Enbridge Response to Comments and Recommendations in WDNR's October 13, 2023 Data Request Letter Submitted November 22, 2023

DNR Comment	Enbridge Response
Water Quality Monitoring Plan (Version 2, August 2023)	
Section 1.0 Introduction	
1) If the proposed project is approved, unless a waterway is completely dry for the entire duration of in-water work, DNR will require trenching in the waterway to be completed using a work zone isolation system or bypass system. Please update the WQ Monitoring Plan and Wetland and Waterbody Crossing Table to reflect this information.	Enbridge understands the WDNR's desire to limit the potential for downstream sediment transport during active instream construction. While completing all waterbody crossings not proposed as HDD or Direct Pipe crossings as dry crossings may be to limit potential downstream sedimentation, Enbridge notes that doing so will increase the duration of disturbance within each waterbody, increasing overall impacts. For intermittent and ephemeral waterbodies that may have isolated standing water pools within the construction workspace at the time of construction, this offset in duration of disturbance may negate the site-specific benefits of completing the crossing using a dry crossing technique. Enbridge is open to discuss the benefits/drawbacks of crossing every waterbody that has standing water at the time of construction using a dry crossing technique. Alternatively, Enbridge proposes crossing all waterbodies that are flowing or have greater than 6 inches of standing (non-flowing) water present in the channel at the time of construction using a dry crossing technique (i.e., dam and pump or flume methods) or a trenchless method (i.e., horizontal directional drill or direct pipe). Enbridge will use typical open cut (wet trench) construction techniques to cross waterbodies if the waterbody is dry or has standing (non-flowing) water less than 6 inches present in the channel at the time of construction. For waterbodies with standing water, but no perceptible flow, Enbridge will install downstream sediment curtains to minimize the potential for migration of suspended sediments downstream. The amount of water within a water feature depends on waterbody type, recent weather, and time of year. Therefore, the amount of water cannot be predicted prior to construction and the crossing type will be based on field conditions at the time of construction.
Section 2.0 (General Comments)	
2) Provide details on how Enbridge will analyze and compare water quality sampling data from waterways that do not have sufficient water depths or flowing water to collect a representative sample as part of the baseline sampling event(s) and/or during the pre-, active, and post-	Enbridge will employ applicable physical assessment methods as listed in the Water Quality Monitoring Plan ("WQMP") to qualify and quantify any impacts to the crossed waterbody. As noted in the WQMP, Enbridge will only collect water quality samples from those waterbodies that have water present at the sampling sites and at the time of site visit in sufficient quantity/depth to allow sample collection without fouling. In addition, if water is not present at the time of the initial site visit in 2023, Enbridge will conduct a second site visit to collect a water quality sample. This is a reasonable level of effort to collect water quality samples from waterbodies that have ephemeral or intermittent flows. Enbridge further notes that of the 204 waterbodies identified within the Project workspace, 156 (approximately 76.5 percent) are classified as either ephemeral or intermittent and flow only during select times of the year, such as after spring melt or following a precipitation event that results in runoff.

constructing sampling events. Provide details on how Enbridge will effectively demonstrate whether the project impacted water quality for these waterways if water quality data is missing for certain sampling events.	In addition to chemical analysis of water quality parameters, the WQMP and the Wetland and Waterbody Post Construction Monitoring Plan ("Monitoring Plan") detail visual evaluations that will occur pre and post construction, including stream banks, streambed elevations of the pipeline location within the stream, and comparing the backfilled area to adjacent undisturbed areas of the stream for sediment composition. Since specific parameters of concern include elevated Total Suspended Solids ("TSS")/Turbidity ("Nephelometric Turbidity Units or NTU"), this data will supplement water quality analysis for streams that have not had sufficient flow for chemical analysis. Additional sampling will be conducted in subsequent monitoring years for any stream that exhibits substantial differences between the upstream and downstream samples for any of the measured attributes. Observed notable physical parameter differences will be discussed with the respective agencies to develop a corrective action plan. Enbridge will also collect physical and biological information at each location, including turbidity and presence of oil and grease, as listed in Table 1 of Enbridge's WQMP, even if chemical samples cannot be collected.
3) Consider updating this section to summarize general water quality sampling information and information that is relevant to all WQ sampling schedules. For example, Section 2.1.1 appears to have general water quality sampling information, but it's written/formatted in a way that the information is only applicable to 2023 monitoring, however, other sections, such as 2.1.2 reference similarities to 2.1.1. It may be more efficient to have an overall summary of WQ sampling information under Section 2.0 and then any different or unique WQ sampling information by date/schedule of sampling in the following subsections. This may help readers/agencies better understand what's proposed. As another example, are the sampling sites described below only applicable	The sampling sites established in 2023 to monitor and sample the 204 waterbody locations described in the WQMP are the proposed sampling locations intended to be used during the duration of the sampling plan. Any changes hereafter will be documented. Enbridge has updated this section by adding clarifying language to the WQMP. See **Attachment 1 (**"Updated Water Quality Monitoring Plan").

to 2023 sampling or all proposed WQ sampling? *"waterbodies that are crossed by the pipeline centerline (102 features); waterbodies within the construction workspace, but not crossed by the pipeline centerline (36 features); waterbodies crossed by temporary access roads (62 features); and waterbodies located with staging areas/construction yards/valve site workspace (4)."* Information requests below may be applicable to this general comment section but are listed by the existing subsection for ease of understanding.	
4) Provide a table/chart summarizing the sampling plan(s) for waterways by sample timing/events (for example, what's the plan for pre-construction (2023, 5-days before pipeline installation), during active construction, post-construction (3 days, 1 week, 1 month, years 1-5), etc.). It's not clear if/how the different sampling events will differ (if at all) between timing in regard to sampling locations, parameters, etc.	Attachment 2 has been added to the WQMP and the Quality Assurance Project Plan ("QAPP") (**Attachment 2, "**Updated QAPP") summarizing sampling parameters and frequencies for pre, active, and post construction water quality sampling.

5) Clarify whether sampling locations will be at the same approximate locations for all WQ sampling collection events.	As described in the WQMP "Actual sampling locations will be finalized during the first sampling event and locations will be recorded using global navigation satellite system (GNSS, a.k.a. "GPS") coordinates to allow relocation for future sampling events. If the stream does not exist 100 feet upstream (e.g., above the headwaters) or if there are landowner access restrictions, the upstream site will be adjusted accordingly. Similarly, downstream locations will be adjusted, if necessary, to honor landowner access restrictions." Locations were previously provided in the June 2023 filing showing proposed water quality sampling locations. The sampling sites established in 2023 are the proposed sampling locations intended to be used during the duration of the sampling plan. This has been updated for further clarity in Section 2.0 "Water Quality" of Enbridge's WQMP and Enbridge's QAPP. Any changes hereafter will be documented.
6) Provide guidances, protocols, etc. for how physical stream habitat assessments would be conducted.	Wetland and waterway delineation surveys conducted in 2019 and 2020 documented stream characteristics, including: water appearance (no water, clear, turbid, sheen on surface, surface scum, algal mats, other), existing conditions (highly functional, moderately functional, functionally impaired), feature description (natural, artificial man-made, manipulated) flow regime (ephemeral, intermittent, perennial, connecting swale), Sinuosity within survey corridor (straight, meandering), general observational notes, depth of water, water's edge to water's edge distance, ordinary high water mark ("OHWM") width, OHWM indicator (clear line on bank, shelving, wrested vegetation ,scouring, water staining, bent/matted, or missing vegetation, wrack line, litter and debris, abrupt plant community change, soil characteristic change), dominant substrate (bedrock, boulder, cobble, gravel, sand, silt/clay, organic), riparian zone presence, vegetation layers present (trees, saplings,/shrubs, herbs), dominant bank vegetation (list), aquatic habitats present, aquatic organisms observed (list), observed disturbances, and general observation notes. The information gathered is representative of the stream characteristics observed while delineating the waterbody throughout the survey corridor, typically an area of about 300 feet wide for the mainline corridor and about 100 feet wide for access roads. This data is available in the 2019 and 2020 Wetland and Waterbody Delineation Reports. This information is similar to information that would be collected following the WDNR Guidelines for Evaluating Habitat of Wadable Streams (WDNR 2002); therefore, Enbridge is not proposing to conduct additional physical stream habitat survey data. Additionally, Table 1 lists the chemical, physical, and biological parameters that Enbridge will collect pre-, during, and post-construction. Enbridge notes that the level of instream disturbance is very limited for pipeline installation. The excavated area will be approximately 20 feet wide at the top of the trench and extend across the channel. Isolation dams will be placed approximately 50 feet apart, depending on site-specific conditions but will not result in significant alternation of the streambed. Large cobble/boulders removed from the trench line (if present) will be placed back on the stream following backfilling of the excavated ditch and installation of the pipe. Similarly, woody debris (i.e., logs) will also be replaced if removed during construction of the temporary dams and/or excavation of the trench. Material excavated from the stream bed will be segregated from other material (e.g., stream bank material, approach upland material) and will be used to backfill the trench once the pipeline is installed. Where stream conditions allow, the first excavated material (stream surface substrate) will also be segregated and will be replaced last to cap the excavation. Where detritus or fine silts are displaced over the trench line during backfilling, natural deposition will restore this layer. Enbridge will visually assess the area disturbed by excavation and compare surface substrate to adjacent, undisturbed substrate. Large cobble/boulders removed from the trench line (if present) will be placed back on the stream following backfilling of the

	excavated ditch and installation of the pipe. Similarly, large woody debris (i.e., logs) will also be replaced if removed during construction of the temporary dams and/or excavation of the trench. As specified in Enbridge's Monitoring Plan, during the first year of post-construction monitoring, Enbridge will evaluate each open cut (wet trench) and/or dry crossing and visually compare stream conditions to preconstruction, including stream banks, streambed elevations of the pipeline location within the stream, compare the backfilled area to adjacent undisturbed areas of the stream for sediment composition. Observed notable physical parameter differences will be discussed with the respective agencies to develop a corrective action plan.
7) During a discussion between Enbridge and DNR, Enbridge shared that physical stream habitat assessments were not proposed to be completed during 2023 WQ sampling. Provide justification.	Please see Enbridge's response to WDNR Data Request Question #6 above.
8) Update this document with the stream embeddedness protocol and mussel survey protocol that will be followed.	The mussel survey protocol is based upon the Wisconsin Wadable Mussel Protocol and communication with the WDNR. Stream embeddedness followed USDA methodologies. The references have been added to the WQMP and QAPP.
Section 2.1.1	
9) Clarify if waterway velocity data will be collected; updated Table 1 with velocity, if applicable.	Stream velocity will be recorded. This parameter has been added to Table 1 in the WQMP.
10) Include discussion on whether applicable physical and biological data will still be collected even if chemical samples cannot be collected (for example, if a waterway is dry at time of visit). If not, provide justification.	Enbridge will employ applicable physical assessment methods as listed in the WQMP to qualify and quantify any impacts to the crossed waterbody. As noted in the WQMP, Enbridge will only collect water quality samples from those waterbodies that have water present at the sampling sites and at the time of site visit in sufficient quantity/depth to allow sample collection without fouling. In addition, if water is not present at the time of the initial site visit in 2023, Enbridge will conduct a second site visit to collect a water quality sample. Enbridge will collect the physical and biological information at each location, as listed in Table 1 of Enbridge's WQMP, even if chemical samples cannot be collected. Please also see Enbridge's response to WDNR Data Request Question #2 above.

11.) This section states "Similar to the 2023 sampling…" See Section 2.0 general comments regarding ease of understanding and connecting different subsections.	Enbridge has revised the WQMP to improve ease of understanding and connections between different subsections.
Section 2.2.	
12) Provide the estimated active construction sampling frequency (how many times before and after dam installation, during the instream work?).	During active construction, Enbridge will collect water quality samples at the following intervals: • 1x prior to instream start (basic active construction parameters) • 1x during dam construction for streams < 10 feet wide and 2x for streams >10 feet wide • 1x per 2 hours during active construction • 1x during dam removal for streams < 10 feet wide and 2x for streams >10 feet wide, Sampling will continue every two hours until upstream-downstream readings are similar for turbidity (downstream levels are not greater than five NTU above upstream levels when upstream levels are 50 NTUs or less or until downstream NTU readings are no greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs). Sample frequency and parameters are included within **Attachment 3** ("Updated Sampling Schedule") summarizing sampling events. The active construction sampling frequency has been added to Section 2.2 "Active Construction Sampling" in Enbridge's WQMP.
13) Clarify whether active construction sampling would also take place within waterbodies within the construction workspace, but not crossed by the pipeline centerline, waterbodies crossed by temporary access roads, and waterbodies located with staging areas/construction yards/valve site workspaces. If not, provide justification and information on how	Enbridge does not propose to collect active construction sampling in waterbodies within the construction workspace, but not crossed by the pipeline centerline, waterbodies crossed by temporary access roads, or waterbodies located within staging areas/construction yards/valve site workspace. Direct disturbance of the stream bed/banks below the OHWM is to be avoided at these locations. Potential secondary impacts associated with stormwater runoff will be controlled through implementation of protective measures as discussed in Enbridge's Project-specific plans including the Environmental Protection Plan (EPP), Stormwater Pollution Prevention Plan (SWPPP), and through compliance with applicable permits. These areas will be visually assessed during inspections following 0.5 inch or greater storm events for potential sediment laden runoff. Meeting the state stormwater construction permit requirements during construction is anticipated to ensure protection of water quality in these locations. This information has been added to Section 2.2 "Active Construction Sampling" in Enbridge's WQMP and QAPP.

Enbridge will demonstrate and evaluate whether project construction may be impacting water quality at these locations.	
14) Provide response actions for if the NTU readings at the first downstream public road crossing are still high (greater than 5 NTUs, greater than 10% of upstream NTU readings).	As described in the WQMP, if NTU readings at the first downstream public road crossing are elevated (greater than five NTU above upstream levels when upstream levels are 50 NTUs or less or when downstream NTU readings are greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs), Enbridge would seek to locate the source causing the elevated levels to the extent that access is available. If it is determined that the source of the elevated levels is associated with the Project, Enbridge would work to control the source to address the elevated sediment levels. For instance, if it is determined that the source of elevated NTUs is from a temporary dam with an inadequately functioning seal, the dam will be repaired to attain proper seals. If the potential source is from stormwater runoff or construction dewatering activities, Enbridge will make adjustments to the erosion controls/dewatering practices to address the sediment reaching the waterbody. If Enbridge is not able to identify a source associated with the Project via a review from the right-of-way or at the stream crossing, the source contributing to the elevated NTUs will be assumed to be non-projected related.
15) Provide the NTU/TSS conversion in the plan document.	Enbridge will use the following formula to calculate TSS levels from field NTU measurements: TSS (mg/L) = 3.869 * NTU – 6.194 $R^2 = 0.8806$ This conversion has been added as a footnote in Enbridge's WQMP.
16) See Section 2.0 general comments regarding ease of understanding and connections between different subsections	Enbridge has revised the WQMP to improve ease of understanding and connections between different subsections.
Section 2.3	
17) This section states "samples will be analyzed for the same parameters as proposed for active construction (see Table 2)." See Section 2.0 general comments regarding ease of	Enbridge has revised the WQMP to improve ease of understanding and connections between different subsections. Additionally, please reference the **Attachment 3** ("Updated Sampling Schedule") to understand sampling schedule, location and parameters for each sampling event.

understanding and connections between different subsections.	
18) Clarify whether this sampling is also applicable to waterbodies within the construction workspace, but not crossed by the pipeline centerline, waterbodies crossed by temporary access roads, and waterbodies located with staging areas/construction yards/valve site workspaces. If not, provide justification and information on how Enbridge will demonstrate and evaluate whether project construction may be impacting water quality at these locations.	Enbridge will collect pre-construction and post construction samples from these waterbodies. Please see Enbridge's response to WDNR Data Request Section 2.2, Question #13 for an explanation of sampling during active construction.
Section 2.4	
19) Include discussion on whether applicable physical and biological data will still be collected even if chemical samples cannot be collected (for example, if a waterway is dry at time of visit). If not, provide justification.	Please see Enbridge's response to WDNR Data Request Question #10 above regarding the collection of applicable physical and biological data. Clarifying text has been added to Section 2.0 "Water Quality" of the WQMP.
20) See Section 2.0 general comments regarding ease of understanding and connections between different subsections.	Enbridge has revised the WQMP to improve ease of understanding and connections between different subsections.
21) Clarify whether this sampling is also applicable to waterbodies within the	Please see Enbridge's response to WDNR Data Request Section 2.2, Question #13 above.

construction workspace, but not crossed by the pipeline centerline, waterbodies crossed by temporary access roads, and waterbodies located with staging areas/construction yards/valve site workspaces. If not, provide justification and information on how Enbridge will demonstrate and evaluate whether project construction may be impacting water quality at these locations.	
22) Provide details, including criteria, on how Enbridge will evaluate and determine whether post-construction conditions are "similar" to pre-construction conditions. Define the term "similar."	It is not practicable to restore a disturbed area "exactly" to pre-construction conditions (e.g., replace every single gravel stone in the same exact location as found); however, Enbridge's goal is to restore the stream widths, depths, substrate composition and elevation as near as practicable to the conditions encountered pre-construction (i.e., similar). Flowing waterbodies are dynamic systems with natural variability and conditions that change over time. Enbridge's instream restoration will focus on restoring the stream elevation so it does not impede natural flow or create a deep pool inconsistent with surrounding areas. Stream banks will be restored as near as practicable to pre-construction heights and angles taking into consideration soil conditions. Where necessary, Enbridge will recontour the disturbed portion of the bank to a more stable angle to minimize the potential for future bank sloughing/erosion based on engineering evaluation and industry standards. Please also see Enbridge's response to WDNR Data Request Section 2.0, Question #2 above for information on pre- and post-construction visual assessments.
Section 3.0	
23) Update this section to align with Waterway section, if applicable. Provide sample collection procedure for wetland water samples or update Section 5.0 to include a section on wetland sample collection (if different than waterways). Update with when samples will be collected (pre- and post-construction events sampling	Chemical sample collection procedures for wetland water quality samples will follow the same collection procedure as waterway water quality samples. As discussed within the Monitoring Plan, Enbridge proposes to sample each waterbody crossing during the first, second, and fifth growing seasons following construction to confirm the successful stabilization of streambanks during high and low flow regimes and restoration of waterbody flow relative to the pre-construction baseline data. Enbridge will attempt to conduct subsequent monitoring during the same season/time of year as the Year 1 monitoring. Furthermore, Enbridge will visit each wetland affected by the Project during the first growing season after construction. This first year of monitoring will evaluate the topography and stabilization of wetland crossings. Any crowning left for anticipated settling will be evaluated to determine whether soils are returning to the native elevation within the expected timeframe. Enbridge has revised the WQMP to improve the understanding and connections between different subsections.

events). See Section 2.0 general comments regarding ease of understanding and connections between different subsections.	
24) Provide justification for not sampling wetlands during active construction and how Enbridge will demonstrate whether active construction may be impacting water quality at these locations.	Active construction will result in short-term impacts limited to the disturbance zone and temporary in nature. This disturbance is associated with activities such as vehicle traffic on construction matting, excavation, pipe installation, backfilling, final restoration, and temporary dewatering. Enbridge will install erosion and sediment controls at the upland-wetland boundary and along the outside edge of the workspace (as necessary) to minimize the potential of sediment laden water leaving the construction workspace, and in accordance with Enbridge's EPP, SWPPP, and applicable State Stormwater permit requirements. These areas will be visually assessed during inspections following 0.5 inch or greater storm events for potential increases in turbidity. Collection of water quality samples for analysis is only practicable where a wetland has standing water with sufficient depth of water to allow the collection of a sample without fouling. The majority of wetlands crossed by the pipeline route are not wetlands containing standing water of sufficient depth to collect samples; therefore, Enbridge does not propose to collect samples from these types of wetlands. If there is a visible indication of water quality decline (e.g., turbid water running into a wetland from an upland construction work area or dewatering that results in the accumulation of sediment within the wetland), Enbridge will adjust site erosion and sediment controls/dewatering operations as needed to address the site-specific situation.
Section 4.1	
25) Provide information on how far upstream samples will be taken.	As described in the WQMP, samples will be taken approximately 100 feet upstream of the Project workspace. Actual sampling locations will be finalized during the first sampling event and locations will be recorded using GPS to allow relocation for future sampling events. If the stream does not exist 100 feet upstream (e.g., above the headwaters) or if there are landowner access restrictions, the upstream site will be adjusted accordingly. Similarly, downstream locations will be adjusted, if necessary, to honor landowner access restrictions. Enbridge has limited survey access upstream and downstream of centerline crossings of waterbodies to the areas where access has been negotiated and granted by private landowners. Given access restrictions, nearly all sampling sites along the mainline construction right-of-way are approximately 100 feet upstream and downstream of the edge of limits of disturbance (workspace). Along access roads, where fewer impacts will occur and a narrower negotiated survey corridor, survey sample locations will be located 25 feet upstream and downstream from the centerline of the access road. For waterbodies with their headwater or terminus within the construction right-of-way, sample locations may not be possible for either the upstream or downstream location as the site-specific conditions allow. Where the headwater or terminus of a waterbody, or the limits of delineation, are adjacent to workspace, sample points were taken as far as possible up to 100 feet from the Project limits of disturbance. Where the limits of survey

	were determined by a property line, waterbody sample points were setback from the property line to ensure survey crews remained on the affected landowner's property. Enbridge has revised the WQMP to improve the understanding of sampling locations.
26) Provide information on how soon IR samples will be taken after an IR is observed.	Enbridge will collect the first water quality sample within 30 minutes of an identified inadvertent release that results in a discharge to a waterbody. This language has been added to Section 4.1 "Waterbodies" of Enbridge's WQMP and QAPP.
27) Provide details on how sampling every 6 hours will be effective at monitoring, containing, and remediating an IR.	Monitoring for an inadvertent return is an activity that is separate from water quality monitoring. Monitoring for potential inadvertent returns is completed by a team of individuals working on the HDD starting with the operator of the drilling rig and extending out to the individuals that will be walking the HDD drill path and observing for potential inadvertent returns. As discussed in Enbridge's response to WDNR Information Request Section 4.1, Question 26 above, Enbridge will collect the first water quality sample within 30 minutes of an identified IR occurring that results in a discharge to a waterbody. Active construction sampling (Table 2) will continue every two hours until upstream-downstream NTU readings are no greater than five NTU above upstream levels when upstream levels are 50 NTUs or less or until downstream NTU readings are no greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs. Enbridge has revised Section 4.0 of the WQMP for clarity. Please see Enbridge response to WDNR Water Quality Monitoring Plan Questions #26 above and, #30, and #31 below.
28) Clarify whether fish kills will be evaluated in the event of an IR.	As stated in Section 2.2, Table 2 (Active Construction Sampling) Enbridge will monitor for fish kills during active construction, including during HDD crossings and as a result of any potential inadvertent returns with a discharge to a waterbody. Additional clarification has been added to the WQMP.
29) Add a statement that DNR Office of Energy and Stormwater teams will also be contacted in the event of an in-stream IR.	Enbridge will promptly contact the Wisconsin spill hotline regarding any surface releases of inadvertent return material. Enbridge will also notify the Independent Compliance Monitor of a surface release. Enbridge will first notify the Wisconsin spill hotline and will then immediately follow-up with other applicable notifications. Enbridge anticipates that each agency will appoint a single point of contact for such notifications and will distribute the information in accordance with respective agency policies (i.e., contact information will be kept onsite during construction). Additional clarification has been added to Section 4.1 "Waterbodies" of Enbridge's WQMP.
30) Provide an action plan if bentonite is present during downstream sampling/assessments.	Enbridge does not propose to sample specifically for bentonite (a naturally occurring clay) but will sample for turbidity (NTU). Enbridge provided stream-specific "action plans" as part of its June 5, 2023 Data Response (Attachment 2) - HDD Inadvertent Return Mitigation and Contingency Plans. In the unlikely event of an in-water release of drilling fluid due to an inadvertent return, Enbridge would collect water quality samples in accordance with the Pre-Construction/Post-Construction chemical and physical parameters (i.e., temperature and turbidity) as listed in Table B1-1and as discussed in Data Request Question #2 Section B-Water Quality response (Enbridge's June 5, 2023 Data Response). Enbridge would collect

	these samples within the primary plume area and at downstream locations as specified in the WQMP. Additional samples would be collected in consultation with the applicable regulating agencies. If drilling fluid returns are observed to be continuously surfacing above ground at an inaccessible location (i.e., wetlands or waterbodies), the following procedure will be followed: • Immediately cease pumping drilling fluid • Notify on-site contractor supervisor and Owner representative as required by the communication plan • Evaluate the release and implement appropriate containment measures • Evaluate the recovery measures to determine the most effective collection method • Ensure that all reasonable measures within the limitations of the technology have been taken to reestablish drilling fluid circulation • Upon approval from Owner representative, continue drilling with the minimum amount of drilling fluid required to penetrate the formation and successfully install the product line
Section 4.2	
31) Provide an action plan if bentonite is still present in samples after 5 days.	As discussed in Enbridge's response to Section 4.1 Question 30, Enbridge does not propose to sample specifically for bentonite (a naturally occurring clay) but will be sampling for turbidity (NTU). This is further discussed in Enbridge's stream-specific "action plans" as part of its June 5, 2023 Data Response (Attachment 2). As discussed in the plans, the primary objective once an inadvertent return is identified is to stop the release and contain the material. In the unlikely event of an instream release, Enbridge will immediately begin containment and cleanup efforts to the extent practicable based on site specific conditions (e.g., weather, high flow events). Enbridge will work with the respective agencies to determine when an inadvertent return site has been appropriately remediated.
Section 5.0	
32) Confirm water quality samples will be taken from a location where the water column is well mixed.	As discussed in the WQMP, Enbridge will collect baseline water quality data from each stream that has water present at the time of site visit in sufficient quantity and depth to collect a sample without fouling. The downstream sampling locations were selected based on the modeling conducted by RPS to be representative of stream conditions below the construction work area. The sediment modeling conducted by RPS indicates that most of the suspended sediments will settle close to the crossing area. Based on that modeling, 100 feet downstream is sufficiently close to register any effects but far enough downstream to allow for uniform mixing of any elevated sediments within the water column and stream width. Enbridge will conduct training for staff involved in collecting water quality samples. The training will assist those individuals with visually identifying if streamflow is well mixed at the point of sample collection. Enbridge's commitment to training has been added to their WQMP under Section 5.1 "Grab Samples".

Section 6.0	
33) Clarify if and when 2023 water quality data and reporting will be provided to DNR for review. Provide details on what information will be provided and how it will be presented.	Enbridge anticipates submittal of raw sample results on or about November 20, 2023. Enbridge will submit the complete report as soon as it is finalized.
34) Provide details on actions that will be taken if laboratory results show values outside of "normal" or expected ranges.	As part of Enbridge's sampling QA/QC process, Enbridge will review laboratory results to identify results that are outside the expected ranges. If an outlier is identified, Enbridge will discuss the results with the laboratory to attempt to discern if the outlier value is due to laboratory analysis error, reporting error, equipment error, use of an incorrect analysis method, sample collection error, or some other factor. Depending on identification of an error, Enbridge would coordinate with the laboratory to evaluate if the sample is still within the appropriate holding time and can be resampled, or if there is a potential need to resample. These steps have been clarified in Section 6.0 "Reporting" of Enbridge's WQMP and QAPP.
35) Lab data should include laboratory sampling notes and a list of any laboratory/sample/analytical errors (if applicable).	Enbridge will include lab output results as an appendix within the final report, inclusive of laboratory sampling notes and errors as provided or assessed.
36) The following topics should be addressed in the discussion section of the report: a. temporal trends, if any b. exceedances of state water quality standards, if any c. exceedance of tribal water quality standards, if any	Enbridge will incorporate the requested discussion into the monitoring report. These details have been added to Section 6.0 "Reporting" of Enbridge's WQMP.

d. comparison of water quality parameters to baseline and previous sampling events	
2) Water Quality Monitoring Plan (Version 2, August 2023), Attachment 2 – Water Quality Testing Methods	
1) Update to include a. DNR and Enbridge analysis for fecal coliform b. Enbridge analysis method for TPH c. DNR analysis methods for Sulfate and TSS (Residue, Nonfilterable in NR 219)	The following methods were used to test the listed parameters during the 2023 monitoring effort and are proposed to be used for future sample analysis: a. Fecal coliform testing method - Standard Method 9223B (Colilert-18) b. TPH - Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). Modified GRO Method for Determining Gasoline Range Organics (WI-PUBL-SW-140) and Modified DRO Method for Determining Diesel Range Organics (WI-PUBL-SW-141) c. Sulfate – EPA 300.0 d. TSS – Standard Methods 2540D This information has been clarified in the WQMP.
3) Water Quality Monitoring Plan (Version 2, August 2023), Attachment 3 – QAPP	
Most of the information requests are based on EPA's Module 1, Guidance on Preparing a QA Project Plan (https://www.epa.gov/sites/default/files/2015-06/documents/module1.pdf)	
1) Provide the purpose/objective of water quality sampling.	The purpose/objective of the water quality sampling has been clarified in the Overall Project Objectives section of the QAPP.

2) Provide goals/decisions to be made from the water quality sampling data results.	A definitive goals statement has been added to the Laboratory Data Quality Objectives section of the QAPP.
3) Identify targeted action limits/levels	Targeted action limits/levels are those numeric values collected below the Project workspace that drop below or exceed (respectively), State and/or Tribal numeric water quality values for the specified parameter as compared to values collected upstream of the Project. For turbidity, the action limit is NTU readings that are no greater than five NTU above upstream levels when upstream levels are 50 NTUs or less or downstream NTU readings are no greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs.
4) Update "Sampling Procedures" section with list of field sampling equipment, materials, supplies and sampling/data collection procedures (list, reference).	The Sampling Procedures section has been updated to include all relevant sampling/data collection procedures. Section 5.2 of Enbridge's WQMP describes that Enbridge will use a multiparameter meter, turbidimeter, and velocity meter (respectively) to record conditions. Enbridge will follow the manufacturer's instructions for calibration, testing, and maintenance. Enbridge will coordinate with the respective laboratory(ies) to verify what size and type of sample containers are needed for the respective chemical parameters that are being sampled and will obtain those containers directly from the selected laboratory.
5) Identify Quality Control Requirements for field measurements	As discussed in Enbridge's response to WDNR Data Request Question #4 above, Section 5.2 of Enbridge's WQMP describes that Enbridge will use a multiparameter meter, turbidimeter, and velocity meter (respectively) to record conditions. Enbridge will follow the manufacturer's instructions for calibration, testing, and maintenance. Calibration results will be recorded on the respective field data sheets.
6) Update Appendix B – Calibration Standard Operating Procedures.	As discussed in Enbridge's response to WDNR Data Request Question #4 above, Section 5.2 of Enbridge's WQMP describes that Enbridge will use a multiparameter meter, turbidimeter, and velocity meter (respectively) to record conditions. Enbridge will follow the manufacturer's instructions for calibration, testing, and maintenance. Calibration results will be recorded on the respective field data sheets.
7) Update Appendix C – Analytical Laboratory Quality Assurance Plan.	As stated in the QAPP, Appendix C will be added once the laboratory(ies) are determined and secured for the Project. The analytical laboratory quality assurance plan for the laboratory that performed the chemical analysis for the 2023 sampling will be included in the respective report.
8) Provide Grab Sample/field sampling protocols (list and references)	Enbridge's Grab Sample protocol has been added to the QAPP.
9) Identify a list of mathematical or statistical methods proposed to analyze the data and identify whether data should be rejected, transformed, or	Enbridge will be working with a statistician to review the Project data, study objectives and limitations, to choose the most appropriate statical analysis method for the paired sampling results (parametric or nonparametric analysis). As discussed in Enbridge's response to WNDR Data Request Question #34 in Section 6.0, Enbridge will coordinate with the laboratory to identify any outlier sample results and determine their cause. Enbridge will indicate in the water quality results report if a sample result is identified that is outside of the expected range for its parameter with no discernible cause. Outliers that are determined to be the result of laboratory or field collection error will be excluded from statistical analysis.

qualified before any statistical analysis.	
10) Provide information on how data results will be evaluated and interpreted.	Comparison of upstream-downstream results will specifically look for changes in measured parameters as they relate to impacts resulting from the Project. For instance, if turbidity values measured at the downstream sampling point are higher at the downstream sampling point as compared to the upstream sampling point, Enbridge will investigate and attempt to identify the cause of the elevated levels and make adjustments, as needed, to correct the difference (NTU readings are no greater than five NTU above upstream levels when upstream levels are 50 NTUs or less or until downstream NTU readings are no greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs).
11) Identify how you intend to use the data to achieve the proposed project's needs and meet project objectives.	Please see Enbridge's response to WDNR Data Request Question #10 above.
12) Provide information on if/how existing data will be considered and how you will determine whether to use existing data.	As discussed in Enbridge's June 5, 2023, data request response to the WDNR, Enbridge has reviewed public water quality data for the stream crossed by the Project. Data sources reviewed include the WDNR Surface Water Integrated Monitoring System (SWIMS) database (Surface Water Integrated Monitoring System (SWIMS) Database | | Wisconsin DNR) and the U.S. EPA Water Quality Exchange Network (Water Quality Data Home). The data set reviewed included data from 2010 to 2022. As shown in Attachments 6 and 7 of Enbridge's June 5, 2023, response, there is limited publicly available data both within the parameters collected as well as relevancy associated with proximity to the Project. Enbridge will include a discussion of existing data in the 2023 monitoring report.
13) Describe how any field or laboratory quality issues specific to sampling collection, handling, processing, analysis, etc. will be identified, resolved, and reported.	As part of Enbridge's sampling QA/QC process, Enbridge will review laboratory results to identify results that are outside the expected ranges. If an outlier is identified, Enbridge will discuss the results with the laboratory to attempt to discern if the outliner value is due to laboratory analysis error, reporting error, equipment error, use of an incorrect analysis method, sample collection error, or some other factor, which would be documented in the report. Depending on identification of an error, Enbridge would coordinate with the laboratory to evaluate if the sample is still within the appropriate holding time and can be resampled, or if there is a potential need to resample. These steps have been added to Section 6.0 "Reporting" of Enbridge's WQMP and QAPP.
14) Provide details on how the distribution of each variable will be determined (so that a decision can be made as to whether a nonparametric or parametric test is conducted). Clarify what test will be performed for each variable to check normality	Please see Enbridge's response to WDNR Data Requestion Question #9 above.

and describe the potential shortcomings of this test. Clarify whether a confident decision about normality can be obtained for the distribution given the sample size.	
4) Enbridge's IR Responses (June 5, 2023)	
Section A – Introduction, Question 6:	
1. Provide details on the trench backfill process for waterway crossings with silt/clay/organic bed substrate and how the backfilling process would support long-term stability of the waterway.	Enbridge proposes to use the open cut method only where a waterbody is dry at the time of construction or where there is no perceptible flow. As such, there is little to no migration of suspended sediments downstream during construction. Enbridge proposes to use the dry crossing technique in waterbodies that have perceptible flow of water at the time of construction. In both cases, Enbridge proposes to backfill the trench using native material originally excavated from the waterbody. Based on Enbridge's 2019/2020 surveys of waterbodies, many waterbodies were identified as having a deposition layer of silt/clay/organic material over native substrates. This would be expected based on the ephemeral/intermittent natural of most of the waterbodies crossed by the project as well as the slow flow rates of many of the perennial streams during normal and low flow periods. Enbridge's surveys did not identify waterways with deep silt/clay/organic bed substrates that would be difficult to excavate and/or backfill. Should questions still exist with the information presented, Enbridge will work with the respective agencies to identify site-specific locations that may require modification of the native backfill material to potentially include clean washed gravel.
2. Provide details on how silty, organic, clay backfill may impact turbidity, water quality, and sediment transport downstream once pipeline installation is complete.	As previously discussed, Enbridge proposes to use the open cut method only where a waterbody is dry at the time of construction or where there is no perceptible flow. As such, there is little to no migration of suspended sediments downstream during construction. Enbridge proposes to use the dry crossing technique in waterbodies that have flowing water at the time of construction. In both cases, Enbridge proposes to backfill the trench using native material originally excavated from the waterbody. Backfilled material will conform to the original stream widths and elevations, returning the stream as near as practicable to the same conditions as were encountered pre-construction. Local scour can occur when sediment transport through a stream reach is greater than the sediment load being supplied from upstream. With restoration of the channel to pre-construction geometry, the forces (both aggregation and deposition) will be similar for the backfilled ditch as well as the surrounding undisturbed streambed. Where natural stream velocities have allowed for deposition of silt, clay, and organic material, those similar conditions will occur following construction. As previously discussed, it is natural to see a short duration of elevated sediment transport as temporary dams are removed and natural flow is restored to the isolated streambed. Over time, natural deposition will restore silt/clay/organic bed material over the backfilled trench line.
Section A – Introduction, Question 8:	

Restoration and Mitigation Measures to Achieve Pre-construction Conditions Following Installation of the Pipeline	
3. Enbridge states "The streambanks will be restored as near as practicable to preconstruction slopes and elevations unless the original slope is determined to be unstable." i. Provide details on how Enbridge will evaluate and determine an original streambank is "unstable;" include specific criteria that will be used to evaluate bank stability. ii. Provide a decision tree for bank stability measures if the banks are determined "unstable."	As discussed above in response to Question 6, initial indications of existing areas with naturally degraded bank stability were identified and recorded during the 2019/2020 wetland and waterbody delineation surveys. These conditions were also assessed during additional engineering surveys completed during the design phase. Observed physical indications of potential bank instability included: existing erosion/undercutting, bank sloughing/landslides, tree tips, and streambank/groundwater discharges. In addition to the environmental studies, Enbridge completed engineering/constructability assessments of each waterbody crossing to assess a crossing technique, verify that the crossing could be successfully completed, and assess if there were site-specific challenges/consideration that needed to be accounted for such as shallow bedrock, visual indicators of existing bank instability, and/or other constructability factors. Additional engineering reviews were conducted to evaluate areas along the right-of-way with slopes 20 percent or greater to assess constructability and restoration methods. This information was used to evaluate locations where site-specific restoration of stream banks may be needed. Of the 138 waterbodies that would be crossed by the pipeline centerline), 72 will be crossed using a trenching method (excavation of bed and bank). Of those 72 crossings, only eight were initially identified as potentially needing site-specific restoration plans. As listed in Table 1 of Attachment N – August submittal eight waterbodies were recommended as potentially needing additional engineered stabilization/restoration solutions. Camp Four Creek and Feldcher Creek were recommended for restoration using standard erosion and sediment controls. Rock Creek, UNT Trout Brook, and UNT Silver Creek recommended remediation are of approaching slopes to the waterbody, not the waterbody banks; therefore, no permanent structures are proposed below the OHWM. The engineering and construction and subsequent design processes have identified and addressed the concerns identified of the trenching method crossings. However, situations may be encountered during active construction that may require additional bank restoration effort based on site-specific conditions at the time of construction. If such a situation arises, Enbridge will work with the respective agencies to address bank instability concerns and quickly arrive at a solution to address the site-specific conditions without delaying restoration of the crossing. Reestablishing bank stability is a robust exercise where multiple stability measures are frequently incorporated, at individual crossings, based on the collective evaluation of stability factors at play. Enbridge included a decision tree in EIR Attachment N (August 2020). That decision tree (Exhibit 1 in the EIR Attachment N) is included here as **Attachment 4** ("Decision Tree (Exhibit 1 in EIR Attachment N)").
4. Enbridge states "Permanent slope breakers will be installed across the full width of the right-of-way during final cleanup." Verify whether permanent slope breakers will be placed in wetlands/waterways.	Permanent slope breakers will be installed in upland areas near the upland–wetland/waterbody boundary to prevent sediment flow into the wetland/waterbody. Permanent slope breakers will not be installed in wetlands or across waterbodies. Permanent slope breakers will be installed in accordance with Enbridge's EPP and respective Project SWPPP.

Post-Construction Waterbody Monitoring to Confirm Restoration	
5. Provide an updated *Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan* detailing how Enbridge will characterize, evaluate, and document post-construction changes for the following parameters in waterways crossed and/or impacted by the project, as well as upstream and downstream of the crossing/impact area. These criteria are not included in the *Wetland and Waterbody Post-Construction Monitoring Plan* (January 2023): • bed and bank scour, erosion, sedimentation • bed and bank stability • migration of riprap, armoring, structures if installed on the bed/banks during the restoration process	An updated Wetland and Waterbody Post -Construction Monitoring Plan is under development and will be provided upon completion. As described in Section 5.5, Waterbody Monitoring Methodology within the Monitoring Plan, during the first year of monitoring the condition of the bank and near bank areas will be visually assessed for stabilization and revegetation success, bank height and width, waterbody depth and flow, and stream bed characteristics will be evaluated. The USACE Wetland Determination Form will be utilized to record changes qualitatively and quantitatively to wetland and waterbody condition. As described in Section 3.0, Preconstruction Baseline Data of that plan, Enbridge will augment the existing baseline data, with civil survey elevation information along the proposed centerline of each non-HDD/Direct Pipe stream crossing starting and extending approximately 50 feet back from the top of each stream bank (where stream depth and velocity allows for safe access). Furthermore, the collection of LiDAR data pre- and post-construction will complement Enbridge's understanding of post-construction elevation changes along the right-of-way. As described in Enbridge's April 14, 2023, Data Response, the goal of the post-construction waterbody monitoring program is to assess quantitatively and/or qualitatively the success of post-construction waterbody restoration through documentation of physical waterbody parameters including bed and bank elevations and contours, bank and bed composition and stabilization, and water quality, depth, and flow. The protocol was developed to establish a standardized monitoring procedure that will be used to evaluate the effectiveness of waterbody restoration efforts, to document overall success, and to identify areas that may require additional remediation. Enbridge proposes to visually monitor each waterbody crossing during the first, second, and fifth growing seasons following construction to confirm the successful stabilization of streambanks during high and low flow regimes, and restoration of waterbody flow relative to the preconstruction baseline data. During each visit Enbridge will document: • Bank and near bank (i.e., within 50 feet of the bank) stabilization and revegetation; • Any observed soil slumping or erosion; • Bank height and width; • Waterbody depth and flow; • Streambed characteristics and composition of the substrate; and • The presence of fish habitat, such as undercut banks, instream structures (e.g., logs), and potential spawning gravel. Each of these physical parameters will be documented at the crossing location and recorded and additional notes on the condition of the surrounding right of- way, any evidence of third-party activity (e.g., off-road-vehicles, grazing, recent construction, etc.), any evidence of erosion, flooding, or notable changes in bank or channel morphology.

	During backfilling, Enbridge will visually assess the bed elevations of the backfilled trench and will match it to the elevations of the adjacent up- and downstream bed. Visual observations at the time of backfilling will also confirm that there are no obstructions in the bed that could impede normal water flow. The described monitoring will identify any potential restoration concerns and the need for additional reclamation measures should any issues including sparse bank vegetation, unstable banks or observed erosion of stream banks, and/or stream bed elevational differences (e.g., higher/lower streambed over the ditch-line). This information will be compared to baseline data collected prior to construction, including: • Civil survey elevation information and/or lidar information along the proposed centerline of each stream starting and extending approximately 50 feet back from the top of each stream bank (where stream depth and velocity allows for safe access); • Additional photographs documenting upstream, downstream and of each bank crossing at the proposed centerline; • Visual assessment of streambed characteristics (i.e., observed streambed materials and characteristics such as gravel, cobble, riffles, and pools); • Visual assessment of fish habitat such as undercut banks, instream structures (e.g., logs), and potential spawning gravel; and • Visual evidence of bank erosion at or near the proposed centerline crossing. During the first year of post-construction monitoring, Enbridge will evaluate each open cut and dry crossing by visually comparing the stream conditions to the preconstruction baseline information to determine if post-construction conditions are similar to pre-construction conditions. Enbridge will also assess the progression of bank revegetation and document any restoration site concerns. Enbridge will coordinate with the respective agencies to develop a site-specific restoration/reclamation plan in the event differences are identified during the post construction monitoring of waterbodies. Enbridge's Operations will also conduct frequent aerial patrols of the pipeline right-of-way in accordance with federal frequency requirements (49 CFR §195.412). Aerial patrol personnel are trained to look for potential erosion and/or changes at streams that could affect the pipeline such as scouring, new beaver dam impoundments, or similar changes. If any issues are identified during aerial patrols, Enbridge will dispatch ground personnel to investigate the locations further to ensure that Project related post-construction waterbody issues are properly evaluated and addressed in coordination with the appropriate agency. Waterbody restoration shall be considered successful if all of the following criteria are satisfied: • The waterbody bank is stable and successfully revegetated (based on the appropriate wetland/upland success criteria); • The height and width of the stream bank approximates the preconstruction baseline conditions and/or adjacent undisturbed bank areas; • The depth and flow characteristics (i.e., free flow without construction related impediment) of the waterbody approximates the preconstruction baseline conditions and/or adjacent undisturbed areas; • The composition of the bed substrate approximates the preconstruction baseline conditions and/or adjacent undisturbed bed areas; and

	• The collected water quality parameters up and downstream of the crossing are similar. During backfilling, bed elevations will be manually assessed to ensure that the elevations of the backfilled trench match the elevations of the adjacent up- and downstream bed to the extent practicable. Visual observations at the time of backfilling will also confirm that there are no obstructions in the bed that could impede normal water flow. The streambanks will be restored as near as practicable to preconstruction slopes and elevations, Enbridge may stabilize disturbed stream banks with rock riprap or other bank protection best management practices ("BMPs), with WDNR and USACE approval, if there is a potential for significant bank erosion.
Waterbody Monitoring Methodology	
6. Provide an updated *Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan* detailing how bed scouring, down-cutting, instability, elevation differences will be visually assessed in the field at the time of monitoring. Provide a brief analysis evaluating why bathymetric/topographic surveys pre- and post-construction are not proposed and how visual assessments will ensure accurate post-construction assessment of restoration success and stability.	Please see Enbridge's response to Section A – Introduction, Question #5 above.
7. Bed and bank scour, erosion, sedimentation, and instability due to project activities may impact the resource upstream and downstream of the project's crossing/impact area. Provide an updated *Attachment 4 Wetland and Waterbody Post-*	1.(i–iii) As described in the WQMP, Enbridge selected sample locations approximately 100 feet upstream of the proposed construction workspace limits and approximately 100 feet downstream of the proposed construction workspace limits where the pipeline crosses a waterbody and where Enbridge has secured landowner permission for off right-of-way access or will access the sample site from the waterbody where safe stream conditions allow (i.e., depth). For waterbodies crossed only by access roads via temporary clear-span bridges, Enbridge will select a sample location approximately 25 feet upstream and downstream of the proposed bridge location. For waterbodies that are within the construction workspace, but not crossed by the pipeline centerline, Enbridge will identify a single representative sample location at the downstream edge of the construction workspace. Following construction, Enbridge will continue to observe for potential changes to bed and bank scour, erosion, sedimentation, bed/bank stability and/or migration of riprap/armoring structures (where applicable) within this same stream reach that may be attributable to construction of the pipeline.

Construction Monitoring Plan detailing the following: 1. details on how far upstream and downstream of the project area the following parameters will be evaluated: i. bed and bank scour, erosion, sedimentation ii. bed and bank stability iii. migration of riprap, armoring, structures if installed on the bed/banks during the restoration process 2. details on how Enbridge will evaluate the above criteria upstream and downstream of the project's crossing/impact areas. 3. details on how Enbridge will evaluate and determine whether upstream/downstream impacts to a waterway are due to project activities or are naturally occurring.	Where riprap, armoring, or other structures have been installed, Enbridge's observations will include the full extent of the area where the bank alteration has been performed. 2. As discussed in Enbridge's WQMP, Enbridge will visually monitor each waterbody crossing post construction. 3. Enbridge only has the ability to observe a waterway directly at its right-of-way and adjacent areas approved by the landowner. What occurs at the watershed above or below, Enbridge has no control over. During Enbridge's pre-construction surveys, it has noted areas within the surveyed corridor where there is existing bank instability. Some large landslide/slope instabilities were observed with agency personnel during field visits, (examples include downstream at Bay City Creek, upstream at the White River and downstream at the Potato River). Where bed/bank instability was noted upstream or downstream of the pipeline workspace prior to construction (either during the 2019/2020 delineations or observed prior to construction) and this instability is observed post-construction with no physical indications that the pipeline restoration of the crossing has altered stream conditions (bank width, streambed height, water velocity and flow path), it can be assumed that the instability is due to natural occurrences.
8. Clarify if pre-construction baseline waterbody characterizations included characterizations of bed and bank stability, scouring, erosion, and	Information on stream characteristics, including observable bed and bank stability, scouring, erosion, and sedimentation were recorded during Enbridge's 2019/2020 wetland and waterbody delineations. Please see applicable delineation forms for further information.

sedimentation. If not, provide justification.	
9. Clarify if waterways with unstable bed/banks will be visited after significant weather events to ensure Enbridge's stabilization/restoration efforts were successful and the waterway remained stable post-construction. If not, provide justification. Provide this information in an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan	During the first year of post-construction monitoring, Enbridge will evaluate each open cut and dry crossing by visually comparing the stream conditions to the preconstruction baseline information to determine if post-construction conditions are similar to pre-construction conditions. Enbridge will also assess the progression of bank revegetation and document any restoration site concerns during subsequent monitoring events during the second and fifth growing seasons following construction to confirm the successful stabilization of streambanks during high and low flow regimes, and restoration of waterbody flow relative to the pre-construction baseline data. Enbridge will coordinate with the respective agencies to develop a site-specific restoration/reclamation plan in the event differences are identified during the post construction monitoring of waterbodies. Enbridge's Operations will also conduct frequent aerial patrols of the pipeline right-of-way in accordance with federal frequency requirements (49 CFR §195.412). Aerial patrol personnel are trained to look for potential erosion and/or changes at streams that could affect the pipeline such as scouring, new beaver dam impoundments, or similar changes. If any issues are identified during aerial patrols, Enbridge will dispatch ground personnel to investigate the locations further to ensure that Project related post-construction waterbody issues are properly evaluated and addressed in coordination with the appropriate agency. Additionally, Enbridge's Operations and Integrity Management teams monitor storm events following completion of construction, Enbridge assesses each non-HDD/DP waterbody crossing as part of its internal flood monitoring program. This program evaluates potential flood conditions that could occur at each waterbody crossing, tracks the duration and intensity of heavy rainfall events along the pipeline system, and evaluates the need for personnel to conduct site inspections following these heavy rain events.
Section A – Introduction, Question 9:	
10. Enbridge Energy states "Enbridge's Operations will also conduct frequent aerial patrols of the pipeline right-of-way in accordance with federal frequency requirements (49 CFR §195.412)." Define the term "frequent" and provide the long-term duration of aerial patrols over the project area. Provide an updated Attachment 4 Wetland and Waterbody Post-	Once in service, the inspection intervals for the Project are regulated under 49 CFR § 195.412 Inspection of Rights-of-Way and Crossings Under Navigable Waters as such: (a) Each operator shall, at intervals not exceeding 3 weeks, but at least 26 times each calendar year, inspect the surface conditions on or adjacent to each pipeline right-of-way. Methods of inspection include walking, driving, flying or other appropriate means of traversing the right-of-way. (b) Except for offshore pipelines, each operator shall, at intervals not exceeding 5 years, inspect each crossing under a navigable waterway to determine the condition of the crossing. Monitoring, as required by 49 CFR § 195.412, will continue for the life of the pipeline. Enbridge does not publicly provide specific details about timing or frequency of aerial or ground inspections to ensure maximum effectiveness of security plans and patrols. No updates have been made to the Wetland and Waterbody Post-Construction Monitoring Plan.

Construction Monitoring Plan detailing this information.	
11. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan detailing how bed elevations will be visually assessed if water and/or flowing water is present in the waterway.	As previously noted, the majority of the waterbodies crossed by the Project are ephemeral or intermittent features. The remaining perennial waterbodies are generally fewer than 15 feet wide and fewer than two feet deep. Larger waterbodies (e.g., White River, Potato River, Tyler Forks) are all proposed as HDDs and will be installed deep below the waterbody avoiding bed disturbance. Clear visibility to the bottom of the stream to assess for bed elevation across the approximately 20-foot-wide backfilled trench is expected.
12. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan detailing how bed scouring will be visually assessed if water and/or flowing water is present in the waterway.	As previously noted, the majority of the waterbodies crossed by the Project are ephemeral or intermittent features. The reaming perennial waterbodies are generally fewer than 15 feet wide and fewer than two feet deep. Larger waterbodies (e.g., White River, Potato River, Tyler Forks) are all proposed as HDDs and will be installed deep below the waterbody. Clear visibility to the bottom of the stream to assess for bed scouring across the approximately 20-foot-wide backfilled trench is expected.
13. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan detailing how Enbridge will determine whether post-construction conditions are different than baseline conditions.	Please see Enbridge's response to Section A – Introduction, Question #5 above. As described in the Restoration and Monitoring Plan waterbody restoration is considered successful if: • the waterbody bank is stable and successfully revegetated; • the height and width of the stream bank approximate preconstruction baseline conditions and/or adjacent undisturbed bank areas; • the depth and flow characteristics of the waterbody approximates the preconstruction baseline conditions and/or adjacent undisturbed areas; • the composition of the bed substrate approximates the preconstruction baseline conditions and/or adjacent undisturbed beds areas; and • the collected water quality parameters up and downstream of the crossing are similar. Collection information, as described in the Restoration and Monitoring Plan, provides methods which create a scalar baseline of preconstruction conditions can be referenced postconstruction to provide comparison.

	During the first year of monitoring the condition of the bank and near bank areas will be visually assessed for stabilization and revegetation success, bank height and width, waterbody depth and flow, and stream bed characteristics will be evaluated. The USACE Wetland Determination Form will be utilized to record changes qualitatively and quantitatively to wetland and waterbody condition. As described in Section 3.0 Preconstruction Baseline Data, Enbridge will augment the existing baseline data, with civil survey elevation information along the proposed centerline of each non-HDD/Direct Pipe stream crossing starting and extending approximately 50 feet back from the top of each stream bank (where stream depth and velocity allows for safe access). Furthermore, the collection of LiDAR data pre- and post-construction will complement Enbridge's understanding of landscape level changes post-construction. Additionally, methods and references tied to visual assessment methods utilized are described within the Surface Water Quality Monitoring 2023 document. Within this document there is clarification of scoring criteria utilized during visual assessment. Visual methods utilized during this project are based upon the USDA Stream Visual Assessment protocol.
14. Provide justification for why monitoring is not proposed for years 3 and 4 post-construction. Provide details on how Enbridge would ensure waterway restoration stability and success during these timeframes if monitoring is not taking place.	The goal of the post-construction waterbody monitoring program will be to assess the success of post-construction waterbody restoration through documentation of physical waterbody parameters, including bed and bank elevations and contours, bank and bed composition and stabilization, and water quality, depth, and flow. The protocols selected were developed to establish a standardized monitoring procedure that will be used to evaluate the effectiveness of waterbody restoration efforts, to document overall success, and to identify areas that may require additional remediation. Enbridge proposes to visually monitor each waterbody crossing during the first, second and fifth growing seasons following construction to confirm the successful stabilization of streambanks during high and low flow regimes, and restoration of waterbody flow relative to the pre-construction baseline data. If possible, the subsequent monitoring will be performed during the same season/time of year as the Year 1 monitoring. Additional sampling will be conducted in subsequent monitoring years for any stream that exhibits substantial differences between the upstream and downstream samples for any of the measured attributes. Bi-monthly monitoring of the pipeline corridor will occur throughout the service of the pipeline. Please see Enbridge's response to WDNR Data Request Question # Section A – Introduction, Question #9 regarding monitoring that will occur through the in-service life of the pipeline.
Section A – Introduction, Question 14:	
15. Clarify if Enbridge will use secondary containment measures for wash water structures to contain any structure leaks. If so, provide details and plans on secondary measures. If not, provide justification.	If used, Enbridge will construct equipment wash stations to capture wash water through installation of secondary containment structures. A typical wash station diagram is attached as **Attachment 5** ("Typical Wash Station").
16. Provide details on BMP measures and secondary containment features that will be implemented at	If wash stations are used, they will be constructed using an impermeable liner and bermed for material containment. Wash water will be managed on site at the wash station. The water will be filtered or contained so that it does not transport non-native invasive plant species seeds or plant parts off-site and does not contaminate soil, groundwater, or surface water. If any hydro- or petro-chemicals are present in the wash water (visible sheen), the

equipment/vehicle washing sites to prevent sediment, debris, oil, etc. from entering wetlands and waterways.	water will be collected for proper treatment and disposal. Enbridge's Environmental Inspectors ("EIs") will perform periodic inspections of these structures to observe and document proper use, visually assess the functionality of the containment, and recommend modifications to the structure if it is not performing in accordance with Project requirements. A typical wash station diagram is attached as **Attachment 5** ("Typical Wash Station").
17. Enbridge states "Where herbicide treatment is not feasible or practicable, Enbridge proposes to implement alternative methodologies to minimize the transport and/or spread of invasive and noxious species." Provide details on the "alternative methodologies."	Enbridge is committed to minimizing the spread of invasive and noxious species ("INS") as defined by Chapter NR 40, Wis. Adm. Code., including invasive and noxious terrestrial plants, aquatic invasive species, and tree pests, along the construction ROW, work areas, and associated access roads. Enbridge developed a Project-specific Invasive and Noxious Species Management Plan ("INS Plan"), which outlines the management strategies that will be used to minimize the introduction and spread of INS identified within the Project construction workspace and access roads in compliance with applicable laws or regulations. Management strategies will be implemented where applicable and appropriate prior to construction, and during Project construction, restoration, and post-construction monitoring phases. This INS Plan is complimentary to Enbridge's EPP. As described in Enbridge INS Plan, the treatment method selected for an INS population will be dependent on a number of factors, including the time of year and species-specific biology, proximity to sensitive species, and construction activities and the timing of those activities. Where existing INS occurrences have been documented, pre-treatment management will be implemented where possible. The pre-treatment objective will be to reduce the observable aboveground vegetative growth and seed production by INS at known locations. The intended effects of pre-treatment are to reduce potential spread of INS plants, seeds (observable on above-ground seed heads), and propagules by reducing INS populations prior to clearing and ground-disturbing activities. Pre-treatment will be prioritized for INS listed by the WDNR as Restricted Noxious Weeds that must be eradicated or controlled in Wisconsin (Table 1). Where possible, Enbridge will pre-treat known locations of terrestrial plant INS by flagging the populations, spot mowing, mechanical removal (e.g., hand-pulling, digging), spot herbicide application, prescribed burning, spot propane weed torching, or an integrated management approach that combines two or more of these techniques prior to clearing. Any of these methods or a combination thereof may also be used during construction, restoration, and/or post-construction monitoring as needed. Pre-treatment will commence when all necessary permits and authorizations, and the necessary landowner or land-managing agency permissions are in place and will continue until the start of clearing or other construction activities. In areas where INS occurrences have been documented and pre-treatment cannot be implemented prior to clearing or between clearing and construction, or pre-treatment has not had the intended effect, a combination of the following BMPs may be implemented, where appropriate and as determined to limit spread of INS. <u>Topsoil Segregation</u> Enbridge may implement topsoil segregation of the infested area to minimize the spread of INS and to allow equipment to work through the area after topsoil has been stripped, as long as equipment stays on the subsoil.

	Stored topsoil in heavily infested areas will be covered or sprayed with tackifier or mulch to reduce the viability of INS seeds and rootstock prior to the restoration phase and prevent transport by wind. Weed-infested stockpiles will be marked with clearly visible signage until the restoration phase. During restoration, Enbridge will return topsoil and vegetative material from infestation sites to the areas from which they were stripped and will not move soil and/or vegetative matter outside of the identified and marked noxious weed infestation areas. <u>Installation of Construction Mats</u> In areas of the construction workspace where pre-treatment of the INS population or topsoil segregation is not feasible, Enbridge will install and work off of construction mats or equivalent to cover the INS source. Construction mats will then be cleaned before use at another non-infested site as described in the "Cleaning Stations" section. Enbridge will also consider the use of construction mats in pre-treated areas with heavy infestations of INS. <u>Cleaning Stations</u> In areas where pre-treatment of terrestrial plant INS has not been implemented prior to clearing, Enbridge may establish cleaning stations to remove visible dirt and plant material from equipment and mats when exiting a known terrestrial INS infestation area along the construction workspace (Section 4.1 of the EPP). Cleaning stations may also be implemented at select sites during construction, restoration, or post-construction monitoring, as needed. Construction mats utilized in an INS site will either be cleaned at designated cleaning stations or will be transported to constructions yards for storage and/or cleaning prior to re-use. Construction mats will be covered and contained in plastic tarps or geotextile fabric when they are transported and stored to minimize the spread of INS seeds. Mechanical means (initial scrape down followed by blow down with air or water) will be the primary method used to remove dirt and plant materials from vehicles, equipment, and construction mats at the cleaning stations or construction yards. Enbridge does not propose the exclusive use of high-pressure wash stations due to the need for additional water and space, and the challenges with containing and disposing of cleaning water. Removal of dirt and plant material will be documented in a cleaning log (see Attachment C of Enbridge's INS Plan). Off-site cleaning stations will be placed in existing disturbed areas (e.g., construction yards that were previously used as construction yards, rail yards, sand/gravel mines) that are clearly designated as a cleaning station area, and where the appropriate erosion and sediment control BMPs have been implemented to prevent off-site surface run-off.
18. Clarify if herbicide treatment will take place in wetlands, waterways, or adjacent to waterways and how water quality, wildlife, and aquatic organism health will be protected.	As described in Section 4.1 of the EPP "Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Enbridge's EIs may be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. All proposed herbicides will be reviewed and approved by Enbridge's Environment Department prior to use and must be federal and/or state approved for use in the proper environments (e.g., wetlands or near waterbodies). The Contractor(s) will obtain necessary permits and/or certifications for the use of the applicable herbicides, is responsible to limit off-right-of-way overspray and will comply with state laws regarding the use of those herbicides. The Contractor(s) will keep proper documentation of the locations where the herbicides have

	been used and provide such documentation to Enbridge within 3 days of completing the work." The contractor will be required to hold necessary permits and licenses prior to application of herbicides on the Project. The contractor will be obligated to apply herbicide consistent with its labeling under federal law.
Section B – Water Quality, Question 1:	
19. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan to include a detailed assessment (in written format) summarizing the following: a. Available data (physical, chemical, and biological) and its data source b. The relevancy and applicability of the baseline data to the proposed project (for example, location of sampling in reference to the proposed surface water crossing, etc.). c. The baseline data parameters that are missing/still needed (see table of requested parameters).	Enbridge collected and evaluated publicly available data from Wisconsin's Surface Water Integrated Monitoring System (SWIMS) Database and the National Water Quality Monitoring Council's Water Quality Portal (WQP) to access publicly available water quality data. Enbridge will be including a discussion of the available data in the 2023 Water Quality Monitoring Report.
Missing Parameters and Enbridge's Proposed Plan	
20. Enbridge states "Based on Enbridge's significant experience with linear construction projects as well as other recent water quality sampling programs, many of the listed	The level of sampling required by the agencies for the Project is unprecedented as compared to past pipeline projects permitted in Wisconsin. Past Enbridge projects, including recent projects in Wisconsin. As an example, for Enbridge's Line 3 - Segment 18 Project (constructed in 2017) WDNR conditioned the permit to require Enbridge to sample for flow, TSS, BOD, and conductivity for at least three streams pre-construction, during construction and post construction. These testing parameters are comparable to parameters required by other agencies on Enbridge projects

parameters are unlikely to be altered long-term by the project's short-term disturbance within the waterway." Provide greater detail, supporting documentation, and examples demonstrating similar Enbridge pipeline installation projects did not affect the listed parameters long-term within waterways.	throughout the United States where Enbridge has constructed and operations thousands of miles of natural gas and crude oil pipelines. Enbridge has complied with these permit conditions.
Pre-Construction Sampling	
21. Clarify if baseline water quality parameters (outlined in Table B1-1) will also be sampled in waterbodies crossed by TCSBs in 2023, in addition to prior to bridge installation and following bridge removal during project construction. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan to include this information.	Yes, baseline water quality parameters (as outlined in Table B1-1) will be sampled in waterbodies containing water deep enough for the collection of water samples without fouling, to be crossed by Temporary Clear-Span Bridges ("TCSBs"), prior to construction, prior to bridge installation, and following bridge removal.
Post-Construction Sampling:	
22. Clarify if samples will also be taken at the paired upstream/downstream sampling locations upon completion of in-stream construction activities (Enbridge's response only references paired upstream/downstream sampling being taken after completion of the Project). Provide an	Yes, paired upstream/downstream sampling will be conducted following completion of instream construction activities. Clarifying text has been added to the Monitoring Plan

updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan to include this information.	
Section B – Water Quality, Question 2	
Waterbody Biological Water Quality Parameters	
23. Provide the literature information referenced in this section regarding benthic macroinvertebrates and pipeline impacts. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan to include this information.	Literature reviews performed by Levesque et al. (2007) and Reid et al. (1999) describe in-stream effects of pipeline construction within/near stream on macroinvertebrate communities as minimal one year after construction/restoration activities are completed. The impacts of construction are compared by Anderson (1996) and Reid et al. (2003) and were determined to be similar to impactful episodic events in nature that generate pulses of highly concentrated suspended sediments. Research results presented in a number of journal articles (Young et al. (1991), Anderson et al. (1998), Armitage et al. (1996), Tsui et al. (1981)) indicate short term decreases in macroinvertebrate abundance and richness and an increase in downstream benthic drift and standing crop. The recovery of the site to baseline community metrics ranges from five weeks to two years. The most important factors identified in Courtice et al. (2019) and other cited literature are duration and intensity of the disturbance. Enbridge will use methods throughout the Project which will in practice limit the duration and intensity of disturbance. The decision to not monitor macroinvertebrate communities pre- and post- construction relies upon the consensus within available literature that impacts to invertebrate communities are negligible. Additionally, water quality standards are established by regulation to protect the environment. The Project is designed and planned to meet water quality standards. Baseline physical and chemical sampling is being conducted as well as pre-, during, and post-construction to demonstrate impacts to the project. As a result, it does not seem prudent to sample for macro-invertebrates for a baseline and post construction. The width of waterbody impacts is limited to a conservative 50 feet which is a small percentage of the entire stream. The sediment impacts from the project have also been documented to be temporary and an orders of magnitude lower than natural sediment contribution in the watershed. Recommended Literature: Scott M. Reid & Paul G. Anderson (1999) Effects of Sediment Released During Open-Cut Pipeline Crossings, Canadian Water Resources Journal, 24:3, 235-251, DOI: 10.4296/cwrj2403235 Lévesque LM, Dubé MG. Review of the effects of in-stream pipeline crossing construction on aquatic ecosystems and examination of Canadian methodologies for impact assessment. Environ Monit Assess. 2007 Sep;132(1-3):395-409. Doi: 10.1007/s10661-006-9542-9. Epub 2007 Feb 15. PMID: 17674136.

	Anderson, P. G., Taylor, B. R., & Balch, G. C. (1996). *Quantifying the effects of sediment release on fish and their habitats*. Canadian Manuscript Report of Fisheries and Aquatic Sciences no. 2346. Reid, S. M., Isaac, G., Metikosh, S., & Evans, J. (2003). Physiological response of rainbow trout to sediment released during open-cut pipeline water crossing construction. *Water Quality Research Journal*, *38*(3), 473-481. Young, R.J., & Mackie, G.L. (1991). Effect of oil pipeline construction on the benthic invertebrate community structure of Hodgson Creek, Northwest Territories. *Canadian Journal of Zoology, 69*, 2154-2160. Anderson, Paul G. Christian Fraikin, G.J. Chandler, J. Trevor. 1998. Impacts and recovery in a coldwater stream following a natural gas pipeline crossing installation. ASME. International Pipeline Conference. Volume II. 1013-1022. Armitage, P.D. and R.J.M. Gunn. 1996. Differential response of benthos to natural and anthropogenic disturbances in 3 lowland streams. Int. Revue ges. Hydrobiol: 81, 2, 161-181. Tsui, P. T. P., & McCart, P. J. (1981). Effects of stream-crossing by a pipeline on the benthic macroinvertebrate communities of a small mountain stream. Hydrobiologia, 79, 271–276 Courtice, Gregory & Bauer, Bernard & NASER, BAHMAN & Roberts, Deborah. (2019). Development of a Duration -Based Management Framework for Instream construction-Induced Suspended Sediment. 4269-4276. 10.3850/38WC092019-1342. An updated plan is under development and will be provided upon completion.
Wetland Water Quality Sampling	
24. Provide justification for not taking wetland samples during active construction. Provide an updated Attachment 4 Wetland and Waterbody Post-Construction Monitoring Plan to include this information.	Enbridge does not propose collecting water quality samples from wetlands that do not have standing water present of sufficient depth to collect a sample without fouling. If there is no surface water present, or the depth of the surface water does not allow for collection of a sample without fouling, the practicability of collecting a water quality sample does not exist. If there is standing water of sufficient depth to allow for collection of a water quality sample, Enbridge will collect the sample for analysis, as described in the WQMP. No changes to the Monitoring Plan have been made.
Section B, Water Quality, Question 19	

25. Clearly state the questions being tested by the analysis of the water quality monitoring data. For example, "has total phosphorus increased with respect to the observed baseline group, either in time or space?" "has the construction and/or installation of the pipeline at X waterway crossing resulted in the total phosphorus exceeding state water quality standards?"	Water quality monitoring during pre-, active, and post- construction is intended to document existing water quality conditions to help meet and maintain regulatory standards and permit requirements. In addition, monitoring provides a benchmark to understand water quality changes pre and post construction and a quantifiable condition to achieve restoration. Furthermore, monitoring during active construction is a tool that is used to identify construction impacts and place or modify BMPs to address construction impacts to water quality. The question being asked for each testing parameter during each sampling event is has the parameter increased, decreased, or remained similar between the upstream and downstream sampling locations. For example, pipeline construction does not have a source for introducing phosphorous to the waterbodies by itself. The only limited contribution is remobilizing existing phosphorous in the soils in the Project area. Existing phosphorous in project areas is typically from agricultural activities, which are limited for this Project. Agricultural activities are mostly on the western portion of the project and in most cases are a fair distance from the perennial water bodies. Any increases in phosphorous during the project would likely be from run off from agricultural activities near intermittent and ephemeral waterbodies and not from the project as there is not a phosphorus source contribution from the construction activities. If downstream phosphorous (or other parameters) levels are shown to be greater or lesser than the upstream levels, Enbridge would investigate the probable cause and determine if the difference is related to Project activities.
26. Explain how the expected sample size for each water quality parameter will provide sufficient statistical power to confidently identify an actionable change in water quality (i.e. a regulatorily-significant impact).	Enbridge understands the statistical power to confidently identify a change would increase with larger datasets over longer periods of time. In this case, additional time is not feasible. Completing additional sampling events in a short period of time does not increase the statistical power to a large extent but could be discussed further. Please also see Enbridge response to WDNR Data Request Question #27.
27. Clarify what precise groups will be tested by each paired test. Clarify if this includes testing pre-construction, active construction, post-construction samples in time, or upstream and downstream samples in space. Provide details on how the experimental design supports these tests.	The objective of Enbridge's water quality sampling is to identify potential changes in water quality parameters between an upstream sampling point and a downstream sampling point that could potentially be due to pipeline construction activities. The study objective is not to document and assess variability in the waterbody or the watershed, nor is the study design developed to assess permanent discharges similar to what would potentially be required for a new permanent outfall structure associated with a wastewater treatment plant or new permanent industrial discharge source.
28. Provide the type of criteria that will affect Enbridge's determination of an	Please see Enbridge's responses to WDNR Data Request Questions #26 and #27 above.

acceptable tradeoff between type-1 and type-2 error (i.e. false-positive and false-negative errors)	
29. Explain how the number of paired samples in time series is sufficient to make confident claims about the trend in differences between upstream and downstream water quality.	Please see Enbridge's responses to WDNR Data Request Question #26 above.
30. Clarify what the null and alternative hypotheses are being tested for each case in the hypothesis test. Clarify the level of confidence that will be chosen for the hypothesis test. Clarify whether Enbridge will perform power analysis for each parameter's hypothesis test.	The null hypothesis is that construction of the project does not result in a long term degradation of water quality with the alternative hypothesis being that the project has resulted in a long term degradation of water quality. Please see Enbridge's response to WDNR Data Request Question #26 above regarding statistical testing.
31. Provide details on how Enbridge will ensure the number of water quality samples collected provides acceptable confidence that a change in water quality has been correctly identified.	Please see Enbridge's responses to WDNR Data Request Questions #26 and #27 above.
Section F, HDD and Direct Pipe Crossings, Question 4	
32. Enbridge states "there are only two waterbodies Enbridge proposes to cross using the HDD technique where a public road does not cross the river prior to the river entering the Bad River Reservation, the Bad River and	There are three waterbodies within the Project workspace that do not drain into the Bad River Reservation. Waterbody sbad1005e (UNT of North Fish Creek) is within the Project temporary workspace at Mainline Valve 1. Waterbodies sase006p (Bay City Creek) and sasa1008e (UNT of Bay City Creek) are within the construction right-of-way near milepost 0.6. Waterbody sase006p is crossed by the proposed centerline while waterbody sasa1008e is within the Project workspace but is not crossed by the pipeline centerline. Waterbody sase006p is not proposed as an HDD crossing; therefore, Enbridge has not identified a downstream road crossing location to collect samples in the event of an inadvertent return that reaches the waterbody. All other waterbodies either crossed by the Project or within the Project workspace flow into the Bad River Reservation either directly

Tyler forks." Update this response to be applicable to all waterways, not just waterways that enter the Bad River Reservation.	or as a confluence to another waterbody. Many of these waterbodies have confluences with other waterbodies prior to being crossed by a public road. Enbridge does not have access to these areas as they are outside of the negotiated workspace; therefore, downstream samples/observations cannot be made at these locations.
Section G, Pipeline Leaks, Spills, Releases Post-Construction (Waterways and Wetlands), Question 1:	
33. Enbridge states "If a construction-related leak were to be identified as a result of the pressure test, the pipe would be replaced/repaired, and a pressure test would be re-performed. Once operational following the completion of a successful pressure test, the pipeline will be operated in accordance with PHMSA safety standards at Part 195 that are designed to prevent releases from a pipeline into the surrounding environment." Provide the estimated time between the time of leak detection and Enbridge's response time to prevent releases from the pipeline into the surrounding environment.	Please see Section 2.1 of Enbridge's Operations Assessment: Oil Spill Report, submitted to the WDNR on February 13, 2023 (submitted as Privileged and Confidential Information). See **Attachment 6** ("Enbridge's Field Emergency Response Plan Midwest Region"). Additional information can be found at https://www.enbridge.com/projects-and-infrastructure/public-awareness/emergency-response-action-plans.
Section G, Pipeline Leaks, Spills, Releases Post-Construction (Waterways and Wetlands), Questions 3-9:	

34. Enbridge states "please see Enbridge's responses to WDNR Data Request Questions #18 and #19 Section F-Horizontal Directional Drills and Direct Pipe Crossings Section." There are no WDNR Data Request Questions #18 and #19 in Section F-Horizontal Directional Drills and Direct Pipe Crossings Section. Provide clarification and an updated response to these questions.	Enbridge's responses to WDNR Data Request Questions #18 and #19 (Section F – Horizontal Directional Drills and Direct Pipe Crossings – Pipeline Leaks, Spills, Releases Post-Construction) were erroneously numbered as Section G - responses #1 and #2.
Section I, Other, Question 3	
35. Provide details on how HDD installation methodologies can control/seal the drill path if the HDD encounters a confined aquifer.	Drilling fluid is a critical contributor to the overall success of an HDD. Drilling fluid is mainly a mixture of water and bentonite clay that performs several functions including: powering the cutting head; removal of drill cuttings from the borehole; stabilizing the walls of the borehole to prevent borehole collapse and water infiltration/loss; and cools and lubricates the drill head/bit. Drilling fluid forms a cake-like containing layer around the outside of the drill path that helps seal the borehole walls, preventing the fluid from escaping through crevices in the wall or groundwater migrating into the bore hole as the drilling fluid creates greater pressure within the hole than that exerted by water that may be in porous soil/rock encountered along the drill path. It is also worth noting the geotechnical analysis performed for each HDD did not identify confined aquifer conditions along the associated drill paths and/or drill profile depths.
Section I, Other, Question 8	
36. Enbridge states "wildlife that encounter these BMPs, such as silt fence, will typically either step/jump over the BMPs or will go around the BMPs." Provide details on how BMPs and erosion control measures would support wildlife migration and crossings for smaller animals or	Enbridge will install BMPs only in locations necessary to prevent erosion and transport of sediment off of the construction right-of-way and is not proposing to surround the entire 41-mile-long Project length with silt fence. Smaller wildlife species that encounter erosion controls and are unable to cross over the erosion controls will either follow the edge of the erosion controls until they reach an area where the controls have not been installed or will select a different direction of travel. Enbridge will work with the WDNR to install alternative BMPs, such as bio-logs, to allow smaller wildlife to cross at agency-identified areas, as discussed in Enbridge's previous information request responses filed April 14th, 2023. Enbridge's Environmental Inspectors will also visually inspect the perimeter ECDs for wildlife during their inspection of the ECDs. Any wildlife that appears trapped by the ECDs will be relocated to the other side of the right-of-way. Enbridge notes that silt fencing (and similar materials) will be used in accordance with WDNRs amphibian and reptile exclusion fencing protocols to protect and deter select species, such as Wood turtles (*Glyptemys insculpta*), from entering a project workspace.

wildlife that cannot step or jump over BMP structures.	
5) Appendix 4 Wetland and Waterbody Restoration and Post Construction Monitoring Plan (March 10, 2023)	
Section 4.2	
1. Clarify where information from the 2022 floristic integrity surveys can be found.	Floristic integrity information is provided as part of the Wetland Timed Meander Surveys Report - Appendix D.
Section 4.4	
2. Enbridge states "to the maximum extent practicable, Enbridge will restore affected wetlands to preconstruction conditions, which is considered in-place compensation, but not in-kind [compensation]. Clarify the distinction between "in-place" and "in-kind" compensation.	In-place restoration occurs when an impacted wetland is reestablished or restored in its original location. In-place restoration is similar to "on-site" mitigation as defined by the Federal Mitigation Rule, with the distinction that the restoration will take place in the exact same location as the impacts rather than simply nearby the impact site. Restoration is the preferred compensation method as it tends to be more successful than other methods. The Federal Mitigation Rule defines in-kind compensation as the restoration of a resource of similar structural and functional type to the impacted resource. Palustrine emergent wetlands impacted by the Project will be restored in-place and will restore the resource's former structural and functional type. Palustrine scrub-shrub and palustrine forested wetlands impacted by temporary workspace will be restored in-place and will return to their original structural and functional type. These wetlands will all be restored both in-place and in-kind. Palustrine scrub-shrub and palustrine forested wetlands impacted by the Project within the permanently maintained right-of-way will be restored to palustrine emergent wetlands. Because these wetlands will be restored to a different structural type, they are considered restored in-place but out-of-kind. Enbridge has also developed a Wetland Mitigation Plan that compensates for conversion impacts. A revised version of this plan will be provided following additional agency discussion. The distinctions between in-place/on-site and more distant mitigation, and in-kind versus out-of-kind mitigation impact the amount of compensatory mitigation required for the project. More details can be found in the Guidelines for Wetland Compensatory Mitigation in Wisconsin, version 1, August 2013 (https://dnr.wisconsin.gov/sites/default/files/topic/Wetlands/mitigation/WetlandCompensatoryMitigationGuidelines.pdf)
Section 4.6	

<table>
<tr>
<td>3. Discern between "medium value high floristic value wetlands" and "Medium" functional value wetlands, as discussed in Section 4.6. These have different monitoring protocols.</td>
<td>As part of the Project wetland evaluation, Enbridge assessed and rated each wetland identified within the survey corridor for eight wetland functional values.
• Floristic Integrity
• Human Use Value
• Wildlife Habitat
• Fish and Aquatic Life Habitat
• Shoreline Protection
• Flood and Stormwater Storage
• Water Quality Protection
• Groundwater Processes
The overall assigned WRAM Functional Value Rating for each wetland is an average of the eight individual component ratings. Wetlands with an overall rating of Medium will be monitored in accordance with the monitoring activities for "Other Medium and Low and Low-Invasive Functional Vale Wetlands". Select wetlands with an overall rating of Medium but with a high rating specific to Floristic Integrity will be monitoring in accordance with the enhanced monitoring as specified in the "High Functional, Medium Functional High Floristic Quality Value Wetlands and Select wetlands Adjacent to ASNRI Waterbodies" category.</td>
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<td>4. Clarify which wetlands adjacent to ASNRI waterbodies will be assessed using the monitoring protocol for high and medium value high floristic value wetlands.</td>
<td>Wetlands that are crossed via the HDD/Direct Pipe methods are not proposed for post-construction monitoring using the monitoring protocols for high and medium value/high floristic value wetlands as the only proposed disturbance will be clearing of the 30-foot-wide path within the permanent easement. Based on a review of the overall wetland WRAM value of wetlands adjacent to ASNRI waterbodies that are crossed using a non-HDD/Direct Pipe method, these wetlands have been rated as "Medium" with "Medium" floristic quality, and therefore will not be assessed using the monitoring protocols for high and medium value high floristic value wetlands.
<table>
<tr><th>Milepost</th><th>Waterbody ID</th><th>Waterbody Name</th><th>Agency Classification</th><th>Crossing Method</th><th>Wetland ID</th><th>WRAM Functional Value Rating</th><th>WRAM Functional Value Significance Rating - Floristic Integrity</th></tr>
<tr><td>4.1</td><td>sasw023p</td><td>White River</td><td>Class II Trout, ASNRI-PNW</td><td>HDD</td><td>wasa1054f</td><td>High</td><td>High</td></tr>
<tr><td>14.1</td><td>sasa1005p</td><td>Brunsweiler River</td><td>Class III Trout, ASNRI-PNW</td><td>HDD</td><td>wasa1005s</td><td>Medium</td><td>Medium</td></tr>
<tr><td>16.6</td><td>sasc1012p</td><td>Trout Brook</td><td>Class III Trout, ASNRI-PNW</td><td>HDD</td><td>wasc1041f</td><td>High</td><td>Medium</td></tr>
<tr><td>16.6</td><td>sasc1012p</td><td>Trout Brook</td><td>Class III Trout, ASNRI-PNW</td><td>HDD</td><td>wasc1041f</td><td>High</td><td>Medium</td></tr>
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	19.2	sasd1011p	Silver Creek	Class II Trout, ASNRI-PNW	HDD	wasd1026f	Medium	Medium
	19.2	sasd1011p	Silver Creek	Class II Trout, ASNRI-PNW	HDD	wasd1028f	Medium	Medium
	20.2	sase1007p	Silver Creek	Class II Trout, ASNRI-PNW	HDD	wase1034f	High	High
	22.3	sasv019p	Krause Creek	Class I Trout, ASNRI-PNW	HDD	wasv059f1	High	Medium
	24.2	sasb006p	Bad River	Class III Trout, ASNRI-PNW	HDD	wasb015e	Medium	Medium
	24.3	sasb006p	Bad River	Class III Trout, ASNRI-PNW	HDD	wasd1008f	High	High
	28.8	sasw008	Gehrman Creek	Class II Trout, ASNRI-PNW	Access Road	wasw014e	Low	Medium
	29.8	sasw005	Camp Four Creek	Class II Trout, ASNRI-PNW	Open Cut	wasw013ss	Medium	Medium
	29.9	sasw003	Camp Four Creek	Class II Trout, ASNRI-PNW	Open Cut	wasw010f	Medium	Medium
	29.9	sasw003	Camp Four Creek	Class II Trout, ASNRI-PNW	Open Cut	wasw011f	Medium	Medium
	30.0	sasw003	Camp Four Creek	Class II Trout, ASNRI-PNW	Open Cut	wasw009e	Low - Invasive	Medium
	30.0	sasw005	Camp Four Creek	Class II Trout, ASNRI-PNW	Open Cut	wasw012f	Medium	Medium
	34.0	sirb012p	Tyler Forks	Class II Trout, ASNRI-PNW	HDD	wirb037s	Medium	Medium
	34.1	sirb012p	Tyler Forks	Class II Trout, ASNRI-PNW	HDD	wirc023f	Medium	Medium
	34.1	sirb012p	Tyler Forks	Class II Trout, ASNRI-PNW	HDD	wirc022f	Medium	High
	34.3	sirc002p	Vogue Creek	Class II Trout, ASNRI-PNW	HDD	wirc017e	Medium	Medium
	36.6	sirw001	Coil Creek	Class II Trout, ASNRI-PNW	Access Road	wirw001e	Medium	Medium
	36.6	sirw001	Coil Creek	Class II Trout, ASNRI-PNW	Access Road	wirw001e	Medium	Medium
	36.6	sirw001	Coil Creek	Class II Trout, ASNRI-PNW	Access Road	wirw001e	Medium	Medium
	36.6	sirw001	Coil Creek	Class II Trout, ASNRI-PNW	Access Road	wirw001e	Medium	Medium
	37.6	sirv001p	UNT of Potato River	Class II Trout, ASNRI-PNW	Access Road	wirv004s	Low	Low
	37.6	sirv001p	UNT of Potato River	Class II Trout, ASNRI-PNW	Access Road	wirv005e1	Medium	Medium
	37.8	sird001p	Potato River	Class II Trout, ASNRI-PNW	HDD	wird001f	High	High
	38.7	sird005e	UNT of Vaughn Creek	Class II Trout, ASNRI-PNW	Pullback	wird015f	Medium	Medium
	39.6	sird016p	Vaughn Creek	Class II Trout, ASNRI-PNW	HDD	wira1007s	Medium	Medium

5.) Clarify what "weed presence" refers to	Weed presence, as listed in Table 4.6-1 of the Post Construction Monitoring Plan, refers to invasive and noxious species (i.e., weeds). As discussed in Enbridge's INS Plan, the Project defines terrestrial invasive and noxious weed as any species listed by the U.S. Department of Agriculture ("USDA") as Noxious or by the WDNR as Prohibited or Restricted Noxious Weeds. Refer to Table 1 in the INS Plan for species that have been documented in the Project area based on pre-construction surveys.

<table>
<tr><td>6.) Clarify what is and is not being proposed for monitoring, comparing Year 1 to Years 2-5; include comparison in tabular form. Provide justification for these methods.</td><td>Enbridge has developed and added a table 4.6-2 “Year 1 through 5 Monitoring Methods Comparison for Line” to the Monitoring Plan further explaining what parameters will be monitoring in each year of post-construction monitoring. The proposed methods are qualitatively and quantitatively sound methods for monitoring the recovery of temporary impacts associated with the Project.</td></tr>
<tr><td>7.) Provide details on how Enbridge will monitor wetlands to ensure re-vegetation and restoration of PFO and PSS wetlands that are temporarily converted to PEM wetland. Provide criteria and measurable standards to evaluate success.</td><td>As described in 4.6.2 of the Monitoring Plan: Enbridge will visit each wetland affected by the Project during the first growing season after construction. The location of each plot will be recorded by GPS and marked on aerial photographs in order to maintain consistent plot locations for the duration of the monitoring program. The same plots will be assessed each monitoring year, generally around the same time of year. At a minimum, one plot will be established for approximately every half-acre of affected wetland in the right-of-way. The species within each plot will be identified and recorded and the dominant species will be noted. Hydrologic indicators will be identified and the presence/absence of invasive species within the plot will be documented. Where forested wetlands are allowed to regenerate naturally, tree regrowth or natural recruitment will be documented on data sheets. The percent cover for each species, as well as the total percent cover by native hydrophytes, total percent cover for the entire plot, and relative percent of native hydrophytes will be estimated. This first year of monitoring will evaluate the topography and stabilization of wetland crossings. Any crowning left for anticipated settling will be evaluated to determine whether soils are returning to the native elevation within the expected timeframe. Areas where subsidence has occurred over the trench will also be noted for potential restoration. Enbridge will also utilize the baseline conditions documented during the pre-construction wetland surveys to identify any other potential deviations in site hydrology. Enbridge will record general conditions in each wetland including: presence and distribution of hydrophytes and estimated cover; presence/absence of invasive species and estimated cover; natural indicators such as wildlife observations (incidental); visual evidence of rutting, compaction, or erosion; status of erosion controls; off-road vehicle activity; and other third-party disturbances. Enbridge will take a representative photograph in each wetland to document first year post-construction conditions. In addition to the collection of the base information described above, Enbridge will establish one meter by one meter random plot locations (one-meter quadrat locations to be selected by field personnel during the first monitoring season) in 50 percent of the low and medium functional value wetlands, and in all of the high functional value wetlands. Section 4.7 of Enbridge's Monitoring Plan lists the success criteria for determining if wetlands have been successfully restored. Wetland restoration shall be considered successful if all of the following criteria are satisfied:

• vegetation in the monitored wetland is at least 70 percent of either the baseline cover documented in the wetland prior to construction, or at least 70 percent of the cover in adjacent unaffected wetland areas;
• there is no evidence of adverse changes to baseline hydrology and drainage;
• wetland topography is restored to baseline conditions and similar to the topography of adjacent undisturbed wetland areas;
• the percent cover of invasive species within the construction workspace is similar to or less than the percent cover in adjacent undisturbed areas outside of the construction workspace and within the same community type.</td></tr>
</table>

	• if natural rather than active revegetation was used, the plant species composition and distribution is consistent with early successional wetland plant communities in the affected ecoregion; and • the presence, density, and distribution of invasive vegetation species is less than or similar to pre-construction baseline conditions Enbridge met with the WDNR, USACE, and EPA on November 13, 2023 and discussed the Monitoring Plan. Enbridge has recently received additional agency comments. and is in the process of reviewing the comments and modifying the plan where appropriate. The final plan is forthcoming which will bolster the response above with the modifications based on agency comments being addressed.
8. Remove the statement "Enbridge will only use the open cut (wet trench) method, which does not isolate the work area from the stream water, to cross waterbodies with no apparent flow." If the project is approved, DNR will require trenching in the waterway be completed using a work zone isolation system or bypass system to isolate the in-water work zone from the waterway, unless the waterway is completely dry for the entire duration of the activity below the OHWM, including accounting for rain events during construction.	Please see Enbridge response to WDNR WQMP Section 1, Question #1 above.
9. Enbridge states "the bed elevations will be matched to avoid impediments to normal water flow." Clarify what the bed elevations will be matched to.	Bed elevations from the backfilled trench line will be compared to upstream and downstream bed elevations immediately adjacent to the backfilled trench line. As noted above, the excavated area is anticipated to be approximately 20 feet wide at the streambed surface. This short distance will allow for visual assessment of restored bed elevations.
10. Enbridge states "the collected water quality parameters up and downstream of the crossing are similar." Define the term "similar."	Enbridge defines the term similar as generally being that the downstream parameter is within 10 percent of the upstream parameter value for most chemical parameters and that those parameters are still within the acceptable numeric water quality as defined by the State. For turbidity, upstream-downstream readings will be considered similar if downstream levels are not greater than five NTU above upstream levels when upstream levels are

	50 NTUs or less or when downstream NTU readings are no greater than 10 percent above upstream NTU levels when the upstream levels are greater than 50 NTUs.
11. This section states Enbridge will implement "integrated approaches to invasive or noxious weed infestations as outlined in Enbridge's Invasive and Noxious Species Management Plan and in accordance with Section 4.0 of Enbridge's EPP." It is not clear in these referenced documents if Enbridge will conduct treatment and/or control measures if it is determined the presence and/or percent cover of the observed invasive species post-construction area greater than what was observed pre-construction (and compared to adjacent, un-disturbed areas). Provide clarification.	Section 6 (Wetland and Waterbody Post-Construction Restoration and Corrective Actions) discusses potential corrective actions that may be needed should the success criteria not be achieved. One potential corrective action, as listed, includes implementation of integrated approaches to invasive or noxious weed infestations as outlined in Enbridge's INS Plan and in accordance with Section 4.0 of Enbridge's EPP. If INS populations have expanded or new populations are identified post-construction, Enbridge will work with the respective agencies to develop site-specific treatment plans.
6) EIR Attachment N, Stream Restoration Typicals (August 2020)	
1. Provide a current table listing all waterways that are proposed to have permanent structures placed below the OHWM as part of waterway restoration/stabilization measures. Include the type and amount of permanent structure(s) that would be placed below the OHWM in the table.	As discussed in Enbridge's response to WDNR Data Request Section A-Introduction Question 8 – Question #3, above) initial indications of degraded bank stability were recorded during the 2019/2020 wetland and waterbody delineation surveys as well as during engineering surveys completed as part of the design phase. Observed physical indications of potential bank instability included: existing erosion/undercutting, bank sloughing/landslides, tree tips, streambank and groundwater discharges. In addition to the environmental studies, Enbridge completed engineering/constructability assessments of each waterbody crossing to assess a crossing technique, verify that the crossing could be successfully completed, and assess if there were site-specific challenges/consideration that needed to be accounted for such as shallow bedrock, visual indicators of existing bank instability, and/or other constructability factors. Additional engineering reviews were conducted to evaluate areas along the right-of-way with slopes 20 percent or greater to assess constructability and restoration methods. As listed in Table 1 of Attachment N – Enbridge's August 2020 submittal, 12 waterbodies were assessed for potential need for enhanced streambank restoration for long-term stability of the bank and

	protection of the pipeline. Of those 12 waterbodies, seven waterbodies were recommended as potentially needing additional engineered stabilization/restoration solutions. Site-specific drawings for these waterbodies are provided as **Attachment 7** ("Site Specific Waterbody Drawings"). The type of permanent structure proposed at each location is shown on the site-specific drawings. The amount of material needed at each location will be dependent on the site-specific conditions at the time of construction. Three waterbodies listed in Table 1 (Rock Creek, UNT Trout Creek, and UNT Silver Creek were evaluated and recommended for incorporation of engineered stabilization on the approaches to the waterbodies, but do not have permanent structures proposed below the OHWM of the waterbody. Engineering recommended the use of standard stream bank restoration methods at the remaining two waterbodies (Camp Four Creek and Feldcher Creek).
2. Per *Exhibit 1, Stream Remediation Decision Process*, provide details on how it would be determined that natural remediation options would not remediate the channel.	The stabilization method is based on an evaluation of the waterbody physical parameters such as bed and bank elevation, contours, and composition, as well as stream type and water depth and velocity. Each stream crossing was evaluated, and the most appropriate restoration method was applied based on current industry standards and engineering expertise. Site-specific restoration plans were developed by engineers after field assessments and potential restoration methods applicable to each crossing.
3. Clarify which waterways are proposed for permanent berms and provide site specific plans for the berms.	No waterbodies are proposed to have permanent berms installed within the waterway. Permanent berms will be installed in upland areas near the upland–wetland/waterbody boundary to prevent sediment flow into the wetland/waterbody.
4. Provide site specific plans for waterways that may have riprap, biologs, rootwads, biostabilization, re-grading, or placement of permanent structures below the OHWM that are not listed above.	No additional waterbodies have been identified as requiring riprap, biologs, rootwads, biostabilization, re-grading, or placement of permanent structures below the OHWM at this time. If field conditions change at the time of construction and additional permanent bank stabilization methods are needed, Enbridge will coordinate with the respective agencies to obtain necessary approvals.
5. Provide copies of Enbridge's Waterbody Data Sheets for the	The waterbody delineation data sheets for waterbodies with proposed permanent structures are provided as **Attachment 8** ("Waterbody Delineation Data Sheets for Waterbodies with Proposed Structures"). These include:

waterways proposed to have permanent structures placed below the OHWM as part of waterway restoration/stabilization measures.	• Bay City Creek (sase006p) • Little Beartrap Creek (sasa047i) • Beartrap Creek (sasb007i) • UNT Deer Creek (sasc039i) • UNT Marengo River (sase1015i) • UNT Brunsweiler River (sasc1006p) • UNT Gehrman Creek (sasw011)
6. Attachment 9-A of Enbridge's response to USACE does not include site-specific stream restoration drawings for Rock Creek, UNT Trout Brook, UNT Silver Creek, Camp Four Creek, or Feldcher Creek, which are listed in *Table 1 Channel Remediation Methods* in Appendix N of the EIR. Provide site-specific stream restoration drawings for these waterways.	Please see Enbridge's response to WDNR Data Request 6) EIR Attachment N, Stream Restoration Typicals (August 2020) – Question #1 above.
7. Describe potential impacts of introducing hard substrate (structures) into the waterway, including upstream and downstream.	Permanent structures within waterways will be limited to use of rip-rap, biologs, and root wads used in post-construction stream bank restoration. These remediation practices are based on current best practices and industry standards, with their intent of providing long-term bank stability in areas where pre-construction surveys have identified potential bank stability concerns. All work will be performed in accordance with Enbridge's EPP, SWPPP, and applicable State Stormwater permit requirements. Enbridge will backfill the excavated trench with the native material that is removed from the trench during the excavation process. If native material is determined to be inappropriate for backfill (e.g., material that could damage the pipeline and/or protective coating), Enbridge will use clean sand obtained from licensed sand/gravel facilities to backfill the trench to a level that covers the pipeline. The remainder of the backfill material will be native material. Enbridge will install trench breakers at the end of sections backfilled with non-native material to minimize the potential for subsurface drainage along the backfilled trench. No crown will be left in stream beds.

	Enbridge's site-specific permanent streambank plans were developed by engineers taking into account stream size, potential flow, bank height, and stability concerns based on pre-construction conditions. These remediation practices are based on current best practices and industry standards, with their intent and impact being the long-term restoration of the streams post-construction disturbance. If installed incorrectly, permanent structures could alter the stream flow patterns, which could result in streambed scour and or/bank scour/sloughing both upstream and/or downstream of the crossing. Where rock riprap has been used, streambed scour could result in a collapse of the riprap material into the stream, potentially blocking the natural stream flow. Enbridge will have a design engineer on site assisting with the installation of the proposed permanent streambank restoration structures.
8. The proposed waterway restoration/stabilization methods include placement of structures on the bed of the waterway, which have the potential to alter stream dynamics and impact the waterway upstream, downstream, and within the pipeline crossing area. For each waterway that is proposed to have permanent structures placed on the beds/banks as part of waterway restoration/stabilization measures (placement of structures), provide the following information:	Please see Enbridge responses to WDNR Data Request 6) EIR Attachment N, Stream Restoration Typicals (August 2020) – Question #1 and #7 above for details on potential impacts of stream restoration and EIR Attachment N, Stream Restoration Typicals (August 2020) Question 4 for waterbodies with site specific restoration plans. Please see EIR Attachment N, Stream Restoration Typicals (August 2020) question 8e for details on how stream restoration techniques are selected and applied in order to restore waterbodies as closely to pre-construction conditions while ensuring long-term stability of the streams. Please see Enbridge's supplemental information regarding the advantages, disadvantages, and risks of using the HDD method (see **Attachment 9 ("**Pipeline Impact Minimization through Routing, Design and Crossing Methods")).
a) Evaluate how long-term waterway impacts from installing the pipeline via directional boring would be greater than, equal to, or less than the currently proposed trenching and restoration/stabilization methods at this location.	Enbridge uses excellence in industry standards for restoration of waterbodies after open cut method construction. The restoration methods described in documents previously submitted represent the trusted industry standards for restoration that have worked flawlessly in countless stream restorations, across North America, as the result of pipeline construction or not. Once restoration is established no long-term waterway impacts should be discernable as the result of either open cut or HDD installation method. Enbridge is committed to maintain and protect waterbody crossings from erosion that could potentially expose the installed pipeline even in the event that the erosion is the result of natural events or conditions. The areas where Enbridge is proposing to install augmented bank stabilization structures have been determined to have site conditions that either are or could result in future natural bank stability concerns. Installation of the pipeline using the HDD would not result in Enbridge installing permanent bank stabilization structures, which, as discussed above, could lead to future bank erosion from natural forces and result in degradation of water quality as well as impacts to fish and other aquatic species.

b) Evaluate how costs, logistics, and technical constraints from installing the pipeline via directional boring would be greater than, equal to, or less than the currently proposed trenching and restoration/stabilization methods at this location.	Please see **Attachment 9**. The document discusses the avoidance, minimization, and mitigations implemented during pipeline routing for the Project as well as the subsequent Waterbody Crossing Method Selection process. The document covers the costs, logistics, and technical constraints for installing the pipeline via HDD versus the proposed trenching and restoration/stabilizations methods. The document does not cover specific locations directly because it is challenging when the project routing, design, and crossing method selection process as a whole is the driver of a decision.
c) Provide detailed plans that include the existing waterway conditions/profiles and proposed design plans.	Please see Enbridge response to Water Quality Monitoring Plan question #6 above for information on details of existing waterway conditions, including water appearance, flow regime, feature description, sinuosity, depth and distance of water, OHWM details, substrate information, riparian zone presence, vegetation layers present, dominant bank vegetation, aquatic habitats, organisms, and disturbances, which are found in the 2019 and 2020 Wetland and Waterbody Delineation Reports. More recent conditions as well as waterbody photos will be documented in the forthcoming 2023 Monitoring Report. Also see Enbridge responses to WDNR Data Request 6) EIR Attachment N, Stream Restoration Typicals (August 2020) – Question #1 above and **Attachment 8** for the site-specific plans for those waterbodies that have proposed permanent structures below the OHWM.
d) Provide information on the existing and proposed velocity and flow of the waterway.	Upstream and downstream pre-construction stream velocity data will be gathered at each waterbody prior to the start of instream construction. Upstream and downstream post-construction velocity data will be collected following construction to document if flow velocity has changed due to installation of the permanent bank stabilization measures. If the upstream-downstream post- construction velocities differ significantly, Enbridge will evaluate if installation of the permanent structure has resulted in the change of flow velocity. If flow velocities are lower downstream, there should be an observed backing up of water upstream of the permanent bank stabilization measure. If flow velocities are faster downstream, there should be an observable restriction in the stream width. The site-specific permanent bank stabilization measures have been designed to not result in impediment of stream flow. The restoration is not designed to narrow the stream channel, which would result in increased velocities or change the flow path (i.e., reroute the channel). It is not designed to remediate erosion/bank stability concerns that may exist outside the construction workspace but considers those existing situations in the site stabilization design.
e) Provide details on how the proposed design is the least environmentally impactful option for waterway restoration/stabilization.	Please see Enbridge response to Water Quality Monitoring Plan Question #2 and #22 above, which describe application of the most appropriate waterbody restoration techniques based on pre-and post-construction site conditions and current industry techniques and standards that will restore the site as closely as possible to pre-existing conditions while ensuring the long-term stability of the stream. All work will be performed in accordance with Enbridge's EPP, SWPPP, and applicable State Stormwater permit requirements, which provide guidance and requirements on minimizing impacts to waterbodies. The designs were developed to protect the disturbed area from potential erosion/bank instability as well as protect the pipeline from potential exposure due to erosion. Enbridge is open to discussing the site-specific restoration plans with the WDNR and

	considering alternative bank restoration methods if proposed by WDNR based on site-specific conditions and WDNR's success in stabilizing similar bank instability issues.
f) Provide details on alternative waterway restoration/stabilization measures that were evaluated for the location and why they were not selected.	Please see Enbridge response to EIR Attachment N, Stream Restoration Typicals Question 8.c. Stream restoration techniques will be applied based on evaluation of stream parameters post-construction with the intent of restoring as closely to pre-construction conditions as possible while also ensuring long-term stream stability with the least amount of introduced permanent stabilization materials and using natural materials where it has been determined that these methods will meet the bank stabilization objective. Site-specific restoration plans were developed by engineers based on current stream restoration industry standards and techniques. Enbridge's instream restoration will focus on restoring the stream elevation, so it does not impede natural flow or create a deep pool inconsistent with surrounding areas. Stream banks will be restored as near as practicable to pre-construction heights and angles taking into consideration soil conditions. Where necessary, Enbridge will recontour the disturbed portion of the bank to a more stable angle to minimize the potential for future bank sloughing/erosion based on engineering evaluation and industry standards.
g) Provide details on if/how fish habitat and transport could be incorporated in the waterway restoration/stabilization plans and still meet the waterway restoration/stabilization objective.	Enbridge would consider incorporating fish habitat and transport structures in select locations where permanent bank stabilization is required based on WDNR recommendations where introduction of artificial habitat may benefit the fisheries. Enbridge notes that this may require additional permitting as it would place permanent structures below the OHWM of the waterbody. Additionally, Enbridge notes that the area of disturbance below the OHWM is limited to the trenchline (approximately 20 feet wide). Benefits to fish habitat in an approximately 20-foot area is likely limited. Extending the introduction of fish habitat further upstream/downstream from the area of direct disturbance (trenchline) would result in greater site disturbance.
h) Provide details on if/how wildlife habitat could be incorporated in the waterway restoration/stabilization plans and still meet the waterway restoration/stabilization objective.	Enbridge would consider incorporating wildlife habitat structures in select locations where permanent bank stabilization is required based on WDNR recommendations where introduction of artificial habitat may be beneficial and does not result in conditions that may affect the long-term stability of the crossing or integrity of the pipeline. Please see Enbridge's response to WDNR Question #8(g) above regarding potential of related additional disturbance.
i) Provide details on any modeling that was completed to evaluate impacts of the proposed waterway remediation/restoration methods on the installation location and upstream/downstream of the installation location, including	Please see Enbridge response to Appendix 4 Wetland and Waterbody Restoration and Post Construction Monitoring Plan Question #8e and #8j. The most appropriate waterbody restoration techniques will be applied based on post-construction site conditions and current industry techniques and standards that will restore the site as closely as possible to pre-existing conditions while ensuring the long-term stability of the stream, stream banks, and pipeline. All work will be performed in accordance with Enbridge's EPP, SWPPP, and applicable State Stormwater permit requirements, which provide guidance and requirements on minimizing impacts to waterbodies. Impacts described and evaluated within the Construction Assessment: Sediment Discharge Modeling Report submitted by Enbridge February 13, 2023, do not specifically assess proposed waterway remediation/restoration methods. Sediment dispersion analysis was conducted using

modeling that was performed to evaluate flooding events.	computational dispersion modeling tools to quantify and bound the range of potential concentrations of sediment within the water column, the downstream timing and extent, and the depositional footprint of sediments that may be caused by both planned and accidental discharges of sediment due to installation techniques of the relocated pipeline, as construction activities cross the range of water bodies within the Project Area. However, as referenced within the report, storm-related events can cause TSS values to exceed hundreds to thousands of mg/L over periods of time that are longer than theses installation periods, by comparison, trenched crossings would be expected to have TSS concentrations near the installation site in the low hundreds of mg/L, which would decrease below 19 mg/L by approximately 1,000 meters downstream of the crossing and last only ~4-10 hours per construction phase. The 100-year and two-year storms were determined for named waterbodies to characterize hydrogeotechnical geohazard likelihoods for peak flow, scour, aggradation/degradation, bank erosion, encroachment, avulsion, and meander cutoff (see September 1, 2021 WDNR Data Request Attachment C, Data Request Response #7: Enbridge Hydrotechnical Geohazard Abstract). Channel scour depth, resultant scour cover, relevant elevations, and recommended horizontal extent left and right of the channel centerline during bankfull conditions were also calculated. These calculations will support the selection and application of stream restoration methods that will ensure the long-term stability of any structures used for the restoration and the stream itself.
j) Provide details on how far upstream and downstream of the structure installation area(s) was analyzed for impacts from the waterway restoration/stabilization methods.	Enbridge has proposed well known, standard waterway restoration and stabilization methods utilized at numerous other sites in Wisconsin and in the midwestern region. These methods are not anticipated to create upstream or downsteam impacts. To the extent that this question is asking how far upstream and downstream of structure installation areas *will be* analyzed for impacts from the location of waterway restoration and stabilization methods. Enbridge is also assuming that "structure placement" here is referring to materials such as riprap, rootwads, or other materials used for the restoration of the stream after pipeline installation. Prior to construction, analysis of the existing waterbodies includes baseline water quality sampling and pre-existing stream condition documentation, as well as sediment modeling completed by RPS (please see Water Quality Monitoring Plan question 32 for greater details for this question). Based on the modeling, 100 feet downstream was selected as determined to be representative of stream conditions below the construction work area and to allow for the uniform mixing of elevated sediments within the water column and stream width. Please see section 2.1.1 of the WQMP for details on water quality parameters and the distances they will be sampled at pre- and post-construction. In addition to pre- and post-construction sampling, the WQMP and the Monitoring Plan detail visual evaluations that will occur pre and post construction, including stream banks, streambed elevations of the pipeline location within the stream, and comparing the backfilled area to adjacent undisturbed areas of the stream for sediment composition. Additional sampling will be conducted in subsequent monitoring years for any stream that exhibits substantial differences between the upstream and downstream samples for any of the measured attributes. Observed notable physical parameter differences will be discussed with the respective agencies to develop a corrective action plan.

k) Clarify if there are any additional underground utilities near the areas proposed for waterway restoration/stabilization and upstream/downstream of these areas. Provide information on how the proposed waterway restoration/stabilization method would impact nearby utility crossings, if applicable.	Enbridge participates in the Wisconsin One Call (Diggers Hotline) system and has completed surveys to identify buried utilities along the Project route. No known utilities have been identified at waterbody crossing locations with the exception of utilities at road-side ditches along public roadways. Enbridge does not anticipate the presence of utilities at these roadway locations will require modification of the restoration plans.
l) Evaluate and provide details on the short-term and long-term impacts upstream, downstream, and within the area of proposed structures. This includes, but is not limited to water quality, wildlife habitat, fisheries, flow, erosion/sedimentation, and bed and bank stability.	Enbridge does not anticipate any long-term water quality impacts as construction and restoration effects are considered only temporary. The proposed structures are designed to stabilize the stream banks; thereby limiting future erosion and potentially improving water quality and fisheries, erosion/sedimentation conditions created by the existing bank stability concerns. The proposed structures can also improve habitat by introducing additional substrate that can provide fish habitat as well as macroinvertebrate habitat. Enbridge will conduct post-construction monitoring to evaluate the success of its restoration efforts. If an unanticipated long-term degradation of water quality or aquatic habitat is identified, it will be evaluated and appropriately remedied in consultation with the applicable agencies.
m) Evaluate and provide details on how the current proposal(s) would increase or decrease erosion/sedimentation upstream, downstream, or within the waterway restoration/stabilization area.	The permanent structure designs were developed to address site-specific conditions associated with the construction right-of-way and permanent right-of-way. They are designed to minimize the potential for bank failure at the crossing location, which would result in increased sediment downstream of the crossing. These structures are not intended to resolve existing bank/bed stability concerns upstream or downstream of the area disturbed by the Project but are intended to take such conditions into consideration to protect the right-of-way and pipeline by providing additional bank stabilization and thereby reducing future erosion/sedimentation.
n) Evaluate and provide details on how the current design proposal(s) would increase or decrease sediment transport.	Please see Enbridge's response to item "l" and "m" above.

o) Provide details on the longevity of the proposed structures.	Stream restoration techniques will be selected and designed to ensure the long-term stability of the stream based on industry design standards and engineering expertise. Any material used in stream restoration will be sourced and placed according to state and federal permit requirements, including Wis. Admin. Code Ch. NR 328. Per the state statute, riprap shall be clean and six to 24 inches in diameter. Materials will be selected at a specification that will meet the requirements of the stream and withstand peak flow and flood events. Where natural materials (i.e., rootwads) have been used for bank stabilization, those structures will decompose over time; however, these structures will provide extended stabilization until vegetation has established. The 100-year and two-year storms were determined for named waterbodies to characterize hydrogeotechnical geohazard likelihoods for peak flow, scour, aggradation/degradation, bank erosion, encroachment, avulsion, and meander cutoff (see September 1, 2021 WDNR Data Request Attachment C, Data Request Response #7: Enbridge Hydrotechnical Geohazard Abstract). Channel scour depth, resultant scour cover, relevant elevations, and recommended horizontal extent left and right of the channel centerline during bankful conditions were also calculated. These calculations will support the selection and application of stream restoration methods that will ensure the long-term stability of any structures used for the restoration and the stream itself.
p) Provide details on how the site would be monitored to ensure the proposed structures would remain in place, avoiding downstream migration.	Once the pipeline is in service, Enbridge's Operations will conduct aerial patrols of the pipeline right-of-way in accordance with federal frequency requirements (49 CFR §195.412). Aerial patrol personnel are trained to look for potential erosion and/or changes along the right-of-way including third-party activities, erosion, stream bank stability concerns at the crossing location. If such conditions are observed, location information is relayed to Enbridge Operations staff for on-the-ground verification. These patrols occur as long as the pipeline is in service. Additionally, please see Enbridge's Post Construction Wetland and Waterbody Monitoring Plan for a description of monitoring that will be performed in years 1-5 post construction.
q) Provide details on long-term maintenance and monitoring of the waterway restoration/stabilization site post-construction.	Please see Enbridge's response to Question 8(p) above.
r) Provide details on how the proposed waterway restoration/stabilization will work long-term if slope failures have been/are occurring upstream and downstream of the project area.	Enbridge can only assist in stabilizing stream banks within its construction right-of-way. Unstable portions of a waterway upstream or downstream of the crossing cannot be controlled by Enbridge and are unrelated to construction activities associated with the Project. Where existing slope stability issues are present, Enbridge has attempted to incorporate restoration methods that will stabilize the area within the construction workspace and permanent right-of-way to the extent practicable. As stated above, Enbridge will conduct aerial patrols of its right-of-way in accordance with frequency requirements outlined in 49 CFR §195.412. If slope failures off right-of-way encroach into the right-of-way, Enbridge will evaluate if there is risk to the integrity of the pipeline and will develop plans to stabilize the right-of-way as necessary.

s) Provide detailed specifications for the proposed fill materials that will be used, including placement and compaction.	Details on the site-specific fill for the proposed engineered bank stability solutions are shown on the site-specific drawings (see **Attachment 8**).
t) If applicable, provide details on the proposed riprap, including its origin, if clean riprap would be used, and the type of riprap (field stone, angled rock, etc.).	Enbridge will install riprap according to the guidance outlined in the USDA, NRCS Wisconsin Supplement to the Engineering Field Handbook (EFH) Chapter 16 – Streambank and Shoreline Protection and the Wisconsin Department of Transportation RipRap Standard 606. Riprap used will be clean field stone or quarry stone, installed in accordance with Wis. Admin. Code Ch. NR 328. Please see the site-specific drawings included as **Attachment 8**.
u) Provide details on proposed vegetation clearing along the bed and banks of the waterway as part of the permanent waterway restoration/stabilization.	Enbridge is not proposing to "clear" vegetation from below the OHWM, except for vegetation that may be removed directly over the trenched area as part of excavation. Vegetation removal on the stream banks will be limited to cutting woody vegetation off at ground level except for the trench line and if necessary, at the bridge crossing location to allow for the safe installation/use of the bridge during construction. Additional vegetation clearing, outside of what would be conducted for standard pipeline construction and streambank restoration, is not proposed. All work will be completed within the construction right-of-way.
v) Describe potential cumulative impacts resulting from the proposed waterway restoration/stabilization and how these impacts would be evaluated post-construction.	As discussed above, the installation of permanent bank stability structures is not anticipated to result in a negative impact to the waterway or its banks; such structures are intended to stabilize the pipeline right-of-way in an area that has been identified as having either bank stability concerns or the potential to develop bank stability concerns. They can result in a positive cumulative impact to the waterway and the watershed by stabilizing an area of the stream that could potentially erode resulting in downstream sedimentation which could affect aquatic life and overall water quality.
w) Provide documentation of riparian owner(s) consent to place structures within the waterway	Enbridge has secured agreements from each landowner crossed by the Project to install and operate the pipeline within the respective temporary and permanent easements. Those agreements convey the authority to restore the right-of-way in a manner that restores the land, protects the resources, and protects the pipeline. This includes confirmation for Enbridge to have the ability to install permanent stream bank stabilization structures where needed.
x) Provide additional photos of the proposed crossing that is proposed for structures, as well as upstream and downstream of the crossing.	Photographs of the locations where permanent waterbody bank structures are proposed are included in **Attachment 10** ("Photographs of Waterbodies with Permanent Bank Structures Proposed"). Additional photographs can be acquired if necessary and as field conditions allow.

y) Provide details on how the proposed structures would ○ Not materially obstruct navigation ○ Not be detrimental to the public interest ○ Not materially reduce the flood flow capacity of the waterway	Please see Enbridge response to Appendix 4 Wetland and Waterbody Restoration and Post Construction Monitoring Plan question #8e) and #8j). Enbridge's goal is to restore the stream widths, depths, substrate composition as near as practicable to the conditions encountered pre-construction, with an emphasis on restoring the stream elevation so it does not impede natural flow or create a deep pool inconsistent with surrounding areas. Stream banks will be restored as near as practicable to pre-construction heights and angles taking into consideration soil conditions. Where necessary, Enbridge will recontour the disturbed portion of the bank to a more stable angle to minimize the potential for future bank sloughing/erosion based on engineering evaluation and industry standards. Restoration efforts are not anticipated to meaningfully alter the bed, banks, or flow of the proposed waterbody crossings and will not materially obstruct navigation, reduce flood flow or capacity of the waterway, or have any detrimental impacts to public interest, including recreational use of the streams. An alteration from the pre-existing conditions would only be made if necessary to ensure the long-term stability of the stream and would be completed in compliance with State permit requirements. The designed permanent structures will not extend into the waterbody a distance that will obstruct navigation of a shallow watercraft under normal flow conditions that would allow a shallow watercraft to navigate the waterbody unobstructed by natural stream obstacles (i.e., narrow channels, tight meandering channels, snags and/or downed trees). They are designed to blend into the banks to the extent practicable while maintaining the stream's original width and depth thereby also not being detrimental to public interest. Since the structures are blended into the stream banks, flood flow capacity would not be reduced.
7) Wetland and Waterway Individual Permit Application	
1) Describe how all practicable measures to minimize the adverse impacts to wetland functional values will be taken.	Enbridge has provided substantial information regarding overall minimization of wetland impacts beginning with the original application materials submitted in February 2020. This includes but is not limited to: routing to avoid wetland disturbance wherever practicable; reducing the construction workspace in wetlands to 95 feet; implementing BMPs such as matting to reduce the potential for rutting/soil mixing and compaction; limiting vegetation clearing and stump removal; and completing construction activities (excavation, pipe installation, backfilling, temporary dewatering) as efficiently and quickly as practicable. Enbridge will implement protective measures included in its Project EPP, SWPPP, and Invasive Species Plan that further reduces wetland impacts and Enbridge has developed a post-construction monitoring plan to assess and document wetland recovery following construction. Additionally, Enbridge developed a compensatory wetland mitigation plan that compensate for impacts from temporary wetland disturbance, conversion of wetland type, and permanent wetland loss. These are all measures that Enbridge has taken to avoid, minimize, and mitigate wetland impacts. Please also see Enbridge's Pipeline Impact Minimization through Routing, Design and Crossing Methods supplemental discussion. Looking at the specific functional values as assessed through the WRAM process, the primary parameters are: Floral Diversity, Fish and Wildlife Habitat; Flood Protection; Water Quality Protection; Shoreline Protection; Groundwater Recharge and Discharge; and Aesthetics, Recreation and

	Education. The primary impact of pipeline construction and right-of-way maintenance activities on wetlands is the temporary disturbance to wetland vegetation during active construction and the conversion of forested and shrub-scrub wetland vegetation to emergent wetland vegetation within the permanent right-of-way. This can temporarily affect many of the functional value parameters; however, Enbridge's minimization approaches (as listed above) as well as Enbridge's plan to restore wetland vegetation following pipeline construction limits the disturbance extent and duration to the extent practicable. Additionally, Enbridge has minimized permanent wetland loss to approximately 0.02 acre of wetland (less than an area measuring 40 feet by 40 feet). As discussed in Enbridge's response to WDNR Data Request Section 4.4 Question #2 above, Enbridge will implement in-place restoration by reestablishing/restoring disturbed wetlands in its original location. These wetlands will continue to provide floristic diversity, fish and wildlife habitat, flood protection, water quality protection, shoreline protection, groundwater recharge and discharge as well as aesthetic/recreational/and educational value. Although there may be a shift in wetland type within the permanent right-of-way (forested to emergent wetland type), these wetlands will still provide functional value. As previously stated, Enbridge will also provide in-kind compensation by the purchase of compensatory wetland mitigation credits for the temporary loss of wetland functional values, the permanent conversion of wetland type, and the approximately 0.02 acre of wetland permanent fill.
2) Define the activities that will result in temporary wetland impacts from the proposed project (consider worse-case scenario). The application narrative lists temporary impacts from pipeline workspace, access roads, and pipe yards. Clarify if the temporary impacts are from placement of matting, excavation, access through wetlands that result in a discharge of fill, etc. Update the Wetland and Waterway Crossing Table with these temporary activities and the amount of fill from each activity.	Temporary wetland disturbance will occur within the Project's construction workspace, with includes the temporary construction right-of-way, access roads, and pipe/contractor yards. Direct wetland disturbance within Project pipe/contractor yards have been avoided to the extent practicable. Enbridge will install erosion and sediment controls at these locations to minimize potential secondary impacts, such as sedimentation from stormwater runoff from the yards. Wetland disturbance associated with the use of temporary access roads could potentially include rutting/soil mixing and compaction. Enbridge has committed to installing temporary matting through wetlands along access roads to minimize the risk of Project related rutting/soil mixing and compaction. Additionally, Enbridge will install erosion and sediment controls in accordance with its EPP, SWPPP, and applicable Stormwater permit conditions. Wetland disturbance within the pipeline construction right-of-way will be associated with clearing, construction vehicle equipment travel through the wetland, excavation and temporary sidecasting of excavated material (either by conventional means or blasting), and temporary dewatering as needed to safely install the pipeline. Similar to temporary access roads, Enbridge has committed to installing temporary matting through wetlands along the construction right-of-way to minimize the risk of Project related rutting/soil mixing and compaction. Additionally, Enbridge will install erosion and sediment controls in accordance with its EPP, SWPPP, and applicable Stormwater permit conditions. The "Temporary Impacts' column on the Wetland and Waterbody Crossing Table (column AV) includes the extent of planned wetland disturbance activities (discharge of fill), whether from matting, excavation, temporary spoil storage, or other Project activities. It is not possible to quantify precisely the area within any given wetland that will be impacted by a specific construction activity as multiple construction activities will occur in the same place over the course of the Project. For example, Enbridge cannot anticipate the exact amount of area that will be matted within a given wetland as that will be based on site-specific conditions at the time of construction as necessary to provide a safe and stable working surface for construction activities while minimizing impacts to wetland areas. Additionally, the extent of surface area that will be used for temporary wetland spoil storage will be dependent on the soil type, soil moisture content, and ability to stack the material in a cohesive pile (angle of repose). The

	wetland excavation width for pipeline installation in most wetlands will be fewer than 30 feet of the 95-foot work space limit because of the soil structure in the wetlands on this Project.
3) Clarify if segregated soils will be placed on construction matting or similar material during temporary storage and management.	Enbridge does not propose to store segregated soils construction matting or similar materials during temporary storage and management. Although this method can be used to manage spoils on small projects with limited ground disturbance, it is not practicable on large projects. Enbridge's construction process is designed to limit the duration of construction, specifically open excavation, in wetlands, which minimizes impacts. Inclusion of matting under to spoil storage increases duration of construction in a wetland, increases equipment traffic in a wetland to install and remove matting, increases the duration required to complete backfill, and does not result in less wetland disturbance.
4) Provide information on storage, containment, and management of trenched and side-casted saturated wetland soils. Provide figures depicting this information, similar to that found in Figure 18 (Typical Wetland Crossing) of the EIR/EPP.	Deep, non-cohesive wetland soils can be challenging to manage within the construction right-of-way. The width of the ditch can expand wider than a typical excavation due to sloughing of the trench walls. Additionally, the ability to sidecast and "stack" excavation material is dependent on factors such as the depth of non-cohesive soil, site-specific soil characteristics, and water/saturation levels. Saturated, non-cohesive soils have a lower angle of repose for sidecast materials; however, these soil considerations do not require topsoil segregation so more room is available. Enbridge will install additional erosion and sediment controls along the edge of the right-of-way where there is increased risk of material migrating outside of the approved workspace. Enbridge has included a new typical drawing depicting how the right-of-way will be used under these conditions, (see **Attachment 11** "Right-of-way Typical for Non-Cohesive Wetland Soils").
5) There may still be opportunity to segregate topsoil and subsoil within saturated wetlands, for example, depending on the wetland's "level" of saturation (such as wetlands with standing water vs wetlands without standing water, but with wet/glistening soil) or soil profile (such as continuous vs discrete soil profiles/layers). Provide additional information on how Enbridge will evaluate whether saturated soils can be segregated during trenching in wetlands and how they will attempt to segregate topsoil and subsoil in saturated wetlands.	The practicability to separate topsoil from subsoil in saturated wetlands is driven by the level of saturation and the soil properties. In standing water wetlands, organic soil segregation is not typically practical; however, the Contractor will attempt to segregate as much of the organic layer as possible based on site/saturation conditions. Where the wetland has standing water or saturated soil to the surface and the top organic layer, or "topsoil" is non-cohesive, that layer cannot be effectively segregated. Where there may be standing water over more cohesive layers, Enbridge will take the first excavated bucket of material and separate it as best as practicable from subsoil material based on the limitations of the soil characteristics and the limits of workspace. That material will be used during backfill as the final restored layer.

6) Update the Wetland and Waterway Crossing Table with the estimated amount of wetland impact from dynamite blasting (or clarify if this amount is included in the amount of wetland impact from excavation activities).	Enbridge has added an additional column to the Wetland and Waterbody Crossing Table listing anticipated amount of wetland disturbance associated with blasting. However, the acreage of Temporary Wetland Impacts (acreage) previously listed in the Wetland and Waterbody Crossing Table accounts for all Project related disturbance within a wetland including all workspace requirements (temporary workspace and permanent easement), area of excavation, area of matting, area of temporary spoil storage.
7) In March 2020, DNR requested of Enbridge "why no wetlands are proposed to be installed across via directional bore." In April 2020, Enbridge's response was "Enbridge has attempted to minimize wetland disturbance within riparian areas of waterbodies proposed to be crossed using the HDD method by extending the HDD, where feasible based on site conditions, to include riparian wetlands. Those wetlands are identified in the updated Attachment F. While HDDs reduce the potential impacts to wetlands associated with excavation, they require significantly larger workspace, which could increase impacts to other adjacent sensitive resource areas." A. Provide greater detail on why non-riparian wetlands are not proposed to be crossed via boring. Details should include discussion on workspace size, geology and risk of frac-out,	a. Non-riparian wetlands are generally not proposed for HDDs. Please see Enbridge's discussion on the applicability of the HDD method and advantages/disadvantages (**Attachment 9**). The reason HDDs are not planned for non-riparian wetlands on the Project is that non-riparian wetlands have stable soils which can be crossed by open cut methods. Open cut crossings are completed in a fraction of the time it takes to complete an HDD and the less time of disturbance in an area provides the least impact. There are situations where saturated (e.g., standing water) wetlands with unconsolidated substrates, boggy wetlands, and deep peat wetlands, as examples, may be more suitable to an HDD crossing or push-pull type installation across the wetland, but these features have not been identified on the Project that are not already proposed as HDDs. One way to reduce both primary as well as secondary impacts is to complete construction in an expedited fashion to minimize the duration of temporary impacts associated with disturbance. The quickest way to cross a wetland and limit the duration of secondary impacts is to complete an open-cut crossing. Open-cut crossings minimize the duration of wetland construction and allow restoration of the right-of-way to occur relatively quickly. Open-cut crossings do result in temporary impacts to the wetland. However, completion of work on the right-of-way and subsequent restoration of the right-of-way can occur more expediently which can minimize the secondary impacts which results in a net benefit to the Project. b and c. The Project pipeline centerline will cross approximately 7.6 miles of wetland. During initial field investigations Enbridge did not differentiate the riparian habitat portion of a wetland that is adjacent to a waterbody. To answer this question, Enbridge classified the entire wetland and/or wetland complex adjacent to a delineated waterbody as "riparian." Using this assumption, approximately 5.0 miles of wetlands are non-riparian and approximately 2.6 miles of riparian wetlands. There are a total of 540 wetlands* crossed by the Project's construction right-of-way, resulting in disturbance of approximately 88.5 acres. Of those totals, 350 wetlands, or approximately 58.9 acres, have been classified as non-riparian, and 190 wetlands or approximately 29.6 acres have been classified as riparian. This analysis identifies 35 non-riparian wetlands and 37 riparian wetlands that will be crossed by HDD or Direct Pipe installation methods. Use of the HDD/Direct Pipe method at these locations accounts for a total of 2.6 acres (0.65 miles) of non-riparian and 3.5 acres (0.88 miles) of riparian wetland crossings, for a total of 72 wetlands, 6.13 acres, and 1.5 miles crossed using a trenchless crossing method.

logistics, cost, technology, access, etc. b. Quantitate how many and the total amount (size) of non-riparian wetlands that are proposed to be crossed by the pipeline and how many of those non-riparian wetlands are proposed to be crossed via HDD. c. Quantitate how many and the total amount (size) of riparian wetlands that are proposed to be crossed by the pipeline and how many of those riparian wetlands are proposed to be crossed via HDD.	For the remainder of the pipeline route, there is a total of 468 wetlands in areas to be installed using conventional installation techniques, including wetland crossed by the pipeline centerline as well as wetland within the construction workspace, but not crossed by the pipeline centerline. There are 315 non-riparian wetlands and 153 riparian wetlands. Of these totals, there are 107 non-riparian wetlands (3.0 acres) and 73 riparian wetlands (3.3 acres) that are not crossed by the Project centerline. The remaining 288 wetlands will be crossed by conventional construction techniques, accounting for a total of 6.1 miles and 76.1 acres. This includes 208 non-riparian wetlands (approximately 4.3 miles and 53.3 acres) and 80 riparian wetlands (approximately 1.8 miles crossed and 22.8 acres). * Counts of wetlands in this answer include small, isolated, single-component wetlands up to large, multi-component wetland complexes. Individual wetlands on the Project are identified by the wetland's unique identifier which included the first four letters and three or four numbers of the identifier. For example, the wetland wasa1010, near milepost 1.0, contains two separate components wasa1010e an ephemeral component and wasa1010s a scrub-shrub component. These two components are part of the wetland complex wasa1010. Both components of wetland wasa1010 were considered one non-riparian wetland for the purposes of this comparison.
8) In March 2020, DNR requested of Enbridge "Can the directional bores planned at road and railroad crossings be extended to bore across adjacent wetlands?" In April 2020, Enbridge's response was "Conventional boring is typically limited to an installation distance of approximately 300 feet, depending on site factors including soils and topography. Enbridge has endeavored to extend bores to the extent practicable." a. Provide details on where Enbridge has extended HDD installation	It is important to differentiate between bores and HDDs. Conventional bores, used at paved road crossings, are a very different construction method than HDD and have a maximum installation distance of approximately 300 feet for the diameter of pipe to be installed on this Project. Wetland and waterbody features adjacent to roads are primarily associated with road ditches. Where road bores will be used these roadside features are generally within the maximum bore distance and will be avoided. Please see Enbridge's description of the benefits and limitations of HDDs for additional discussion of the HDD installation method. Horizontal directional drills on this Project have a minimum installation distance of approximately 1,300 feet due to pipe diameter and wall thickness. The minimum HDD drill on this Project is approximately 1,700 feet. Enbridge has designed HDD workspace to avoid impacts to adjacent wetlands and waterways where practicable. Below are descriptions of the design decisions Enbridge made to reduce impacts at each of the proposed HDD locations. **<u>White River HDD:</u>** Exit workspace (north side) was extended back 770 feet to reduce impacts to forested wetland wasm002f. The workspace is specifically situated in the largest available upland area.

across adjacent wetlands to road and railroad crossings. b. For wetlands adjacent to roads/railroad crossings where HDD was not extended, provide further justification.	The entrance workspace (south side) was extended back 430 feet to reduce impacts to forested wetland wasd021f. Workspace is located as much as possible in upland areas with neck-downs to avoid wetland impacts where possible. To further extend or shorten the HDD would result in increased wetland impacts. **<u>Deer Creek HDD</u>**: Exit workspace (south side) was extended back 445 feet and as far as practicable to reduce impacts to forested wetlands wase073f and wase074f. HDD entrance workspace has no additional wetlands in the immediate area to avoid. **<u>Marengo Direct Bore</u>**: The north side workspace was extended back 365 feet and specifically designed to reduce wetland. Impacts are avoided or reduced for forested wetland wase1055f and intermittent waterbodies sase1018i and sase1019i with the current workspace configuration. To extend the drill workspace further would not result in additional wetland or waterbody impact reductions. **<u>Brunsweiler River HDD</u>**: The Brunsweiler HDD has significant engineering constraints due to proximity of roads. However, both entry (west side) and exit (east side) workspace are situated to avoid wetland impacts to the extent practicable. The HDD entrance workspace is extended to specifically reduce impacts to wetlands wasc1052e and necked down significantly to reduce impacts to wetland wasc1053e. The exit workspace is situated, to the extent practicable, to reduce impacts to wetland wasc1028e. Few changes to workspace are possible for this HDD and workspace is primarily located in upland areas. **<u>Highway 13 HDD</u>**: Workspace/HDD changes have been designed to minimize wetland impacts to the extent practicable. **<u>Trout Brook HDD</u>**: HDD is extended 425 feet on the entrance (east) side to reduce impacts to forested wetland wasc1045f, scrub/shrub wetland wasc1044s, and perennial waterbody sasc1014p (UNT of Billy Creek). Additional workspace/HDD changes would not result in further impact reduction. **<u>Billy Creek HDD</u>**: Careful balancing of engineering constraints and environmental impacts were necessary to layout the Billy Creek HDD. Workspace has been placed in upland areas to the extent possible and the HDD has been located to avoid wetland, waterbody, and road impacts. Workspace/HDD changes would not result in additional impact reduction. **<u>Silver Creek HDD</u>**: Workspace/HDD changes would not result in additional impact reduction.

<table>
<tr><td></td><td><u>Krause Creek HDD</u>:
Both entry and exit workspace are situated in upland areas to avoid wetland impacts to the extent practicable. To further extend or shorten the HDD would result in increased wetland impacts.

<u>Bad River HDD</u>:
Workspace and the configuration of the HDD is heavily limited by engineering constraints. Extending the HDD would not have been practicable and wetland impacts have been reduced to the extent practicable.

<u>Tyler Forks HDD</u>:
Moving the HDD entrance (southwest side) would not result in any change to wetland impacts. The HDD exit (northeast side) workspace is situated to avoid impacts as much as possible. To further extend or shorten the HDD on the northeast would result in increased wetland impacts.

<u>Potato River HDD</u>:
Both entry and exit workspace are situated to avoid wetland impacts to the extent practicable.
The HDD entrance (south side) was extended 334 feet to reduce impacts to forested wetland wirc1002f. The entrance workspace was then carefully placed between wetlands to minimize wetland impacts to the extent practicable. Impacts to forested wetlands wird003f and wira016f are likewise reduced due to the current length and configuration of the HDD. To further extend or shorten the HDD would result in increased wetland impacts.<u>Vaughn Creek HDD</u>:

Impacts were avoided to the extent possible due to engineering constraints, moving the exit (south side) workspace would require a longer pullback which is not possible due to roads and railroads. Additional wetland impacts reductions were not practicable.</td></tr>
<tr><td>9) Provide greater detail comparing the workspace size and amount of tree/shrub clearing in wetlands that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.</td><td>Please see Attachment 9. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows:
Geotech work could require tree/shrub clearing to complete the work along the HDD path
The HDD path would be cleared 30 feet for areal inspection according to PHSMA requirements versus the 95 feet if the crossing was trenched. The 30 feet would potentially need to be widened and matted to along the mainline crew to progress down the construction right-of-way to avoid a move around of the crew. The pipeline routing by trenching avoided wetlands while the HDD path would have to be straight meaning even though the width of clearing was reduced the length of clearing would be longer because less of the wetland would be avoided. The total acres of wetland clearing as a result would not be 30 feet compared to 95 feet as a percentage it would be less of percentage in reduction and actually could be more depending on the specific location.</td></tr>
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	• The HDD workspaces on each side would increase the workspace from a 95 feet width if in wetlands to a 200 feet width for approximately 200-250 feet. If the workspace could be located in uplands the trenching width would change from 120 feet width to a 200 feet width for approximately 200-250 feet. • The HDD pull back string construction workspace requires approximately the same width as the 95 feet for wetland crossing resulting in the same clearing and matting impacts as for trenching in the best case. The routing avoided wetland crossing lengths by avoiding the wetlands and changing alignment to minimize the crossing lengths. This would have to be straightened for the pipeline pull back string which would increase impacts and if the pull back string needed a new alignment off the existing construction footprint the increased impacts would be even greater. • The project construction duration would increase which has negative impact. • The project construction costs would increase as well.
10) Clarify whether wetland clearing (forested and/or shrub) would take place along the pipeline ROW, regardless of the pipeline installation method (trenching vs boring). Clarify if the width and/or length of wetland clearing would differ between the pipeline installation method.	Forested and scrub/shrub wetlands cleared over Enbridge's permanent right-of-way (30 feet centered on the centerline) will be cleared regardless of trenching or boring of a wetland for maintenance, security, and monitoring activities. Additionally, temporary workspace and travel lanes are necessary for construction and cannot be located on, or close to, a bore path or trench line. Any potential reduction in workspace within a bored wetland would be limited to workspace planned for wetland spoil storage.
11) Provide greater detail comparing the amount of temporary wetland fill (via excavation) that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.	Please see **Attachment 9**. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows: • The temporary wetland fill from trench material side casting would be reduced. • The matted travel lane down the HDD path would be the same in either case. • The matted area for the pipeline pull back string and HDD equipment would be the same or large than the trenching method for the HDD if the alignment did not need to change for the HDD and pull back string. If the alignment was shifted and a false row required for the pull back string the impacts would increase for the HDD
12) Provide greater detail comparing the amount of temporary wetland fill (via	Please see Enbridge's response to Question # 11 above.

placement of construction matting) that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.	
13) Provide greater detail comparing the amount of temporary wetland fill (via soil rutting/soil mixing from equipment use and access) that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.	Wetlands are matted to prevent soil rutting and mixing from equipment use and access if a wetland is trenched or bored regardless of the wetland being high-quality or not.
14) Provide greater detail comparing the amount of permanent wetland fill that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.	There would be no more or no less permanent wetland fill if any wetland is trenched or bored, high-quality or not. Permanent wetland fill is only planned at valve sites (along permanent access roads) where it cannot be avoided.
15) Provide greater detail comparing the amount (size) of wetlands that will be crossed and/or impacted from vehicle access and/or equipment use from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	There would be no greater or lesser areal impacts due to crossing or vehicle/equipment access if any wetland is trenched or bored, high-quality, or not. Vehicle crossing and access will be limited to matted areas unless wetlands are frozen. Please see **Attachment 9**. Temporary impacts would be difficult to calculate because while in-stream and adjacent impacts would be eliminated, additional impacts would need to be accounted for HDD construction work.

16) Provide greater detail comparing the temporary and permanent impacts to wetland functional values that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching. Include a comparison specific to high-quality wetlands.	The primary impact of pipeline construction and right-of-way maintenance activities on wetlands is the temporary removal of wetland vegetation during active construction and the conversion of forested and shrub-scrub wetland vegetation to emergent wetland vegetation within the permanent right-of-way as outlined in Enbridge's Monitoring Plan. There will be approximately 26.1 acres of high-quality wetlands based on the DNR Wetland Rapid Assessment Method ("WRAM") temporarily impacted regardless of if the wetland is trenched or bored with approximately 75.1 acres of medium, low, or low-invasive wetlands temporarily impacted from construction. Construction can temporarily diminish the recreational and aesthetic value of the wetlands crossed; and temporarily remove or alter wetland wildlife habitat. These effects would be greatest during and immediately following construction and most, with the exception of vegetation and habitat impacts, will cease after the trench is backfilled, contours are restored, and erosion controls are installed.
17) Provide greater detail comparing the amount (size) of dynamite blasting that would take place in wetlands as a result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Installation of the pipeline using the HDD technique would avoid the use of blasting between the HDD entrance and exit. However, route adjustments required in order to accommodate an appropriate alignment for an HDD could potentially increase, decrease, or be equal to the amount of proposed blasting. Please see Enbridge's supplemental text describing Enbridge's routing process and advantages/disadvantages of the HDD method (**Attachment 9**).
18) Provide greater detail comparing the risks of introducing and/or spreading invasive species in wetlands that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	The risk of introduction/spread of invasive species is the same regardless of method used for pipeline installation. A right-of-way will be established along the entirety of the pipeline path. As described in 4.1 of the EPP, Enbridge's plans "To prevent the introduction of identified noxious weeds and invasive species to the Project, construction equipment will be cleaned prior to arriving on site. Equipment designated for use within waterbodies will be washed and dried prior to use. Purge and clean all pumps before proceeding from one location to the next if designated noxious weeds or invasive species (e.g., zebra mussels, Eurasian milfoil, etc.) are known to be present in the area." Furthermore, "Prior to clearing and grading of the construction right-of-way and pending landowner permission, major infestation areas identified during surveys or by Enbridge's EIs may be treated with the recommended herbicides or their equivalents as identified through consultation with local authorities. All proposed herbicides will be reviewed and approved by Enbridge's Environment Department prior to use. Alternatively, full construction ROW topsoil segregation may be implemented for weed control in upland areas to allow equipment to work through the area after topsoil has been stripped, as long as equipment stays on the subsoil (clearing, grading, and restoration equipment will still be cleaned)." In addition, Enbridge's INS Plan outlines management strategies that will be used to minimize the introduction and spread of INS identified within the Project construction workspace, access roads, and improved haul routes in compliance with applicable laws or regulations. The INS plan is considered complimentary to Enbridge's EPP. Two primary strategies are developed to minimize the spread of INS within the Project Area. The first strategy is application of prevention measures to limit spread of INS through establishment of INS BMPs. Prevention measures described within the INS Plan (2.3.1.1 – 2.3.1.4) will be employed to limit the spread and introduction of INS through activities such as construction or site management. The second strategy is active management to minimize the spread of documented occurrences of terrestrial INS. Active management

	practices described in 2.3.2 of the INS Plan will be selected based on the site-specific conditions, timing, and INS ecology. Furthermore, the INS Plan describes procedures that will be utilized when working in waterbodies in compliance with Wisconsin Admin. Code NR 40, and Wisconsin Manual Code 9183.1.
19) Provide greater detail comparing cumulative wetland impacts that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").
20) Provide greater detail comparing the methods, timeline, and costs of restoration in wetlands as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows: • The HDD method would not have a trench line to restore. Matting may still be needed along the HDD path to complete clearing operations and for equipment travel in the event of an inadvertent release of drilling fluid. Matted areas would still need to be restored in both cases, but the reduced area of restoration along the HDD pathway would be less. • The HDD process may require alignment changes and/or a false construction right-of-way for the pipeline pull back string. The result could be increased timeline and costs for restoration for the HDD versus trenching depending on the specific amount of HDD alignment and false construction right-of-way needed. • The HDD process over the same distance of construction is longer than trenching. The time from temporary fill initiation to time of restoration would be greater with the HDD process. • The Project construction time would increase overall with an HDD. • Any cost savings for restoration by HDD would be small in comparison to the increased costs from implementing the HDD method (e.g., move arounds).
21) Provide greater detail comparing the methods, timeline, and costs of post-construction monitoring in wetlands as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. The postconstruction monitoring methods, timeline, and costs would not change materially between either installation method. The post-construction monitoring task requires the monitors to traverse the entire construction footprint and monitor the wetlands. The main driver of the cost and timeline is staff time to complete the field work, process the data, and write the report. The small changes in field time for monitoring between the two construction crossing methods would not be material enough to determine a change.

22) Provide greater detail comparing the project costs that would result from 1) installing the pipeline via boring in wetlands and 2) installing the pipeline via trenching in wetlands.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").
23) Provide greater detail comparing the risks of frac-out, spills, and/or contamination in wetlands as a result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	HDD is a construction technique that is chosen to reduce or avoid environmental impact. Whereas conventional trenching as described by Enbridge in EPP Section 10.0 "Trenching in uplands typically occurs using a backhoe excavator or a rotary wheel ditching machine. A backhoe is typically used to excavate the trench in wetlands. Excavated material will be side cast (stockpiled) within the approved construction right-of-way separate from topsoil." Therefore, the risk of an inadvertent return ("IR") is only present during HDD operations. Please see **Attachment 9** to better understand applications and limitations of HDD within the context of this Project. Enbridge has evaluated the risk of IR by utilizing geotechnical information, hydrofracture analysis and IR risk evaluation analysis to determine suitable areas for HDD application and to minimize the risk of IR. As described in Section 30.0 of the EPP, HDD drilling fluids/mud consists primarily of water mixed with inert bentonite clay. Additives may be deemed necessary based on evaluations and recommendations made by the Mud Technician during drilling and hole opening operations. If the need for drilling fluid additives does arise, it is anticipated that all additives used will be listed on the Wisconsin Department of Natural Resources Approved Horizontal Directional Drilling Products List. Section 30 of the EPP, as well as the crossing specific IR Mitigation and Contingency Plan provides information about monitoring for IR, and also dictates a plan of action to contain and remediate areas impacted by an IR should an IR occur. As described in the crossing specific IR Mitigation and Contingency Plan the training of MTI drilling personnel and the application of methods described methods described in the IR Mitigation and Contingency Plans significantly lessen the potential for spills of drilling fluid. The risks of releases and contamination is minimal during pipeline installation (HDD, conventional trenching methods). The risk of a release is derived primarily from any fuels, petroleum products, or other regulated substances released from equipment during construction. The risk and impacts of spills during the Project are mitigated by Enbridge through proper planning and preventative measures. Spill prevention, containment and control measures for this Project are captured throughout Section 29 of the EPP.
24) Provide greater detail comparing the technological and logistical constraints and limitations of working within wetlands as a result from 1) installing the pipeline via boring and	Please see **Attachment 9**. Pipeline Impact Minimization through Routing, Design and Crossing Methods.

2) installing the pipeline via trenching.	
25) Provide site-specific details on why the following high-quality wetlands cannot be crossed via boring. Compare how boring vs trenching the pipeline through these wetlands would affect wetland fill amounts, functional values, project costs and logistics, risk of frac-out, wetland clearing amounts, water quality, wildlife habitat, restoration/stabilization costs, and post-construction monitoring costs. a. wasc1055f_w b. wase1056f_w c. wirb1005f_w d. wirc10003f_w e. wirc1010f_w f. wirc1014f_w g. wirc1022f_w h. wasc071f i. wasd1010f j. wasw012f k. wird027f l. wirc013f	HDDs are an expensive construction technique that have benefits as well as limitations and bring additional Project risks that are not present with open trench construction techniques. Please see **Attachment 9**. Wetland delineations on the Project show most wetlands have stable soils which can be crossed by open cut methods. Open cut crossings are completed in a fraction of the time that it takes to complete an HDD, and the less time of disturbance in an area during construction results in the lease amount of impacts. There are situations where saturated (e.g., standing water) wetlands with unconsolidated substrates, boggy wetlands, and deep peat wetlands, as examples, may be more suitable to an HDD crossing or push-pull type installation across the wetland, but these features have not been identified on the Project that are not already proposed as HDDs When conducting field surveys in preparation for routing and design of workspace, Enbridge surveys an area wider than the final workspace layout. In doing so, wetlands and waterbodies are often delineated that are not within the final Project workspace. Several wetlands identified by the DNR in this question are included in this group of avoided wetlands. a. wasc1055f_w – wetland wasc1055f is a small (0.02 acre), forested wetland located near milepost 13.95. The wetland is not within construction workspace and will not be bored, trenched, or otherwise impacted by the project. The wetland is located 85 feet away from the Brunsweiler River HDD drill path and approximately 10 feet away from access road 026. The wetland has not been identified as high quality. The name "wasc1055f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented. b. wase1056f_w – wetland wase1056f is a small (0.03 acre), forested wetland located near milepost 11.25. The wetland is not within construction workspace and will not be bored, trenched, or otherwise impacted by the project. The wetland is located 77 feet away from the Marengo River HDD drill path and 75 feet away from the Marengo River. The closet workspace (55 feet away) is intended for the purpose of accessing Marengo River to acquire water for use in hydrostatic testing. Osredkar Road is between the workspace and the wetland. The name "wase1056f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented. c. wirb1005f_w – wetland wirb1005f is a small non-riparian forested wetland located on Iron County Forest land near milepost 30.8. The 50 foot diameter, nearly round wetland is not crossed by the centerline, but approximately 77 square feet of the wetland will likely be impacted by the proposed trench. All of the 0.04-acre wetland will be cleared for construction activities and half (0.02-acres) of the wetland, in the permanent right-of-way, will be permanently converted to palustrine emergent wetland. The small, isolated wetland may not practicably be crossed using a trenchless construction method. Extending a drill in this portion of the pipeline is not practicable because workspace on the south is limited by a private residence, and expanding drill workspace to the north would result in additional impacts to high quality wetland wirb1007f. The name "wirb1005f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented.

	d. wirc10003f_w(sic) – wetland wirc1003f is the forested component of a wetland complex near milepost 37.0 on Iron County Forest land. The small, delineated area is part of a larger wetland complex. The full size of the wetland is not known because it extends outside the survey corridor. The wetland is not in the construction right-of-way, it is not crossed by the proposed centerline, would not be impacted by trenching, and is not identified as a high-quality wetland on the project. The edge of the wetland is crossed by the edge of access road 090 for a total of 34 feet. The palustrine emergent component of the wetland extends an additional 34' along the edge of the access road. Although small, the wetland is bisected by two waterbodies (sirc1003i and sirc1004e). The portion of the wetland impacted by the access road will be bridged/matted. The name "wase1003f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented. e. wirc1010f_w – wetland wirc1010f is the forested component of a wetland complex near milepost 36.8 on Iron County Forest land. The small, delineated area is part of a larger wetland complex. The full size of the wetland is not known as it extends outside the survey corridor. The wetland is not in the construction right-of-way, it is not crossed by the proposed centerline, would no be impacted by trenching, and is not identified as a high-quality wetland on the Project. The forested component of the wetland (wirc1010f) is not impacted by any project workspace. The palustrine emergent component (wirc1010e) is crossed by access road 090 for a total of 8 feet. The portion of the wetland impacted by the access road will be bridged/matted. The name "wirc1010f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented. f. wirc1014f_w – wetland wirc1014f is the forested component of a wetland complex near milepost 36.0 on Iron County Forest land. The small, delineated area is part of a larger wetland complex. The full size of the wetland is not known as it extends outside the survey corridor. The wetland is not within construction workspace and will not be bored, trenched, or otherwise impacted by the Project. It is not identified as a high-quality wetland on the Project. The wetland is 27 feet' from the edge of access road 087. The name "wase1014f_w" is the specific identifier of the wetland data point where soils and other information about the wetland were documented. g. wirc1022f – wetland wirc1022f is a small, forested wetland near milepost 34.8 on Iron County Forest land. The isolated, non-riparian wetland is approximately 0.06 acres in total with 0.04 acres impacted by construction and 0.01 acres permanently converted to palustrine emergent wetland. The wetland is approximately 45 feet long within the workspace, but is not crossed by the centerline and not likely to be trenched. The size of the wetland does not warrant drilling method and extending a drill path would result in additional high-quality wetland impacts. h. wasc071f – wetland wasc071f is a high-quality forested wetland in Ashland County near milepost 22.7. The wetland is part of a larger wetland complex that extends outside the Project's surveyed area. It is proposed for a 520 foot open cut crossing and has two smaller high-quality wetlands on either side. Trenchless construction is not practicable for wasc071f due to Golf Course and Gilgen Roads on one side and the Krause Creek HDD on the other.

	i. wasd1010f – wetland wasd1010f is a high-quality forested wetland located in a complex construction area of the proposed pipeline route. The wetland is located on a tight bend in the pipeline where the pipeline enters the wetland from the west and 550 feet later leaves the wetland to the north. The wetland is situated between steep slope areas of the pipeline route and in an area planned for blasting assisted trenching. j. wasw012f – wetlands wasw012f and wasw013ss are medium quality scrub-shrub/forested wetlands located in a complex construction area of the proposed route. The wetlands and Camp Four Creek (sasw005) are within an area where blasting is expected. Installation using the HDD would avoid blasting, reduce temporary wetland disturbance within wasw012f and wasw013ss; however, the workspace configuration would require the drilling operation set up with the entrance to the south and the exit to the north, or would require additional right-of-way through wetland wasw026f, a high quality wetland with high floristic quality. Accessing the HDD site would increase construction-related traffic through wasw026f, including needing to bring in the HDD rig through the wetland. Additional traffic would occur due to a move around as well, or wasw013ss and wasw12f would need to be matted to allow construction equipment travel and avoid a move around. There would also be disturbance to wasw026f associated with acquiring the necessary geotechnical information required for the HDD. Access roads to an HDD and to allow the construction move around through wasw027e, wasw011f, and wasw009e. Please see Attachment 9 for a further discussion on HDDs. k. wird027f – wetland wird027f is part of a large wetland complex on Iron County Forest land near milepost 32.8. The high-quality wetland extends to the east and west of the delineated portion crossed by the Project centerline. The pipeline route curves coming into and out of the wetland which would require HDD pullback workspace to extend off right-of-way and create additional impacts that are avoidable with an open cut crossing. A pullback to the southwest would be difficult due to varied topography and would require substantial clearing and grading. A pullback to the northwest would add additional impacts to high-quality wetland wird028f. l. wirc013f – wetland wirc013f is part of a large, expansive wetland complex on Iron County Forest land near milepost 34.4. To the southwest is the Tyler Forks HDD. The pipeline curves on the north side of the wetland to avoid an area with steep varied topography. Any adjustment in workspace would increase impacts to high-quality wetlands in the areas adjacent to the wetland crossing.
26) Provide details on why the wetlands listed with "High" WRAM Functional Value Rating on the Wetlands and Waterbodies Crossing Table cannot be crossed via boring. Compare how boring vs trenching the pipeline through these wetlands would affect wetland fill amounts, functional values, project costs and logistics, risk of frac-out, wetland clearing amounts,	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").

water quality, wildlife habitat, restoration/stabilization costs, and post-construction monitoring costs.	
27) Clarify if construction matting is proposed to be placed in wetland for greater than 60 consecutive days during the growing season. If so, clarify if a matting restoration plan has been reviewed and approved by DNR. If matting will be placed in wetland for greater than 60 days during the growing season, and a matting restoration plan has not been submitted to and reviewed by DNR, please provide a wetland matting restoration plan.	It is anticipated that construction matting will be placed in wetlands for greater than 60 consecutive days during the growing season. Enbridge' EPP covers restoration activities and serves as a matting restoration plan. Per Enbridge's EPP, the appropriate class of erosion control blankets will be installed in accordance with manufacturer's recommendations, state Department of Transportation (DOT) specifications, and WI DNR Technical Standards 1052 and 1053. Post construction, all disturbed areas, including construction matting locations, will be restored and revegetated. As stated in the EPP, non-standing water wetlands will be seeded post construction using the mix provided in the EPP to provide temporary cover and allow natural revegetation via the seeds and rhizomes in the topsoil. No fertilizer, lime, or mulch will be applied in wetlands. Enbridge does not plan to seed standing water wetland areas because the reestablishment of vegetation occurs best through natural process without supplemental seeding. Wetlands identified in the Project area will be monitored following Enbridge's Monitoring Plan. Post-construction restoration will be geared toward the final goal of restoring pre-construction characteristics of the resource (i.e., vegetation and hydrology). Enbridge will reseed areas that are not adequately revegetated during the first growing season. If impacts on hydrology are identified, Enbridge will take actions to restore the hydrology. Language has been added to Enbridge's EPP (Section 24.3 "Construction Matting")
28) Provide details on how the amount of permanent and temporary wetland clearing has been minimized to the extent practicable.	Please see **Attachment 9** and the alignment sheets previously provided as these discuss and show where wetland clearing was avoided and minimized through the routing process. Wetland impacts are further reduced by narrowing the Project workspace where practicable. Enbridge has reduced the typical construction workspace in most wetlands from 120 feet to 95 feet. This workspace reduction has resulted in avoidance of approximately 15.5 acres of wetland temporary impacts. Enbridge has further reduced temporary impacts along the HDD/Direct Pipe paths at most HDD/Direct Pipe locations by approximately 16.0 acres. Enbridge's reduced clearing along the permanent easement from 50 feet to 30 feet (at most locations) has reduced the permanent forested/scrub-shrub wetland conversion to emergent wetland by 3.5 acres which includes reducing forest wetland conversion by approximately 3.2 acres and scrub-shrub wetland conversion by approximately 0.3 acres.
B. Waterways – General:	

1) Provide greater detail comparing the amount of temporary waterway impacts (via dredging, excavation) that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows: • The project has 72 open cut waterbody crossings (excavated bed and bank). The total amount of disturbance is approximately 370 feet for these crossings. The majority of these impacts are to intermittent and ephemeral streams (approximately 262 feet). Intermittent and ephemeral streams account for approximately 71 percent of the total impacts. • The routing, Waterbody Crossing Method Selection, and engineering analysis and design process have avoided and/or minimized the impacts to the numbers provided above. • The HDD method is generally suitable to cross sensitive or particularly deep, wide, or high-flow waterbodies where the site-specific topography and the local geologic substrate are suitable. It is generally not practicable for crossing narrow waterbody crossings, particularly for large diameter pipelines which require long HDDs. While the HDD method avoids cutting the bed and banks of a waterbody, this method has specific requirements (e.g., longer duration, need for large additional workspace for equipment and pipe string fabrication, and suitable topography and subsurface conditions), that limit its feasibility in some areas without resulting in additional resource impacts and/or environmental disturbance.
2) Provide greater detail comparing the amount of permanent waterway impacts that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods"). Enbridge has committed to restoring the beds of waterways as near as practicable to their pre-construction elevations and consistency. The impacts to waterways will be temporary and no permanent impacts will occur.
3) Provide greater detail comparing the impacts to water quality as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. Enbridge has performed sediment dispersion analysis using computational dispersion modeling tools to quantify and bound the range of potential concentrations of sediment within the water column, the downstream timing and extent, and the depositional footprint of sediments that may be caused by both planned and accidental discharges of sediment due to installation techniques of the relocated pipeline, as construction activities cross the range of water bodies within the Project Area. The pipeline installation methods considered include dry trenching methods in smaller watercourses along the pipeline routes, as well as the potential for an inadvertent return into large watercourse crossings where HDD will be used. These analyses bound the expected and accidental events and types of consequences that could result in a range of magnitudes and extents of potential effects during pipeline construction.

	Key findings from the report include: • For trenched methods at water crossings, the proposed installation activities would be expected to have a lesser magnitude and more brief effect on TSS in the water column than storm-related events. As compared to storm-related events that can cause TSS values to exceed hundreds to thousands of mg/L over periods of time that are longer than theses installation periods, trenched crossings would be expected to have TSS concentrations near the installation site in the low hundreds of mg/L, which would decrease below 19 mg/L by approximately 1,000 meters downstream of the crossing and last only ~4-10 hours per construction phase. • Successful HDD methods will have no sedimentation impacts; however, TSS concentrations resulting from hypothetical inadvertent returns were modeled. TSS concentrations near the HDD inadvertent return release site would be expected to be high (more than 20,000 mg/L), but would decrease to 10-300 mg/L at a point 500-1,000 meters downstream. No modeling scenario (for trenched or HDD crossings) would result in TSS levels exceeding 19 mg/L at farther downstream locations, including any portion of the Reservation. The Sediment Modeling Report submitted February 13. 2023, provides additional insight into modelled sediment releases resulting from pipe installation (trenching methods and HDD) for the Project.
4) Provide greater detail comparing the impacts to fish spawning, fish transport, and/or fish habitat as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. The site conditions which can limit the use of HDD include soil types, rock outcrops, and bedrock formation. If an HDD is completed successfully, no water quality impacts occur at the crossing. In the event of an inadvertent return within a waterway, an initial plume of sediment into the water column would be experienced. The size and extent of the plume would be influenced by the amount of material lost, the duration of release, and the flow of the waterbody at the time of the release. For non-HDD crossings, Enbridge proposes to use a dry crossing technique if there is flowing water or that have greater than six inches of standing (non-flowing) water present in the channel at the time of construction (i.e., dam and pump or flume methods). Enbridge will use typical open cut (wet trench) construction techniques to cross waterbodies if the waterbody is dry or has standing(non-flowing) water fewer than six inches present in the channel at the time of construction. For waterbodies with standing water, but no perceptible flow, Enbridge will install downstream sediment curtains to minimize the potential for migration of suspended sediments downstream. Fish, mussels, and macroinvertebrates are not anticipated to be present under dry stream conditions, with the possible exception of organisms that may be living in the interstitial space between substrate material (hyporheic zone). Enbridge will adhere to instream crossing timing windows, and approved timing restriction waivers, for pipe installation that avoid sensitive spawning periods. If there is perceptible flow, Enbridge will use a dry crossing technique, which will temporarily isolate the construction workspace from stream flow as well as aquatic organisms. This will limit both the duration and area of disturbance (primarily limiting it to the period of construction and the area between the temporary upstream and downstream dams at each crossing) and the potential for downstream sedimentation. This, in turn, will minimize harm to aquatic organisms. As

	stated in the Draft Environmental Impact Statement (Section 6.14.9), some mortality of less mobile organisms, such as small fish and invertebrates, may occur within the trench and possibly in the workspace between the upstream and downstream dams where a dry crossing construction method is used. However, the affected area within any one stream will be small. The excavated area will be approximately 20 feet wide at the top of the trench and extend across the channel. Please see the Project's Sediment Modeling Report for a further discussion of potential sediment releases and transport. Potential direct effects during instream construction on downstream fish include changes to fish behavior (e.g., habitat selection), the abundance and/or type of food organisms, the survival and/or development of eggs, and fish survival as a result of mortality or increased stress which can reduce their growth rates and/or resistance to disease (Anderson et al., 1996). The sensitivity of downstream fish to these effects is dependent on the timing of sediment deposition since certain habitats are used only during specific periods or seasons (e.g., spawning); and hydrological and climatic conditions often dictate the level of sediment transport and the availability of habitats (Dehoney and Mancini, 1982; Anderson et al., 1996). Adherence to instream construction timing restrictions during water crossing construction to avoid periods of spawning or egg incubation avoids the risk of some of the above-mentioned potential effects. Reid and Anderson (1999) found that recovery of aquatic communities (e.g., benthic macroinvertebrates and fish) coincides with recovery of affected downstream habitats. Reid et al. (2008) reported that the effects on aquatic habitat due to open-cut (wet) crossings were generally found to be limited to increased sediment deposition and short-term habitat alteration within a short distance downstream of construction. A study conducted by Reid et al. (2002) evaluated the effectiveness of dam and pump and flume crossing methods in limiting the amount of sediment released during in-stream pipeline construction and associated effects on downstream fish and fish habitat in six brook trout streams. This study included crossings of brook trout streams in Minnesota, Nova Scotia, and Ontario and found that dry crossings can be very effective at: (1) minimizing increases to downstream suspended sediment concentrations during in-stream construction; and (2) preventing sediment-induced effects on habitat and fish abundance downstream of pipeline water crossings. Furthermore, Reid et al. (2008) presented a summary of measured biological effects on fish and benthic macroinvertebrates from several studies. The reported effects on fish varied and included the following: No effect on warmwater and cold-water fish abundance and community structure; No effect on movement and abundance for two fish species; Temporary (<1 year) reduction in warmwater and brook trout abundance; and Increased respiration rate and altered blood chemistry in rainbow trout. Similarly, the reported effects on benthic macroinvertebrates varied and included the following: No effect on community abundance and structure; Temporary (<1 year) reduction in abundance and species diversity; and increased drift during construction.
5) Provide greater detail comparing the impacts to macroinvertebrates as a result of 1) installing the pipeline via	Please see **Attachment 9**. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows: As previously discussed, instream construction activities will likely result in the temporary disturbance to macroinvertebrates at the crossing location, including those individuals that are present between the upstream and downstream isolation dams. However, significant literature has been

boring and 2) installing the pipeline via trenching.	published showing that the disturbance is typically limited to one year or less and that natural recruitment of native macroinvertebrates will reestablish once the project is completed and the stream bed and bank are restored. Potential impacts to macroinvertebrates at the specific stream crossing could be avoided if the HDD is successfully installed and there are no inadvertent returns that result in a discharge to the waterbody.
6) Provide greater detail comparing the impacts to bed and bank stability as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").
7) Provide greater detail comparing the impacts to riparian buffers as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").
8) Provide greater detail comparing the methods, timeline, and costs of restoration in waterways (including the placement of permanent structures as part of bank stabilization) as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. The question has been answered with an understanding and acknowledgement of the attached document. The attempted response to the question specifically is as follows: • The HDD method would not have impacts to beds and banks to restore or permanent structures as part of the bank stabilization. • The HDD process may require alignment changes and/or a false construction row for the pipeline pull back string. The result could be increased timeline and costs for restoration for the HDD versus trenching depending on the specific amount of HDD alignment and false construction right-of-way modifications. • The HDD process over the same distance of construction is longer than trenching. The time from HDD start to the time of restoration would be greater with the HDD process. • The Pproject construction time would increase overall. • Any cost savings for restoration by HDD would be small in comparison to the increased costs from the HDD method.
9) Provide greater detail comparing the methods, timeline, and costs of post-construction monitoring in waterways	The post-construction monitoring methods, timeline, and costs would not change materially between either installation method. The post-construction monitoring task requires the monitors to traverse the entire construction footprint and monitor the wetlands and waterways. The main

as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	driver of the cost and timeline is staff time to complete the field work, process the data, and write the report. The small changes in field time for monitoring between the two construction crossing methods would not be material enough to determine a change.
10) Provide greater detail comparing the project costs that would result from 1) installing the pipeline via boring in waterways and 2) installing the pipeline via trenching in waterways.	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").
11) Provide greater detail comparing the risks of frac-out, spills, and/or contamination in waterways as a result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. HDD is a construction technique that is chosen to reduce or avoid environmental impact. Whereas conventional trenching as described by Enbridge in EPP Section 10.0 "Trenching in uplands typically occurs using a backhoe excavator or a rotary wheel ditching machine. A backhoe is typically used to excavate the trench in wetlands. Excavated material will be side cast (stockpiled) within the approved construction right-of-way separate from topsoil." Therefore, the risk of an inadvertent return ("IR") is only present during HDD operations. Reference the attached HDD document to better understand applications and limitations of HDD within the context of this Project. Enbridge has evaluated the risk of IR by utilizing geotechnical information, hydrofracture analysis and IR risk evaluation analysis to determine suitable areas for HDD application and to minimize the risk of IR. As described in Section 30.0 of the EPP, HDD drilling fluids/mud consists primarily of water mixed with inert bentonite clay. Additives may be deemed necessary based on evaluations and recommendations made by the Mud Technician during drilling and hole opening operations. If the need for drilling fluid additives does arise, it is anticipated that all additives used will be listed on the Wisconsin Department of Natural Resources Approved Horizontal Directional Drilling Products List. Section 30 of the EPP, as well as the crossing specific IR Mitigation and Contingency Plan provides information about monitoring for IR, and also dictates a plan of action to contain and remediate areas impacted by an IR, should an IR occur. As described in the crossing specific IR Mitigation and Contingency Plan, the training of MTI drilling personnel and the application of methods described methods described in the IR Mitigation and Contingency Plan significantly lessen the potential for spills of drilling fluid. The risk of releases and contamination is minimal during pipeline installation (HDD, conventional trenching methods). The risk of releases derived primarily from any fuels, petroleum products, or other regulated substances released from equipment during construction. The risk and impacts of spills during the Project are mitigated by Enbridge through proper planning and preventative measures. Spill prevention, containment and control measures for this Project are captured throughout Section 29 of the EPP.
12) Provide greater detail comparing the technological and logistical	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").

constraints and limitations of working within waterways as a result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	
13) Provide greater detail comparing the amount (size) of dynamite blasting that would take place in waterways as a result of 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Please see **Attachment 9**. Additionally, please see Enbridge's response to WDNR Section 7) Wetland and Waterway Individual Permit Application – Question #17 regarding blasting in a wetland.
14) Provide greater detail comparing the workspace size and amount of bank vegetation clearing in and adjacent to waterways that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	Enbridge is not proposing to "clear" vegetation from below the OHWM, except for vegetation that may be removed directly over the trenched area as part of excavation. Vegetation removal on the stream banks will be limited to cutting woody vegetation off at ground level except for the trench line and, if necessary, at the bridge crossing location to allow for the safe installation/use of the bridge during construction. Woody vegetation would be selectively removed from the permanent easement as part of Operations to allow for visual assessment during the aerial patrols.
15) Update the Wetland and Waterway Crossing Table with the estimated amount of waterway impact from dynamite blasting (or clarify if this amount is included in the amount of waterway impact from dredging).	Added to Wetland and Waterbody Crossing Table (Column I)
16) In Enbridge's response to USACE on January 23, 2023, Enbridge stated in Table 3-1 that trenchless method was rejected for specific waterways because "the narrow width of the waterway is unsuitable for a long	Please see **Attachment 9**. On October 16, 2023, Enbridge provided the Wisconsin DNR a Waterbody Crossing Method Decision Tree that illustrates how waterbody crossing methods are determined. Using the logic illustrated in the decision tree Enbridge determined that none of the waterbodies in Table 3-1 warranted installation using the HDD method. Because wetlands, including high-quality wetlands, are restored in-place there is no net loss of wetlands or wetland functional values as the result of construction of the Project through wetlands. In addition, a natural gas pipeline project permitted by the WDNR that agreed to HDD under wetlands

HDD crossing." What if HDD was extended outside of the waterway to also cross wetlands, sensitive resources, etc., thus utilizing the opportunity for a "long HDD crossing?" For each waterway listed in Table 3-1, discuss what the crossing, workspace, wetland clearing, wetland, impacts, and waterway impacts would look like if HDD was utilized beyond just the waterway crossing, as part of "a long HDD crossing"?

experienced three separate inadvertent return events in those wetlands. As such, the benefits of utilizing HDD for wetlands does not outweigh the potential for adverse consequences and disturbance associated with using the HDD method. The additional workspace required for HDD may increase wetland disturbance in areas adjacent to the HDD thus offsetting any wetland impacts avoided using the HDD method.

Waterbodies included in table 3-1:

Milepost	USGS Name	Feature ID
0.63	Bay City Creek	sase006p
2.91	Beartrap Creek	sasb007i
7.99	UNT of Marengo River	sasd011p
14.73	UNT of Brunsweiler River	sasc1006p
15.86	UNT of Trout Brook	sasc1003p_x1
19.83	UNT of Silver Creek	sasd1015p
20.61	UNT of Silver Creek	sase005p_x2
21.28	UNT of Silver Creek	sasv004p
22.01	UNT of Krause Creek	sasv020p
23.72	UNT of Bad River	sasa008p
28.39	UNT of Gehrman Creek	sasa004p
29.81	Camp Four Creek	sasw005
30.67	UNT of Feldcher Creek	sirb010p
31.76	Feldcher Creek	WDH-103
39.00	UNT of Vaughn Creek	sird009p

Decision Tree Answers for each waterbody:

Waterbody Crossing Method Decision Tree Question	Answer
Can waterbody be crossed using an open cut crossing method?	Yes
Would open cut be challenging because of width, flow, topography, boat traffic, or secondary impacts?	No
Does stream have special designation?	Yes
Is stream small or medium?	Yes
Are stream banks restorable?	Yes
Is sediment discharge controllable?	Yes
Decision:	**Open Cut Method**

17) The following waterways are proposed for dredging and bank stabilization measures requiring the

Please see **Attachment 9**. Also, please see Enbridge's response to WDNR Data Request Section 6) EIR Attachment N, Stream Restoration Typicals (August 2020), Question #1.

placement of permanent structures below the OHWM; some of these waterways are also trout streams or perennial tributaries to trout streams (per the Wetland and Waterbody Crossing Table). Provide greater detail on why HDD is not practicable at these locations. Provide information on how boring the waterway would affect wetland fill amounts, project costs and logistics, wetland clearing amounts, waterway impact, water quality, restoration/stabilization costs, post-construction monitoring costs. a. Bay City Creek (sase006p) b. Little Beartrap Creek (sasa047i) c. Beartrap Creek (sasb007i) d. UNT Deer Creek (sasc039i) e. UNT Trout Brook (sasc1003p_x1) f. Rock Creek (sasc041p) g. UNT Marengo River (sase1015i) h. UNT Silver Creek (sasd1015p) i. UNT Gehrman Creek (sasw011) j. UNT to Brunsweiler (sasc1006p) k. Camp Four Creek (sasw005)	
18) The following waterways are proposed for dredging and are	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").

perennial tributaries to trout streams (per the Wetland and Waterbody Crossing Table). Provide greater detail on why HDD is not practicable at this location. Provide information on how boring the waterway would affect wetland fill amounts, project costs and logistics, wetland clearing amounts, waterway impact, water quality, fisheries and fish habitat; and post-construction monitoring costs. a. UNT of Marengo River (sasd011p) b. UNT of Silver Creek (sase005p_x2, sasv004p) c. UNT of Krause Creek (sasv020p) d. UNT of Bad River (sasa008p) e. UNT of Gehrman Creek (sasa004p) f. UNT of Feldcher Creek (sirb010p) g. UNT of Vaughn Creek (sird009p)	
19) Provide information on how the use of sand as trench backfill would impact sediment transport and stability in a waterway system (for waterways without an existing sandy substrate), including waterways comprised of silty/clay/organic bed material. Provide a list of waterways where sand backfill is proposed.	Sand and/or native material that has been screened to remove rocks that could damage the pipe coating will only be used to backfill the pipeline up to the top of the pipe to protect the coating and will only be used where these substrate conditions (i.e, rocky, cobbly subsoils or bedrock) exist. The remainder of the backfilled material up to the surface would be native material originally excavated from the trench. Sand "bedding" is not needed in silty/lay/organic substrate materials. The location where sand bedding is needed will be determined based on substrate conditions observed during excavation; therefore, a list cannot be provided at this time.

20) Enbridge states ECDs will be inspected, at a minimum, weekly and within 24 hours after every precipitation event that produces 0.5 inch of rain or more during a 24-hour period. Provide information on how waterway bed and bank stability can also be evaluated during this time.	Enbridge will inspect ECDs in conformance with the EPP and WPDES Permit No. WI-S067831-6. Enbridge's EIs will conduct the inspections. The EIs will also observe for erosion that occurs within the construction work area, but does not result in a breach of ECDs. The EIs will also visually assess potential bank stability concerns following bank restoration as well as visually assess potential backfill scour.
21) sasv001p (UNT of Silver Creek) and sirb009p (UNT of Feldcher Creek) are proposed to be crossed/impacted by access roads and are proposed to be dredged. Provide details on the need to dredge these waterways.	The Wetlands and Waterbody Crossing Table has since been updated as these two unnamed tributaries were erroneously listed as dredged. Please see **Attachment 12** ("Updated Wetland and Waterbody Crossing Table" (column CL)).
C. Installation of TCBS across waterways:	
1) The Wetland Waterbody Crossing Table describes 400 SF of bank disturbance for installation of TCSBs. a. Clarify why bank disturbance cannot be avoided. b. Describe the proposed bank disturbance activities and describe how 400 SF was calculated. c. Described how the footprint of bank disturbance was minimized the extent practicable.	To safely support construction equipment and vehicle traffic, each bridge needs to be securely installed and level. This can require minor grading/earth work above the bank (above the OHWM) where the bridge header will be placed to support the bridge decking. Bridges that are not level and securely installed create safety conditions that could result in equipment sliding off the bridge and into the waterbody, potentially resulting in avoidable bed and bank disturbance as well as risk of a release of hydraulic fluid or fuel should the equipment be damaged during the process. Unsafe bridging could also result in Project personnel injury or death. Four hundred square feet of disturbance was calculated based on the average width of the bridge header and bridge decking required to accommodate the size and weight of the equipment that will be used on the bridge during construction. Ground disturbance associated with bridge placement will be minimized to the extent practicable to safely construct the temporary bridges. Where ground disturbance is necessary, Enbridge will use best management practices to stabilize exposed bare soil, such as the application of temporary seed and mulch, installation of ECDs (e.g., bio logs), or placement of geotechnical fabric over the exposed areas below the bridge header. As mentioned above, bridge headers will be placed above the top of bank and typically three feet back from the OHWM. These locations will be restored as part of final site restoration as the bridge decking and headers are removed. Disturbed areas will be seeded and either mulch or erosion control blankets will be applied based on site conditions and level of ground disturbance.

d. Describe how bank disturbance will be minimized during placement and removal of TCSBs. e. Describe how banks will be restored upon removal of TCSBs.	
2) Describe how the installation and removal of the TCSBs would be conducted in a manner that prevents sediment and debris from entering the waterway.	Bridge decking is lifted and set onto the bridge abutments. This prevents stream bed disturbance that would be created by dragging the decking across a streambed. Similarly, bridge decking is lifted and removed. Bridge decking will be cleaned of loose material (wooden fragments/soil) prior to removal.
3) Clarify if any TCSBs will require in-stream support. If so, a. Provide justification for the need to install in-stream support in the waterway (site specific). b. Provide an updated Wetland Waterbody Crossing Table with this information. c. Provide site-specific plans of the in-stream support and waterway crossing. d. Provide information on how impacts to the bed of the waterway will be avoided. e. Provide information on how flow will be maintained.	Enbridge is not proposing to install instream supports. Figure 12 in the EPP has been updated to remove reference to in-stream support. If an in-stream support is needed to provide a safe bridge crossing based on site-specific conditions at the time of construction, Enbridge will install the support so that it does not impede stream flow, does not create scour or bank erosion, and is placed at grade without excavation of the stream bed.

f. Provide information on how aquatic habitat, vegetation, fisheries, aquatic organisms will be protected during installation, use, and removal.	
4) Clarify if any TCSBs will require earthen ramps. If so, a. Provide justification for the need to use earthen ramps instead of wood or metal ramps (site specific). b. Provide an updated Wetland Waterbody Crossing Table with this information. c. Provide site-specific plans of earthen ramp and waterway crossing. d. Provide information on how water quality, vegetation, fisheries, aquatic organisms will be protected during installation, use, and removal of earthen ramps. e. Provide methods for installation and removing earthen ramps. f. Provide information on the origin of the material used for the earthen ramp.	TCSBs will be installed with wood or metal approaches/ramps. If there are site-specific circumstances where use of wood or metal ramps creates a safety issue, Enbridge will evaluate the use of earthen ramps, including potential incumbrances to water flow during high water events where water may leave the stream channel.

5) Clarify if rock flume bridges are proposed.	Enbridge included a typical figure for rock flume bridges (EPP Figure 13); however, Enbridge is not proposing to use rock flume bridges on the Project.
6) Provide figures for Bridge Types A, B, C, as described in the Wetland Waterbody Crossing Table.	The bridge type drawings were provided as Attachment L in Enbridge's August 2020 EIR material updates. For ease of access, Enbridge has also included these drawings as **Attachment 13**.
D. Driving on the Bed of Waterways	
1) Clarify if driving on the bed of waterways is proposed. If so, a. Provide justification for the need to drive on the bed of the waterway (site specific). b. Provide an updated Wetland Waterbody Crossing Table with this information. c. Provide information on how impacts to the bed and banks of the waterway will be avoided. d. Provide information on how water quality, aquatic habitat, vegetation, fisheries, and aquatic organisms will be protected. e. Provide details on how impacts to the bed of the waterway will be avoided and minimized. f. Provide details on how you shall ensure soil is not displaced within	a. There may be certain situations where Enbridge will require that a single piece of equipment cross a waterbody prior to bridge placement. Where there are trees growing on the river banks at the bridging location, those trees will need to be cut and removed prior to bridge placement. This may require that a piece of equipment complete a one-time ford of the waterbody to remove the tree so that the bridge can be safely installed. All other equipment will be required to use the temporary bridge. As discussed above, temporary equipment bridges will be used to allow construction equipment passage across a waterbody during construction of the Project. Where there are trees growing on the river banks at the bridging location, those trees will need to be cut and removed prior to bridge placement. This may require that a piece of equipment complete a one-time ford of the waterbody to remove the tree so that the bridge can be safely installed. Without this one time pass, it is possible that placement of the bridge cannot be completed safely, which could result in bridge failure and equipment falling into the waterbody, resulting in potential fuel or hydraulic spills and/or personnel injury. All other equipment will be required to use the temporary bridge. b. Enbridge cannot determine at this time which waterbodies may require the one-time fording for a single piece of equipment. This will be determined on a site-specific basis at the time of construction based on the contractor's determination of the exact bridge location that will safely support construction passage and support installation of the specific waterbody. c. Temporary disturbance of the bed and bank may occur due to the one-time pass for a single piece of equipment. Any bank disturbance will be stabilized with the necessary erosion and sediment controls. d. As indicated within section 23.2 of the EPP, with exception to clearing-related equipment, Enbridge prohibits fording of waterways (i.e. civil survey, potholing, or other equipment are not permitted to ford waterways prior to bridge placement). Fording by one piece of equipment will only require minutes to cross the waterbody. Impacts to water quality, aquatic habitat, vegetation, fisheries, and aquatic organisms will be protected by the extremely short duration of the disturbance. e. The application of single pass travel through waterways during the Project is limited to necessary vehicles for specific purposes. Areas disturbed will be stabilized if there if the activity results in ground disturbance.

the waterway channel or on its banks during the driving activity.	f. There will be a very brief (minutes) of increased turbidity as the single piece of equipment traverses the waterbody.
E. Wetland and Waterway Crossing Table:	
1) Clarify why waterway features in the Wetland Waterbody Crossing Table would have "N/A" for Proposed Pipeline Crossing Method but have dredging proposed.	Applicable corrections have been incorporated in the Wetland and Waterbody Crossing Table.
2) Clarify when Dredging would be "Yes" and Instream Excavation Impacts would be "N/A"	Applicable corrections have been incorporated in the Wetland and Waterbody Crossing Table.
3) Clarify if ditches, WDH, swales are assumed and/or considered navigable waterways or wetlands and why the feature type is not categorized as a waterway or wetland feature.	Enbridge has committed to treating all waterbody features in the Wetland and Waterbody Crossing Table as navigable waterways. This includes rivers, streams, ditches, WDH features, and swales. WDH are considered navigable, except where the DNR has determined the waterway is not navigable. WDH waterbodies are place markers for locations where the Wisconsin DNR Hydrologic Database indicates a "blue line" feature but where no waterbody, with a defined bed and bank, was identified.
4) Update the table with any navigability determinations made by DNR	The WDNR conducted a navigability determination of five features (WDH-102_x1, WDH-102_x2, WDH-102_x3, WDH-107_x1 and WDH-107_x2) on August 27, 2021. These five locations represent three separate sections of feature WDH-102 and two separate sections of feature WDH-107. Based on the review, four features were determined to be non-navigable, and one feature was determined to be navigable. The table currently includes WDNR's navigability determinations, see footnote "s"
5) Update this table to include proposed amounts of fill from permanent structures below the OHWM of waterways and a description of the fill.	Please see Enbridge's response to WDNR Data Request Section #6) EIR Attachment N, Stream Restoration Typicals (August 2020), Question #1.
6) Application narrative states permanent fill is proposed for the of mainline	Each mainline valve requires a permanent access road for operational, maintenance, and emergency access. As discussed in Enbridge's March 2, 2021 data response to WDNR Data Request Question #4, Enbridge uses Intelligent Valve Placement ("IVP") analysis modeling as a design

valves, but the table lists permanent fill for wasc1010s, wasc1010e, wbad1006e, wasa115e as "permanent access." Provide clarification on proposed permanent wetland fill and the activities resulting in permanent fill. Provide a brief PAA on why permanent wetland fill cannot be avoided and how the amount of permanent fill was minimized to the greatest extent practicable.	methodology to determine where valves should be placed. The objective and guiding principle of the IVP methodology is to meet or exceed the regulatory requirements and to reduce the maximum potential release volume as much as reasonably practicable in the unlikely event of a pipeline release. Enbridge's IVP analysis included modelling the entire pipeline route associated with the Project, taking into account the topography of the right of way, the elevation profile of the pipeline, the line size and throughput, and the location and topography of watercourses. The IVP methodology also considers potential impacts of a pipeline release on sensitive features, or High Consequence Areas ("HCAs"), including highly populated areas, other populated areas, reservoirs holding water intended for human consumption, commercially navigable waterways, and environmentally sensitive areas. Upon completion of its IVP analysis, Enbridge conducted a field verification of the recommended three additional valve locations. The field verification was focused on evaluating the impact of constructing the valves on the environment, including evaluation of the following factors: valve site access, constructability, access to electricity, and land availability. The topography, location of flood plains, presence of HCAs, availability of land, availability of power, accessibility, and environmental impacts such as wetland avoidance were also evaluated in determining the final valve locations. As provided in the application materials, Enbridge anticipates filling approximately 998 square feet of wetlands, which is slightly larger than an area measuring 30 feet by 30 feet. Of that approximately 998 square feet of wetland permanent fill, approximately half (410 square feet) occur in a manmade road ditch. Enbridge has determined that access to the required new valves cannot be accomplished without crossing wetlands, and the fill cannot be avoided. The amount of wetland fill has been minimized to the extent practicable taking into consideration the factors for valve siting and placement listed above. Enbridge has also minimized the width of the access roads to the extent practicable to maintain safe ingress/egress of operation equipment as well as emergency equipment (e.g. fire trucks). For example, Enbridge incorporated a concrete bulkhead as part of the access road going into mainline valve #5 to reduce permanent wetland impacts. Further reduction in access road widths could affect Enbridge's ability and the ability of emergency response equipment to safely access these sites.
7) Update the table with road access ID's.	Access road IDs have been added to the Wetland and Waterbody Crossing Table (column T)
8) Update the table with type of flow bypass system proposed for in-water crossing (flume vs dam and pump).	Enbridge is not able to select a specific waterbody dry crossing method at this time due to the need to accommodate for variable stream flow. The best type of dry crossing method to be used will be selected based on the stream flow conditions at the time of construction. For instance, if at the time of construction a stream has minimal flow that is not sufficient to provide flow to a pump operating at the lowest pumping rate without drying up the stream, then a flume crossing method will be used. Enbridge will select the type of flow bypass system based on field conditions at the time of construction taking into account factors such as flow, ability to seal the temporary dam to prevent water infiltration into the isolated work zone, and safety.
Blasting	
1) Provide justification for dynamite blasting within waterways and what	HDD is a construction technique whereby a tunnel is drilled under a waterway or other designated area, and a pipeline or other utility is pulled through the drilled underground tunnel. As described in the blasting plan, areas subject to blasting have been identified as locations where

alternatives were considered. Provide details on why waterways proposed for blasting cannot be crossed via HDD (or if waterways would be proposed for dynamite blasting regardless of installation method).	conventional trenching techniques including HDD will be inadequate, and blasting is required to create a trench in order to install a pipeline at sufficient depth below the streambed. The site conditions which limit the use of HDD and other conventional trenching operations at identified blasting areas include soil types, rock outcrops, and bedrock formation. These locations are subject to change based on additional on-site geotechnical investigation, and Enbridge will make every reasonable effort to reduce the extent of blasting required on the Project.
2) Evaluate short-term and long-term impacts to dynamite blasting within waterways, including impacts on water quality, fisheries and habitat, wildlife and habitat, bank/bed stability, sediment transport, aquatic vegetation, and macroinvertebrates.	As described in the blasting plan, areas subject to blasting have been identified as locations where conventional trenching techniques will be inadequate, and blasting is required to create a trench of sufficient depth to install the pipeline in compliance with regulations. These locations are subject to change based on additional on-site geotechnical investigation, and Enbridge will make every reasonable effort to reduce the extent of blasting required on the Project. Each site-specific blasting plan will include details and calculations regarding environmental variables that will be recorded closer to the time of the blast. The site-specific blasting plan will take into account environmental/site-specific conditions that exist, as well as methods, materials, and locations of all explosives to be used for blasting. The blasting contractor will be required to coordinate with Enbridge's environment staff during initial planning to determine the potential to effect threatened and endangered species, as well as to implement measures to avoid impacts to identified species. Based on consultation with WDNR, Enbridge will not allow in-stream work, including blasting, during the work exclusion dates to allow for fish spawning and migration. Following any blasting activities, stream channels will be restored to near pre-construction contours, alignment, and conditions through post-construction restoration activities. Enbridge will monitor this crossing following construction as part of its Post Construction Monitoring Plan. Impacts to water quality, fisheries and habitat, wildlife and habitat, bank/bed stability, sediment transport, aquatic vegetation, and macroinvertebrates as a result of blasting are comparable to conventional trenching methods used during this project. Literature has identified the concentration of Total Suspended Solids (TSS) into the water column during in-stream construction as the primary effect associated with pipeline construction (Reid and Anderson, 1999; Reid et al., 2002; Reid et al.,2008). As described in Reid et al. (2004) sediment release can be avoided or minimized through the selection of appropriate crossing methods, limiting the duration of instream work, and application of best management practices (BMPs). The literature presented throughout this response accurately reflects similar conclusions of sediment modeling efforts undertaken in support of this project. As described in the Sediment Discharge Modeling Report the proposed installation activities at trenched water crossings, would be expected to have a lesser magnitude and more brief effect on TSS in the water column than storm related events. As compared to storm-related events that can cause TSS values to exceed hundreds to thousands of mg/L over periods of time that are longer than theses installation periods, trenched crossings would be expected to have TSS concentrations near the installation site in the low hundreds of mg/L, which would decrease below 19 mg/L by approximately 1,000 meters downstream of the crossing and last only ~4- 10 hours per construction phase quickly attenuating after the sediment

	disturbances ceased. The levels at 1,000 m distance were consistently below typical background TSS conditions in the water column for the anticipated construction period of June-August. Reid et al. (2002) showed that once the in-stream activity associated with the dry crossing was complete, downstream TSS concentrations returned to background levels with one to 10 hours. Similarly, Reid et al (2002a) reported that six hours after backfilling was complete for an open-cut crossing, TSS concentrations had decreased markedly and returned to background levels by the following morning. The authors found that TSS concentrations decrease as the plume of turbid water moved downstream. Therefore, no permanent changes to water column TSS should be expected as increases in TSS concentrations associated with in-stream pipeline construction decrease rapidly once the in-stream work is completed, and water column TSS concentrations return to background levels shortly thereafter. Biological effects such as short-term reductions in abundance and diversity of benthic macroinvertebrates and fish have been documented likely the result of organism emigration from affected areas (i.e., benthic macroinvertebrate drift and fish movement). Reid and Anderson (1999) reported that observed effects are typically non-residual and recovery to post-construction conditions are usually reported within a year of construction, as macroinvertebrates re-colonize the crossing area. Reid and Anderson (1999) found that recovery of aquatic communities (e.g., benthic macroinvertebrates and fish) coincides with recovery of affected downstream habitats. Reid et al. (2008) reported that the effects on aquatic habitat due to open-cut (wet) crossings were generally found to be limited to increased sediment deposition and short-term habitat alteration within a short distance downstream of construction. As described in the EPP Section 23.3.1 streambed material, will be segregated (e.g., upper one foot and the remaining trench spoil will be stored separately) and placed within a spoil containment structure. Upon completion of the pipelaying operations the trench will be backfilled with the streambed material as near as practicable to its preconstruction condition with no impediments to normal water flow. Furthermore, permanent stabilization will be initiated within 24 hours of backfilling the crossing, which includes restoring the stream banks as near as practicable to pre-construction conditions unless that slope is determined to be unstable. If Enbridge determines that the slope is unstable, the banks will be reshaped to prevent slumping. Once the banks are reshaped, ECDs will be installed within 24 hours of backfilling the crossing. Project areas will be monitored following restoration activities to ensure that bed and bank stability are achieved.
3) Evaluate short-term and long-term impacts to dynamite blasting within wetlands, including impacts on water quality, vegetation, soils, wildlife and habitat, and hydrology.	The short-term and long-term impacts of blasting within a wetland are determined by the application of effective measures to protect wetland during construction and the effective restoration of disturbed areas once construction ceases. The expected short-term and long-term impacts of construction to affected wetlands are negligible. The intent of the procedures included within the EPP is to minimize construction-related disturbance and sedimentation of wetlands and to restore those wetlands as nearly as possible to pre-existing conditions. The methods described within the EPP as it pertains to wetland protection during construction are meant to preserve and maintain wetland functions. A specific impact of trenching activities to wetland function are identified in literature as the result of soil compaction and soil mixing during project activities. As described in Olson et al (2012), these changes to soil characteristics affect soil water holding capacity and thus altered hydrology, soil/sediment chemistry, and invertebrate and wetland plan habitat. As noted in the EPP, Enbridge will utilize the Trench-Line-Only topsoil segregation method in wetlands without standing water. When constructing in wetland areas without standing water, up to 12 inches of topsoil (organic layer) will be stripped from the trench line and stockpiled separate from trench spoil to preserve the native seed stock. In standing water wetlands, organic soil

	segregation is not practicable; however, the Contractor will attempt to segregate as much of the organic layer as possible based on site/saturation conditions. After pipe installation, backfilling of wetland trenches will take place immediately, or as approved by an EI. Where blasting is utilized to create pipeline trenches through wetlands, the wetlands will be restored as near as practicable to pre-construction conditions and reasonable attempts will be made to return the subsoil to its pre-construction density. Additionally, low ground pressure equipment will be used to the extent practicable to limit soil compaction. Where low ground pressure equipment is not used, construction equipment will operate from timber construction mats or equivalent means with prior approval from Enbridge. Furthermore, during restoration activities, a backhoe, similar equipment working from construction mats, or low ground pressure equipment will be used to restore the wetland.
4) Application materials show wetlands and UNT of Feldcher Creek (sirb1001e, sirb1002e, sird1004i) as having dynamite blasting proposed, but no Proposed Pipeline Crossing Method listed. Provide clarification.	The impacts from blasting are anticipated to extend no further than five feet either side from the Project centerline. None of the listed features are within the area anticipated to be impacted. The Waterbody and Wetland Crossing Table has been updated to indicate no blasting impacts for these features.
5) Provide details on proposed blasting within and adjacent to shallow aquifers and springs.	Enbridge is preparing a separate document discussing all the studies/analyses that have been completed to identify potential areas with shallow confined aquifers along the Project route. This information will be submitted under separate cover. Enbridge has not identified any shallow confined aquifers along the pipeline route that would be affected by the planned pipeline installation depths. There are 69 wetland crossings where blasting is anticipated and where Enbridge's wetland surveys indicate the presence of a seep, spring or groundwater discharge. Of the 69 wetlands, 49 are located in areas where blasting has been determined to be needed and 20 are in areas where blasting is "Likely" to occur. Details on each wetland crossing may be found in the Wetland Waterbody Crossing Table and applicable wetland delineation data sheets.

Milepost	Feature ID	Cowardin	Anticipated Blasting Areas	Anticipated Blasting Impact (Sq Ft)	Proposed Pipeline Crossing Method	Data sheet indicates seep, spring, discharge
19.82	wasd1033f	PFO	Yes	723	Trench	Yes
19.84	wasd1034f	PFO	Yes	2,301	Trench	Yes
20.30	wase006f	PFO	Likely	900	Trench	Yes
20.84	wasv013f	PFO	Yes	479	Trench	Yes
20.88	wasv011f	PFO	Yes	371	N/A	Yes
20.96	wasv016f1	PFO	Yes	229	Trench	Yes
20.97	wasv016f2	PFO	Yes	134	Trench	Yes
20.98	wasv016e	PEM	Yes	2,814	Trench	Yes
21.03	wasv017e	PEM	Yes	6,217	Trench	Yes

		21.09	wasv017e	PEM	Yes	250	Trench	Yes	
		21.12	wasv017e	PEM	Yes	3,377	Trench	Yes	
		21.25	wasv019e2	PEM	Likely	9,224	Trench	Yes	
		21.27	wasv019f2	PFO	Likely	3,226	Trench	Yes	
		21.29	wasv019f1	PFO	Likely	11,096	Trench	Yes	
		21.35	wasv019e1	PEM	Likely	4,110	Trench	Yes	
		21.42	wasv022e	PEM	Likely	1,047	Trench	Yes	
		21.47	wasv022e	PEM	Likely	9,770	Trench	Yes	
		21.57	wasv022e	PEM	Likely	61	Trench	Yes	
		22.63	wasc069s	PSS	Yes	2,873	Trench	Yes	
		22.70	wasc071f	PFO	Yes	16,601	Trench	Yes	
		22.90	wasc072f	PFO	Yes	1,738	Trench	Yes	
		22.99	wasc075e	PEM	Yes	225	Trench	Yes	
		23.01	wasb010f	PFO	Yes	827	Trench	Yes	
		23.06	wasb010f	PFO	Yes	830	Trench	Yes	
		23.09	wasb010f	PFO	Yes	2,074	Trench	Yes	
		23.18	wasb010f	PFO	Yes	3,464	Trench	Yes	
		23.92	wasa037f	PFO	Yes	4,891	Trench	Yes	
		23.95	wasa037e	PEM	Yes	437	Trench	Yes	
		24.43	wasb003e	PEM	Likely	2,984	Trench	Yes	
		25.34	wasd008f	PFO	Yes	1,520	Trench	Yes	
		25.49	wasd1010f	PFO	Yes	15,854	Trench	Yes	
		25.58	wasd1010f	PFO	Yes	98	Trench	Yes	
		25.72	wasd1009f	PFO	Likely	122	N/A	Yes	
		26.29	wasv042f	PFO	Likely	1,636	Trench	Yes	
		26.42	wasv039f	PFO	Likely	184	Trench	Yes	
		26.44	wasv039f	PFO	Likely	557	Trench	Yes	
		26.84	wasv032f	PFO	Yes	1,527	Trench	Yes	
		27.10	wasv028f1	PFO	Yes	12	N/A	Yes	
		27.10	wasv028f2	PFO	Yes	121	N/A	Yes	
		27.50	wasv053f3	PFO	Likely	193	N/A	Yes	
		27.52	wasv053f1	PFO	Yes	974	Trench	Yes	
		27.52	wasv053e	PEM	Yes	215	N/A	Yes	
		27.52	wasv053f3	PFO	Likely	22	N/A	Yes	
		27.55	wasv054f2	PFO	Yes	332	Trench	Yes	
		27.56	wasv054f1	PFO	Yes	237	Trench	Yes	
		27.60	wasv055f	PFO	Yes	13,314	Trench	Yes	
		27.68	wasv055f	PFO	Yes	3,442	Trench	Yes	
		27.94	wasv057e	PEM	Yes	229	Trench	Yes	
		27.94	wasv057e	PEM	Yes	100	Trench	Yes	
		28.22	wasa032f	PFO	Likely	569	N/A	Yes	

28.39	wasa031f	PFO	Likely	966	Trench	Yes
28.40	wasa031f	PFO	Likely	7,074	Trench	Yes
29.38	wasw021f	PFO	Yes	20,740	Trench	Yes
29.50	wasw025f	PFO	Yes	19,258	Trench	Yes
29.59	wasw026f	PFO	Yes	6,271	Trench	Yes
29.77	wasw012f	PFO	Yes	4,535	Trench	Yes
29.79	wasw013ss	PSS	Yes	8,659	Trench	Yes
29.86	wasw012f	PFO	Yes	13,955	Trench	Yes
29.96	wasw012f	PFO	Yes	22,653	Trench	Yes
30.66	wirb027f	PFO	Likely	1,582	Trench	Yes
30.87	wirb1006f	PFO	Yes	5,062	Trench	Yes
31.07	wirb1007f	PFO	Yes	5,638	Trench	Yes
31.11	wirb1007f	PFO	Yes	17,789	Trench	Yes
31.32	wirb1007f	PFO	Yes	7,601	N/A	Yes
31.34	wirb1007f	PFO	Yes	23,374	N/A	Yes
31.39	wird1001f	PFO	Yes	1,090	Trench	Yes
31.52	wirb016f	PFO	Yes	67	N/A	Yes
31.53	wirb016f	PFO	Yes	67	N/A	Yes
31.97	wirb011f	PFO	Likely	59	N/A	Yes

6) Provide details on how blasting would affect Enbridge's proposed restoration plans in wetlands and waterways.	Although not specifically described, blasting within the Project area is incorporated into Enbridge documentation describing restoration of wetlands and waterways. The Project EPP, Blasting Plan, and the Monitoring Plan and other documentation contain information describing restoration and monitoring activities. The restoration efforts apply to all wetlands and waterways, including those that may require blasting.
7) In Attachment E of the EIR, the blasting plan states "Following any blasting activities, stream channels will be restored to near pre-construction contours, alignment, and conditions through post-construction restoration activities." Define the term "near pre-construction."	It is not practicable to restore a disturbed area "exactly" to pre-construction conditions (e.g., same single gravel stone placed in the same exact location); however, Enbridge's goal is to restore the stream widths, depths, substrate composition as near as practicable to the conditions encountered pre-construction. Flowing waterbodies are dynamic systems with natural variability. Enbridge's instream restoration will focus on restoring the stream elevation so that the natural flow of the stream is not impeded or a deep pool is not created inconsistent with surrounding areas. Stream banks will be restored as near as practicable to pre-construction heights and angles, taking into consideration soil conditions. Where necessary, Enbridge will recontour the disturbed portion of the bank to a more stable angle to minimize the potential for future bank sloughing/erosion. Enbridge does not propose to realign any streams.
F. General	
1) Provide greater detail comparing the amount of temporary and permanent	Please see **Attachment 9** ("Pipeline Impact Minimization through Routing, Design and Crossing Methods").

impacts to wildlife and wildlife habitat that would result from 1) installing the pipeline via boring and 2) installing the pipeline via trenching.	
2) Describe how the proposed project represents the least environmentally damaging practicable alternative taking into consideration practicable alternatives that avoid wetland impacts.	The proposed Project achieves the original Project objectives, is technologically and economically feasible to construct and minimizes environment impacts. As outlined in Enbridge's EPP and the Monitoring Plan, the construction procedures are intended to minimize construction- related disturbance and to restore wetlands as nearly as practicable to pre-existing conditions. Given the need for the Project to cross the Lake Superior Lowland region from the east to west, the Project must cross a number of waterways originating at higher southern elevations that flow north to Lake Superior. Many of those waterways are surrounded by a patchwork of wetlands that must also be crossed. For that reason, to meet the Project objectives, wetlands are unable to be completely avoided. Wetlands within the Project route will have a temporary impact with a minimal amount of permanent impact (0.02 acres). To minimize wetland impact throughout construction low ground pressure equipment will be used limiting disturbance to wetlands. Where low ground pressure equipment is not used, construction equipment will operate from timber construction mats. Post-construction, wetlands with temporary impact will be monitored for successful restoration which includes 70% vegetation cover, no evidence of adverse changes to hydrology, wetland topography to baseline conditions, and invasive species are similar or less than percent coverage to undisturbed areas outside of construction space.
3) Describe how the proposed project will not result in significant adverse impact to wetland functional values, in significant adverse impact to water quality, or in other significant adverse environmental consequences.	Enbridge has provided the requested information throughout the permitting process. Enbridge has conducted route analyses; completed surveys; conducted modeling studies; developed minimization, mitigation and monitoring plans; and has collected unprecedented levels of water quality data as compared to similar projects. The Project will require permanent fill of approximately 0.02 acres of wetland, as well as the conversion of some areas of forested and scrub-shrub wetland habitat to emergent wetland habitat associated with maintenance of the permanent right-of-way. The Project will also require temporary wetland disturbance. Enbridge has committed to meeting wetland and waterbody success criteria outlined in the Monitoring Plan to minimize adverse impacts to wetland functional values, water quality and other environmental impacts. Enbridge has also committed to implementing a Mitigation Plan that will compensate for any impacts to wetland functional values from the direct fill, conversion, and temporary impacts of the Project. Enbridge is currently conducting a significant pre-Project water quality sampling effort to document background concentrations in waterways crossed by the project. Enbridge has also commissioned modeling that demonstrates that the potential Project impacts to water quality will be localized near crossings, will fall within background concentrations see in the watershed, and will be temporary and short-term in nature. As stated in Enbridge's WQMP and Enbridge's EPP, the Project will follow environmental policies, procedures, and mitigation measures. Enbridge's EPP

	meets or exceeds all applicable federal, state, and local environmental protection and erosion control specifications, technical standards, and practices limiting adverse impacts to wetlands, water quality and other environmental factors identified. Finally, since the Project simply replaces an existing segment of a pipeline that is required to continue operating under an international treaty, once completed the Project will not result in any additional adverse environmental consequences.
4) Provide details on how pipe coating (such as on girth welds) will be prevented from entering waterways and wetlands.	Enbridge will construct the Project using modern pipeline design, manufacturing, coating, and installation techniques and in compliance with design, construction, maintenance, and operation functions are regulated by PHMSA under 49 CFR Part 195, which governs transportation of hazardous liquids by pipeline. The design of the pipeline system will also comply with the industry standards (e.g., American Society of Mechanical Engineers/American National Standards Institute Code B31.4, American Petroleum Institute ("API") 570, API RP 1102, among others). The pipeline will be coated with a fusion bond epoxy coating designed to protect it from corrosion. Except for a small area at the end of the pipe joint, this coating is applied at the pipe mill before shipment to the site. After welding and inspection, girth welds will be coated with similar or compatible protective materials in accordance with required specifications. The small area at the ends of the pipe where the individual pipe joint are welded together will be field coated with an epoxy coating, either sprayed on or rolled/brushed on. Enbridge will use tarps or similar covering below areas of field coating to capture drips/overspray during application.
5) Section 4.6 of the EIR states "Enbridge will minimize the width of the trench through wetlands by minimizing the length of time the excavated ditch is open to reduce the potential for slumping and/or ditch cave-ins." Verify Enbridge has minimized the widths of the trenches through wetlands and waterways to the extent practicable, considering the depth of the trench, soil type, soil saturation, and personnel safety.	Enbridge has minimized the width of the trench through wetlands and waterways to the extent practicable considering the depth of the trench, soil type, soil saturation, and personnel safety. The depth and bottom width of the trench is determined by the diameter of the pipeline and any buoyance control devices (e.g., concrete coating) and the depth of cover needed below ground level/streambed. The width at the top of the trench is dependent on soil characteristics including cohesiveness and saturation. Wider excavations may be needed in site-specific locations and field conditions to accommodate personnel activity within the excavation, if needed, in order to comply with safety requirements. To minimize the trench width further would require installing the pipe at a shallower depth, potentially shallower than that required by Federal regulations (49 CFR § 195.248) and Enbridge's internal standards that meet and/or exceed Federal standards.
6) Enbridge provided information project planning and the DNR HDD Tech Standard for the *proposed* HDD installations. Provide details on if/how Enbridge applied DNR's HDD Tech	Technical Standard 1072 states" *This standard applies to drill paths within projects using HDD as an installation method. Within this standard, drill path segment is used to reference a specific instance where HDD is used within a project. HDD project is used to refer to a larger project that may contain multiple drill path segments.*" Enbridge's Project would be classified as an HDD project as it will use the HDD method (including the Direct Pipeline method) at 13 locations. Enbridge has applied Technical standard 1072 at all 13 locations. However, Technical Standard 1072 does not

Standard for the *entire* project when evaluating pipeline installation methods. Provide information on how Enbridge applied the DNR HDD Tech Standard to make decisions regarding the use of HDD vs trenching of the pipeline through all wetlands and waterways proposed to be crossed by the pipeline.	require that all environmental features (e.g. wetlands and waterbodies) be crossed using the HDD method, and does not provide a decision method to determine the practicability of using an HDD on a given crossing. Please see **Attachment 9**. Using the HDD method to cross every feature is not practicable for a 30-inch diameter pipeline. Requiring use of the HDD method for every feature would create secondary impacts. All Project reroutes would need to be designed to establish the correct alignment and avoid any crossings of roads with the pullback string, would likely impact new landowners currently avoided by the Project route, would result in impacts to resources at the HDD entry and exit workspaces, and would increase the Project costs. Enbridge notes that WDNR Technical Standard 1072 was issued by the WDNR approximately two years after Enbridge filed its applications with the WDNR and USACE. Enbridge has confirmed in prior information request responses that the HDD designs meet the technical standard requirements.