SITE C CLEAN ENERGY PROJECT

Component Application Package – Halfway River Causeway Road 19.2 / MR43

Application for Approval

For Canadian Navigable Waters Act

August 24, 2020

Submitted to:
Transport Canada
Navigation Protection Program
Suite 1100 - 1166 W Pender Street
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Submitted by:
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Attachment A  Overview Map - Halfway River Causeway 19.2 / MR43
Attachment B  Design Drawings, Plan and Profile Views of Causeway 19.2 / MR43
INTRODUCTION

The Canadian Navigable Waters Act (CNWA) came into force on August 28, 2019. The CNWA includes a Schedule of navigable waters requiring regulatory approval for works that risk a substantial interference with navigation. Works required for construction and operation of the Site C Clean Energy Project (the Project) that occur on, over, under or through navigable waterways, as defined by the CNWA, must be permitted.

The Halfway River is a Peace River tributary near Hudson’s Hope, BC and is not named in the CNWA Schedule of navigable waters. However, once the Site C reservoir is filled, the Halfway River lower reaches will become part of the Peace River, a Schedule waterbody under the CNWA.

This application for Approval is for a causeway road that will be constructed along the Halfway River approximately 5 river km upstream of the confluence with the Peace River. The causeway road will be left in place after reservoir clearing activities are completed and will be inundated by the future reservoir.

HALFWAY RIVER CAUSEWAY ROAD 19.2 / MR43 – RESERVOIR CLEARING

Site C Reservoir clearing in the lower Halfway River drainage requires machine access to both banks of the river and the construction of new access roads. BC Hydro has submitted Notices of Work for six mainstem bridge/causeway crossings that are part of the new access road development (see Notices of Work: Registry #1493, #1846, #1851, #1852, #1853 and #1855). This CNWA Approval request is for one mainline causeway that will be constructed to facilitate clearing as shown in the overview map in Attachment A.

The centrepoint coordinates of the causeway are as follows: 56.227227, -121.484887. The causeway is within Forest Act Occupant Licence to Cut (OLTC 19) area held by BC Hydro, on land with a legal description as follows: “Crown Foreshore, bed of the Halfway River and the Halfway River located within Sections 3, 25, 34, 35 and 36 Township 83 Range 23 West of The 6th Meridian Peace River District”.

CAUSEWAY DESIGN

The mainline causeway will be located on the left downstream bank of the Halfway River (labelled as MR43 on the overview map; Attachment A). The causeway is approximately 400 m in length and will generally be constructed of well compacted granular fill placed on non-woven filter fabric to an elevation of 0.3 m above the design flow elevation. The riverward side of the causeway will be armoured with rip rap. The causeway will have a 5 m wide running surface and a 2H:1V side slope.

The causeway will generally be constructed as per the low flow design option (see IFC drawings in Appendix B) except that it will be located approximately 5 m south (toward the river) of the location shown on the design, to provide room for a ditch between the existing shale slope and the causeway to collect and direct runoff from the shale slope. Culverts may also be required to convey this runoff to the riverward side of the causeway; alternatively, the runoff may be allowed to drain in a southerly direction to the end of the
causeway and then be conveyed south through the causeway via culverts. There is potential for the causeway to be overtopped during the high flow period (spring 2021).

The causeway has a total footprint of 4,868 m². Of this total footprint, 373 m² is within the wetted channel width (an isolated pool of standing water).

Riprap specifications have been developed using the estimated flows level and associated scour potential. The granular material requirements and riprap specifications for the causeway road are summarized in the drawings in Attachment B. Minor changes to the location and design of the causeway road may be required in order to field fit to site conditions that exist during construction.

2.2 CONSTRUCTION SCHEDULE

The contractor is expected to begin constructing the causeway in September. Causeway materials will remain in place once reservoir clearing activities are complete. The future Site C reservoir would cover the causeway materials after reservoir filling is completed in 2024. The reservoir operating range is 460 – 461.8 m elevation, meaning any remaining causeway material would be under approximately 20 m of water once the Site C dam is operating. The causeway would be shown in the future reservoir maps; however, it is not expected to have effects to boater navigation.

3 PUBLIC BOATER ACCESS

Construction of temporary bridges/causeways in the Halfway River channel is expected to block boater access to lower portions of the Halfway River between September 1st, 2020 and April 30th, 2021. These blockages will span the river sections between 4.7 river-kilometers upstream of the existing highway bridge (Crossing ID 19.3-A as per Attachment A), and 7 km upstream of the highway bridge (Crossing ID 19.7-A, Attachment A). The causeway (ID MR43) is located outside of this river blockage area. Signage to boaters associated with the causeway will be done in compliance with any listed terms and conditions included within approval documents issued by Transport Canada.

4 CONSULTATION WITH INDIGENOUS GROUPS

The alignment of river crossings for reservoir clearing in the Halfway River area (OLTC#19) was presented as part of the forestry management plan and short term water use package at the Site C Permitting Forum #12, held May 2nd, 2019 in Fort St. John.
Attachment A

Overview Map – Halfway River Causeway 19.2 / MR43
Attachment B

Design Drawings, Plan and Profile Views of Causeway 19.2 / MR43
HALFWAY RIVER
19.2 CAUSEWAY ROAD

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DESCRIPTION: ISSUED FOR CONSTRUCTION
ISSUE DATE: 20/04/14
GENERAL NOTES:

1. DESIGN SPECIFICATIONS:
   1.1. DESIGN BASED UPON LEAF DATA AND FIELD VISIT.
   1.2. DESIGN SPEED: 40km/h.
   1.3. FINISHED ROAD SURFACE: 5m WITH 2m CROSS SLOPE.
   1.4. CUT AND FILL SLOPES AS SHOWN ON THE TYPICAL ROAD TEMPLATES.

2. ALL PERMITS AND REGULATORY APPROVALS TO BE IN PLACE PRIOR TO COMMENCING WORK.

3. ENVIRONMENTAL MANAGEMENT PLAN TO BE PREPARED FOR PROJECT BY OTHERS. COMPLETION OF WORKS TO COMPLY WITH MITIGATION RECOMMENDATIONS OUTLINED IN ENVIRONMENTAL MANAGEMENT PLAN.

4. REFER TO FRITH HILLER RESOURCE SCIENCE CORP REPORT DATED DECEMBER 15, 2019 FOR GEOTECHNICAL INFORMATION. EXISTING SOILS ENCOUNTERED TO BE UNCONSOLIDATED AND BICUMULATED WITH GRANULAR BACKFILL PRIOR TO ROADWAY CONSTRUCTION.

5. WASTE EXCAVATION SPECIFICATIONS ON THESE DRAWINGS CONFORM WITH WOOSAFE BC (WSBC) REGULATIONS. WSBC REGULATIONS ARE TO BE COMPLIED WITH.

6. RIPRAP SPECIFICATIONS:

<table>
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<th>CLASS OF RIPRAP (kg)</th>
<th>NO ONLINE PERCENTAGE OF RIPRAP</th>
<th>ROCK ORGANIZATION</th>
<th>APPROXIMATE AVERAGE DENSITY (mm)</th>
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LOADING DIAGRAM - 156-CFT HIGHWAY G.V.W. = 900 lb:

DESIGN IN ACCORDANCE WITH CMAR 79/14 WITH MODIFIED LOADING AS FOLLOWING:

714 | 204.6 | 204.6 | 159 | 204.6 | 204.6 | 204.6 (A)

TRUCK | 450 | 1800 | 7200 | 1000 | 40 | 800
HORONTECHNICAL DATA:

- Hydrology completed by ERV Consulting Services Ltd. estimated in Hydrotechnical Mern 2 modeling results for 19.2 Causeway.
- seasonal Q10 design flow (E) estimated @ 63.2 m³/s
- seasonal Q10 design flow (W) is estimated @ 1.3 m³/s
- seasonal Q10 design flow (W) is estimated @ 42.8 m³/s - 44.2 m³/s
- seasonal Q10 flow applies to non-peak flow season from September to April.