.				SCALE: NOTED	DWG. NO. B-3-5.84-23063-A-1354



**East Savanna River
Milepost 1085.8**

Milepost	MDNR License Application ID Number	Waterbody Name	County	Top-of-Bank Header-to-Header (feet)	Waterbody Width (feet) ^b	OHWM Depth (feet) ^c	Drawing Number
1085.8	60	East Savanna River	St Louis	80.0	45.0	3.5	B-3-5.84-23066-A-1356

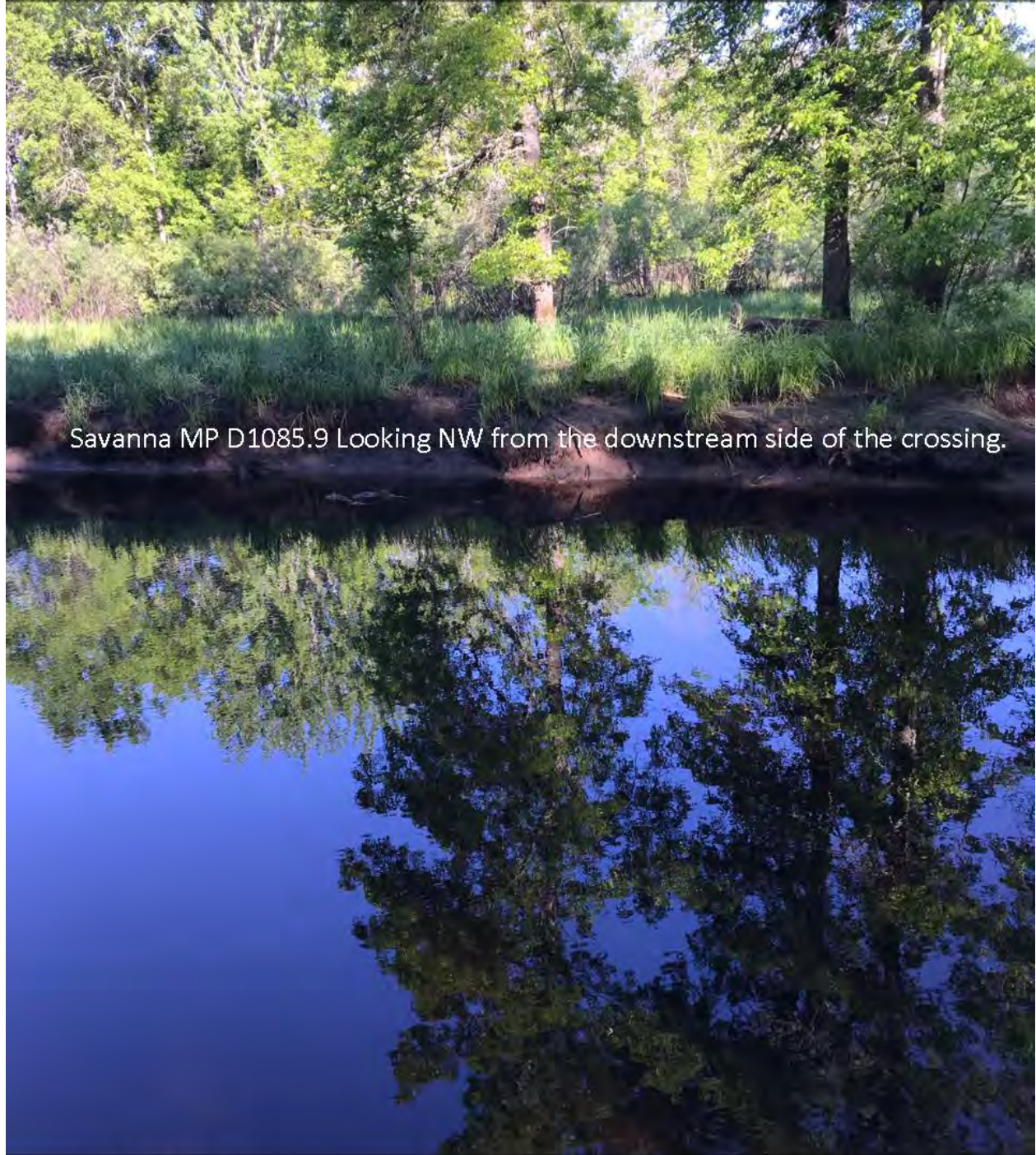
Crossing Location: The East Savanna River Crossing is in St. Louis County and is situated south and east of Laurie Rd. at Mile Post D1086. The bridge would be located on county administered land on either side of the crossing. The topography is relatively flat through the wetland but has defined banks on either side of the waterbody.



DIRECTION
NW (T)

46.88893°N
093.03046°W

ACCURACY 33 ft
DATUM WGS84



Savanna MP D1085.9 Looking NW from the downstream side of the crossing.

D1085.9
Savanna Rvr

HDD Access/
Crossing

6/12/19,
8:00:25 AM

Bridge Description: A modular bridge would be built on site from pre-engineered and ready to assemble components. The design would consist of steel bracing, panels and decking. The bridge would have an approximately 18 foot travel lane, with a total width of 25 feet. The length of the bridge at this site would be 80 feet, allowing for a setback of more than 10 feet from the edge of bank on West or upstream side of the crossing and 25 feet on the downstream side.

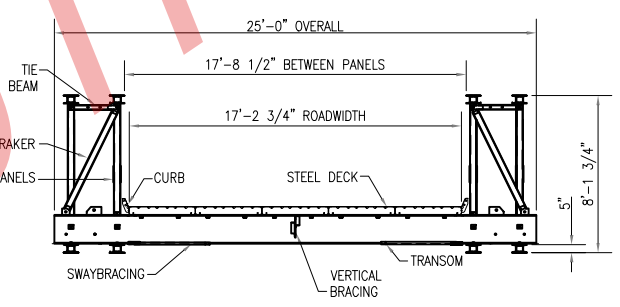
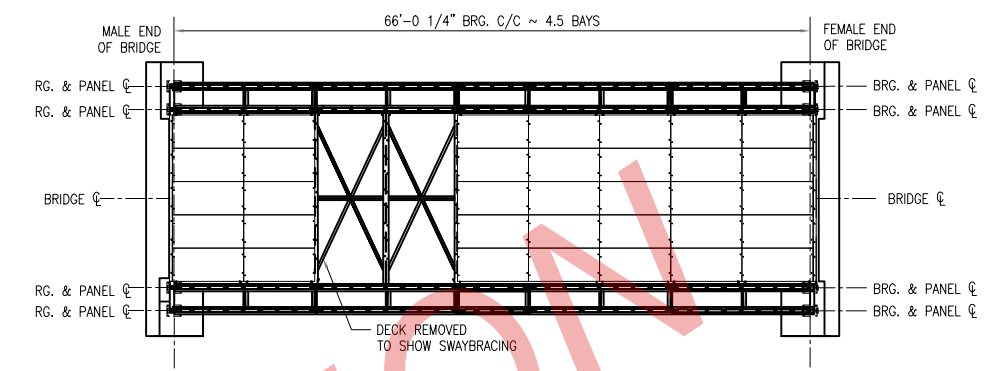
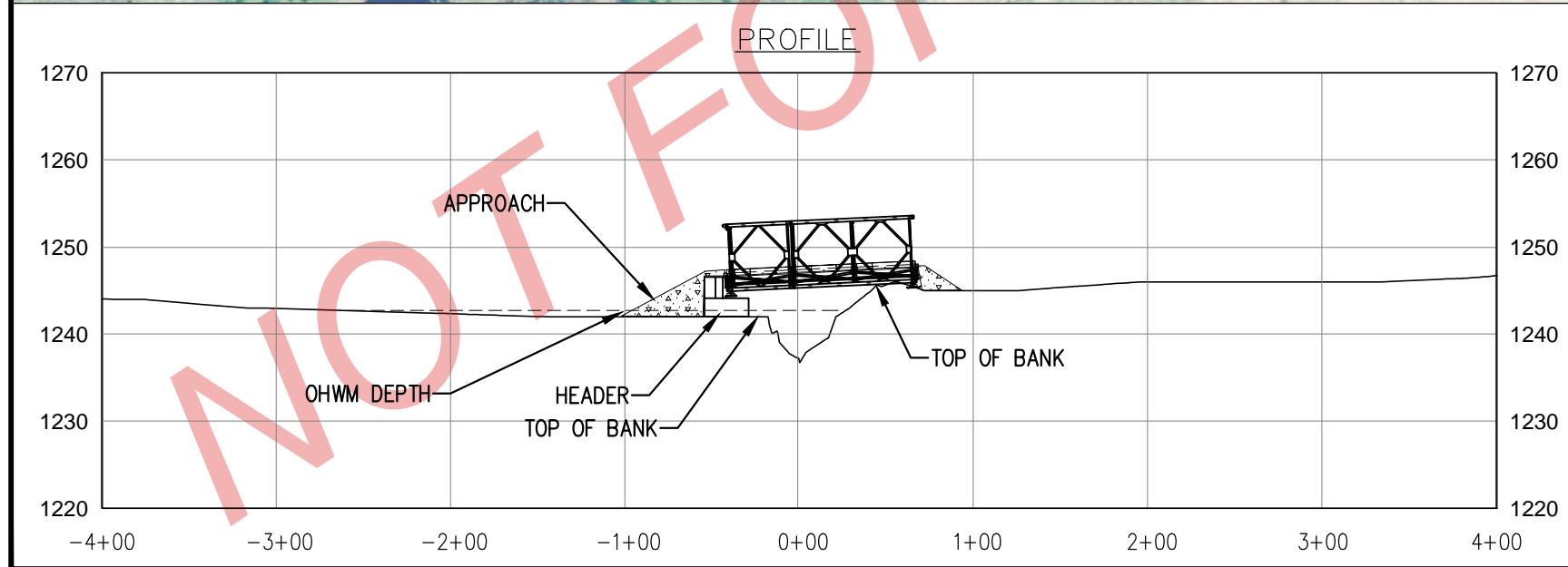
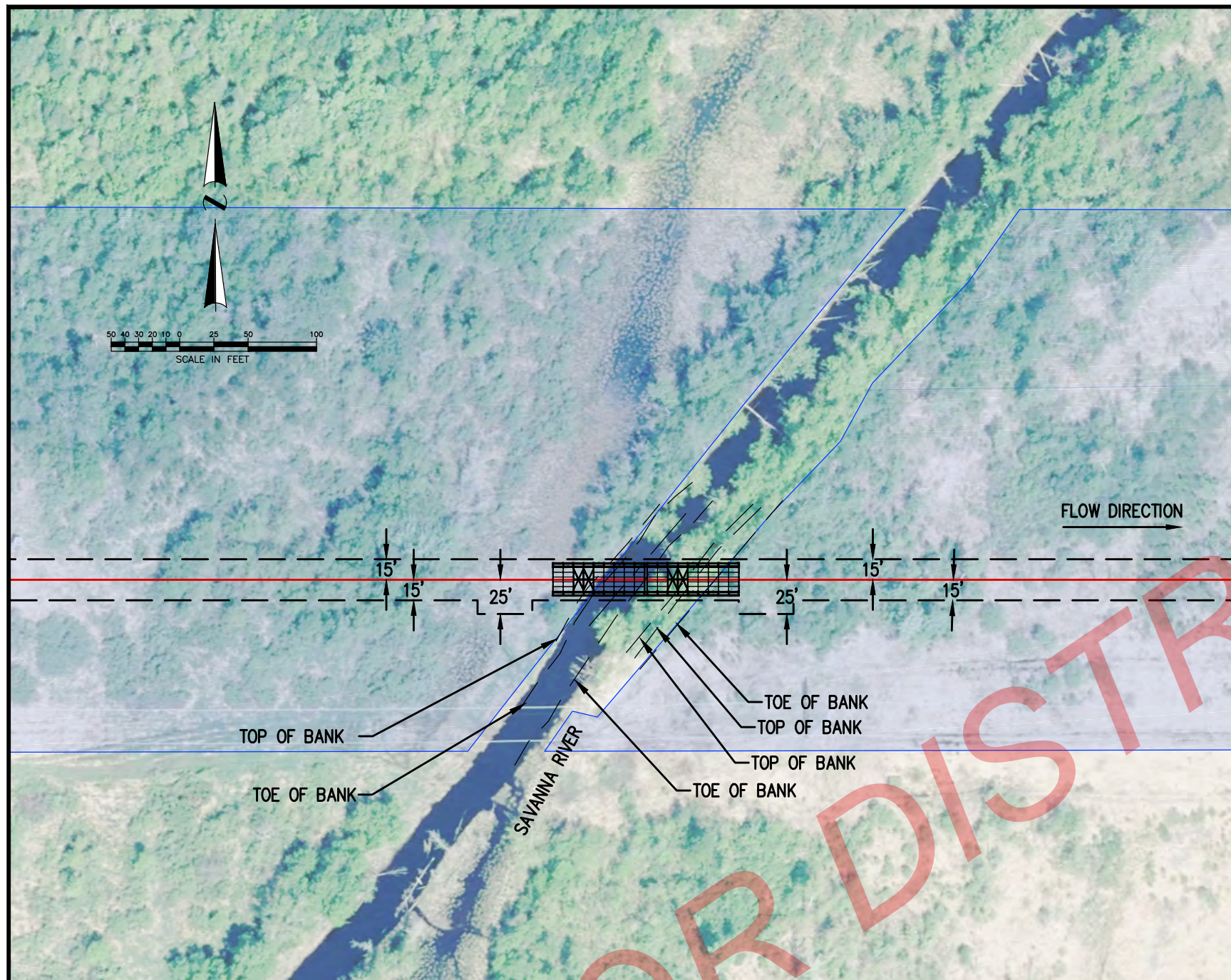
Bridge Installation Method: The bridge would be set from the west side of the crossing due to the close proximity to Laurie Rd. The 30 foot ROW would be matted appropriately to allow safe passage of the Mainline Construction equipment and a 30 by 40 foot work space on the south side of the right-of-way would be used on each side to set the bridge. Clearing of an additional 15 feet by 30 feet for this ATWS would be needed outside of the 30 foot wide ROW, but would be within the original 50' easement. Excavators, cranes and/or side booms would be used to position the bridge over the water body. The bridge and any support headers would be set on top of the existing levees on either side of the crossings and secured by cables attached to temporary anchors on either side of the river. As this bridge will require no in-stream support, all work would occur outside the Ordinary High Water Mark and placement of the bridge would not affect the course, current or cross-section of the waterbody.

Need of Bridge/Justification: Enbridge is proposing to install a bridge at this crossing location to avoid the spread move that would result in impacts to local roadways, residents, and communities along the spread move travel path. At this location, the spread move is approximately 12 miles round trip, with an estimated 45-55 truckloads needed to complete the move. Trucks would exit the right-of-way and follow Laurie Rd. north and north east until turning south on Savanna Rd. The trucks would travel 2 miles south until crossing the right-of-way and unloading. The unloaded trucks would then continue south on Savanna Rd. until Tamarack Rd, where they would turn west for a mile until turning north onto Halden Rd. The trucks would continue on Halden Rd for 2 miles and then head east as the road changes into Evergreen Rd. Once the trucks returned back to Savanna Rd. they would head north and follow the same route on Laurie Rd back to the west side of the crossing. A map of this travel path is included, below:



Installation of a bridge will allow all crews except for the clearing crews to remain on the construction right-of way and avoid the need to access public roads. Spread moves also require that Enbridge disassemble heavy equipment and make multiple travel trips around the spread moves to transport and reassemble equipment. Enbridge is also working with the MPCA to plan for inadvertent release of HDD drilling mud at all HDD locations. The construction of a mat road

to the waterbody and a bridge across the feature would also provide for more rapid response to a release, should one occur.



STREAM CLASSIFICATION:

REFER TO ENVIRONMENTAL PROTECTION PLAN (EPP) AND ENVIRONMENTAL ALIGNMENT SHEETS (EAS) FOR ALL STREAM CLASSIFICATION AND RESTRICTED ACTIVITY PERIOD (RAP) DETAILS.

DESIGN WATER LEVEL ELEVATION, S90.22M (PROVIDED BY AMEC)

CROSSING 1,100 YEAR DESIGN DISCHARGE (Q100), 62.0M³ / S (PROVIDED BY AMEC)

CROSSING 1,2 YEAR DESIGN DISCHARGE (Q2), 6.2M³ / S, HIGH WATER MARK ELEVATION, S89.4M (PROVIDED BY AMEC)

CONSTRUCTION NOTES:

CONTRACTOR WILL BE RESPONSIBLE FOR THE DESIGN OF THE TEMPORARY BRIDGE AS PER CONSTRUCTION NOTES THAT ARE LISTED BELOW.

C1. TEMPORARY BRIDGE, ROADS AND THE LIKE USED FOR CONSTRUCTION SHALL BE DESIGNED AND CONSTRUCTED IN COMPLIANCE WITH MOST RECENT LOCAL GOVERNMENT AND ENVIRONMENTAL PERMITS AND PLANS. THE FOUNDATION AND INSTALLATION OF THE TEMPORARY BRIDGE SHALL PROVIDE FOR THE SAFE PASSAGE OF CONSTRUCTION VEHICLES, EQUIPMENT AND MATERIALS, MINIMIZE SOIL EROSION AND PROVIDE FOR PROPER DRAINAGE AS OUTLINED IN THE ENVIRONMENTAL PROTECTION PLAN (EPP).

C2. PRIOR TO THE INSTALLATION AND USE OF A STRUCTURE GREATER THAN A SPAN OF 3 METERS, THE CONTRACTOR SHALL ENSURE THAT THE STRUCTURAL DOCUMENTATION SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

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- STRUCTURES LOADING CAPACITY
- INSTALLATION, REMOVAL AND MAINTENANCE INSTRUCTIONS
- MATERIAL CONDITION REPORTS

C3. SIGNS SHOWING MAXIMUM LOADS AND SPEED LIMITS SHALL BE POSTED ON BOTH SIDES OF ALL BRIDGES, VISIBLE TO APPROACHING VEHICLES AND EQUIPMENT. ENBRIDGE RESERVES THE RIGHT TO EXECUTE INSPECTIONS VERIFYING THE CONTRACTOR IS IN COMPLIANCE WITH THEIR DOCUMENTS.

C4. TEMPORARY "WARNING-PIPELINE CONSTRUCTION AHEAD" SIGNS MUST BE PLACED 100M UPSTREAM AND DOWNSTREAM OF THE CROSSING ALONG THE WATERWAY. SIGNS MUST BE POSTED DURING FULL DURATION OF CROSSING CONSTRUCTION AND LEGIBLE AT A MINIMUM DISTANCE OF 50M.

C5. BRIDGE LOCATIONS ARE SHOWN 7-10M FROM CENTRELINE, CONTRACTOR MAY ADJUST LOCATION AS NEEDED FOR CONSTRUCTION PURPOSES PROVIDED THAT SUPPORTS ARE PLACED OUTSIDE THE WATER LEVELS (UNLESS SPECIAL APPROVAL IS RECEIVED) AND ALL BRIDGE LOAD DESIGN CONDITIONS ARE MET. CONTRACTOR MUST RECEIVE ENBRIDGE APPROVAL FOR FINAL BRIDGE LOCATION.

C6. BRIDGE MUST BE DESIGNED TO HANDLE ALL REQUIRED LOADS DURING CONSTRUCTION.

C7. HIGH VISIBILITY PAINT IS TO BE APPLIED TO THE EDGES OF THE BRIDGE AND THE RAILINGS.

DESIGN AND DRAWING NOTES:

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- ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
- BRIDGE DESIGN BASED ON DRAWINGS SUPPLIED BY RAPID SPAN STRUCTURES LTD. AND IS FOR INFORMATION ONLY.

ISSUED FOR REVIEW
7/2/2019

A	ISSUED FOR REVIEW	AM	07/02/19	NKD	MB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE					
DWN. BY:	AM	DATE	07/02/19	PROPOSED 36in. LINE 3 REPLACEMENT CROSSING OF SAVANNAH RIVER	
CHK.	NKD	ENBRIDGE M.P. D1085.9			
PROJ. ENGR.		SCALE	NOTED	DWG. NO.	B-3-5.84-23065-A-1356
PROJ. MGR.					
CLIENT APP.					

