

**LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT
RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS**

Question IAAC-33

Table of Contents

ABBREVIATIONS AND ACRONYMS	II
QUESTION IAAC-33	1

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-33

Abbreviations and Acronyms

CEAA	<i>Canadian Environmental Assessment Act</i>
CRA	commercial, recreational, or Aboriginal fisheries
DFO	Department of Fisheries and Oceans
EIS	environmental impact statement
EOC	emergency outlet channel
IAAC	Impact Assessment Agency of Canada
LAA	local assessment area
LMOC	Lake Manitoba outlet channel
LSMOC	Lake St. Martin outlet channel
RAA	regional assessment area

Question IAAC-33

QUESTION IAAC-33

EIS Guideline Reference: 7.1.5 Fish and Fish Habitat; 7.3.1 Fish and Fish Habitat

EIS Reference: 7.2.1.4 Potential Effects, Pathways and Measurable Parameters; 7.2.1.7 Significance Definition

Context and Rationale

Section 7.3.1 of the EIS guidelines requires that the effects of changes to the aquatic environment on fish must be assessed, including the anticipated changes in the composition and characteristics of the populations of various fish species.

In Section 7.2.1.4 of the EIS, the proponent has indicated that the focus of the fish and fish habitat assessment is on Project activities or components that may affect fish and fish habitat that are part of or that support commercial, recreational, or Aboriginal (CRA) fisheries. Four CRA fish species in particular have been identified for the assessment that “have unique life history (e.g., spring spawning) and habitat requirements that cover the range of life histories and habitat requirements for other CRA fish species in the LAA and RAA.”

Section 7.2.1.7 of the EIS defines significant effects to fish passage as “an irreversible, measurable reduction of critical upstream or downstream movements (i.e. spawning runs) of CRA fish species”. Both the 2013 and 2019 Fisheries Act and their respective policy statements define migration areas more broadly as a component of fish habitat. Fishes certainly migrate to spawn but they also migrate at other times, such as to feed or for other reasons.

Under the new Fisheries Act, protections are afforded to all fish species and not just CRA fish species. Further, the effects to fish and fish habitat under CEAA 2012 are not limited to CRA fisheries. Consideration of all potentially affected species is necessary for a full understanding of potential effects to fish and fish habitat.

Information Requests

- a) Discuss the applicability of the effects assessment to fish and fish habitat to all fish species present in the LAA and RAA. Demonstrate that the CRA species used in the assessment are adequately representative of the unique life history and habitat requirements of all fish species in the LAA and RAA.
 - i. If it is determined that the CRA fish species used in the assessment do not cover the unique life history and habitat requirements of all fish species in the LAA, complete an assessment of the potential for the Project to impact all fish species. Describe mitigation measures and assess the significance of residual effects. Discuss associated monitoring and follow up.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-33

- b) Discuss the effects of the Project on fish passage applying a broader definition of migration (i.e. fish movements possible within the current system).

Response IAAC-33

- a) The environmental impact statement (EIS) was prepared prior to August 28, 2019 and took into consideration legislation in existence at that time. As such, the Aquatic Environment section of the EIS was prepared in consideration of the *Fisheries Act* (2012) and its associated guidance documents. It is recognized that the Application for *Fisheries Act* Authorization for the Project will be reviewed by the Department of Fisheries and Oceans (DFO) using the revised *Fisheries Act* (2019).

The focus of the fish and fish habitat assessment presented in the EIS is on Project activities or components that have the potential to adversely affect fish and fish habitat that are part of, or that support, commercial, recreational, or Aboriginal (CRA) fisheries as defined by the federal *Fisheries Act* (2012). CRA fisheries in the Project area (as defined in the 2012 version of the *Fisheries Act*) could include up to 12 different fish species. However, rather than focusing the assessment on all 12 species, four focal fish species (or species groups) were selected for the assessment. These four species or species groups included those that are most important to commercial, recreational, and Aboriginal fisheries in the Local Assessment Area (LAA) and Regional Assessment Area (RAA), that spawn in spring, summer, and fall, and for which mitigation measures designed to protect these species was also likely to provide protection for other species. As such, these focal species were deemed to be sufficiently representative to gain a full understanding of potential effects to fish and fish habitat and include the following:

- Lake whitefish, a large-bodied benthivore (i.e., bottom-feeding), that undertakes large fall migrations to spawning grounds and is known to be an important component of commercial, recreational, and Aboriginal fisheries in the north basin of Lake Winnipeg, Lake St. Martin and Lake Manitoba. Lake whitefish are known to spawn in rivers or lakes with sandy to rocky substrates. The eggs must incubate over the winter before hatching in the spring. The young are planktivores prior to switching to a benthic diet later in their first year.
- Walleye, a large-bodied, piscivore (i.e., fish-eating), that migrates to spawning grounds in the spring. The eggs hatch approximately three weeks following fertilization and the larvae are planktivores before switching to a piscivorous diet later in their first year. This species is also an important component of commercial, recreational, and Aboriginal fisheries in Lake Winnipeg, Lake St. Martin and Lake Manitoba. Walleye, known locally as pickerel, are known to spawn along lake shorelines and in rivers and streams with rocky substrates and are found in deeper, offshore areas of lakes during the day due to light sensitivity.
- Northern pike, a large-bodied, piscivore, spring-spawning species that is an important component of the commercial, recreational, and Aboriginal fisheries in Lake Winnipeg, Lake St. Martin and Lake Manitoba. Pike spawn in quiet bays of lakes and ponds with aquatic and flooded terrestrial vegetation. Pike switch rapidly from a planktivorous to a piscivorous diet within their first couple of months. They prefer nearshore habitat with abundant cover and ambush their prey.

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-33

- Forage fish is a collective group of small-bodied, spring or summer spawning fish species (e.g., fathead minnow, emerald shiner) that are prey for the large-bodied focal fish species listed above. As such, forage fish provide a link between potential effects to plankton and benthic invertebrates and piscivorous species such as walleye and northern pike. The forage fish category also includes the young of all other species and therefore encompasses a variety of life history strategies. Forage fish were included as a focal species group due to their propensities to inhabit shallow waters and their weak swimming abilities, two life history traits that make them susceptible to entrainment and stranding.

As many as 54 species of fish have the potential to occur in the RAA. Of the 54 species that could occur within the RAA, about 47 are known to occur within it, and of those, 38 have been captured within the LAA during studies related to the EOC or the Project. Of the 47 species that are known to occur within the RAA: 22 could be considered small bodied forage species; six are large bodied piscivores; five are sucker species (benthivores); three are catfish species (demersal piscivores); three are salmonids (including both benthivores and planktivores); two are hiodons (mooneye and goldeye) that are primarily open-water planktivores and piscivores; two are lampreys; one is an invasive piscivore/planktivore (smelt); one is a unique benthivore (freshwater drum); one is the common carp and one is the lake sturgeon. The most common large-bodied species in the Project area include lake whitefish, white sucker, northern pike, walleye, yellow perch and common carp.

The focal species include three of the most common species in the LAA. They also include piscivores (walleye and northern pike) and benthivores (lake whitefish) with planktivorous life stages. The focal species also include demersal (lake whitefish) and pelagic (walleye) fish, as well as fish that inhabit nearshore weedy areas (northern pike). The focal fish include spring-spawners (walleye and northern pike) and fall-spawners (lake whitefish), as well as those that undertake large migrations to spawning grounds (lake whitefish) and those that typically do not (northern pike). The focal species include those that spawn in swift water over rocky substrates (walleye), in rivers and lakes in both swift and standing water (lake whitefish) and in weedy areas with low water velocities (northern pike). The focal species include those that must incubate eggs through the winter (lake whitefish) and those that hatch within three weeks of fertilization in the spring (walleye and northern pike). The early life stages of the focal species also vary greatly, from pelagic drift (lake whitefish and walleye) to inhabiting quiet backwaters (northern pike). The forage fish grouping took into consideration fish with more limited home ranges, short life expectancies, summer spawning, and weak swimming abilities.

The varied life history traits, habitat requirements, and feeding strategies of the focal species adequately reflect the wide variety of life history traits, habitat requirements, and feeding strategies of the species within the RAA. They also focus the assessment to the fish species most important to people. Project effects were considered in relation to each of the traits identified above. While the assessment of Project effects highlighted the four focal species groups, potential Project effects took into consideration all of the species present. Where potential Project effects were expected to have a measurable effect on a species that was not one of the focal species, this was identified in the EIS (e.g., potential drift of yellow perch larvae out of Lake Manitoba and Lake St. Martin – see Volume 3, Section 7.2.4.3 of EIS pg. 7.69; creation of suitable spawning habitat for suckers downstream of the

LAKE MANITOBA AND LAKE ST. MARTIN OUTLET CHANNELS PROJECT RESPONSE TO IAAC TECHNICAL INFORMATION REQUESTS

Question IAAC-33

most downstream water control structure in each channel – see Volume 3, Section 7.2.4.3 of EIS pg.7.59, 7.73).

- b) The life history traits described above that were taken into consideration within the EIS include all movements of fish including spawning and non-spawning migrations. This included feeding movements into the Dauphin River by freshwater drum and white bass (see Volume 3, Section 7.2.2.2 of EIS, pg. 7.37), passive movements of forage species into the LSMOC (see Volume 3, Section 7.2.4.3 of EIS, pg.7.72), larval drift of fish into the LMOC and LSMOC (see Volume 3, Section 7.2.4.3 of the EIS, pg. 7.72), downstream overwintering movements of carp, freshwater drum and white bass (see Volume 3, Section 7.2.2.2 of EIS, pg. 7.37), and active upstream movements of walleye into the Dauphin River during spring (see Volume 3, Section 7.2.4.3 of EIS, pg. 7.73) and of lake whitefish into the Dauphin River and Lake St Martin during fall (see Volume 3, Section 7.2.4.2 of EIS, pg.7.73). The assessment also included movements within Lake St. Martin and up the Fairford River.

Given that Lake Manitoba, Lake St. Martin and Lake Winnipeg are currently connected through pre-existing natural waterways, the Project will not impede the ability of any fish to move in any direction or into any natural location as compared to their abilities prior to the Project. During operation, the Project will increase the ability of fish to move in a downstream direction by providing additional routes for fish movement between the lakes. However, no change in the ability of fish to move up or down in the Dauphin River or Fairford River would occur because water depths and water velocities in the rivers during the extreme flows would be expected to be similar to more typical years. Some risk associated with distracting fish from traditional migratory routes has been identified and assessed as part of Project operation in Volume 3, Section 7.2.4.3 of the EIS (see pg. 7.69 and 7.73). There is also risk of fish stranding while migrating downstream in the LSMOC. However, mitigation of potential fish stranding in the LSMOC has been identified (see Volume 3, Section 7.2.4.4 of EIS, pg.7.76).and included in the Project design.