Denison Mines

Wheeler River Project

Final Environmental Impact Statement

November 2024

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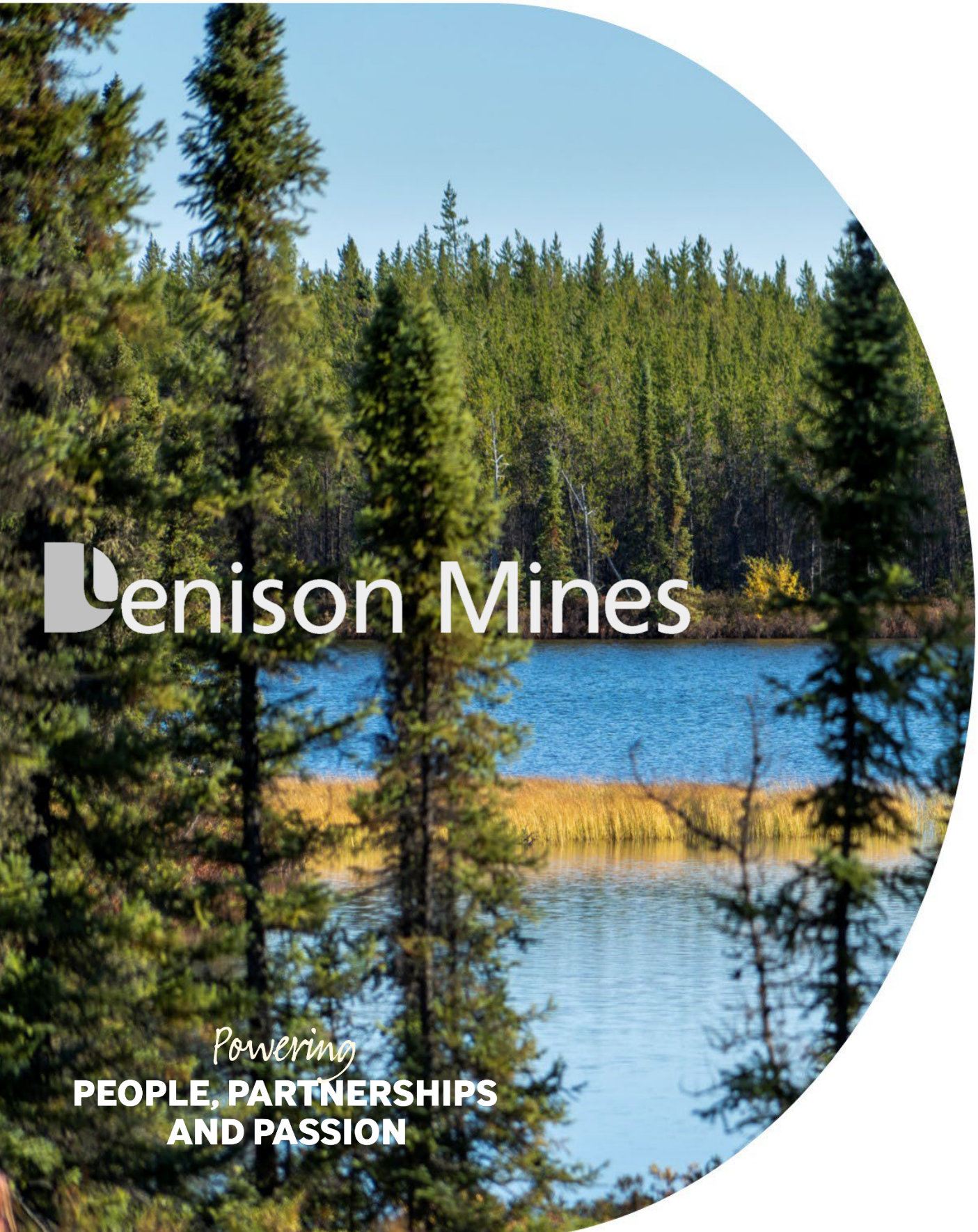
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Denison Mines Corp.

Appendix 9-F Supplemental Information

Version 3

October 2024

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1 Introduction

On October 21, 2022, Denison Mines Corp. (Denison) submitted a draft Environmental Impact Statement (EIS) for the proposed Wheeler River Project (the Project). Based on their initial review, the Canadian Nuclear Safety Commission indicated that the submission contained the required information to proceed with the Federal-Indigenous Review Team (FIRT) technical review of the draft EIS. On March 20, 2023, the FIRT provided Denison with an initial list of information requests (IRs) for Denison to respond to and eventually submit a final EIS document. Denison compiled a list of responses to these initial IRs and provided the FIRT with a revised draft on August 18, 2023. Following the review of these documents, the FIRT provided Denison with a subsequent list of IRs on November 27, 2023. This Appendix provides additional information to address several IRs provided by Environment and Climate Change Canada (ECCC) related to woodland caribou, migratory songbird species, and species at risk (SAR) listed under Schedule 1 of the federal *Species at Risk Act* (SARA).

2 Supplemental Information

2.1 Woodland Caribou

The following information is intended to provide additional context to the responses provided in the IR tracking sheet, particularly in regard to the following: IR-137, IR-143, IR 144, IR 145, IR-143/144R1, IR-143/145R1, IR-149, IR-149-R1A and R1B, IR-151, IR-155, and IR-156.

Figure 2-1 illustrates the location of woodland caribou observed during the baseline field program in association with the ecosite types as classified by the Saskatchewan Ministry of Environment as having the potential to develop into low, moderate, or high-quality habitat to support woodland caribou in relation to the SK1 range. These habitat potential categories are based on the overall habitat suitability ranking for the life history requirements, including forage, refuge, and calving habitat for caribou (Saskatchewan Ministry of Environment 2019). Figure 2-2 provides further insight as to the woodland caribou observed during the baseline field program in association with the ecosite types as classified by the Saskatchewan Ministry of Environment but in context with the Wildlife Study Areas.

To provide further context on the biophysical attributes for woodland caribou, as referenced in the 2020 Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada (ECCC 2020), Figure 2-3 to Figure 2-8 illustrate the location of caribou observations from the baseline field program in relation to calving, foraging, and refuge habitat, based on information received from the Saskatchewan Ministry of Environment (2023). These figures present the information at two different scales: (1) in context with the Wildlife Study Areas, and (2) in relation to the Project Footprint.

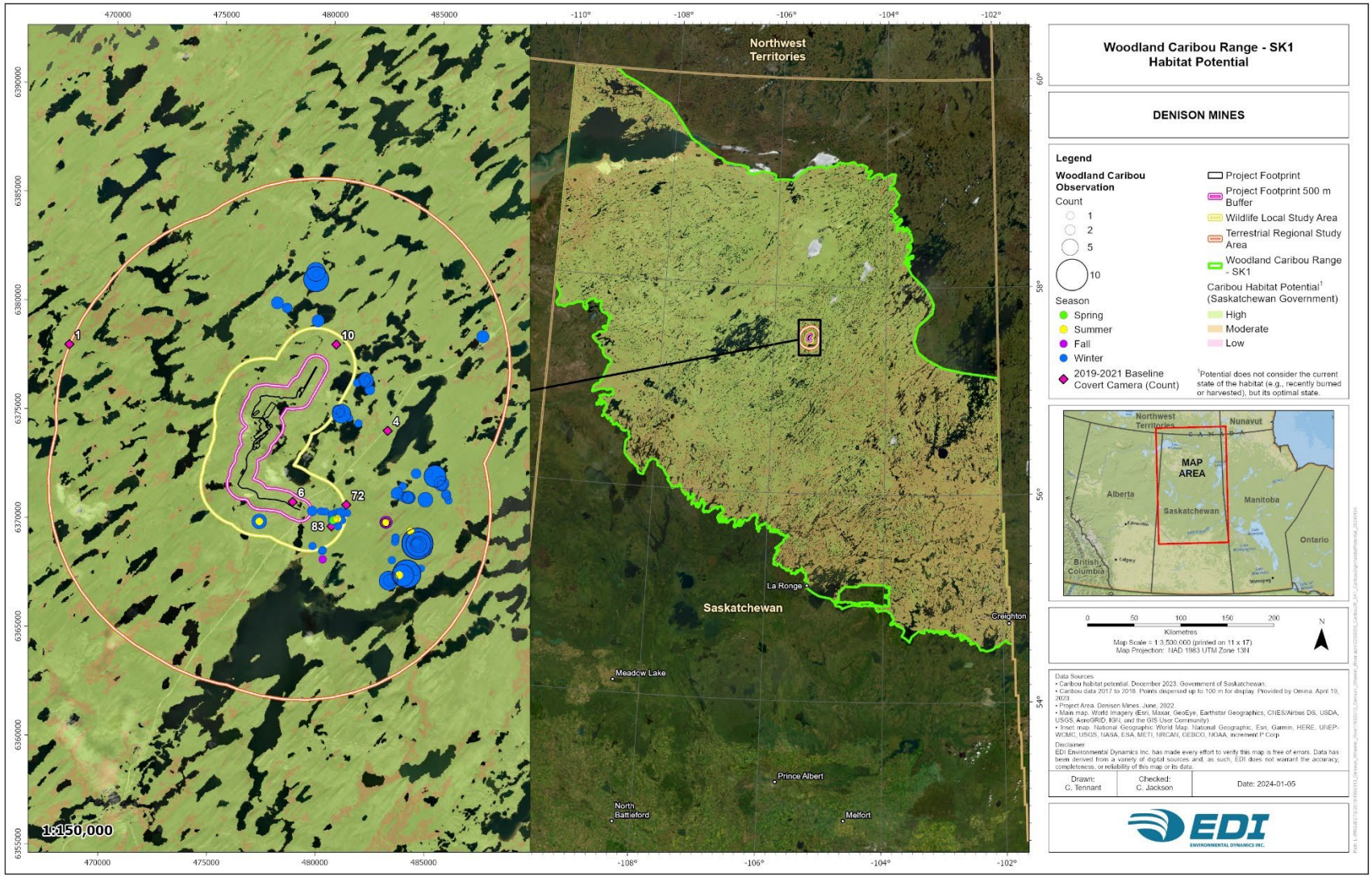

Figure 2-1: Woodland Caribou Range – SK1, Habitat Potential

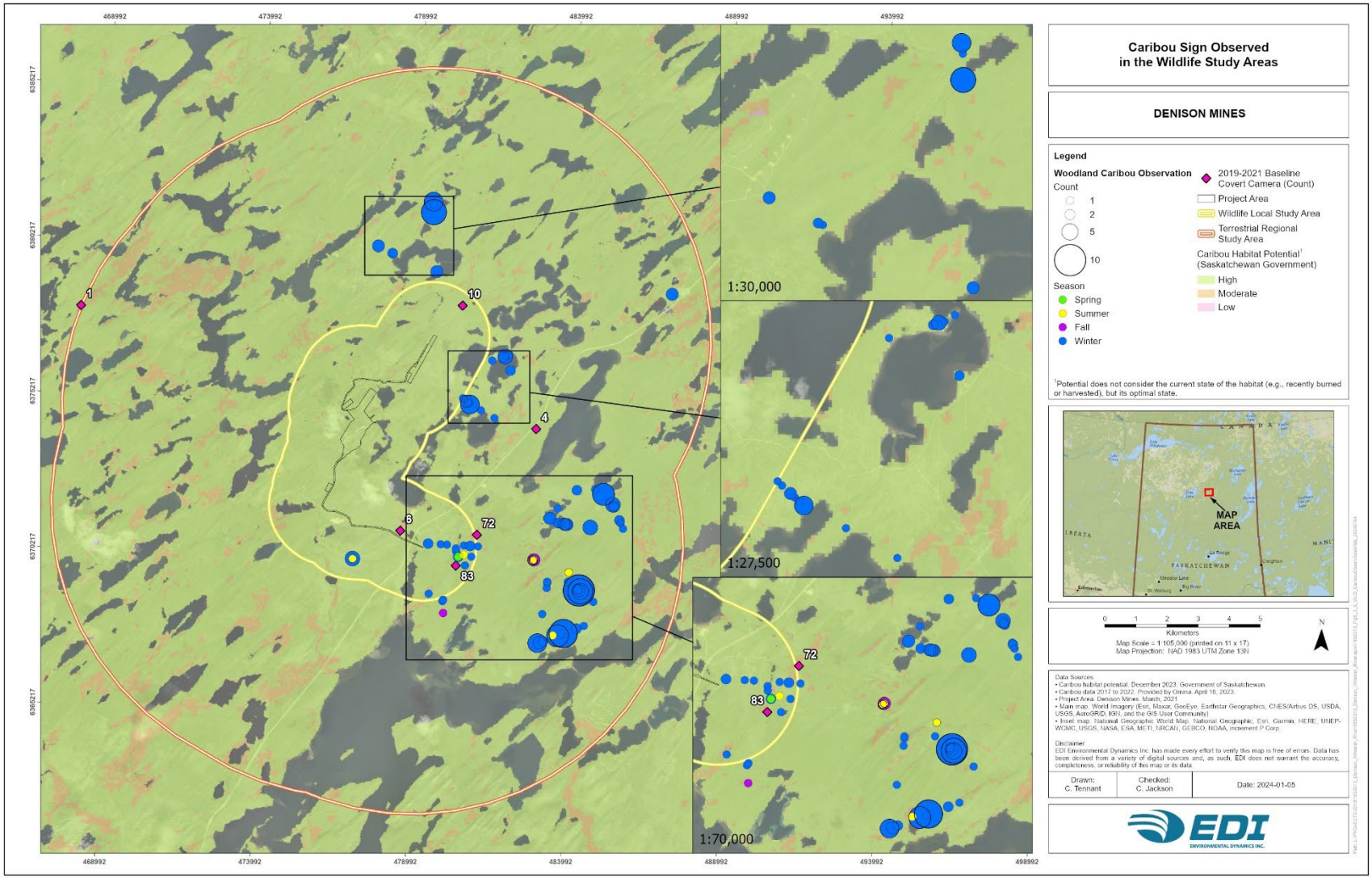

Figure 2-2: Caribou Sign Observed in the Wildlife Study Areas

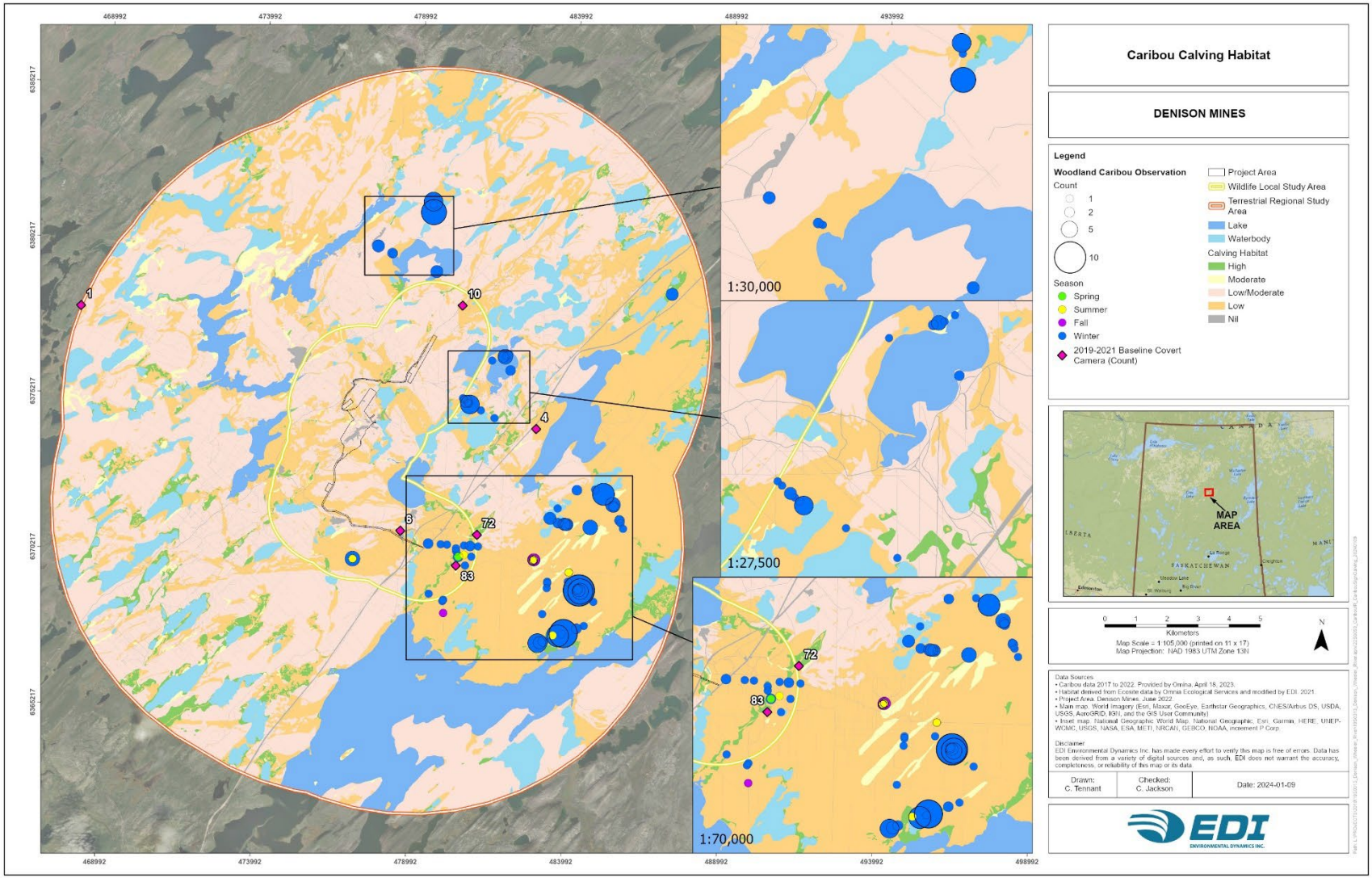

Figure 2-3: Caribou Calving Habitat Potential within the Wildlife Study Areas

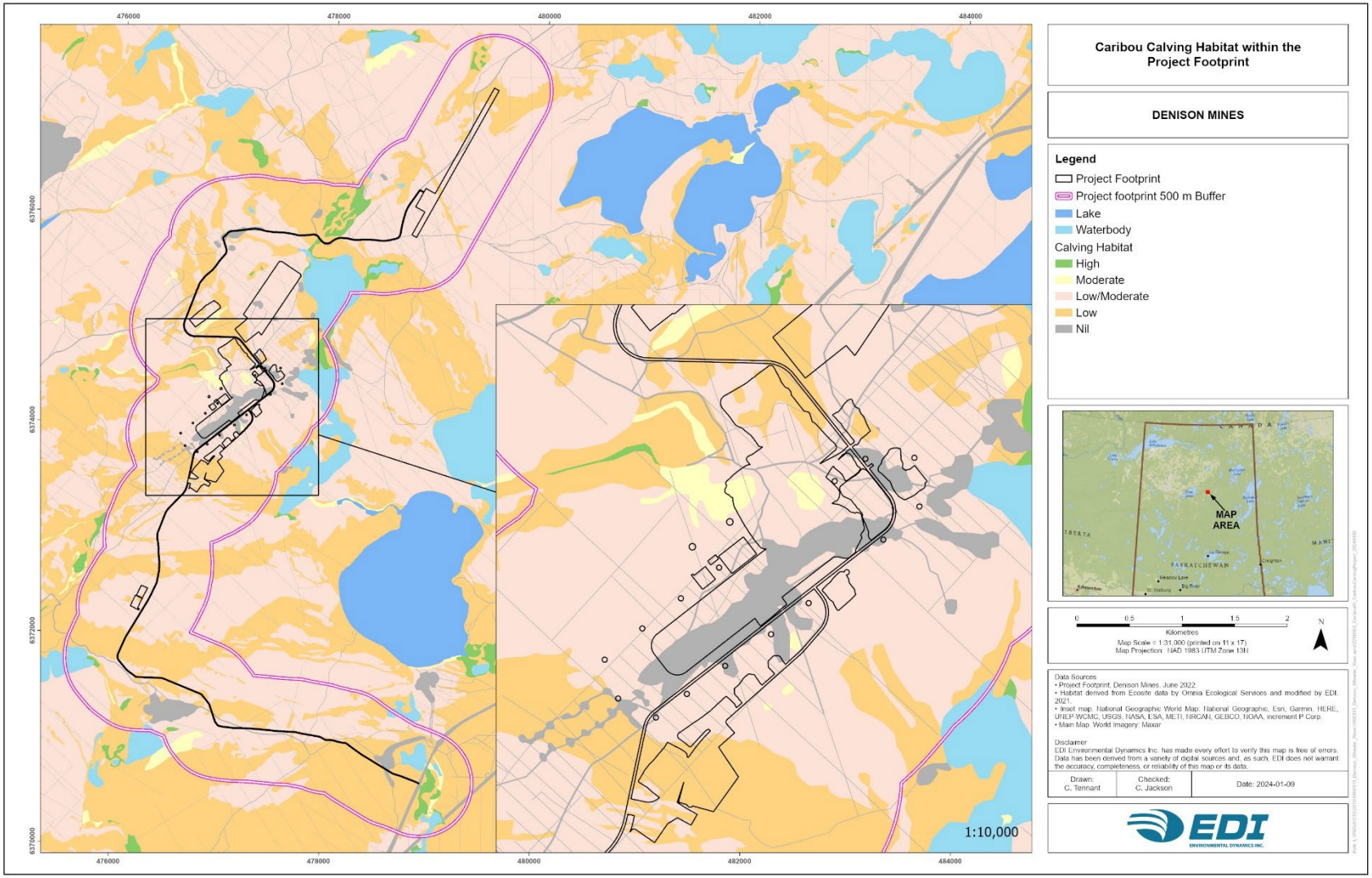

Figure 2-4: Caribou Calving Habitat Potential within the Project Footprint

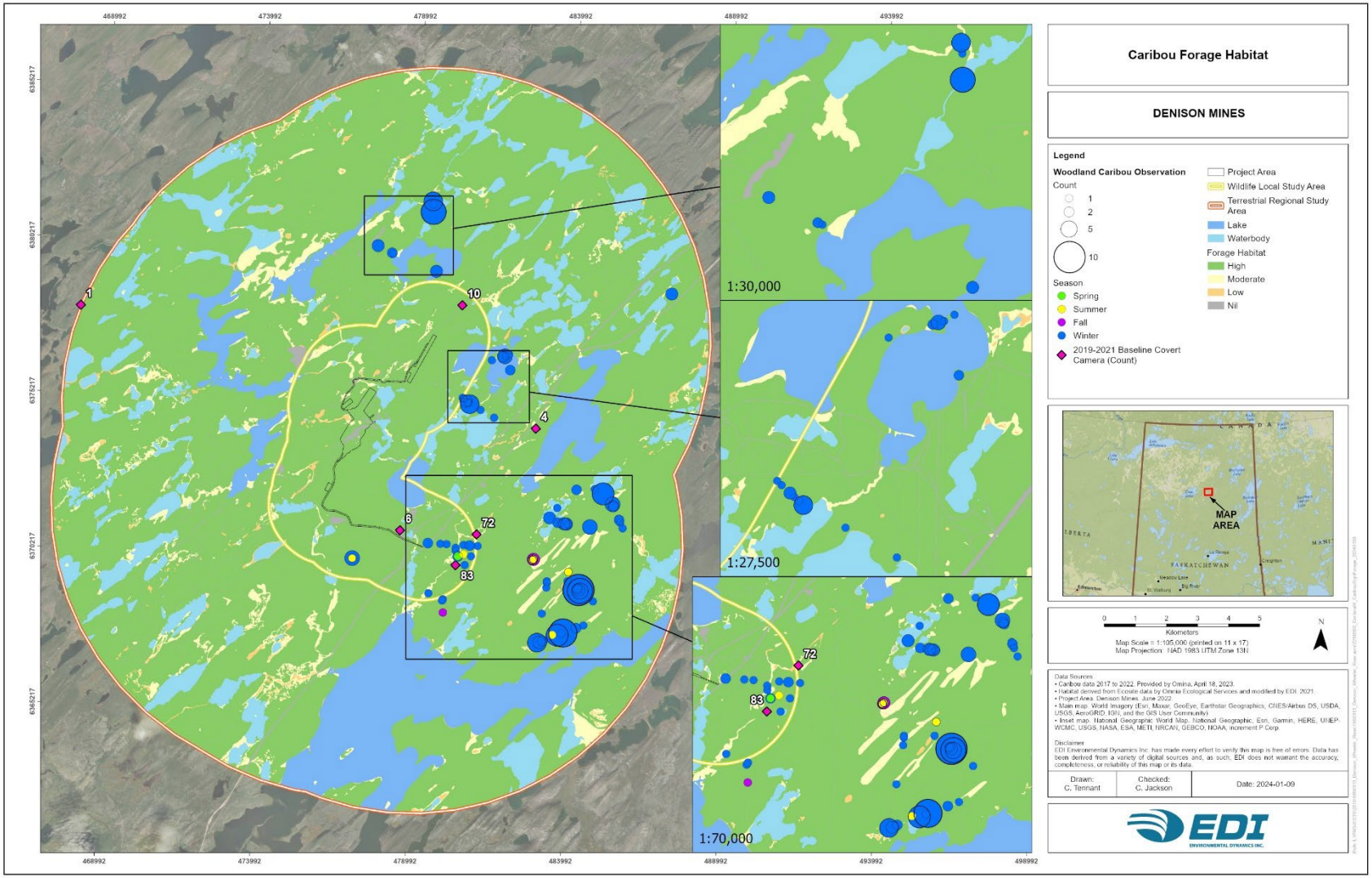

Figure 2-5: Caribou Forage Habitat Potential within the Wildlife Study Areas

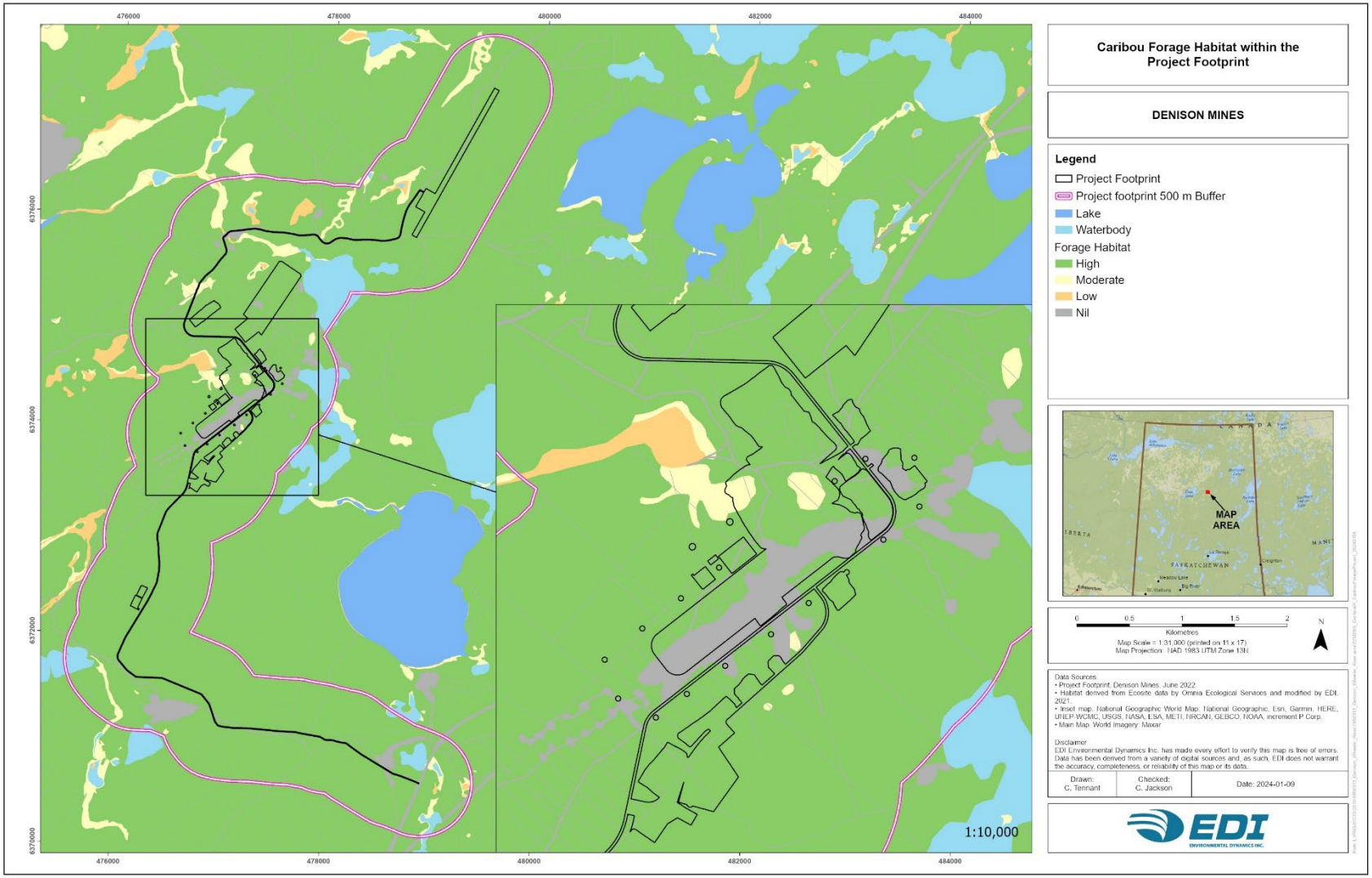

Figure 2-6: Caribou Forage Habitat Potential within the Project Footprint

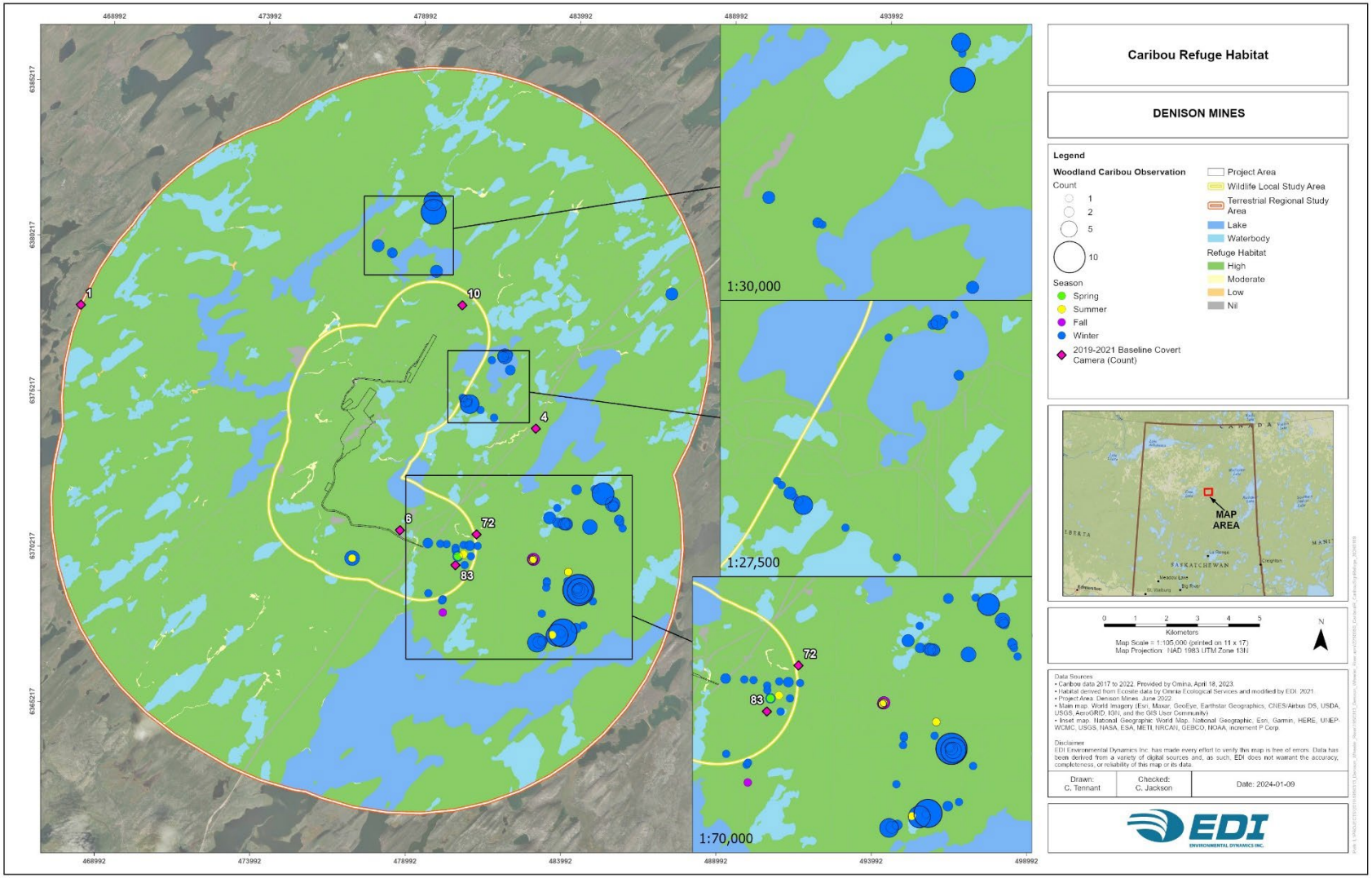

Figure 2-7: Caribou Refuge Habitat Potential within the Wildlife Study Areas

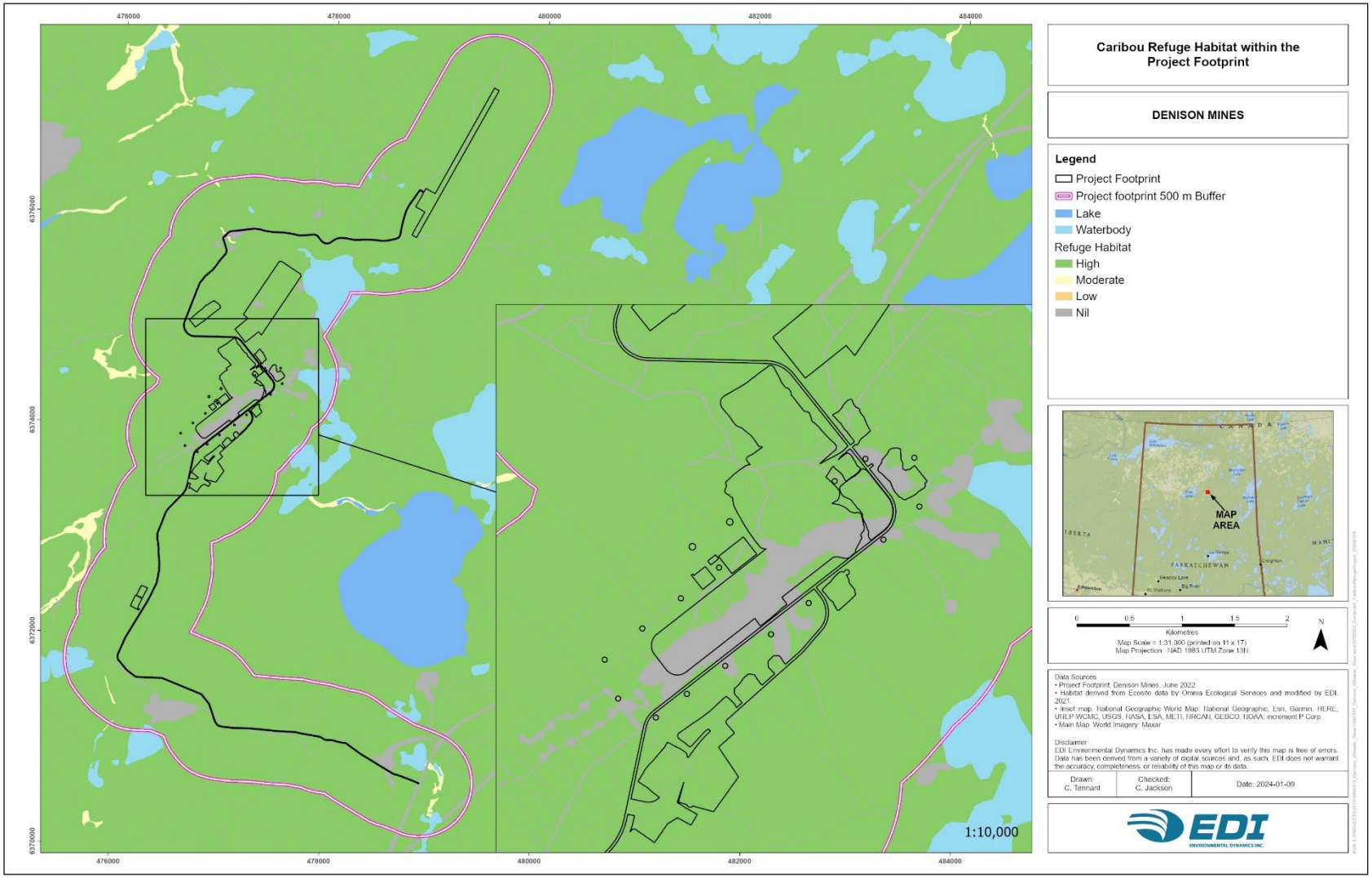

Figure 2-8: Caribou Refuge Habitat Potential within the Project Footprint

2.2 Migratory Birds

The following information is intended to provide additional context to the responses provided in the IR tracking sheet, particularly in regard to the following: IR-159 and IR-162. For IR-160, IR-164, IR-169, and IR-170, the updates were made in Section 9 of the EIS.

Number	IR-159_WRP
Dept.	ECCC
Project effects link	Migratory Birds
Reference to EIS, appendices, or supporting documentation	9.4.3.2.3 Baseline Studies – Migratory Songbirds Appendix 9-B, Section 2.10.2, Results
Context and Rationale	**Context and Rationale:** Information presented in the draft EIS is insufficient to accurately predict Project impacts to breeding birds. The Proponent collected a single year of breeding songbird point counts and aerial waterfowl surveys (including avian species at risk). A single year of surveys in which birds may be unusually scarce or abundant could severely compromise interpretation of post- construction monitoring data. Additionally, data presented in the draft EIS is from 2017 and ECCC advises that more recent data is needed for a comprehensive baseline to verify Project impacts. Data from the Saskatchewan Conservation Data Centre (HABISask), the Saskatchewan Breeding Bird Atlas and the Boreal avian Modelling project contain information on avian densities and avian species at risk that could supplement field data. The national standard for major projects recommends a minimum of two years of field surveys to be provided, so that temporal variability can be considered when comparing post-construction against baseline records and other available data. **Updated Rationale:** ECCC recommends that for major projects, a minimum of two years of field surveys should be provided so that temporal variability can be considered when comparing post-construction against baseline records and other available data. More recent data is needed. due to landscape changes that may have occurred since 2017 as well as cumulative effects that have occurred in that time. Additionally, if there was an unusually high population density of birds in 2017 due to extraneous circumstances, Project effects may be attributed to a non-existent decline in the population when the discrepancy can be due to natural variability. A more recent baseline will account for interannual variation and any regional effects and will allow for a more accurate review of mitigation and follow-up measures. Data from the Saskatchewan Conservation Data Centre (HABISask), the Saskatchewan Breeding Bird Atlas and the Boreal Avian Modelling project contain information on avian densities and avian species at risk that could supplement field data.
Information Requirement	Supplement breeding bird point count data and aerial waterfowl data collected during 2017 with additional pre-construction field data or existing post-2017 data/modelling to provide a comprehensive baseline that can be used to verify Project impacts during construction and operational phases.

Response:

The EA used an accepted, proven habitat-based EA approach to address the variability of population surveys. Further, the EA used all available, recent/relevant survey data collected in appropriately timed and executed methodologies, including TK. However, supplemental surveys would not be expected to provide any information/data that would affect or alter the findings of the habitat-based EA.

The supplemental avian data received from records from the Saskatchewan Breeding Bird Atlas downloaded through the NatureCounts web portal (Saskatchewan Breeding Bird Atlas 2017), which also includes data received as part of the Saskatchewan Boreal Monitoring Strategy program. These data represent bird observations from 24-point counts conducted on June 7 and June 9, 2019. Nine point-counts are located approximately 6.5 km east of the Project footprint, the majority of which are located in the BS3 ecosite type; 15 point-counts are located approximately 7.7 km south of the Project footprint, the majority of which are located in the BS3/BS7 ecosite type. During this survey effort, 24 migratory songbird species were documented. A summary of the total number of individuals observed for each species across all plots are presented below.

Common Name	Scientific Name	Number of Individuals Observed
American Robin	*Turdus migratorius*	8
Bald Eagle	*Haliaeetus leucocephalus*	1
Canada Goose	*Branta canadensis*	50
Canada Jay	*Perisoreus canadensis*	10
Chipping Sparrow	*Spizella passerina*	19
Common Loon	*Gavia immer*	2
Common Tern	*Sterna hirundo*	1
Dark-eyed Junco	*Junco hyemalis*	10
Greater Yellowlegs	*Tringa melanoleuca*	1
Hermit Thrush	*Catharus guttatus*	11
Lincoln's Sparrow	*Melospiza lincolnii*	8
Orange-crowned Warbler	*Leiothlypis celata*	2
Palm Warbler	*Setophaga palmarum*	10
Red-breasted Merganser	*Mergus serrator*	2
Ruby-crowned Kinglet	*Corthylio calendula*	14
Savannah Sparrow	*Passerculus sandwichensis*	1
Solitary Sandpiper	*Tringa solitaria*	0
Song Sparrow	*Melospiza melodia*	2
Spotted Sandpiper	*Actitis macularius*	1

Common Name	Scientific Name	Number of Individuals Observed
White-crowned Sparrow	*Zonotrichia leucophrys*	6
White-throated Sparrow	*Zonotrichia albicollis*	24
White-winged Crossbill	*Loxia leucoptera*	40
Yellow Warbler	*Setophaga petechia*	3
Yellow-rumped Warbler	*Setophaga coronata*	12

Number	IR-162_WRP
Dept.	ECCC
Project effects link	Migratory birds
Reference to EIS, appendices, or supporting documentation	Section 9.4.3.3, Bird Species at Risk
Context and Rationale	**Context and Rationale:** Not all avian species at risk present in the study area were included as Key Indicators in the avian species at risk (SAR) valued component (VC). Barn swallow and horned grebe were recorded in the study area, but not included as VCs. Additionally, bank swallow may inhabit the Project area. Impacts to Species at Risk Act Schedule 1 listed species need to be identified, avoided, lessened and monitored. In Section 9.4.3.3. the Proponent states: "It is acknowledged that the listed Barn Swallow (*Hirundo rustica*) and Horned Grebe (Podiceps auratus) could potentially occur in the Terrestrial RSA. Incidental observations occurred during the baseline studies (Appendix 9-B). To focus the effects assessment on a few key species (described in the following) it was decided to use Olive-sided Flycatcher and Common Nighthawk to represent Barn Swallow as well, and to use Yellow Rail and Rusty Blackbird as a substitute for Horned Grebe. Unlike Horned Grebe, Yellow Rail and Rusty Blackbird are also listed provincially." Barn swallow, bank swallow and horned grebe may have different nesting habitat requirements than the representative species discussed in the draft EIS. An explanation of how differing species are representative of one another is required, or if an explanation cannot be provided, the species should be assessed individually. **Updated Rationale:** The management plans for these three species demonstrate the variability in their habitat selection. The Management Plan for the Yellow Rail (*Coturnicops noveboracensis*) in Canada (Environment Canada, 2013) states "Yellow Rails inhabit shallow wetlands and other wet areas with grass-like vegetation. They breed in wetlands such as damp hay fields or meadows, floodplains, bogs, upper levels of estuaries, salt marshes (Bookhout 1995, Alvo and Robert

	1999, COSEWIC 2009), shallow prairie wetlands, and wet montane meadows (Peabody 1922, Sherrington 1994, Popper and Stern 2000). " The Management Plan for the Rusty blackbird (*Euphagus carolinus*) in Canada (Environment Canada 2015), states: "Rusty Blackbirds tend to select breeding sites with a combination of freshwater bodies with shallow water and emergent vegetation for foraging that are adjacent to wetlands with conifers or tall shrubs with cover for nesting (Matsuoka et al. 2010a, Matsuoka et al. 2010b, Greenberg et al. 2011)." The Management Plan for the Horned Grebe (*Podiceps auritus*), Western population, in Canada (ECCC, 2022) states: "The Horned Grebe breeds in small (generally 0.5 to 2 ha, but ranging from 0.24 to 18.2 ha), shallow (at least 20 cm deep, but on average 40 cm), and usually fishless, perennial wetlands, but they can also nest on larger lakes with shallow edges and sufficient emergent vegetation. Breeding sites usually contain at least 40% open water with beds of emergent vegetation, such as sedges (Carex spp.), rushes (Juncus spp.) and cattails (Typha spp.) (Faaborg 1976, Kuczynski et al. 2012, Routhier 2012, Stedman 2018)." Due to differing habitat selection and use, ECCC recommends that each selected VC is given an individual assessment with specific mitigation measures. This will allow for a more accurate review of the chosen mitigation measures.
Information Requirement	Explain how nesting habitat requirements of barn swallow is represented by common nighthawk and olive-sided flycatcher as a VC or assess individually each SAR that overlaps with the Project and is likely to be affected. Explain how nesting habitat requirements of horned grebe are represented by yellow rail and rusty blackbird as a VC, or assess individually each SAR that overlaps with the Project and is likely to be affected. Assess individually each SAR that overlaps with the Project and is likely to be affected. See also related IRs: IR-160 and IR-161.

Response:

As per accepted, proven EA methodology, Denison used a habitat-based methodology to determine the Project's effects on VCs, using an accepted Key Indicator methodology, and not every species, to focus and inform the EA.

Nesting habitat requirements of the horned grebe are similar at a landscape level to those represented by yellow rail and rusty blackbird in that they are typically found associated with northern waterbodies and watercourses with various forms of emergent vegetation. At a site-specific scale, there are subtle differences in nesting habitat requirements, as summarized previously by ECCC in the Context and Rationale response.

Given the nesting habitat requirements of these species, the available habitat types within the Denison study areas (e.g., Project Area, Wildlife Local Study Area, and the Terrestrial Regional Study Area) for use by these species include the following ecosite types: Labrador tea shrubby bog (BS18), graminoid bog (BS 19), graminoid bog/graminoid fen (BS19/BS24), open bog (BS 20), leatherleaf shrubby poor fen (BS22), willow shrubby rich fen (BS23), graminoid fen (BS24), open fen (BS25), and waterbodies and lakes. The habitat-based methodology of the environmental assessment adequately and appropriately addresses effects on these habitat types and the associated migratory bird species that could potentially use these

habitat types. Further assessment of each species would not be expected to affect or alter the findings of the habitat-based environmental assessment.

The characterization of the alteration and/or habitat loss residual effect considers the Project effects on available habitat used by these three migratory breeding birds within the Wildlife LSA and Terrestrial RSA. As outlined in Table 9.3-18, 0.05% of the Project Area, 11.5% of the Wildlife LSA, and 24.2% of the Terrestrial RSA provide habitat types that are potentially available to these three migratory breeding bird species.

Direct habitat loss is calculated as the area of available habitat lost due to site clearing within the Project Area. Direct habitat loss has been mitigated by reducing the size of the Project Area to the extent practicable during Project design; however, available habitat is still predicted to be cleared during Construction. In the Project Area, 0.09 ha or 100% of available habitat is assumed to be removed and will not be available to these species for the duration of the Project (Table 9.3-19). This considers that the Project Area has previously been disturbed (i.e., almost 15% of the Project Area is disturbed by anthropogenic activities) and includes only 0.02 ha (0.01%) of landscape covered by waterbodies. This relates to a removal of 0.02% of available habitat within the Wildlife LSA and 0.001% in the Terrestrial RSA.

An additional 93.9 ha (17.0%) of available habitat in the Wildlife LSA may experience habitat alteration resulting from indirect Project effects, such as sensory disturbance (Table 9.3-19). This area of indirect effect represents 1.0% of available habitat in the Terrestrial RSA that may experience habitat alteration.

2.3 Species At Risk – *Myotis* Species

The following information is intended to provide additional context to the responses provided in the IR responses to for IR-174 associated with both the Round 2 and Round 3 responses.

Acoustic bat surveys were completed between July 22 and 23, 2019 with 61 survey points sampled across five ecosite types (refer to Appendix 9-B). The location of the survey points, species detected, and frequency of detections are included in Figure 2-9.

As noted in Appendix 9-D, habitat for the little brown myotis is composed of (1) overwintering hibernacula that are sufficiently cool and humid and (2) summering areas that provide foraging areas and suitable locations for roosting and maternity colonies (COSEWIC 2013). Hibernacula and maternity sites are reported as being the main limiting habitat features for this species (COSEWIC 2013), and this, as described below, is consistent with conditions at the Project site and surrounding area.

Hibernacula occur in parts of caves, mines (openings to surface for ramps and raises for example), and buildings that have stable and specific temperature (-4 to 13°C) and humidity (>80%) conditions (COSEWIC 2013). Based on existing environment information presented in the EIS including the terrain and vegetation and ecosystem existing environment sections, there are no hibernacula anticipated in the Project Area (i.e., caves, mines, buildings with stable and specific temperatures per COSEWIC 2013). Terrain is low relief due to flat-lying sandstone and almost continuous cover of sandy glacial deposits (i.e., surface is predominately sand textured and there are no rocky outcrops or bedrock at surface for cave habitats); there are no man-made structures (e.g., mine openings or buildings) in the Project Area. As noted in the EIS, the terrain and vegetation communities are fairly uniform throughout the study areas and the habitat considerations in the Project Area are considered representative of the landscape in the wildlife LSA and RSA.

Maternity sites can occur in large-diameter trees, rock crevices, buildings, and bat houses that offer warm and relatively stable microclimate conditions that allow females to avoid going into torpor so they can focus on caring for their young (COSEWIC 2013a, Slough and Jung 2020). As highlighted above, since there are no rock crevices, buildings, or bat houses in the Project Area, a consideration for maternal roost potential was focused on the areas where larger diameter trees may be present.

Existing ecosite information was reviewed and ecosites with higher potential for maternity roosts (i.e., larger diameter trees) were selected. The ecosites with the potential for larger diameter trees are shown in Figure 2-10 below, and include ecosites RF1 (regenerating forest >5m tall; per Appendix 9-B), BS3 jack pine/blueberry/lichen, BS4 jack pine – black spruce/feathermoss, BS7 black spruce/blueberry/lichen, BS9 black spruce – jack pine/feathermoss, BS14 white birch/lingonberry – labrador tea, BS16 black spruce/ balsam poplar/river alder swamp, BS17 black spruce treed bog, and BS21 tamarack treed fen. While these ecosites were selected for the *potential* to have larger diameter trees, it is important to note that the majority of these ecosites have trees with diameter at breast height <10 cm. Refer to Appendix 9-B for representative photos of the selected ecosites.

Based on this conservative mapping exercise, the Project Area contains small areas of suitable potential maternal roost habitat. The total Project Area is around 170 ha and potential bat maternal roost ecosites represent less than 49 ha, when as noted above it is assumed that the ecosites identified above provide trees suitable for maternity roosts across their entirety. As noted in the EIS, the terrain and vegetation communities are fairly uniform throughout the study areas and the habitat considerations in the Project Area are considered representative of the landscape in the wildlife LSA and RSA.

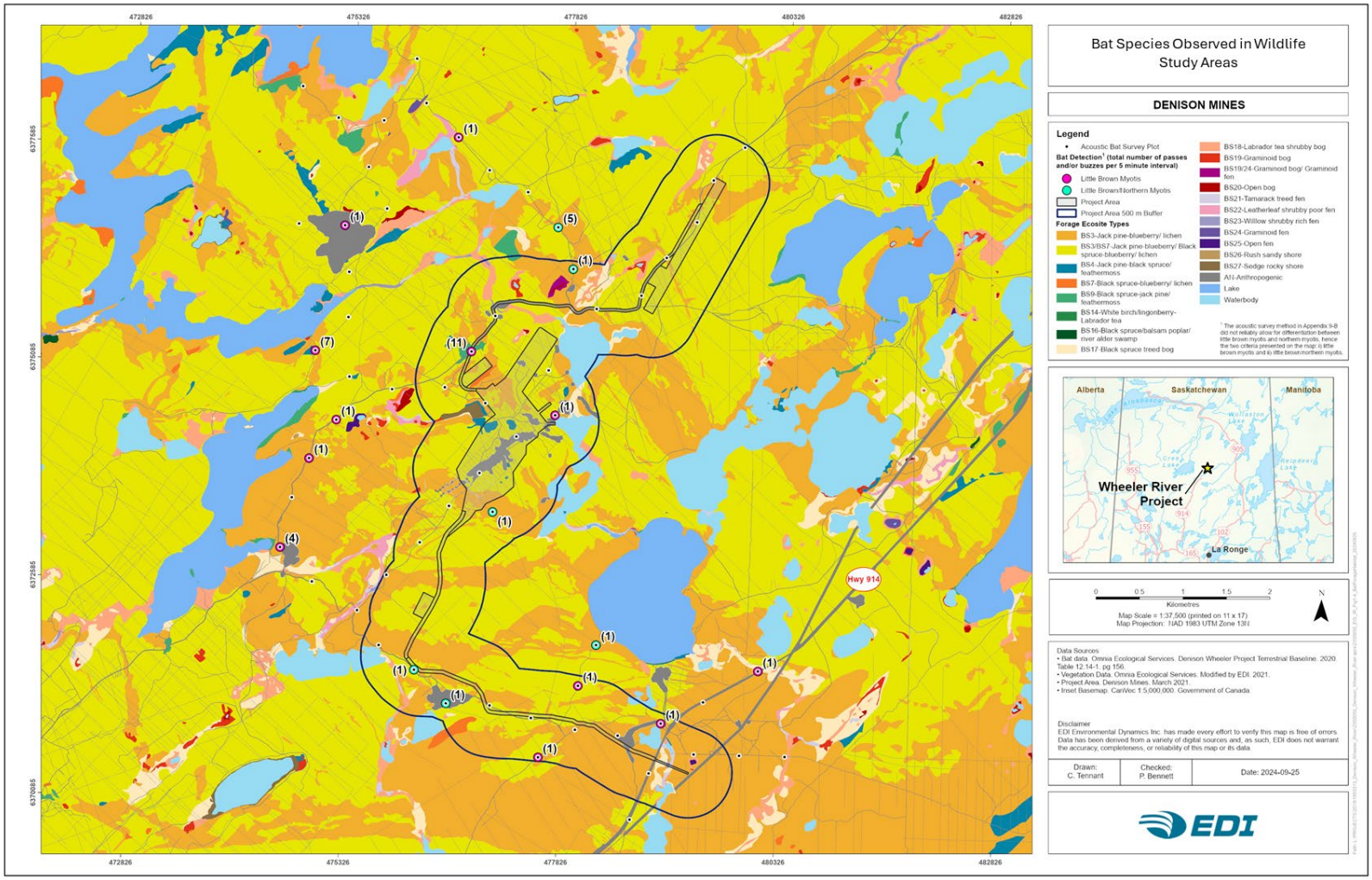

Figure 2-9: Bat Species Observed within the Wildlife Study Areas

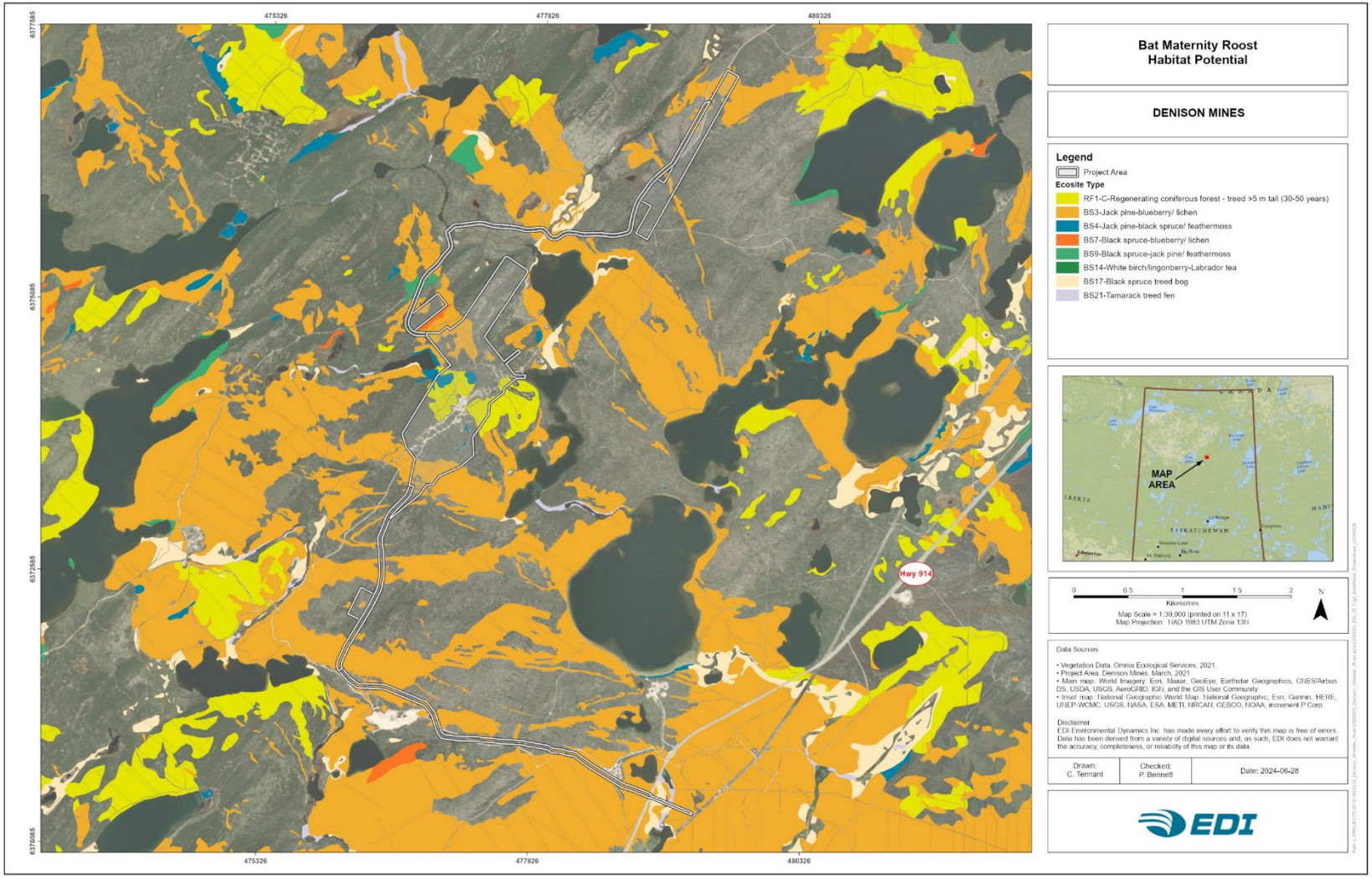

Figure 2-10: Bat Maternity Roost Habitat Potential

3 References

COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis *Myotis lucifugus*, Northern Myotis *Myotis septentrionalis*, and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. xxiv + 93 pp.

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Slough, B.G. and Jung, T.S. 2020. Little Brown Bats Utilize Multiple Maternity Roosts Within Foraging Areas: Implications for Identifying Summer Habitat. Journal of Fish and Wildlife Management 11(1):311–320.