

BONAVISTA MAP AREA

The Bonavista and Trinity map areas (NTS 2C06 and 11), located between Bonavista and Trinity bays, within the Avalon Zone of eastern Newfoundland, are underlain by mostly sedimentary rocks, originally deposited in the separate Ediacaran basins (Normore, 2010, 2011; Mills et al., 2024). West of the Spillers Cove Fault Zone (SCFZ), well-developed to terraced siliciclastic rocks of the volcano-sedimentary Magdalenian Supergroup (ca. 605–1440 Ma) comprise the Bonavista Basin, and contact with rocks of the St. John's Basin that lie east of the fault zone, which are correlative to lithostratigraphic units of the eastern Avalon Peninsula (O'Brien and King, 2002, 2004a, 2005; O'Brien et al., 2009; Normore, 2010, 2011). The oldest rocks east of the SCFZ occur within a structural culmination near Catalina and are inferred to be ca. 560 Ma based on correlation of their distinctive Mississippian Fort Larnach assemblage (O'Brien and King, 2004a; O'Brien et al., 2006; Hoffman et al., 2008; Mason et al., 2013) with the age-constrained type locality at Mississippian Point (Gosse, 1988; Py et al., 2016; Matthews et al., 2021). Recent age constraints on the overlying St. John's Group in the Avalon Peninsula include ca. 564 Ma and ca. 562 Ma for its lower (Matthews et al., 2021) and upper (Coffield et al., 2007, 2020) units, respectively.

Units comprising the Bonavista Basin, west of the SCFZ, are mainly older than those of the St. John's Basin. The main constituent units of the Magdalenian Supergroup include the well-known Red Arm, Rocky Harbour and Green Hill groups (Mills et al., 2020). General deposits of the Trinity (Normore, 2011) and Mercantile (Gosse et al., 2024, 2025a, b) diamictites have been age-constrained to ca. 589 Ma (Py et al., 2016), and ca. 589 Ma (Gosse et al., 2025a), respectively, and sit near the stratigraphic middle of the Rocky Harbour Group. Age constraints indicate that even upper stratigraphic units of the Rocky Harbour Group are older than the oldest rocks east of the SCFZ (Mills et al., 2024; Gosse et al., 2024, 2025a).

This map is based on field data collected during the summers of 2014, 2015 and 2017, earlier data collected in support of preliminary maps for the area (Normore, 2010, 2011), as well as observations presented by previous workers (O'Brien and King, 2002, 2004a, b, 2005). Modifications to previously published stratigraphic frameworks are based on new interpretations using stratigraphic analysis focused on the diamictites (Gosse et al., 2024), whereas litho- and petrochemical mapping (Mills, 2020; Mills and Mercantile-Martin, 2020; see also Mills and Sanderson, 2015, 2017, 2021). U-Pb geochronology (Py et al., 2016; Mills et al., 2017, 2024; Gosse et al., 2025a, b), new structural interpretations (Mills et al., 2019, 2024; see also Sanderson and Py, 2021; Mills, 2024; see also Mills, 2021). Data on the distribution and prevalence of the updated map include:

- 1) Station data, including rock type, structural measurements, location data, and field photographs collected during the 2014, 2015 and 2017 field seasons.
- 2) Additional station data from the original 2006–2010 field notes, including location, rock type and structural measurements collected in preparation of the preliminary bedrock maps (Normore, 2010, 2011).
- 3) Field localities, as documented by O'Brien et al. (2005).

Rock unit names largely follow the long-standing lithostratigraphy of Wilcock (1900), Hayes (1948), and Jenness (1963). Previously proposed stratigraphic frameworks (O'Brien and King, 2002, 2004b, 2005; Normore, 2010, 2011) have been modified, but many subunit names are listed in the legend to aid reference to previous work.

**Acknowledgments**  
Dr. Tom Calkin (1947–2021, Memorial University of Newfoundland, MUN) provided mentorship beyond understanding the deformation history of the area. Dr. Ian Knight (Geological Survey of Newfoundland and Labrador, retired), Dr. David Lowe (MUN) and Nicolas Gosse (Earth Sciences, MUN) provided insights into the varying depositional settings reflected by the diverse diastolic units. Dr. Alex Lu (Cambridge University) provided helpful feedback regarding Ediacaran facies and other impressions. Jesse Wilson, Cameron Poddie and Jeffrey (David) Haines provided consistent field assistance. Gerry Hickey provided logistical support. Hanna Hevel, Harvard Toppo, Gordon Fox, Rick Varga and Craig Bonner provided excellent services. Students who shared results of their undergraduate mapping projects on the Bonavista Peninsula as part of the Natural Sciences Tripos at the University of Cambridge, U.K., are also acknowledged: Norman Blundell (2022), Sophie Baddeley (2019), Tom Spencer (2019), and Jingwei (David) Zhang (2019).

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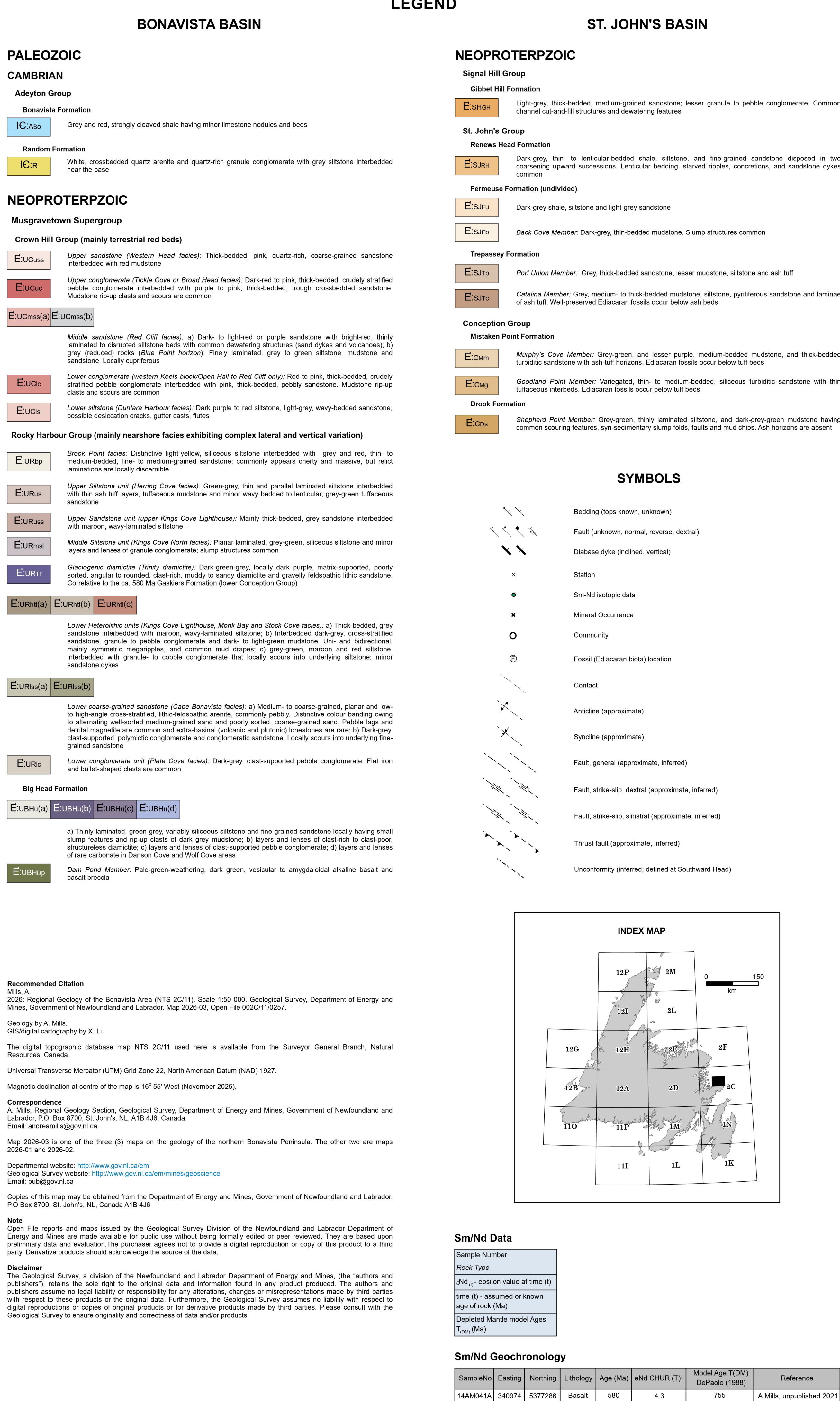
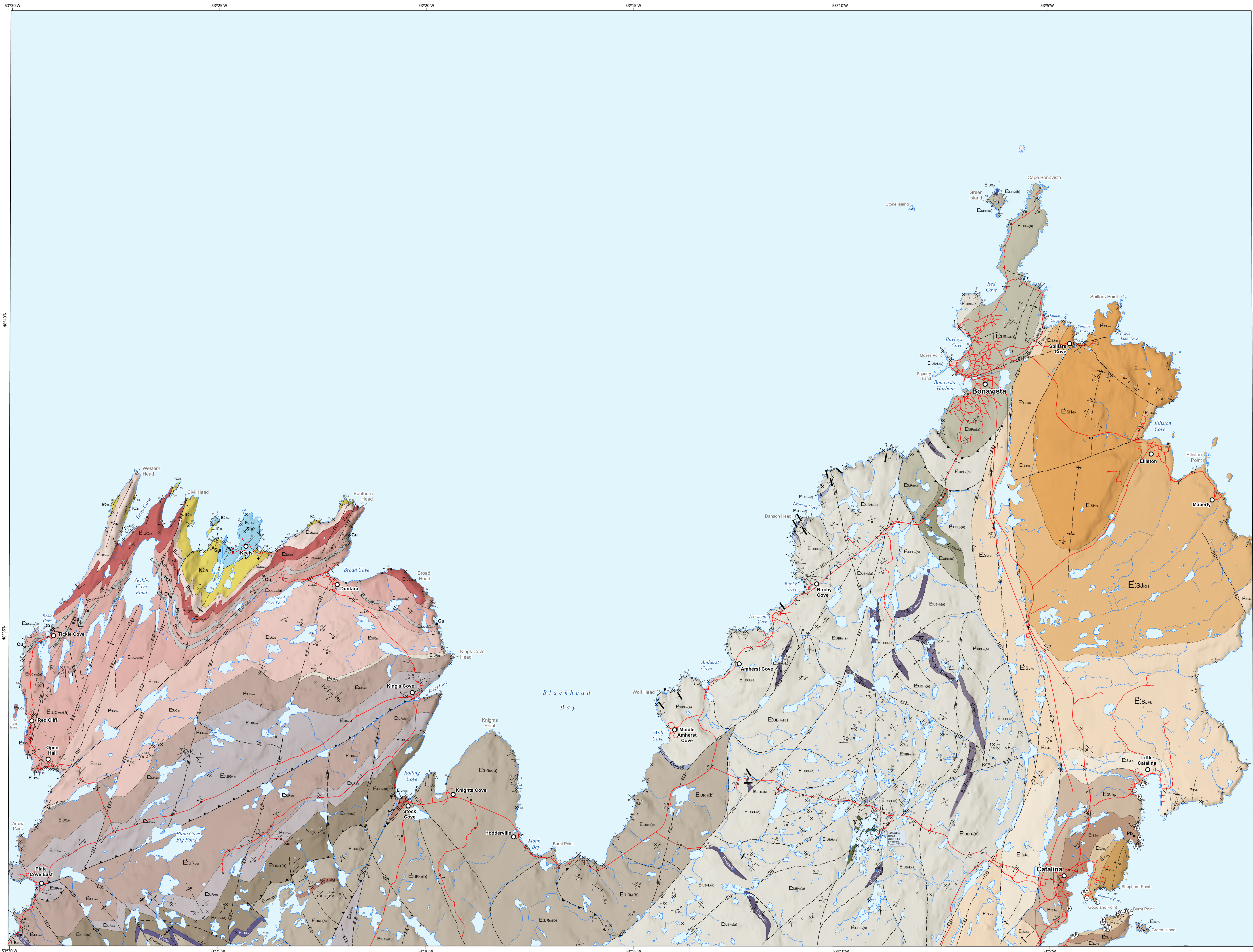
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Map 2026-03

REGIONAL GEOLOGY OF THE BONAVISTA AREA (NTS 2C/11)

OPEN FILE 002C/11/0257

Scale 1:50 000

