Topic: Caribou and moose: Movement, habitat, methodology: Definitions of select habitat and critical habitat (DAR section 10.49)

Preamble from the Mackenzie Valley Environmental Impact Review Board (Review Board):
In its definition of critical habitat for boreal caribou, Environment Canada (2012) states the following:

- Critical habitat for boreal caribou is identified as: i) the area within the boundary of each boreal caribou range that provides an overall ecological condition that will allow for an ongoing recruitment and retirement cycle of habitat, which maintains a perpetual state of a minimum of 65% of the area as undisturbed habitat; and ii) biophysical attributes required by boreal caribou to carry out life processes.
- The biophysical attributes for boreal caribou critical habitat are categorized by the types of habitat used by boreal caribou in accordance with seasonal and life-stage activities, which include broad scale, calving, post-calving, rutting, wintering, and travel.

The DAR states that critical life stages for boreal caribou are 1) late winter, and 2) calving/post calving. The DAR also refers to work by DeMars et al. (2020), who used collared data from over 300 boreal caribou females in the Northwest Territories to assess habitat selection during seven seasonal activity periods and on a year-round basis. Those seasonal activity periods describe habitat selection by caribou in late winter and calving, which reflect Environment Canada's (2012) biophysical attributes of critical habitat.

In responding to this IR, the Review Board requires analysis from ECC and any other relevant expert departments. Please make it clear what information was provided by each department and how that information was used in the developer's response.

Request from the Review Board:

A. Please clarify why the DAR appears to assess project-related effects based only on the definition of critical habitat using the 65% disturbance threshold but does not assess potential disturbance to biophysical habitat selected during critical life stages of late winter and calving.

B. Please provide versions of Figure 10.2 that illustrate

   i. all-year,

   ii. calving/post-calving, and

   iii. late winter habitat selection using two visually contrasting categories (i.e., selected bins ≥6; and least selected bins ≤5).

Response from the Government of the Northwest Territories:

A. The Government of Northwest Territories (GNWT) acknowledges the definition of critical habitat in the national recovery strategy, as stated by the reviewer. Appendix H-1 of the national recovery strategy (ECCC, 2020) describes the biophysical attributes of critical habitat for the Taiga Plains ecozone during different seasons. When reviewing the biophysical attributes described across different seasons, they seemingly encompass almost all habitat types and successional stages, and many of the biophysical attributes described are difficult to map. That general characterization was the impetus for developing an NWT-specific Resource Selection Function (RSF) (DeMars et al., 2020) habitat analysis map that would allow the GNWT to more easily map out areas that boreal caribou are more likely to select, under the assumption that boreal caribou will select areas that are providing the biophysical attributes they require.

The All-Year (or All-Season) RSF modelling was based on collar locations from throughout the year, and thus captures the calving and late-winter season, but would be more representative of "average" habitat selection. The national recovery strategy states on page 38 (ECCC, 2020):

> "*The biophysical attributes for boreal caribou will vary over space and time with the dynamic nature of the boreal forest. In addition, particular biophysical attributes will be of greater importance to boreal caribou at different points in time. Certain biophysical attributes are required more by a local population during different life processes, seasons or at various times over the years.*"

However, the recovery strategy does not indicate that late winter and calving seasons are "critical life stages" that are more important than other times of the year. The reference in the Developer's Assessment Report (DAR) to "critical life stages" (footnote to Table 10.3 for a description of the criteria Timing) was a description from the "*Guidelines for Exploration and Development Projects in Boreal Caribou Habitat in the Northwest Territories*" (GNWT, 2022), referring to late winter and calving as the "highest risk periods". The wording used in the DAR was intended as a descriptor to characterize the criteria "Timing". The term was not meant to be interpreted as a direct link to "critical habitat," as considered in the national recovery strategy.

As noted in the RSF model report that was adapted for this assessment (DeMars et al., 2020, pg. 61):

> *"These seasonal RSF models and maps revealed seasonal differences in habitat selection by caribou, particularly in their response to burns, but we caution against assigning more importance to one season over another in terms of management implications. Assigning importance would require demographic models that identify those seasons with high influence on population dynamics (Crouse et al. 1987) and/or explicitly linking individual fitness to habitat selection (e.g., Nielsen et al. 2010, DeCesare et al. 2014). In the absence of such information, year-round RSF maps showed good predictive performance, indicating that they were able to capture meaningful variation in seasonable space use by caribou."* [emphasis added]

Using a year-round/all-season model was considered reasonable in the context of the

Project's effects assessment, which is why year-round/all-season RSF values were used to evaluate habitat.

The EOSD land cover categories and fire age classes used in the RSF model are likely the best proxy for capturing the biophysical attributes described in the national recovery strategy's Appendix H-1. Understanding how much each category contributes to 'selected' habitat in the RSF maps and how much of each category will be affected by disturbance from the Project facilitates an understanding of which biophysical attributes are being affected, not just during selected seasons.

The broader information requests implied in the reviewer's request are addressed in the GNWT's responses to the following Information Requests:

- CanNor IR#26 — summarizing the biophysical features directly and indirectly affected by the Project (Table 26-1_
- MVEIRB IR #47 — summarizing year-round, calving/post-calving and late winter caribou selected habitat
- MVEIRB IR #60, Part B — see below.

B. Figures 60-1 to 60-3 below illustrate year-round (all seasons), calving, and late winter selected habitats. These outputs are derived from the resource selection functions (RSFs) developed by DeMars et al. (2020). Each figure indicates selected habitat by light green shading, corresponding to RSF values ≥ 6. Data sources used to produce these maps are listed in each map's notes.

The response to this Information Request has been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. Subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of this response. The GNWT is confident that all line departments are contributing to efforts to minimize negative social, cultural, and environmental impacts, while maximizing benefits for NWT residents from this project.

The following departments have been specifically involved in the drafting, review and approval of this response:

- Department of Infrastructure
- Department of Environment and Climate change

Figure 60-1 Year-Round (All Season) — Selected Habitat

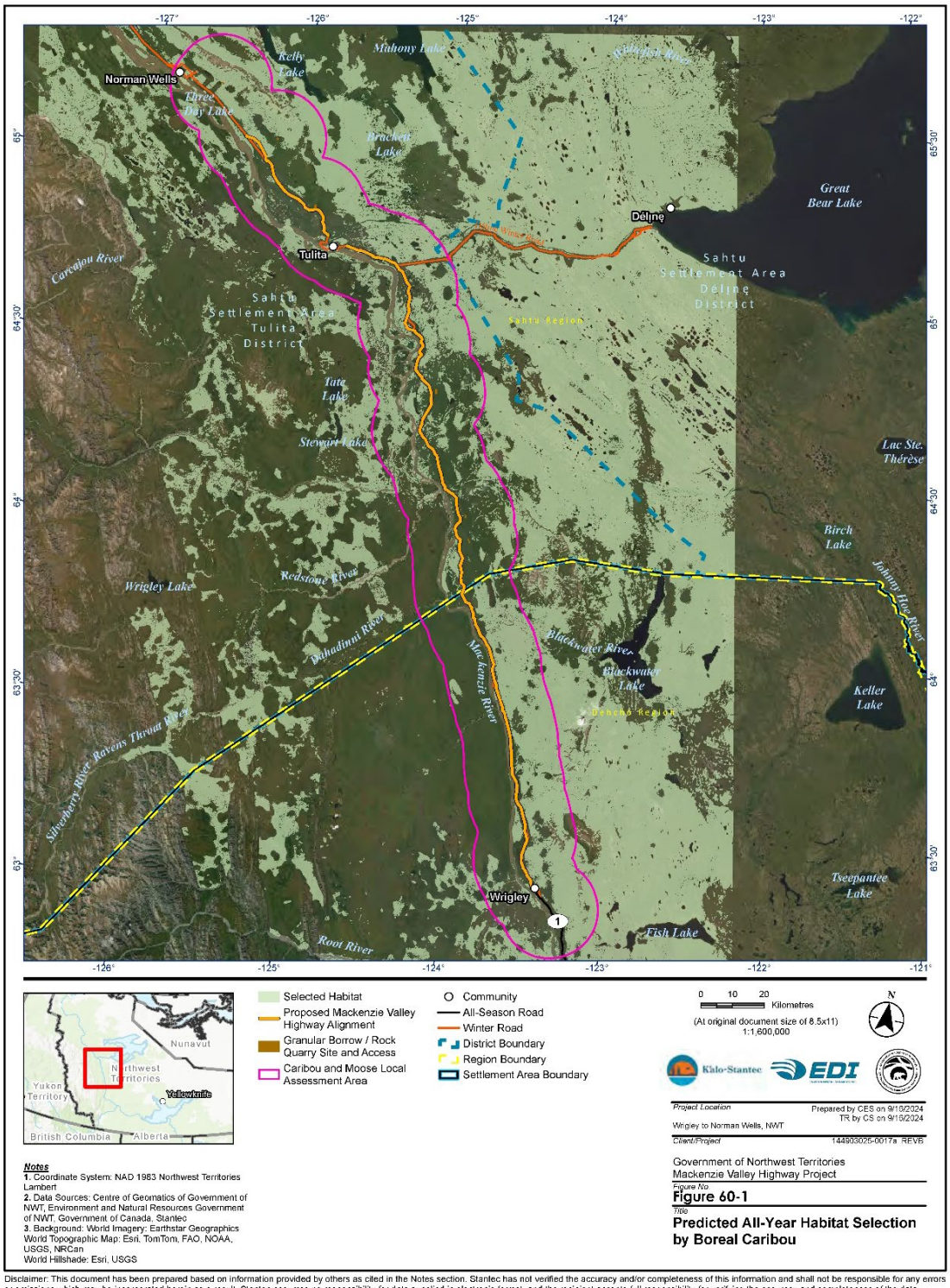
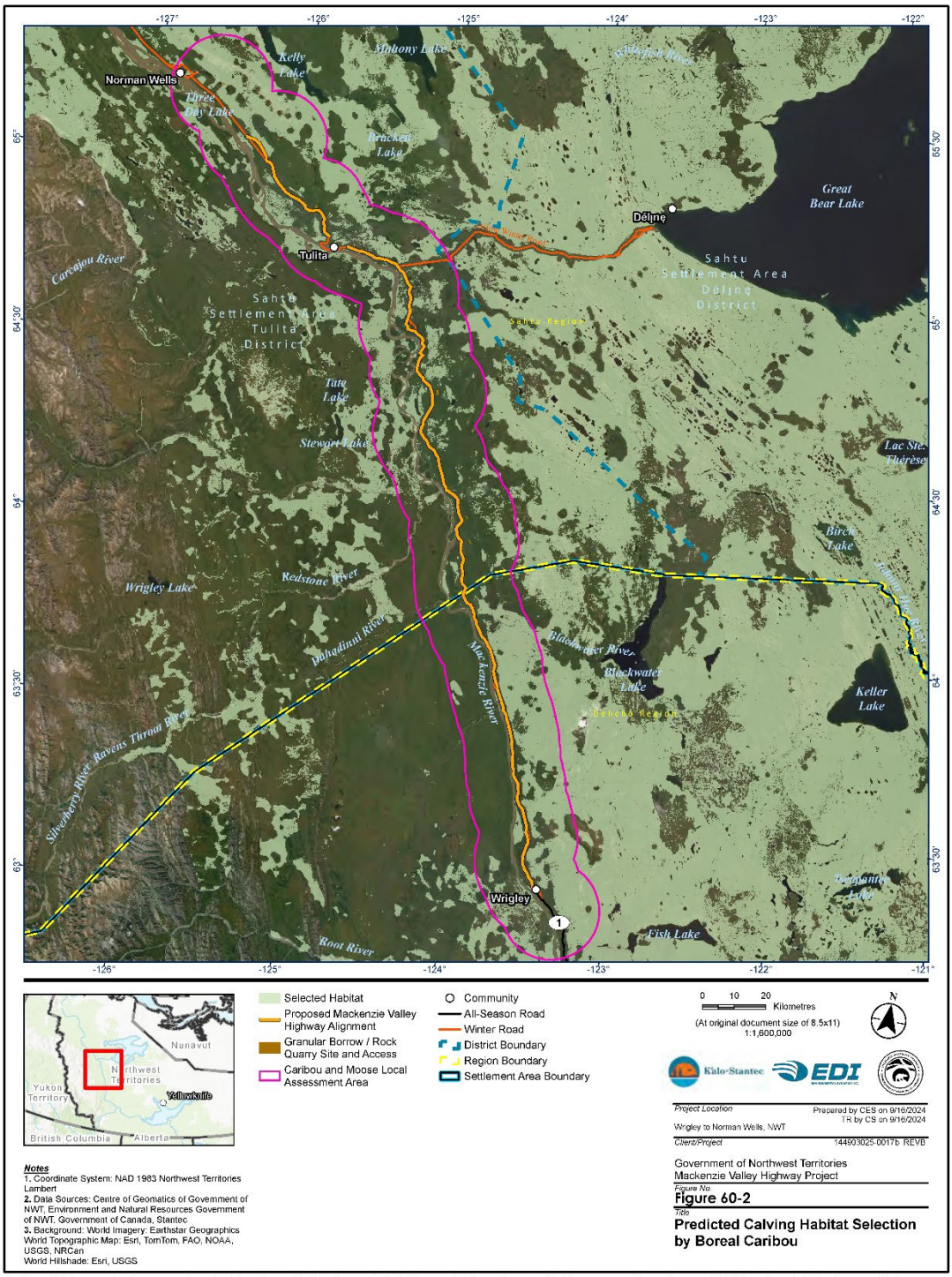
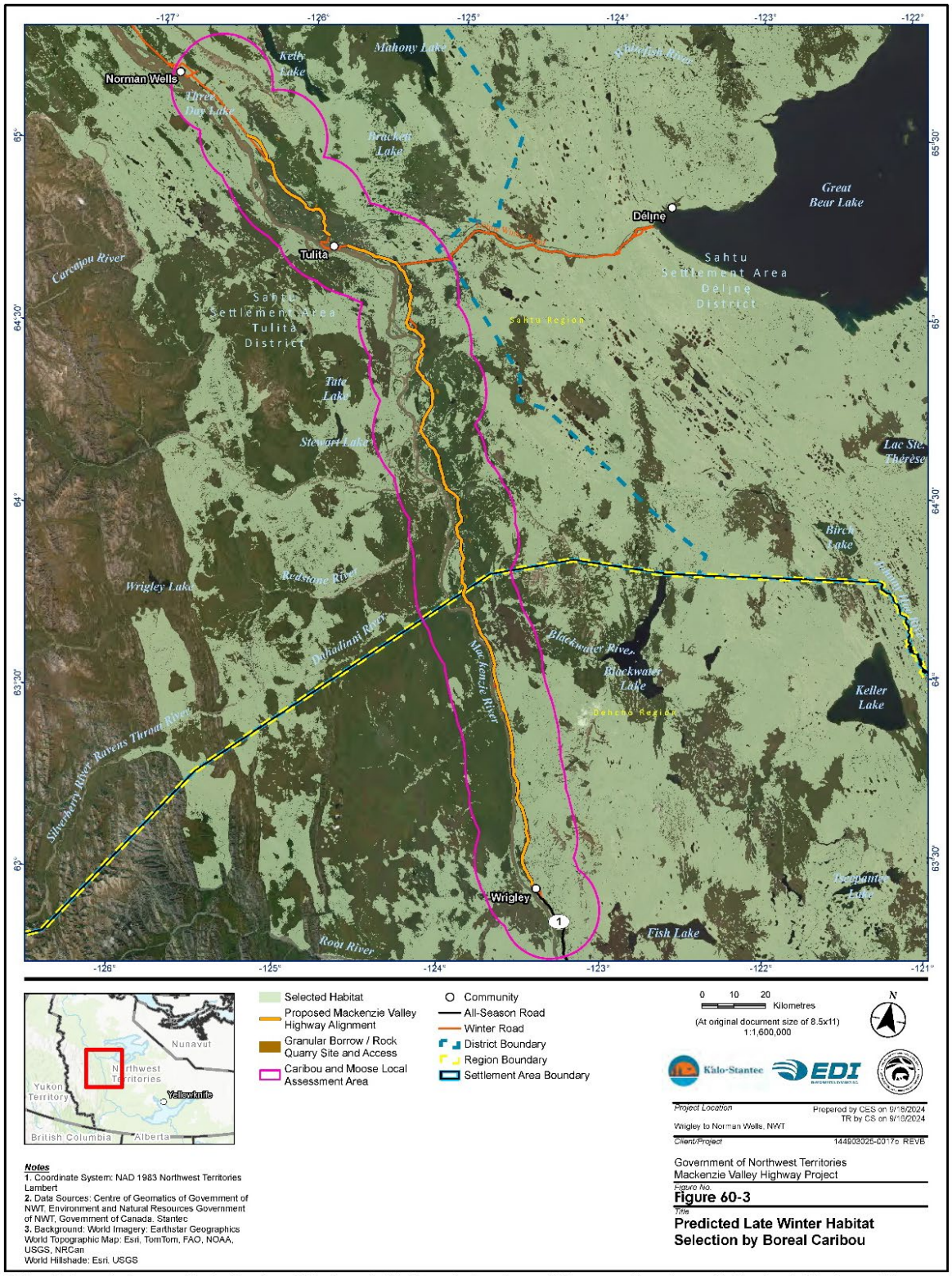


Figure 60-2 Calving/Post-Calving Season — Selected Habitat



Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Figure 60-3 Late Winter Season — Selected Habitat



References

DeMars, C., Hodson, J., Kelly, A., Lamontagne, E., Smith, L., Groenewegen, K., Davidson, T., Behrens, S., Cluff, D., and Gurarie, E. 2020. Influence of Land Cover, Fire and Human Disturbance on Habitat Selection by Boreal Caribou in the NWT. Project 202 of the Government of the Northwest Territories Department of Environment and Natural Resources, Northwest Territories Cumulative Impact Monitoring Program. 70 + 159 app pp. https://reviewboard.ca/upload/project_document/Comment-06-Boreal-Caribou-Report-2020-zdn74.pdf

Environment and Climate Change Canada. 2020. Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada. 143 pp. (https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/Rs-CaribouBorealeAmdMod-v01-2020Dec-Eng.pdf)

GNWT. 2022. Guidelines for Exploration and Development Projects in Boreal Caribou Habitat in the Northwest Territories – Draft for review. Prepared by EDI Environmental Dynamics Inc. for Environment and Natural Resources, Government of the Northwest Territories. 88 pp.