

Kimball-Colinville and Bickford Maximum Operating Pressure Increase Project – Environmental Screening Report

FINAL REPORT

December 6, 2024

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Limitations and Sign-off

The conclusions in the Report titled Kimball-Colinville and Bickford Maximum Operating Pressure Increase Project – Environmental Screening Report are Stantec’s professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient’s own risk.

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Executive Summary

Enbridge Gas Inc. (Enbridge) is proposing to increase the maximum pressure gradient at their Kimball-Colinville Pool and Bickford Pool in the Township of St. Clair, Ontario (the Projects). The Projects are necessary to meet growing market demand for incremental storage space.

Project activities will involve a variety of measures including upgrades to wells and replacement of components such as lateral lines and station/valve components, among others. Existing access roads will be used, and construction will be completed using existing disturbed areas. Although no new environmental disturbance is anticipated, as part of the planning process Enbridge retained Stantec Consulting Ltd. to prepare an Environmental Screening Report to recommend mitigation and protective measures.

It is Stantec's opinion that the proposed Projects can be implemented in a manner that manages potential environmental impacts through the proposed mitigation and protective measures outlined in this report.



Abbreviations

AAFC	Agriculture and Agri-Food Canada
Enbridge	Enbridge Gas Inc.
ESA	<i>Endangered Species Act</i>
ESR	Environment Screening Report
LIO	Land Information Ontario
MECP	Ministry of the Environment, Conservation and Parks
O. Reg.	Ontario Regulation
SAR	Species at Risk
SCRCA	St. Clair Region Conservation Authority
SOCC	Species of Conservation Concern
Stantec	Stantec Consulting Ltd.



1 Introduction

1.1 Description and Purpose of the Project

Enbridge Gas Inc. (Enbridge) is proposing to increase the maximum pressure gradient at their Kimball-Colinville Pool and Bickford Pool in the Township of St. Clair, Ontario (the Projects). The Projects are necessary to meet growing market demand for incremental storage space.

Project activities will involve a variety of measures include upgrades to wells and replacement of components such as lateral lines and station/valve components, among others. Existing access roads will be used, and construction will be completed using existing disturbed areas.

Although no new environmental disturbance is anticipated, as part of the planning process Enbridge has retained Stantec Consulting Ltd (Stantec) to prepare an Environmental Screening Report (ESR) to: document existing environmental conditions through a desktop review of existing literature, mapping and other data; identify potential environmental impacts associated with the Project; and recommend mitigation and protective measures. The ESR also identifies instances where additional environmental fieldwork, studies, and/or permits and approvals may be required.

1.2 Definition of the Study Areas

The Kimball-Colinville Pool Study Area is bound on the west side by Ladysmith Road, on the north by Rokeby Line, on the east by Kimball Road, and on the south by Courtright Line. The Bickford Pool Study Area lies at the intersection of Highway 40 and County Road 2 (Bentpath Line); it is bound on the north by the backlot line between Bentpath Line and Wilkesport Line, and on the east by the Bickford Pool property line. The Study Areas are shown in Appendix A.

1.3 Report Objectives

The purpose of the ESR is to:

- Document existing conditions in the Study Areas;
- Identify the environmental impacts associated with the Projects; and
- Determine the environmental mitigation and/or protection measures required to mitigate impacts caused by the Projects.

The ESR was prepared in consideration of the impact identification and assessment process outlined in the Ontario Energy Board *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Pipelines and Facilities in Ontario (2023)*.



1.4 Approval Process and Regulatory Requirements

The following permits and regulatory approvals may be required for the Projects:

- St. Clair Region Conservation Authority (SCRCA) Permit:
 - Under Ontario Regulation (O. Reg.) 41/24 of the *Conservation Authorities Act*, for activities in their regulated area potentially affecting flooding and erosion control.
- Ministry of the Environment, Conservation and Parks (MECP) Registration/Permit:
 - If the Projects require dewatering quantities from 50,000 Litres (L) to 400,000 L/day of water a day, an Ontario Environmental Activity Sector Registry must be obtained.
 - If the Projects require dewatering quantities in excess of 400,000 L of water a day, a Permit to Take Water must be obtained.
- *Endangered Species Act (ESA)*, 2007 Approval/Authorization:
 - Under O. Reg. 242/08 from the MECP for terrestrial species at risk (SAR).



2 Environmental Screening and Recommended Mitigation Measures

As Project activities will use existing access roads and ground disturbance will occur in previously disturbed areas, potential impacts to the physical, biophysical, and socio-economic features in the Study Areas are limited. The following features were not identified in or adjacent to the Study Areas during this screening exercise, and/or are not anticipated to be impacted by project activities, and therefore are not discussed further in this report:

- Exposed or Shallow Bedrock
- Aggregate Resources
- Designated Natural Heritage Features and Areas
- Vegetation Communities
- Community Services
- Local Infrastructure
- Cultural, Tourism, and Recreation Facilities
- Cultural Heritage Resources

2.1 Physical Features

2.1.1 Soil and Soil Capability

Existing Conditions

The soil types present in the Study Areas include Caistor Clay and Brookston Clay. Agriculture and Agri-Food Canada (AAFC) provides the following regarding the soil profile for each soil type present in the Study Areas (AAFC 2019; Ontario GeoHub 2023):

Caistor Clay: *is classified as Gleyed Gray Brown Luvisol soil. The soil has been disturbed by agriculture and the soil material is primarily composed of mineral particles. The water table is present in the soil during an unspecified period and the growth of plant roots is restricted by the third layer. For the parent materials involving this type, the mode of deposition for this soil type includes Morainal material (till) deposited by glacial ice: a mixture of boulders, sand, silt, and clay; the texture is fine and has chemical properties that are moderately / very strongly calcareous 6-40 Calcium Carbonate (CaCO₃) equivalent %.*



Kimball-Colinville and Bickford Maximum Operating Pressure Increase Project – Environmental Screening Report

Environmental Screening and Recommended Mitigation Measures

December 6, 2024

Brookston Clay: *is classified as an Orthic Helanic Gleysol soil. The soil has been disturbed by agriculture and the soil material is primarily composed of mineral particles. The water table is present in the soil during an unspecified period and the growth of the plant roots is not restricted by any soil layer. For the parent materials involving this type, the mode of deposition includes Morainal material (till) deposited by glacial ice: a mixture of boulders, sand, silt, and clay; the texture is moderately fine and has chemical properties that are moderately / very strongly calcareous 6-40 CaCO₃ equivalent %).*

The Canada Land Inventory system categorizes land into seven (7) classes which reflect the soil's capability to produce field and forage crops and explains different limitations each class of soil has. Lands classified as Class 1 are considered the most productive, while those classified as Class 7 are the least productive. Class 1 to 4 agricultural lands are generally considered arable lands with Class 1 and 2 considered prime for general field crop production. The classification system reflects limitations such as slope, shallow soils, climate, drainage, and fertility. Organic soils are not rated in the classification system.

In the Study Areas, two (2) of these soil capability classes were identified: Class 2 and 3. The following consists of a description for each soil capability class (AAFC 2013)

- Class 2- soils have moderate limitations that restrict the range of crops or require moderate conservation practices.
- Class 3- soils have moderately severe limitations that restrict the range of crops or require special conservation practices.

Impacts and Mitigation

During construction, equipment operating on agricultural soil can lead to reduced soil quality. Soils with no vegetative cover are more prone to erode, which can result in soil erosion from water and wind. Water and wind erosion both can result in a significant loss of topsoil. To mitigate these potential impacts, the following measures are recommended:

- Soil conservation (topsoil stripping and storage) should occur on all agricultural land.
- Standard erosion and sediment control measures should be implemented on all active areas and regularly inspected, maintained, and improved as required.
- To the extent feasible, construction activities should occur during drier times of the year. Lands affected by heavy rainfall events and wet soil conditions should be monitored, to avoid the potential for topsoil and subsoil mixing. Construction activities should be temporarily halted on lands where excessively wet soil conditions are encountered. If a situation develops that necessitates construction during wet soil conditions, soil protection measures should be implemented, such as: confining construction activity to the narrowest area practical, installing surface protection measures (such as swamp mats), and using wide tracked or low ground pressure vehicles.
- During construction activities, weather should be monitored to identify the potential onset of high wind conditions which can cause wind erosion. In the event that high winds occur, dust suppressants should be applied.



- In conjunction with the above measures, all required materials and equipment should be readily accessible and available for use as required.
- If clean-up is not practical during the construction year, interim soil protection measures should be undertaken.

2.1.2 Tile Drainage

Existing Conditions

Both Systematic and Random tile systems exist throughout the Kimball-Colinville Pool Study Area. A Systematic Tile System refers to an area that has been cross hatched in a regular pattern, while Random Tile System refers to an area where tiles have been installed where needed (Land Information Ontario [LIO] 2019).

Impacts and Mitigation

During construction, equipment operating on agricultural land can crush or sever tile drains. Should tile drains be encountered during excavation activities, locations should be flagged, and repairs should be implemented following the completion of construction.

2.1.3 Groundwater

Existing Conditions

Portions of the Kimball-Colinville Study Area, and the north end of the Bickford Pool Study Area, are in a Significant Groundwater Recharge Area (Lambton County, 2020). The Kimball-Colinville Study Area is also in the regulated area of SCRCA.

Impacts and Mitigation

During construction, where trenches encounter shallow groundwater conditions or following a large precipitation event, removing water from the trench (known as dewatering) may be necessary. During trench dewatering, discharge water will be released to the environment. An uncontrolled discharge of water could cause downstream flooding, erosion, sedimentation, or contamination. Other potential effects of uncontrolled discharge may include introduction of hazardous materials or pollutants to soils or bodies of water. The handling and storage of large volumes of liquid fuel poses a drinking water threat in the Significant Groundwater Recharge Areas. Lands regulated by SCRCA are flagged as risks for flooding and/or erosion. To mitigate these potential impacts, the following measures are recommended:

- Should construction anticipate dewatering above 50,000 L/day, a hydrogeologist should be retained to either register the work in the Ontario Environmental Activity Sector Registry or submit a Permit to Take Water application. The documentation required for the registration or application will include mitigation measures during dewatering activities.



- Special refueling procedures should be undertaken that include, at a minimum, include using a two-person refueling system with one worker at each end of the hose. Spill containment devices and absorbent material should be on hand and readily available.
- To reduce the impact of potential contaminant spills, the contractor should implement spill management protocols such as secondary containment of any temporary fuel storage and preparation of a spill response plan.
- A permit application should be submitted to SCRCA for construction activities in their regulated area.

2.1.4 Archaeological Resources

Existing Conditions

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Archaeological potential criteria commonly include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area. A review of Ministry databases has determined that portions of the Study Areas have not previously been assessed for archaeological potential.

Impacts and Mitigation

Enbridge will identify areas where ground disturbance or temporary land use is required. Should additional undisturbed land be used for Project activities, an archaeological assessment will be required. Dependent on the findings of the archaeological assessment, mitigation may be required through completing further stages of assessment.

Should previously unknown archaeological resources or human remains be uncovered or suspected of being uncovered during construction, they may be a new archaeological site and therefore ground disturbance in the find location should cease immediately. Enbridge's Environment Department should be notified immediately. A site-specific response plan should then be employed following further investigation of the specific find. The response plan would indicate what additional archaeological work is required, if any, and under which conditions the ground disturbance activity in the vicinity of the find location may resume.

Enbridge is committed to keeping interested Indigenous communities engaged on any unearthed artifacts and/or human remains discovered in relation to all its projects.

2.1.5 Groundwater

Existing Conditions

Portions of the Kimball-Colinville Pool Study Area, and the north end of the Bickford Pool Study Area, are in a Significant Groundwater Recharge Area (Lambton County, 2020). The Kimball-Colinville Pool Study Area is also in the regulated area of SCRCA.



Impacts and Mitigation

During construction, where trenches encounter shallow groundwater conditions or following a large precipitation event, removing water from the trench (known as dewatering) may be necessary. During trench dewatering, discharge water will be released to the environment. An uncontrolled discharge of water could cause downstream flooding, erosion, sedimentation, or contamination. Other potential effects of uncontrolled discharge

2.2 Biophysical Features

2.2.1 Wildlife Species at Risk and Species of Conservation Concern

Existing Conditions

A variety of background documents and sources of information were consulted during the preparation of the ESR to identify records of wildlife SAR and Species of Conservation Concern (SOCC) in the Study Areas, including the following information sources:

- Natural Heritage Information Centre database (MNR 2024a)
- LIO On-line Natural Heritage Mapping (MNR 2024b)
- MECP Species at Risk in Ontario List (MECP 2023)
- Fisheries and Oceans Canada Aquatic Species at Risk Map (DFO 2024)
- Ontario Breeding Bird Atlas (Cadman et al. 2007)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Butterfly Atlas (Macnaughton et al. 2024)
- iNaturalist Canada (iNaturalist 2024)

The list of wildlife SAR with the potential to occur in the Study Areas is noted below in Table 2-1. Some of the desktop sources provide data at a scale of 10 x 10 kilometer (km), and a recent species record is not confirmation that the species may be present in the Study Areas.

Table 2-1: Summary of Wildlife Species at Risk

Species	Status Ontario ESA, 2007	Status Federal <i>Species at Risk Act</i>, Schedule 1
Mammals		
Little brown myotis (<i>Myotis lucifungus</i>)	Endangered	Endangered
Northern myotis (<i>Myotis septentrionalis</i>)	Endangered	Endangered
Small-footed myotis (<i>Myotis leibii</i>)	Endangered	NA



Table 2-1: Summary of Wildlife Species at Risk

Species	Status Ontario ESA, 2007	Status Federal Species at Risk Act, Schedule 1
Tri-colored bat (<i>Perimyotis subflavus</i>)	Endangered	Endangered
Reptiles		
Blanding's Turtle (<i>Emydoidea blandingii</i>)	Threatened	Endangered
Butler's Gartersnake (<i>Thamnophis butleri</i>)	Endangered	Endangered
Common Five-lined Skink - Carolinian Population (<i>Plestiodon fasciatus pop. 1</i>)	Endangered	Endangered
Eastern Foxsnake (<i>Pantherophis vulpinus</i>)	Endangered	Endangered
Spiny Softshell (<i>Apalone spinifera</i>)	Endangered	Endangered
Spotted Turtle (<i>Clemmys guttata</i>)	Endangered	Endangered
Birds		
Bank Swallow (<i>Riparia riparia</i>)	Threatened	Threatened
Barn Swallow (<i>Hirundo rustica</i>)	Threatened	Threatened
Bobolink (<i>Dolichonyx oryzivorus</i>)	Threatened	Threatened
Common Nighthawk (<i>Chordeiles minor</i>)	Special Concern	Threatened
Eastern Meadowlark (<i>Sturnella magna</i>)	Threatened	Threatened
Least Bittern (<i>Ixobrychus exilis</i>)	Threatened	Threatened
Prothonotary Warbler (<i>Protonotaria citrea</i>)	Endangered	Endangered
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Endangered	Endangered
Wood Thrush (<i>Hylocichla mustelina</i>)	Special Concern	Threatened
Herptiles		
Western Chorus Frog (<i>Pseudacris triseriata</i>)	Not Rated	Threatened

Additionally, wildlife SOCC potentially located in the Study Areas are two species of birds: Eastern Wood-Pewee (special concern), and Purple Martin (not rated).

Impacts and Mitigation

During construction, wildlife SAR and SOCC have the potential to experience direct mortality from animal-vehicle collisions, and/or exhibit temporary avoidance behaviour due to the presence of humans and equipment. To mitigate these potential impacts, the Projects should be registered under the *ESA* and a Mitigation Plan developed to outline recommended species-specific mitigation measures. The following mitigation is also recommended during construction:

- All persons working in the Project footprints should be made aware of the potential presence of SAR and SOCC.
- Activities should avoid and/or limit time in natural features to the extent possible.



- Equipment and vehicles should yield to wildlife.
- Fencing should be installed around deep excavations to prevent wildlife entrapment.
- The contractor should inform their personnel not to threaten, harass or injure wildlife.
- If wildlife is encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site.
- SAR cannot be handled unless a Wildlife Scientific Collector's Permit is obtained.
- Limit workspace in fields where waterfowl are present from mid-March until May.
- Where possible, limit work in natural areas from April 1 to June 15 to reduce impacts on amphibian breeding habitat.
- Where possible, limit impacts to crayfish burrows in the woodlot near Kimball Road and Courtright Line, and in the woodlot south of Rokeyby Line.

2.2.2 Aquatic Resources

Existing Conditions

A background data review was conducted to determine locations and characteristics of potential surface water features in the Study Areas. Data shows numerous constructed drains in and adjacent to the Kimball-Colinville Pool Study Area, including the Anderson Drain, Taggart Drain, Jarvis Drain, Eyre Drain, McDonald Drain, White Drain, Lloyd-Smith Drain, and Burton Drain (MNR 2024b). None of the watercourses are flagged as containing aquatic SAR (DFO 2024). Data shows no water features in the Bickford Pool Study Area (MNR 2024b).

Impacts and Mitigation

It is Stantec's understanding that all construction activities in or near water will be completed as per the DFO-Enbridge Agreement (**Appendix B**). With successful implementation of the DFO-Enbridge Agreement there are no anticipated impacts to fish and fish habitat. If the conditions on the Agreement cannot be implemented fully, Enbridge will seek a project-specific review from the DFO.

2.3 Socio-Economic features

2.3.1 Land Use

Existing Conditions

The Projects occur on agricultural land that contains oil and gas infrastructure. Surrounding properties are largely agricultural, with the occasional residential property. A review of local official plans (Lambton County, 2020; St. Clair Township, 2011), the MECP Record of Site Condition Registry (MECP 2024), and aerial mapping identified no known contaminated sites.



Impacts and Mitigation

During construction, potential impacts to neighbouring property owners include nuisance caused by noise, dust, and equipment exhaust. Interaction with comminuted soil during ground disturbance has the potential to spread the contamination throughout the Study Areas. To mitigate these potential impacts, the following measures are recommended:

- Construction equipment should be equipped with appropriate mufflers and silencers as available.
- Company and construction personnel should avoid excessive idling of vehicles; vehicles and equipment should be turned off when not in use unless required for operation.
- To the greatest extent practical, activities that could create noise should be restricted to daylight hours and adhere to local noise by-laws.
- Sources of continuous noise, such as portable generators, should be shielded or located so as to reduce disturbance to residents.
- The contractor should implement site practices during construction that are in line with the Environment Canada document 'Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities' (ChemInfo Services Inc. 2005), which may include:
 - Maintaining equipment in compliance with regulatory requirements
 - Covering loads of friable materials during transport
 - Dust suppression of source areas
 - Watering for dust control must not result in the formation of puddles, rutting by equipment or vehicles, the tracking of mud onto roads or the siltation of watercourses.
- If evidence of potential contamination is found, construction should cease in the vicinity of the find and Enbridge's Suspect Soil Program should be implemented.



3 Conclusion

It is Stantec's opinion that the proposed Projects can be implemented in a manner that manages potential impacts through the proposed mitigation and protective measures outlined in this report and adherence to the conditions of additional permitting and approvals.



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Kimball-Colinville and Bickford Maximum Operating Pressure Increase Project – Environmental Screening Report

References

December 6, 2024

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Appendices



Appendix A Study Areas



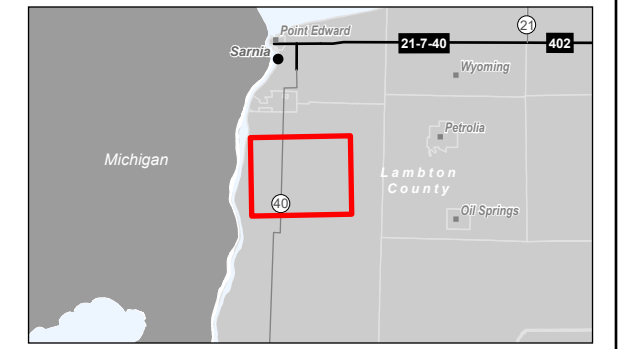
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Legend
Study Area

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- Notes**
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Project Location: County of Lambton, ON
160901173 REV6
Prepared by malcazaren on 2024-12-05
Technical Review by ABC on 2024-mm-dd

Client/Project: ENBRIDGE GAS INC.
KIMBALL-COLINVILLE AND BICKFORD MAXIMUM OPERATING PRESSURE INCREASE PROJECT - ENVIRONMENTAL SCREENING REPORT

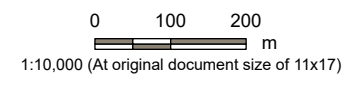
Figure No. 1

Title: Kimball-Colinville Pool

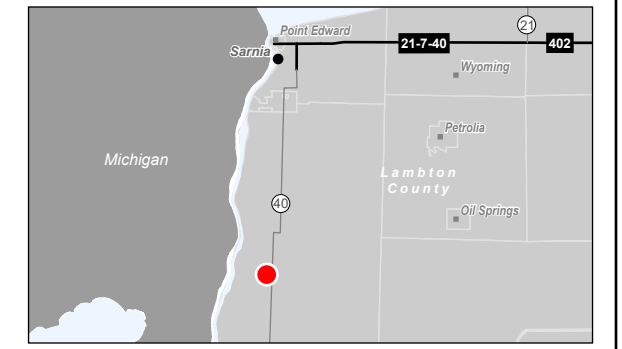
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Legend
 Study Area



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Project Location: County of Lambton, ON
160901173 REV6
Prepared by malcazaren on 2024-12-05
Technical Review by ABC on 2024-mm-dd

Client/Project: ENBRIDGE GAS INC. KIMBALL-COLINVILLE AND BICKFORD MAXIMUM OPERATING PRESSURE INCREASE PROJECT - ENVIRONMENTAL SCREENING REPORT

Figure No. **2**

Title: **Bickford Station Pool**

Appendix B DFO-Enbridge Agreement



DFO and Enbridge Gas Inc. Agreement related to
Watercourse Crossings for Pipeline Construction and
Maintenance in Ontario

BETWEEN

Her Majesty the Queen in Right of Canada, as represented
by the Minister of Fisheries, Oceans and
the Canadian Coast Guard (DFO)

AND

Enbridge Gas Inc.

March, 2022

1. NAME OF PARTICIPANTS

- HER MAJESTY THE QUEEN IN RIGHT OF CANADA as represented by the Minister of Fisheries, Oceans and the Canadian Coast Guard (hereinafter referred to as “DFO”)
- Enbridge Gas Inc. includes any parties working on their behalf

2. INTRODUCTION

- WHEREAS:
 - the *Constitution Act, 1867* assigns to the federal government exclusive jurisdiction for sea coast and inland fisheries and the *Fisheries Act* sets out powers and duties of the federal government with respect to the protection of fish and fish habitat;
 - The *Species at Risk Act, 2002* identifies the Minister of Fisheries and Oceans Canada as the competent minister with respect to aquatic species other than those individuals in or on federal lands administered by the Parks Canada Agency and, as competent minister, has specific powers, duties and functions related to the conservation, survival and recovery of aquatic species at risk and their habitat;
 - Enbridge Gas Inc. is an Ontario company responsible for natural gas storage, transmission and distribution in Ontario. On Jan. 1, 2019, Union Gas Limited and Enbridge Gas Distribution Inc. amalgamated to form Enbridge Gas Inc.;
 - Since 1997 DFO and Enbridge Gas Inc. (formerly Union Gas Limited) have established a process for the review and notification of watercourse crossing projects. This process provides for effective protection of fish and fish habitat in the Province of Ontario; and
 - Enbridge Gas Inc. has a legal obligation to stay compliant with the *Fisheries Act* and *Species at Risk Act*.

3. PURPOSE/OBJECTIVES/EXPECTED OUTCOMES

This Agreement is intended to:

- Help ensure that fish and fish habitat, as defined under the Fisheries Act and Species at Risk Act and related policies, are considered during the planning, review, approval and monitoring of pipeline construction and maintenance activities in the Province of Ontario.
- Increase certainty, consistency, efficiency and effectiveness in the conservation, protection and enhancement of fish and fish habitat in Ontario according to the provisions of the relevant federal legislation, regulations, policies and programs. In part this will be accomplished following the process outlined in Annex 1.
- Facilitate compliance by Enbridge Gas Inc. with the Fisheries Act and Species at Risk Act and in cases where required, assist with attaining the necessary DFO approvals that are required before construction can begin.

4. OTHER GENERAL INFORMATION

- This Agreement replaces the Agreement Letter between Union Gas Limited and Fisheries and Oceans Canada – Ontario Great Lakes Area Related to Watercourse Crossings for Pipeline Construction and Maintenance (DFO-OGLA/UJL Agreement 2008) and the associated conditions of the afore-mentioned Agreement.
- Nothing in this Agreement abrogates or derogates from any Aboriginal, treaty or other rights of Indigenous People including self-government.

5. DEFINITIONS

- **Base Flow:** the volume of flow in a stream channel that is not derived from surface runoff or flow from stream regulation, water diversion or other human activities. Base flow is attributed to such natural storage sources as groundwater, lakes, and swamps.
- **Best management practices and mitigation measures:** a suite of planning, design, construction, maintenance and removal tools and approaches that supports the fulfilment of watercourse crossing standards as defined in this Agreement.
- **Critical habitat:** means the habitat that is necessary for the survival or recovery of a SARA listed species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species.
- **Deleterious substance:** means, as defined by Section 34 of the *Fisheries Act* and summarized here, any substance that, if added to any water in such quantity or concentration or has been changed by heat or other means would degrade or alter the water quality such that it could directly or indirectly harm fish, fish habitat, or the use of fish by humans. Note: Environment and Climate Change Canada (ECCC) is responsible for its administration and enforcement.
- **DFO-Enbridge Standard:** standardized methodology for construction and removal of temporary watercourse crossings specifically identified in Annex 1 of this Agreement.
- **Fiscal Year:** means any twelve month period starting April 1st of the year and ending March 31st of the following year.
- **Fish:** as defined by the *Fisheries Act*, includes parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.
- **Fish habitat:** means, as defined by the *Fisheries Act*, water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.
- **Fish passage:** means the ability for all life stages and sizes of fish to freely migrate and move between different areas of fish habitat including but not limited to through bridges, culverts or other obstructions.
- **Ford:** A shallow, stable crossing location that does not require alteration of the bed or banks of the watercourse
- **Harmful, Alteration, Disruption or Destruction of Fish Habitat (HADD):** means, as interpreted by DFO in the Fish and Fish Habitat Protection Policy Statement (2019), any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish.
- **In-water timing windows:** means a period of time when in-water work associated with watercourse crossing activities is permitted.
- **In-water work:** aspects of a watercourse crossing project that requires any machinery, or parts thereof, or disturbance within a watercourse, including any disturbance to the watercourse bed, channel, banks or adjacent riparian habitat, as delineated by its ordinary high water mark.
- **Meander Belt:** the land area on either side of a watercourse representing the furthest potential limit of stream channel migration. Areas within the meander belt may someday be occupied by the watercourse.
- **Ordinary high water mark/bankful channel:** the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (e.g., rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the waterbody bed and banks that are frequently flooded by water so as to leave a mark on the land and where the

natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (i.e. full supply level).

- **Riparian area:** the vegetated areas adjacent to a watercourse that directly contribute to fish habitat by providing shade, cover and food production areas. They also stabilize watercourse banks and shorelines.
- **Sediment:** means soil or other surface material transported by wind or water as a result of erosion. Note that sediment not resulting from natural processes could be considered a deleterious substance under the *Fisheries Act*.
- **Sensitive habitat:** examples of sensitive habitat include but are not limited to, those habitats that provide specialized function for fish to carry out their life processes, are rare within the area, are easily perturbed and/or are slow to recover. Some examples include structurally complex areas like riffles; areas of groundwater upwellings; areas with submergent native aquatic vegetation.
- **Species at risk:** means an extirpated, endangered or threatened species, or a species of special concern, that is listed in Schedule 1 of the *Species at Risk Act (SARA)*.
- **Temporary clear span bridge:** small scale bridge structures (e.g., Bailey bridge or log stringer bridge) that completely span the watercourse, do not alter the stream bed or banks, and are a maximum of one lane wide. The bridge structure (including bridge approaches, abutments, footings, and armouring) is built entirely above the ordinary high water mark.
- **Winter crossings - Ice bridges and snow fills:** these are two methods used for temporary winter access in remote areas. Ice bridges are constructed on large watercourses that have sufficient stream flow and water depth to prevent the ice bridge from coming into contact with the stream bed or restricting water movement beneath the ice. Snow fills are temporary stream crossings constructed by filling a stream channel with clean compacted snow, and are typically used for crossing smaller watercourses. Materials such as gravel, rock and loose woody materials are NOT used in the construction of winter crossings.

6. SCOPE

- This Agreement applies to all watercourse crossings for the construction and maintenance of pipelines by Enbridge Gas Inc. in all freshwater fish habitats in the Province of Ontario. Specifically, Annex 1 will outline a process with a set of DFO-Enbridge standards for the review and submission of watercourse crossing projects to DFO.
- This Agreement pertains to the administration of Sections 34.3, 34.4, 35, 38(4), 38(5), 38(6) and 38(7) of the *Fisheries Act*.
- This Agreement pertains to the administration of Sections 32(1), 33 and 58(1) of the *Species at Risk Act*.

7. ROLES AND ACTIVITIES/RESPONSIBILITIES

- The Parties agree to participate in the periodic review of the Agreement to ensure that it remains consistent with the roles and responsibilities described therein. The Parties further agree to collaborate on the creation of harmonized watercourse crossing standards guidelines, and mitigation measures to guide decisions designed to protect fish and fish habitat.
- The Parties agree to carry out compliance and effectiveness monitoring activities as outlined in Annex 2 in order to ensure that the Agreement implementation and protection of the sustainability and ongoing productivity of fish and fish habitat are carried out in a consistent and effective manner.

- The Parties agree to develop and deliver joint training programs for staff as required.
- Enbridge Gas Inc. and their contractors will also abide by the Fisheries Act Sections 38(4), 38(4.1) and 38(5) Duty to Notify provisions. These provisions apply to persons whose actions have led to occurrences, or the serious and imminent danger of such occurrences, that result in the death of fish, HADD to fish habitat or deposit of deleterious substances. There is a duty to notify when the death of fish, HADD to fish habitat or deleterious deposit has not been authorized under the Act or where there is a serious and imminent danger of such an occurrence by notifying DFO (notify through email: fisheriesprotection@dfo.mpo.gc.ca or by phone: 1-855-852-8320). When reporting, please make note this work was completed under the Enbridge DFO Agreement. The obligation extends beyond notification to taking corrective action and reporting in accordance with Sections 38(6) and 38(7).
- Enbridge Gas Inc. and their contractors must also immediately report the spill of any material harmful to the environment (e.g. fuel, fluids, silt) in waters to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre at 1-800-268-6060 and take corrective measures. In such cases, Enbridge Gas Inc. must also notify on the details of the occurrence and the corrective measure being taken.

8. MANAGEMENT PROVISIONS

- The Parties will meet annually or more frequently as required to fulfil the objectives.
- DFO and Enbridge Gas Inc. will oversee implementation of this Agreement and will establish an Implementation Team to ensure effectiveness of the Agreement by recommending changes to the Agreement as required; and providing an issues resolution mechanism.

9. ANNUAL REPORT

- Enbridge Gas Inc. will submit an annual report on the implementation of this Agreement for the previous year to DFO by June 1. A year will be considered to run from April 1 to March 31 (e.g., report is due on June 1, 2022 for works undertaken between April 1, 2021 and March 31, 2022).
 - The report shall contain the information as outlined in Annex 2 (Annual Reporting and Audit).

10. REVIEW

- During the fifth year that this Agreement is in effect and every fifth year after that, a review team will review the effectiveness of activities under this Agreement.

11. FINANCIAL ARRANGEMENTS

- This Agreement will not impose any financial responsibilities on its Parties, except that each Party will be responsible for the staff and funding costs it incurs in its own interest, related to the support of the Agreement. The Parties may agree to jointly fund and support projects and initiatives that support the program activities.

12. DURATION, AMENDMENT, REVIEW, RENEWAL, WITHDRAWAL AND TERMINATION

- The Agreement will come into effect on the date it is signed by both Parties and will be formally reviewed every five years to evaluate its effectiveness.
- The Agreement will remain in effect until terminated in writing.
- The Agreement replaces any previous versions of the Agreement.

- Either Party may amend at any time with agreement by both Parties. The amendments shall be in writing.
- Either Party may terminate this Agreement by providing six (6) months written notice to the other Party. Enbridge Gas Inc. shall submit a final annual report providing notification of any projects reviewed under the Agreement before termination occurs.

13. LEGAL DISCLAIMER

- This Agreement is an expression of the mutual intentions of the Parties and is not legally binding on them or enforceable against them.
- The regulatory and legal decision making authority of DFO is not delegated or otherwise affected by this Agreement.
- It is the responsibility of Enbridge Gas Inc. to comply with all federal and provincial laws and regulations, all municipal by-laws, and any other orders, rules and by-laws. Compliance with this Agreement does not relieve proponents from possible prosecution under either Canada’s *Fisheries Act* or *Species at Risk Act*.

14. CONTACTS

Correspondence relating to this Agreement is to be sent to the respective points of contact designated below. Either Party may revise its point of contact by written notice to the other Party at any time.

For DFO:

Coordinator Client Liaison & Partnerships,
 Ontario
 Fish and Fish Habitat Protection Program
 Ontario and Prairie Region
 Email: fisheriesprotection@dfo-mpo.gc.ca

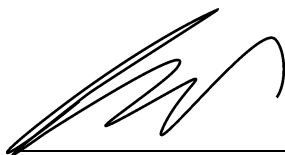
For Enbridge Gas Inc.:

Supervisor, Permitting

15. EFFECTIVE DATE AND SIGNATURE

SIGNED IN THE PRESENCE OF:

FOR HER MAJESTY THE QUEEN IN RIGHT OF CANADA



 C. Thomas Hoggarth
 Regional Director
 Ontario and Prairie Region, Fisheries and Oceans Canada

March 22, 2022

 Date

FOR ENBRIDGE GAS INC.

Neil MacNeil

Director System Improvement Engineer

Date

This Agreement comes into effect on the latest date noted above.

Annex 1: Watercourse Crossing Review Process

These watercourse crossing standards have been developed collaboratively between DFO and Enbridge Gas Inc. They represent minimum levels of performance requirements that must be met by Enbridge Gas Inc. when constructing, maintaining and removing watercourse crossings.

The conditions and requirements included in the general and specific watercourse crossing standards have been deemed as the necessary mitigation measures required to classify the watercourse crossing project as not likely to result in the death of fish or HADD to fish habitat. If Enbridge Gas Inc. determines that the requisite watercourse crossing standards that apply to their specific project can be implemented as outlined in the Steps below, they may proceed with their activity without coming to DFO for a review of their project.

In cases where Enbridge Gas Inc. determines that the requisite watercourse crossing standards that apply to their specific project cannot be implemented, such as a watercrossing completed in the wet, a Request for Review must be submitted to DFO.

Step 1 - Does fish and/or fish habitat exist?

The types of watercourses that are excluded from the *Fisheries Act* can be found on the Fisheries and Oceans Canada's Projects Near Water website (<https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>).

If the proposed project has fish and/or fish habitat features, **proceed to Step 2**. If not – no further DFO review required.

Step 2 - Are there SARA listed species in the vicinity of the work site?

Enbridge Gas Inc. will determine whether aquatic species at risk (i.e. fish and mussels) listed federally under SARA are likely present. When determining if species at risk are likely to be impacted by the project, Enbridge Gas Inc. should consider both the immediate footprint and the potential spatial and temporal extent of the possible project impacts relative to the documented presence of species at risk and/or their habitat. SARA prohibitions only apply to species that are classified as Extirpated, Endangered or Threatened under Schedule 1 of the SARA. Consult DFO's aquatic species at risk maps (<http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>). Species listed as Special Concern should be identified to ensure their life history parameters are considered.

If there are Endangered or Threatened SARA listed aquatic species at risk and/or their habitat that may be impacted by the works in question then then submit a Request for Review (<https://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/request-review-demande-d-examen-004-eng.html>) to DFO, if not then **proceed to Step 3**.

EXCEPTION: If the project requires Horizontal Directional Drilling in areas with aquatic Species at Risk AND you can meet all of the conditions outlined in the DFO-Enbridge Standard for Horizontal Directional Drill outlined in Step 4 below, submission to DFO is not required.

Step 3 - Is there a code of practice?

DFO has developed a series of standards and codes of practice (COP) for common works, undertakings and activities. These provide guidance on how to avoid and mitigate impacts to fish

and fish habitat and comply with the *Fisheries Act* and *Species at Risk Act*. DFO Codes of Practice are available at <https://www.dfo-mpo.gc.ca/pnw-ppe/practice-pratique-eng.html>. These can change so it is important to check the website to ensure the most recent version is being followed. When applying a DFO Code of Practice, notification forms do not need to be sent to DFO. Notification will be included in the annual reporting as outlined in Annex 2.

Note that DFO Codes of Practice reference additional *Measures to Protect Fish and Fish Habitat and Standards*. These measures are available on DFO's website (<https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>) and also apply.

If there is not a code of practice then **proceed to Step 4**.

Step 4 - Is there an agreed upon DFO-Enbridge standard?

The following step outlines standards for different types of works, undertakings and activities agreed to by Enbridge Gas Inc. and DFO. Enbridge Gas Inc. is required to meet ALL of the criteria and conditions listed for the standard to apply.

Horizontal Directional Drill

You can use this standard if:

- You follow the procedures and methodology outlined in the following Enbridge Gas Inc. documents in appendix 1:
 - Generic Sediment Control Plan Horizontal Directional Drill dated December 2021
 - Horizontal Directional Drilling Contingency Plan Guide dated December 1, 2021
- Work is taking place outside of Critical Habitat including any identified riparian areas
- Work is taking place at least 15m from any watercourse
- Work is taking place at least 30m from any watercourse that has aquatic species at risk

Temporary bridges

You can use this standard if:

- You follow the procedures and methodology outlined in the Enbridge Gas Inc. document in appendix 1:
 - Generic Sediment Control Plan Temporary Vehicle Crossings dated December 2021
- The temporary bridge is no greater than one lane wide
- The crib, log or swamp mat support is above the ordinary high water mark

Temporary culverts:

You can use this standard if:

- You follow the procedures and methodology outlined in the Enbridge Gas Inc. document in appendix 1:
 - Generic Sediment Control Plan - Temporary Vehicle Crossings dated December 2021
- The use of explosives is not required to complete the works, undertakings and activities
- Fish passage is maintained during the works, undertakings and activities

- No sensitive habitat exists at the crossing location
- The temporary culvert does not result in the draining of upland ponded or wetland features
- The culverts have a maximum length of no longer than 12.2m (40ft)
- The installation and removal of culverts must occur within a single allowable activity timing window

Dam and pump crossings:

You can use this standard if:

- You follow the procedures and methodology outlined in the Enbridge Gas Inc. document in appendix 1:
 - Generic Sediment Control Plan Dam and Pump Water Crossings dated December 2021
- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) **AND** flow conditions are 1.5m³/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse
- Note: fish passage in a dam and pump crossing is not required

Dry Flume Crossings

You can use this standard if:

- You follow the procedures and methodology outlined in the Enbridge Gas Inc. document in appendix 1:
 - Generic Sediment Control Plan Dry Flume Water Crossings dated December 2021.
- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m³/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse
- Note: fish passage in a dry flume is not required

Step 5 – if none of the above apply, submit a request for review to DFO

<https://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/request-review-demande-d-examen-004-eng.html>

Annex 2: ANNUAL REPORT AND AUDIT

- The report will detail the number and types of watercourse crossings that are constructed using the Agreement and any corresponding compliance monitoring. The intent of the reporting is to confirm the conditions for each type of crossing were met and therefore the reporting will differ for each crossing method.
- For each watercourse crossing the annual report will include the following basic information:
 - Location info: township or municipality, name of watercourse, co-ordinates
 - Contractor information: name, contact information
 - COP being used /type of crossing method
 - Will be submitted by June 1 the following year
- For dam and pump and dry flume crossings the annual report will also include the following information:
 - Start and end date for inwater work
 - Area of temporary dewatering
- For temporary culvert crossings the annual report will also include the following information:
 - Photographs of temporary culverts (pre, during and post construction)
- Audit: Compliance and effectiveness monitoring will occur jointly by DFO and Enbridge Gas Inc. The data and feedback obtained will be used to evaluate how the goals and objectives of the Agreement are being met and to support improvements and revisions to future versions, while supporting an adaptive management approach to policy development.
 - A subset of projects will be selected for audit. Joint site visits will be undertaken and should include during construction and/or 1- 5 years post construction.

Generic Sediment Control Plan – Horizontal Directional Drill

This Plan is applicable to Enbridge Gas Inc. (EGI) workers and Contractors involved in HDD activities. It establishes best management practices to prevent and/or mitigate an unauthorized death of fish or harmful alteration, disruption or destruction (HADD) of fish and fish habitat or the impairment of water quality from an inadvertent release of drilling fluid or sedimentation in the vicinity of, or beneath, watercourses. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Drilling fluid is typically composed of bentonite clay-water mixture, which is considered non-toxic/hazardous, however, if it is released to a watercourse, there is the potential for the drilling fluid to adversely impact fish and invertebrates. EGI recognizes the need to protect downstream water users, as well as aquatic species and their habitat, from sedimentation. As such, extensive planning prior to, and constant vigilance during, construction operations are essential.

Conditions for use

- Work is taking place outside of Critical Habitat including any identified riparian areas
- Work is taking place at least 30m from any watercourse that has aquatic species at risk
- Work is taking place at least 15m from any watercourse

Planning and Pre-Construction

The following precautionary measures should be implemented to minimize the risk of an inadvertent release or sedimentation during HDD activities:

- Select a pipeline route to minimize the number of watercourse crossings;
- If possible, schedule HDD activities during low flow times;
- Ensure watercourse crossing permits and approvals are obtained, reviewed and remain on-site throughout the duration of the project;
- Where necessary, EGI will notify the required regulatory authorities (i.e. Conservation Authority) prior to the watercourse crossing;
- Ensure that all construction personnel are aware of this contingency plan prior to the commencement of drilling activity;
- Conduct a feasibility assessment (i.e. geotechnical assessment) to assess the suitability of subsurface conditions (if required);
- Maximize distance of HDD entry and exit points from the watercourse and ensure they are at least 10 m from a watercourse if aquatic species at risk are not present in 30 m if present; and
- Maximize depth of the drill path beneath the watercourse.

Construction Mitigation Measures

The steps and precautions that follow should be completed when conducting HDD activities beneath, or in the vicinity of, a watercourse:

- Clearly flag the expected drill path prior to commencing any drilling operations, to facilitate monitoring for potential drilling fluid releases.
- Assign personnel to monitor the drill path for inadvertent returns of drilling fluid or sedimentation.
- Fluid volumes, annular pressure and cutting returns will be continuously monitored to ensure potential drilling fluid losses are detected and addressed immediately. Dedicated personnel should be assigned to continuously monitor drilling pressure and fluid volumes.
- Ensure an approved spill kit is on site and readily available, as per the Spill Response Procedure.
- Sediment control measures (i.e. silt fencing, SiltSoxx™, etc.) should be set-up prior to initiating HDD operations to contain potential releases of drilling fluid, sediment-laden groundwater or run-off along the proposed drill path. Sediment control measures shall be installed:
 - Around entry and exit pits;
 - Around drilling fluid containment pits;
 - Surrounding spoil piles;
 - Between all HDD operations and watercourse as identified on this drawing;
- Over-excavate the entry and exit pits to create drilling fluid sump pits;
- Drilling fluid must be contained in entry and exit pits (sump pits) and as they are filled, drilling fluids should be promptly removed and/or removed at the completion of HDD operations at an approved location;
- All vehicles, machinery and other equipment shall not enter the water. There must be no fording of any watercourse;
- If possible, refueling of equipment should not occur within a minimum of 30 m from a watercourse, however, if required, secondary containment must be used around the refuelling area to prevent entry into the watercourse; and
- If necessary, ensure dewatering occurs through a ‘sediment-bag’ and utilizes other erosion and sediment control (ESC) measures, as required, and is released greater than 30 m from the top-of-bank into a vegetated area.

During HDD operations, workers should keep enough spill response material on-site and readily available to contain any inadvertent releases of drilling fluid or release of sediment-laden groundwater, including (but not limited to):

- Sandbags
- Filter cloth (i.e. silt fence)
- T-Posts
- Corrugated culverts
- Numerous 5-gallon pails
- Vacuum trucks
- Straw bales
- Snow fencing
- Sediment control lots (i.e. SiltSoxx™) or equivalent
- Polyethylene sheets
- Shovels

In addition to the above, for larger watercourse crossings, the following materials should also be kept on-site:

- Turbidity curtains
- Floating sediment boom
- Trash pumps complete with sufficient lengths of leak-free hose, suction heads, and fish screens

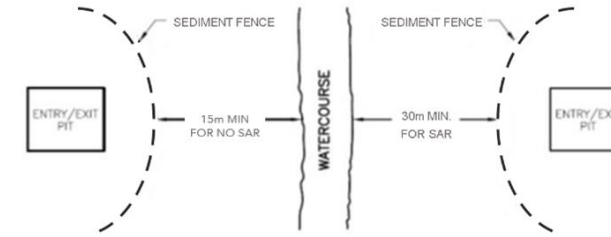
Contingency Plan for Inadvertent Release

Bank and Riparian Zone Areas

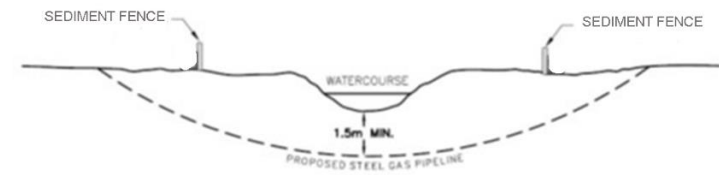
The steps that follow should be completed when pipeline installation by HDD is occurring adjacent to a watercourse bank or riparian zone and drilling fluid is identified along the drill path.

- HDD operations should stop immediately and spill containment be established using EGI’s approved methods including, but not limited to:
 - Straw bales and sediment control fencing;
 - Sandbags and polyethylene sheets;
 - Containment pits, rings and/or absorbent booms;
 - Vacuum trucks; and,
 - Site re-grading (berms).
- The EGI Supervisor and Environmental Inspector (if applicable) must be notified of the inadvertent release of drilling fluid or sedimentation.
- The EGI Supervisor must follow the reporting requirements outlined in the Spill Response Procedure and at a minimum, contact, the Environmental Advisor at **1-855-336-2056** to ensure regulatory reporting requirements are met and to ensure clean-up operations are completed.
- If in doubt, report the spill. At a minimum, the following information will be required when reporting to the Environmental Advisor:
 1. Date and time of spill
 2. How the spill occurred
 3. Location of spill
 4. Type of material spilled
 5. Volume of material spilled
 6. Any impacts from the spill
 7. Immediate spill response actions
 8. Photographs
- Contact an approved environmental consultant to support spill cleanup and restoration, if deemed necessary based on the extent and impacts of the release.
- Workers including the EGI Inspector, Environmental Advisor and Contractor and Environmental Inspector (if used) should check for the root cause of release and identify potential solutions including (but not limited to):
 - Reducing the pressure of slurry flow (i.e. excavate pressure relief pits);
 - Reducing the speed of drill rotation;
 - Reducing the speed of drill rod advancement;
 - Moving the drill location (laterally, depth, etc.); and,
 - Utilizing water to replace the bentonite drilling fluid, if site conditions allow.
- Any substantial deviation (i.e. installation method, crossing location/depth) from approved pipeline construction drawings must be resubmitted to the respective regulatory agencies (i.e. Conservation Authority) prior to resuming work.
- Residual drilling fluid must be removed by shovel or vacuum truck. Clean-up activities must minimize further disruption to the bank and riparian zone area.
- Any damage must be repaired, such as settlement and/or heaving.
- HDD activities may resume when preventative actions have been implemented and all parties are satisfied with the approach (i.e. EGI Supervisor, Environmental Advisor, Environmental Inspector and regulatory authorities [if involved]).

Minimum Horizontal Directional Drill Setback and Depth



PLAN



PROFILE

NOTES

- SEDIMENT FENCE TO BE SET UP A MINIMUM OF 15m FROM A NO SPECIES AT RISK WATERCOURSE AND 30m FOR A SPECIES AT RISK WATERCOURSE.
- HORIZONTAL DIRECTIONAL DRILL TO BE SET UP BEHIND SEDIMENT FENCE.
- MINIMUM OF 1.5m COVER FROM TOP OF PIPE TO BED OF WATERCOURSE.
- ALL DISTURBED AREAS TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS OR AS CLOSE AS POSSIBLE.

Watercourses

In addition to the above steps and precautions for bank and riparian zone areas, the following should be completed when pipeline installation by HDD is occurring beneath a watercourse and drilling fluid is identified or suspected in the watercourse itself:

- Where leakage of drilling fluids is suspected in a watercourse (i.e. sediment plume) operations should stop immediately and a visual inspection be conducted to verify the presence and extent. All necessary steps should be taken to minimize the impacts.
- Containment and clean-up activities must be initiated as soon as possible, where appropriate.
- Where the release is small with no visible sediment plume it should be allowed to dissipate naturally. Clean-up efforts within the watercourse may potentially be disruptive and cause further suspension of sediment in the water column than if the release were left to dissipate.
- Where the release is large with a visible sediment plume extending beyond the drilling site, the Environmental Advisor must be contacted to retain an environmental consultant to monitor the turbidity levels of the plume and associated potential impacts. In addition, the location of the inadvertent release should be isolated from the watercourse by installing a cofferdam or other containment system by utilizing the following materials:
 - Sandbags and polyethylene sheets;
 - Siltsoxx™, filter cloth (silt fence), straw bales;
 - Corrugated culverts; and/or,
 - Turbidity curtains.
- The following materials can be used to control and clean up the release:
 - Shovels and 5-gallon pails (if conditions are dry)
 - Trash pumps with hose, suction head and fish screens; and/or
 - Vacuum trucks.
- If subsequent drilling attempts result in additional inadvertent returns of drilling fluid, the crossing should be halted, the Supervisor contact the Environment Department at **1-855-336-2056** and refer to the Contingency Plan for Installation Alternatives below.

Contingency Plan for Installation Alternatives

If EGI is unable to use HDD methodology to install the pipeline even with the mitigation implemented above, construction activities must be suspended, and the Environmental and/or Permit Advisor must be contacted to discuss alternate crossing methods. Any changes to the permitted crossing method may require permit amendments or government agency approval.

EGI should consider the following (from most to least preferred):

- Further geotechnical investigations to revise the pipeline alignment or depth
- Implement another crossing method as outlined in the Enbridge Gas Inc. and Department of Fisheries and Oceans Agreement Related to Watercourse Crossings for Pipeline Construction and Maintenance in Ontario (EGI DFO Agreement)
- Implement another crossing method such as a Non-Isolated Trench/Wet Open Cut method (work area is not isolated from flowing water)

Once the crossing method is reviewed by all internal parties and has been revised, the revised crossing method must be resubmitted for review and approval to the respective regulatory agencies (i.e. Conservation Authority, DFO [if required]) prior to resuming work.

Death of Fish or Harmful Alteration, Disruption or Destruction of Fish Habitat (HADD)

- If death of fish or HADD has occurred due to failure of this plan, a restoration plan should be developed and implemented by the company in consultation with and upon receipt of approval from the respected Conservation Authority and the DFO.

If a HADD occurs, notification are required as per the Contingency Plan for Inadvertent Release section above. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD to DFO.

Restoration

The following conditions should be considered when restoring any areas impacted by an inadvertent release of drilling fluid:

- Ensure the drilling exit and entry pits are cleaned of drilling fluid and the fluids are disposed of at an approved location.
- Any disturbed areas adjacent to the watercourse should be seeded, covered with erosion control matting (or equivalent) and restored as close as possible to pre-construction condition.
- All seeding and vegetation replacement will be with native species and as directed by the landowner or regulator (as required).
- If post-construction monitoring reveals erosion, remedial work will be taken as quickly as possible.
- If there is insufficient time in the growing season, the site should be stabilized (i.e. cover exposed soils with erosion control matting) and seeded the following spring.
- Maintain effective erosion and sediment controls until revegetation of disturbed areas is achieved, then remove the control measures.
- All debris and garbage shall be removed from the construction site to an approved location.

NOTES



LOCATION

ALL HORIZONTAL DIRECTIONAL DRILL CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN HORIZONTAL DIRECTIONAL DRILL

SCALE	DATE
NTS	DECEMBER 2021
FILE No.	PROJECT No.

DRAWN	CHECKED	DRAWING	REV
GTH			0

APPROVED

Generic Sediment Control Plan - Temporary Vehicle Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of temporary vehicle water crossing at any watercourse (e.g., streams, rivers and ponds). The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at <https://www.dfo-mpo.gc.ca/pnw-ppc/measures-mesures-eng.html>. Vehicle crossings typically include temporary bridges (e.g., Bailey bridges, log stringer bridges) and winter crossings such as ice bridges and snow fills. The following requirements apply to any watercourse and areas adjacent to it:

- Temporary vehicle crossings to be in place no longer than a single restricted activity timing window.
- Use existing vehicle access across watercourses wherever possible.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- Prior to commencing the installation of temporary vehicle crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence.
- Vehicle crossing structures capable of handling anticipated high water flows during the construction period will be used. See guidelines below on sizing of water opening.
- Coarse cobbles, sandbags, geotextile liners and/or curb stringers will be used to protect culvert and ramp approach fills from erosion and to prevent sediment from entering a watercourse.
- On the approaches to vehicle crossing structures, road ditches constructed for drainage control will incorporate the necessary erosion and sedimentation control measures (e.g., silt fence, check dams) to prevent sediment from entering a watercourse.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of water and fish.
- All exposed mineral soil must be graded to a stable slope and treated as quickly as possible to prevent erosion and sediment from entering a watercourse.
- All temporary vehicle crossing structures will be removed upon completion of construction. Banks and approaches will be restored and stabilized immediately upon removal of a vehicle crossing structure.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly from sediment control mitigations.
- Equipment fording will only be allowed if the Code of Practice can be met. It is available at <https://www.dfo-mpo.gc.ca/pnw-ppc/codes/temporary-crossings-traversees-temporaires-eng.html>.
- The Company will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Sizing of Water Opening

It is important that the size of the water opening be selected so the structure can safely pass flood flows that can reasonably be expected to occur during the life of the crossing. **These structures must also allow for fish passage at all times except during the pipeline installation.** Any one of the following methods can be followed:

- Install a bridge that clear spans the watercourse from top of bank to top of bank where banks are defined (i.e. ordinary high water mark), and ensure adequate freeboard to allow for anticipated increase in stream discharge and passage of debris. In cases where banks are undefined: use cribbing or other footing material to hold the bridge and ensure adequate freeboard to allow for anticipated increase in steam discharge and passage of debris.
- Maximum culvert length will be 12.2 m (40 ft).
- Conduct a hydrology and hydraulics analysis to determine theoretical opening size. The design flow will be the two year flood (Q2), unless the culvert is to be left in place through the spring freshet, in which case the theoretical opening size will be based on the five year flood (Q5).
- Culvert sizes may also be selected to be the same as nearby culverts that have been in place for many years and have performed satisfactorily.
- If culverts are used, the approved size or equivalent multiple culverts must be installed. If multiple culverts are used a low-flow channel through one culvert must be established.

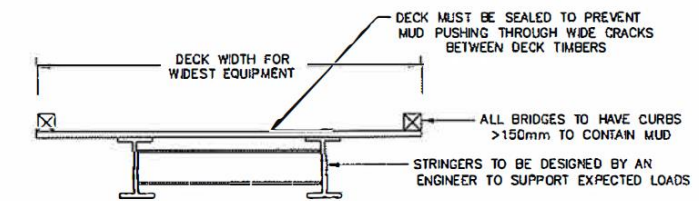
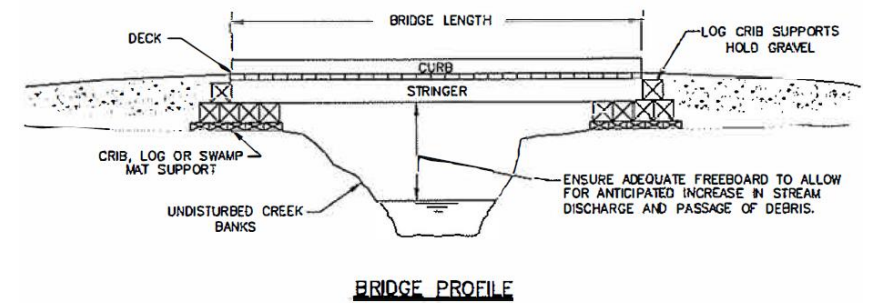
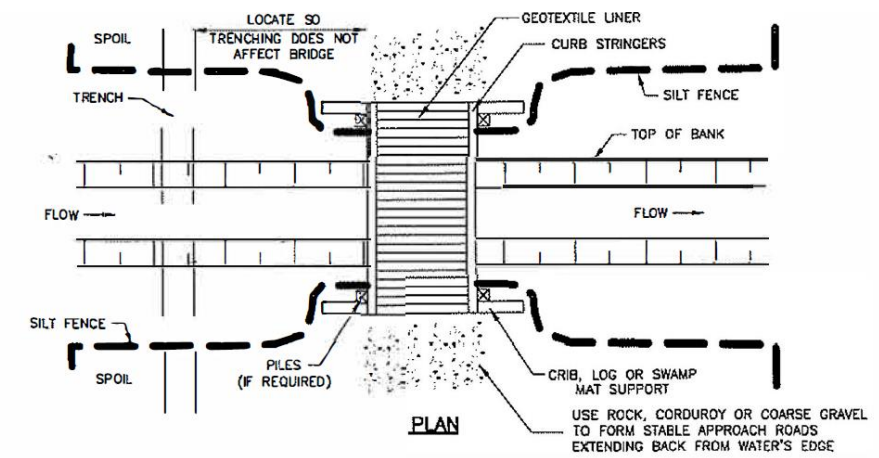
Detailed Construction Sequence - Temporary Bridges

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary bridges.

Conditions for use

- The temporary bridge is no greater than one lane wide.
- The crib, log or swamp mat support is above the ordinary high water mark.

1. Generally, there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt fish or fish habitat (e.g., in-water crossing of watercourse by machinery), these should be undertaken outside of the restricted activity timing windows.
2. Install the bridge in a manner that will minimize sediment entering the watercourse. Stringers must be engineered to support the loads expected on the bridge. Curbs at least 150 mm high must be installed along the edge of the deck and if necessary, the deck lined with geotextile to contain mud on the bridge. Fasteners connecting components must be strong enough to hold them in position during the life of the bridge.
3. Road approaches leading to the bridges must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filler cloth, rip rap, seed and mulch, sediment traps, etc.)
4. While the bridge is in use, any buildup of sediment on the bridge deck or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
5. Temporary crossings will be removed as quickly as possible when no longer required. Surplus gravel and bridge materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
6. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



TYPICAL STEEL BRIDGE SECTION

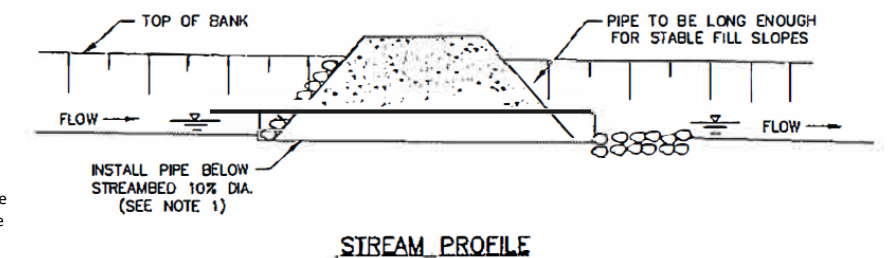
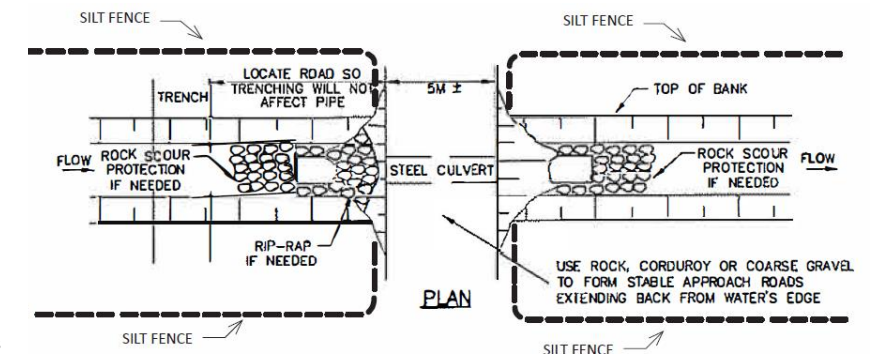
Detailed Construction Sequence - Temporary Culverts

Conditions for use

- The use of explosives is not required to complete the works, undertakings and activities
- Fish passage is maintained during the works, undertakings and activities
- No sensitive habitat exists at the crossing location
- The temporary culvert does not result in the draining of upland ponded or wetland features
- The culverts have a maximum length of no longer than 12.2m (40ft)
- The installation and removal of culverts must occur within a single allowable activity timing window

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary culverts. Pre-, during-, and post-construction photographs showing the culvert location will be taken.

1. Install culvert pipe of diameter and length as per the Sizing of Water Opening requirements to ensure for stable fill slopes and safe vehicle/equipment passage. Culvert invert is to be set to allow a minimum of 10cm water depth for fish passage. Culvert installation can be done in flowing water as long as the installation occurs outside the restricted activity timing window. Culvert backfill and fill for the road is to be coarse granular or rock fill material. Erosion protection may be needed on the upstream road fill slope and if scour is possible, rip rap is to be placed in the watercourse upstream and downstream of the culvert outlet.
2. Road approaches leading to the culvert crossing must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock, or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filter cloth, rip rap, seed and mulch, sediment traps, etc.).
3. While the culvert is in use, any build-up of sediment on the road surface or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
4. Temporary crossings will be removed as quickly as possible when no longer required. Removal must occur outside the restricted activity timing window. Surplus gravel and culvert materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
5. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



STREAM PROFILE

NOTES



LOCATION

ALL TEMPORARY VEHICLE CROSSINGS (BRIDGES & CULVERTS) IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN
TEMPORARY VEHICLE CROSSINGS

SCALE

NTS

DATE

DECEMBER 2021

FILE No.

PROJECT No.

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APPROVED

Generic Sediment Control Plan Dam and Pump Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dam and pump type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO). This includes the current DFO Code of Practice for temporary cofferdams and diversion channels available at <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/cofferdams-batardeaux-eng.html>

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m³/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dam and pump crossing is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at <https://www.dfo-mpo.gc.ca/pnw-ppe/measure-mesures-eng.html>. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

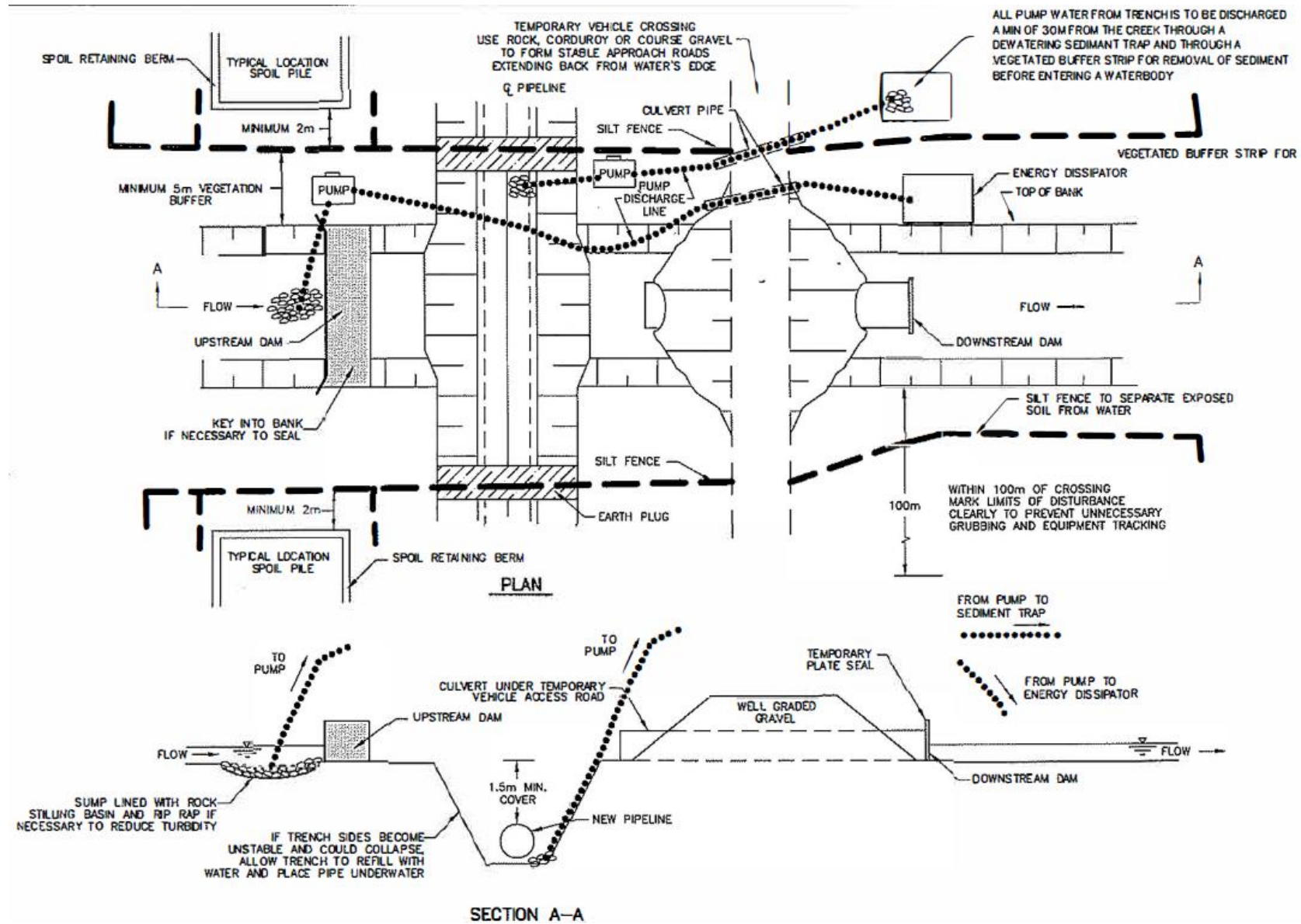
- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the watercrossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence.
- If there is any flow in the watercourse, EGI is to install pumps to maintain streamflow around the blocked off section of channel. An energy dissipater is to be built to accept pump discharge and prevent watercourse erosion.
- Adequate pump capacity will be on site to handle anticipated water flows and any potential increases in flow during the construction period. Backup pumps with adequate capacity to handle 100% of the downstream flow must be on site and ready for immediate replacement, should the primary operating pump(s) fail.
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- Instream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date EGI specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

If unforeseen events (e.g., bedrock in trench, dam washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. At a minimum contact the Environmental Advisor at 1-855-336-2056.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.



Detailed Construction Sequence - Dam and Pump Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dam and pump" type water crossings.

- Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the dams and to pump water must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
- If possible, install pumps in a natural pool upstream of the excavation. Excavate temporary sump within right-of-way if no natural pool exists. Check pump operation to equalize flow and ensure water intakes used in fish bearing waters are screened in accordance with DFO Code of Practice. Rip rap, stilling wells, filter cloth, gravel filters or other mitigation measures will be used at the upstream inlet of the pump to prevent suspension of sediment from pumping when necessary. Rip rap and rock check dams will be used when necessary to prevent scouring and erosion at the pump outlet. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
- Dams are to be made of steel plate, inflatable rubber dam (aquadam), pea stone bags, or metre bags and constructed so that sediment is not introduced to the watercourse. An impervious membrane is to be incorporated into the dam if necessary, to control seepage flow. Dams may need keying into the banks and streambed. Install downstream dam only if needed to keep the trench area dry. Dewater the area between dams and for fish bearing streams, conduct fish recovery operations. All pump water is to be discharged well away (minimum 30 m) from the creek and through a sediment trap to prevent reentry of sediment into the watercourse.
- Excavate trench through plugs and streambed as quickly as possible, re-positioning discharge hose as necessary. Lower the pipe in the trench and backfill immediately. During pumping activities, monitor flow upstream and downstream to ensure normal flow levels. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of above the high-water mark in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.

- Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap) to the maximum extent possible between dams. Do not use erosion control matting in the bankfull channel. All construction material (e.g. dams, rip rap, pea stone bags) will be removed from the site to an approved location. Removal of all materials will be done in a manner to prevent entry of sediment to the watercourse. The downstream dam will be removed first. Keep pump running until normal flow is resumed. Complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
- Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc. is to be completed immediately upon trench backfilling or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
- Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES



LOCATION

All DAM AND PUMP WATER CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN
DAM AND PUMP WATER CROSSINGS

SCALE	NTS	DATE	DECEMBER 2021
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FILE No.	PROJECT No.
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APPROVED

Generic Sediment Control Plan - Dry Flume Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dry flume type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m³/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dry flume is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at <https://www.dfo-mpo.gc.ca/pnw-ppe/maasures-mesures-eng.html>. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur outside of the restricted activity timing windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossings will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment should not enter the water. There should be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the water crossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date Company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

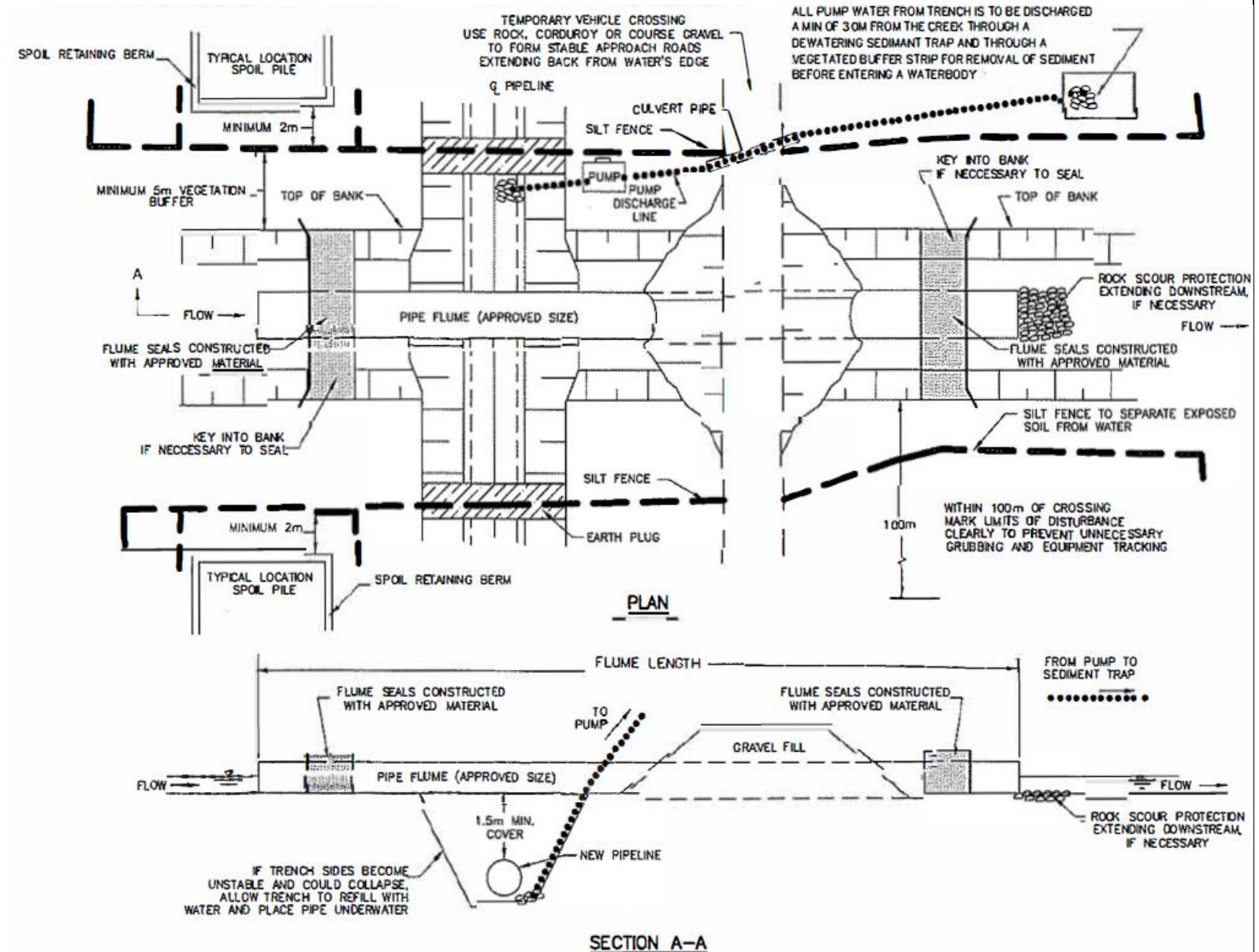
If unforeseen events (e.g. bedrock in trench, flume washout) cause the strategies set out in this pion to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI will be used to report any unexpected discharge of silt or sediment or other deleterious substance of the water crossing. At a minimum contact the Environmental Advisor at 1-855-336-2056.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.

Flume Sizing

- Flumes will be sized initially based on hydrology and hydraulic analysis to determine theoretical opening size. The capacity of the flumes will be sized to handle 150% of the anticipated flow.
- The approved size or equivalent multiple flumes must be installed.
- Flume sizes may also be selected to be the same as existing nearby culverts that have been in place for many years and have performed satisfactorily.



Detailed Construction Sequence - Dry Flume Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dry flume" type water crossings.

- Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the flume must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
- Install flumes equal to or larger than the diameter determined by the methods described above. Place impervious dams at each end of the flume, upstream first then downstream. Alternative dam materials include coarse gravel with rip rap protection, pea stone bags, steel plate and metre bags. During placement, install an impervious membrane, if necessary, to prevent leakage. Dams may need keying into the bank and streambed. Once the area is isolated, conduct fish recovery and transfer operations and dewater the area between the dams. All pump water is to be discharged well away (minimum 30 m) from the watercourse and through a sediment trap to prevent reentry of sediment into the watercourse. Pump discharge lines will be installed to keep pumped water from coming into contact with soil on the construction site.
- Excavate trench through plugs and under flume, then dewater. Work area dewatering will be filtered to remove suspended solids. Lower in pipe by passing under flume and backfill immediately. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.

- Once the pipe installation is complete and the flume(s) are no longer necessary, they will be removed as quickly as possible and in the following manner: remove the downstream dam; remove the upstream dam; remove flume(s).
- Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., do not use erosion control matting in the bankfull channel coarse gravel or rip rap) to the maximum extent possible between dams. All construction material (e.g. dams, rip rap) not required to return the watercourse to preconstruction condition will be removed from the site and stabilized above the high-water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the watercourse.
- Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc., is to be completed immediately upon removal of the flume or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
- Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES



LOCATION

ALL DRY FLUME WATER CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN
DRY FLUME WATER CROSSINGS

SCALE

NTS

DATE

DECEMBER 2021

FILE No.

PROJECT No.

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DRAWING

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APPROVED