

MINERAL INVENTORY PROJECT

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ABSTRACT

The mandate of the Mineral Inventory Project is to document geological and mineral resource information on the Province's mineral occurrences and to make the information available to the public. Updates in 2019, using data taken mainly from mineral industry assessment reports and press releases, and to a lesser extent, government publications and academic thesis, were conducted Province-wide, with a focus on areas where mineral exploration is ongoing and new information is being released.

INTRODUCTION

The Mineral Inventory Project maintains the principal repository for geological information on the Province's mineral resources. The Mineral Occurrence Data System (MODS) is a digital mineral occurrence database containing over 7200 records. It is recognized as an important mineral exploration tool and is consistently used by the mineral exploration and mining industries (Stapleton *et al.*, 2015; Figure 1). Updating of the database is an ongoing process and in 2019 it continued Province-wide using data taken mainly from mineral industry assessment reports and press releases, government publications and academic thesis (Figure 2).

The MODS consists of summaries of data including location, geological descriptions, mineralogy, deposit type, work histories, resource and/or reserve statistics, analytical results and bibliography on known mineral occurrences. It offers fast and easy access to mineral occurrence information throughout all of Newfoundland and Labrador. The main delivery point for the MODS data is the Geological Survey of Newfoundland and Labrador website (<http://www.nr.gov.nl.ca/nr/mines/Geoscience/index.html>). Clients can search the database using either the "Geoscience Atlas" or the MODS "Search Form". It provides a current, high-quality, online mineral deposit database that helps to further define the Province's mineral potential and increase its prospectivity.

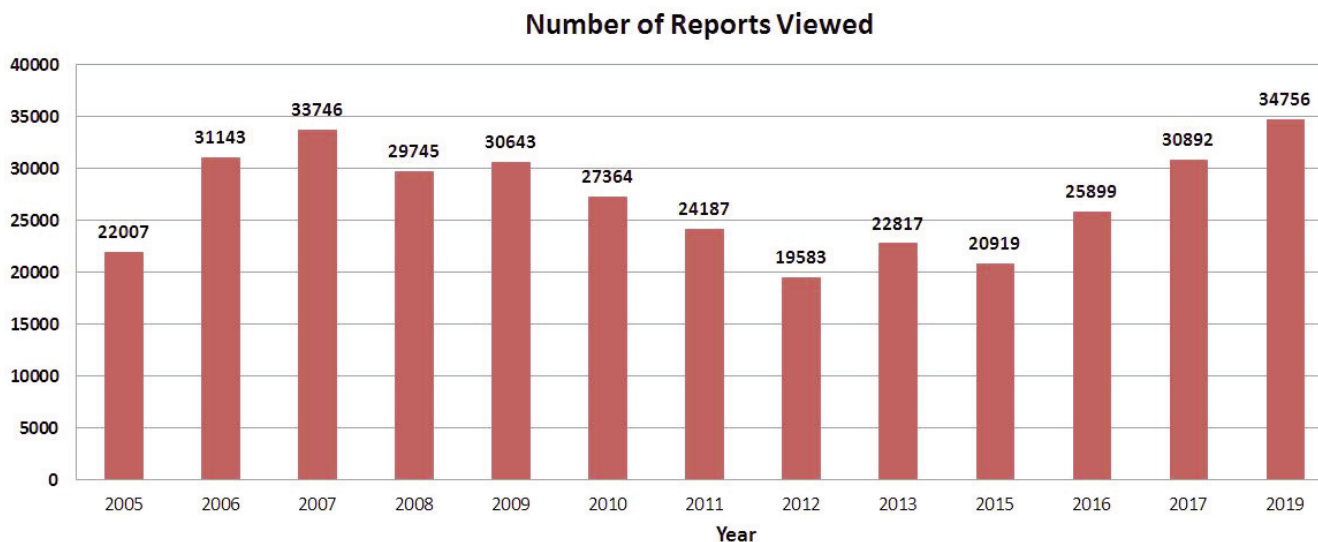


Figure 1. Number of reports reviewed per year 2005–2019 (data for 2014 and 2018 unavailable).

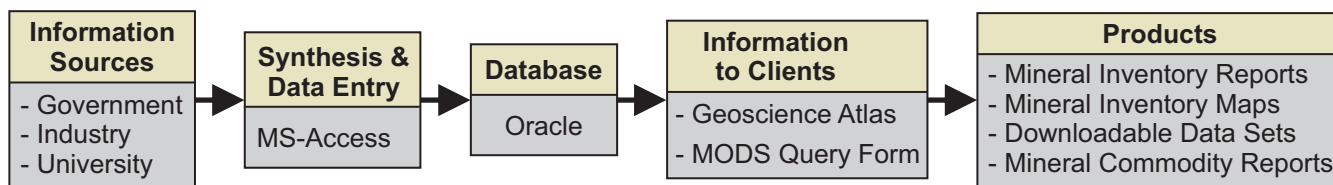


Figure 2. MODS flow chart.

2019 UPDATES

Areas updated in 2019 include parts of 2D, 2E, 12A, 12B, 12H and 12I (Newfoundland) (Figure 3), and 3D, 13A, 13M, 13N and 14D (Labrador) (Figure 4). Although updates were implemented on a Province-wide basis, a focus was placed on documenting occurrences in areas with active mineral exploration programs, such as; rare-earth-element (REE) exploration near the coastal community of St. Lewis in southeastern Labrador (Figure 5), and gold exploration near Thurber Dog Lake, located between Adlatok River and Uqjoktok Bay, in central-eastern Labrador (Figure 4).

Port Hope Simpson (PHS) REE District

Search Minerals Inc. began exploring for rare-earth-elements (REEs) near the communities of St. Lewis and Port Hope Simpson in 2009 (Figure 4), an area known as the Port Hope Simpson (PHS) REE district. Within this area, mineralization is hosted in peralkaline volcanic rocks, primarily in pantellerite and commendite flows and ash-flow tuffs, of the Fox Harbour Volcanic belt (Miller, 2015). A number of discoveries have been made with the most advanced being the Foxtrot deposit (Nmino #003D/05/Ree001) discovered in 2010 through systematic follow-up of coincident airborne radiometric and magnetic anomalies. It contains a 43-101 compliant “indicated” resource of 7 392 000 tonnes grading 191 ppm Dy, 1485 ppm Nd, 397 ppm Pr and 33 ppm Tb (Roscoe Postle Associates, 2016). Two other prospects, Deep Fox (Nmino #003D/05/Ree007), discovered in 2014, and Fox Meadow (013A/09/Ree004) discovered in 2016, both have the potential to be larger than Foxtrot (R. Miller, personal communication, Nov. 7, 2019). More than 20 additional occurrences have been identified within a 70-km-long and 8-km-wide area of the Fox Harbour Volcanic belt (Figure 5) (Search Minerals website, Nov 27, 2019).

Thurber Dog Lake Area

The Thurber Dog Lake area is located 40 km southwest of the coastal community of Hopedale (Figure 4). It has a long exploration history dating back to the late 1950s when Lundberg Exploration Limited conducted airborne magne-

tometer and electromagnetic surveys over parts of the Florence Lake greenstone belt for British Newfoundland Exploration Limited. Gold mineralization was first discovered there in the early 1990s by Falconbridge Limited; where grab samples from outcrop assayed up to 3.8 g/t Au from a sulphide gossan associated with carbonatized mafic intrusive rocks (Hussey and Moore, 2005 and references therein). The area has seen consistent exploration work by various companies and the mineral exploration rights to the area are presently held by Labrador Gold Corp.

The Thurber Dog Lake area is underlain by the Archean Florence Lake greenstone belt, which consists predominantly of mafic volcanic rocks, and lesser ultramafic, felsic and sedimentary units (Figure 6). The mafic volcanic rocks are metamorphosed (greenschist to amphibolite facies) and composed of, massive, layered and pillowed flows, amphibolite of uncertain protholith, and gabbro (James *et al.*, 1996). The ultramafic rocks are talc schists with variable amounts of carbonate and magnesite, and dark-green-to-black chlorite and serpentine (?) schists (James *et al.*, 1996). Both, the mafic volcanic rocks and ultramafic schists, are host to quartz-carbonate veins that are subparallel to parallel with respect to the north-south-trending penetrative fabric (Emon *et al.*, 1996). According to Cullen and Churchill (1997), mineralization in the Thurber Dog Lake area is associated with variably altered mafic-ultramafic schists that locally host sulphide-bearing quartz-vein arrays. Semi-massive to disseminated arsenopyrite, chalcopyrite, and bornite mineralization within, and adjacent to, quartz-carbonate veins has been reported, often occurring in association with locally intense carbonate alteration and shearing (*see* Hussey and Moore, 2005 and references therein).

Gold mineralization has been outlined over a 3-km-strike length in the Thurber Dog Lake area with values up to 8.26 g/t Au in a grab sample (Labrador Gold Corp. press release, November 22, 2019) and 3.97 g/t Au in a 5-m-chip-channel sample (Cullen and Churchill, 1997). The MODS currently has three documented gold occurrences in the area: Thurber Dog Lake #1 (Nmino #013N/02/Au 001), Thurber Dog Lake #2 (Nmino # 013N/02/Au 002) and Thurber Dog Lake #4 (Nmino # 013N/02/Au 003).

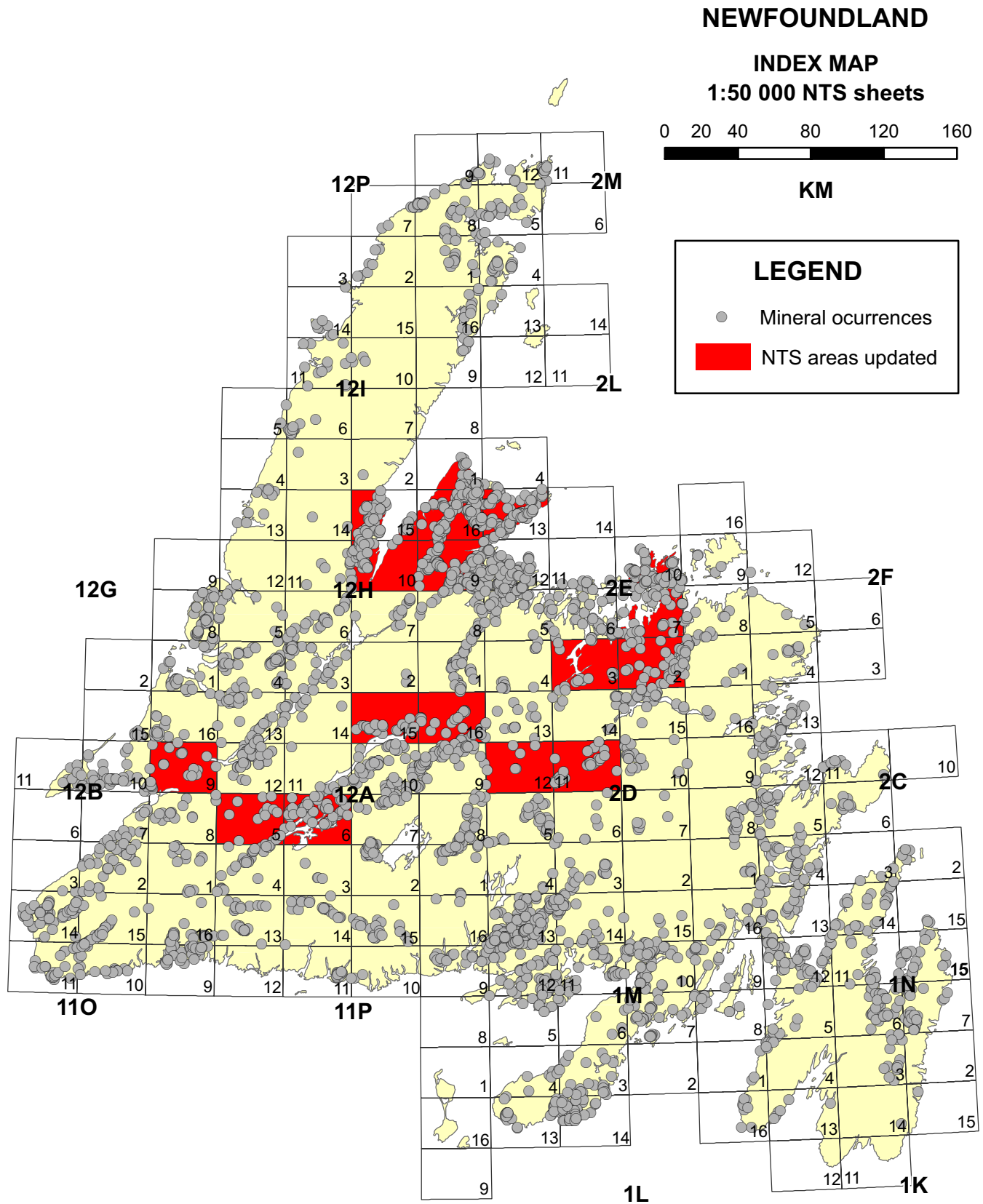


Figure 3. NTS areas updated, Newfoundland.

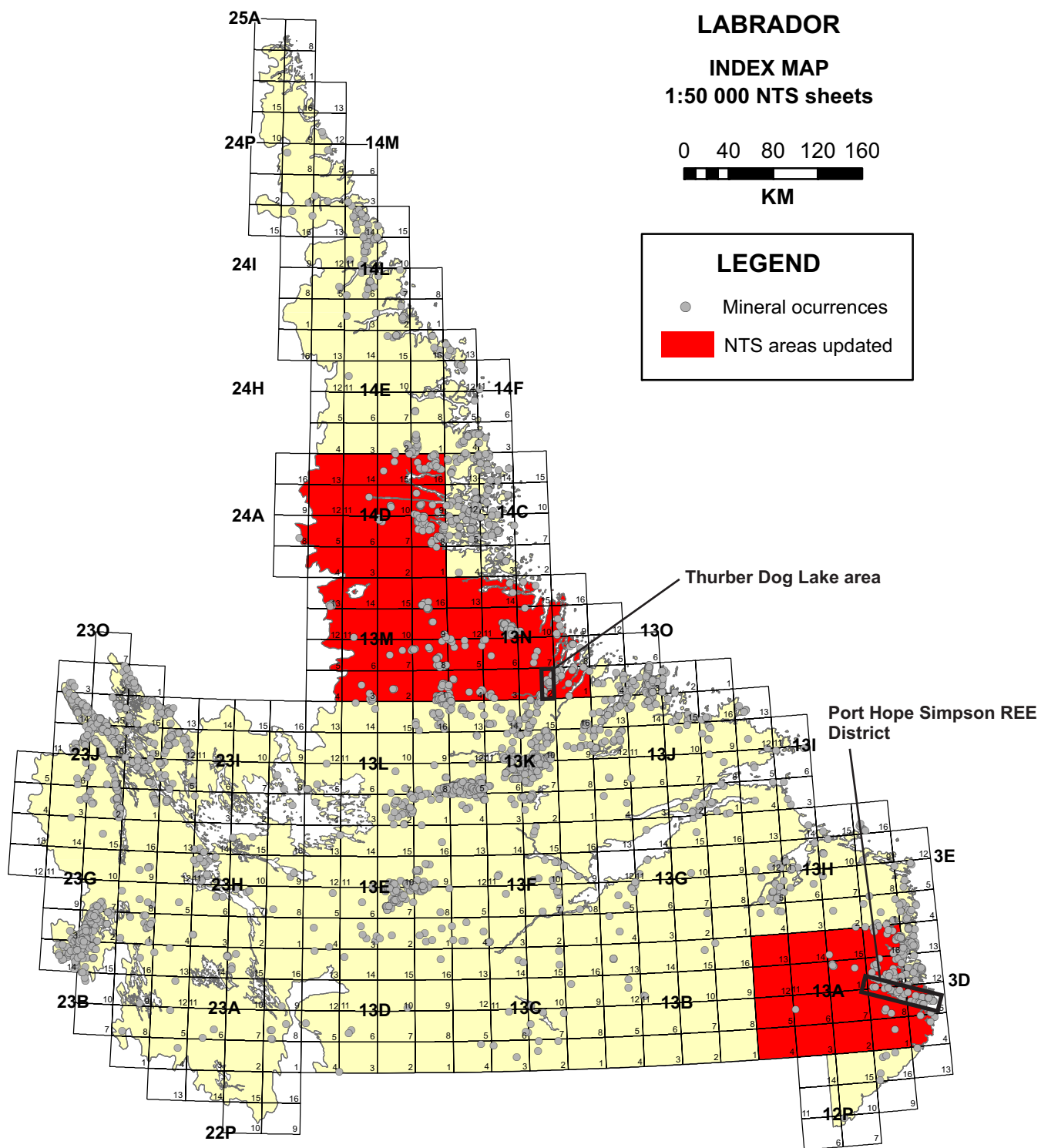


Figure 4. NTS areas updated, Labrador.

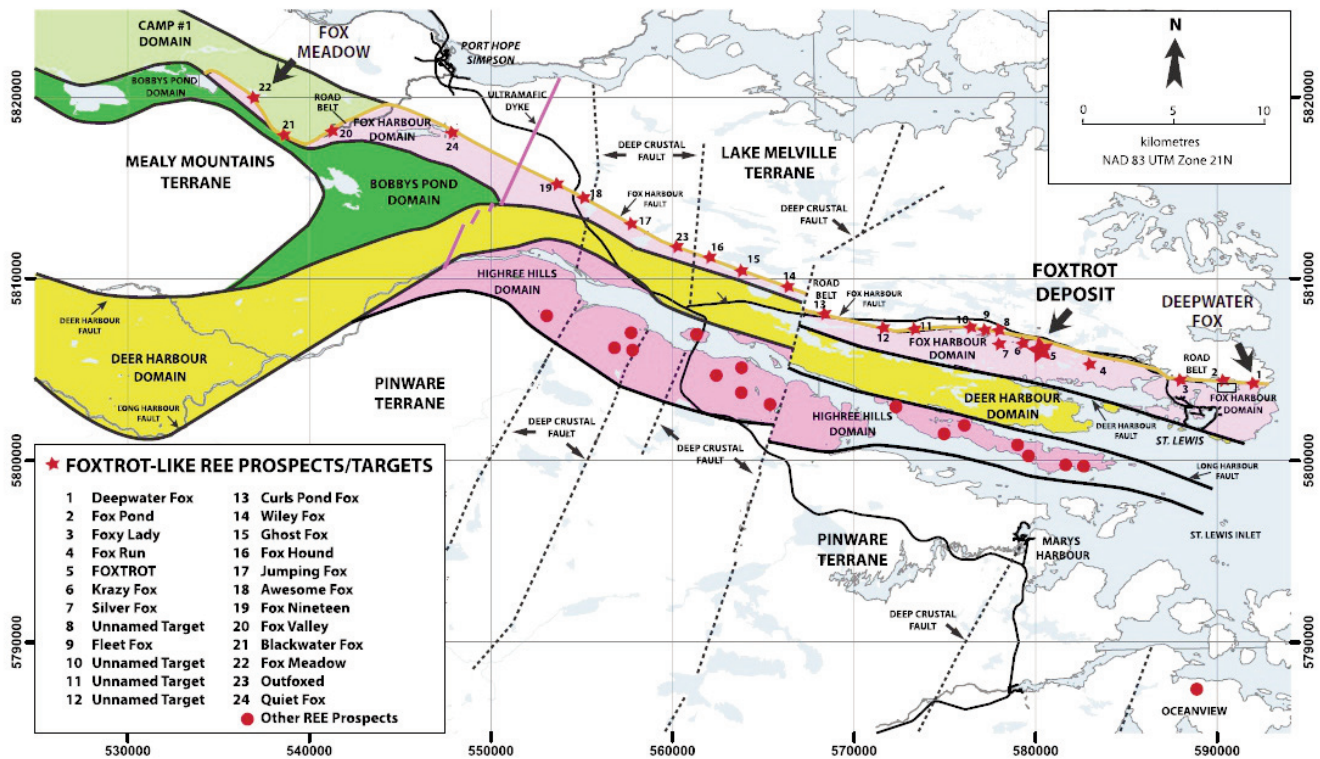


Figure 5. Rare-earth element prospects and targets in the Port Hope Simpson–St. Lewis area, southeast Labrador. Terrane boundaries are modified from Gower (2012) (after Miller, 2015).

SEARCHING AND DOWNLOADING MODS DATA

The Geoscience Atlas is a very good application for cursory analysis and downloading of MODS data without the need for third-party software. However, it is recommended that users import the data into other GIS programs for detailed analysis. There are four ways to search the database using the Geoscience Atlas: key word search, attribute search, spatial search and custom query (Stapleton and Smith, 2018). The maximum number of hits that can be viewed in the Search Results dialogue box is 1000 per search.

The MODS data can be downloaded using the Tool icon on the Geoscience Atlas Map View. The process is “Tools/Download Data/Mineral Occurrences/Extract Data”. This method is used to download all of the MODS database records or a subset. To download all of the records, turn on the MODS layer, zoom to the full extent of the map and follow the process outlined above. A subset of the data can be downloaded by geographically zooming to an area of interest and following the process above, or one can first search the database and download the results of the search using the same method. The data fields included in the downloaded

record do not include the long text fields and are designed to be used with GIS programs (Stapleton and Smith, 2018).

MODS USER STATISTICS

The MODS is used by mineral explorationists to help guide their exploration programs. It is used daily by government geologists in land-use planning. The 2019 web server statistics for the MODS indicate that it was accessed 34 756 times (Figure 1). Over the past fourteen years it has been consistently used, averaging 27 207 hits per year. A hit is logged when the user opens a MODS record. A detailed study of the 2013 web server statistics indicated that the database has a global audience, being accessed from one hundred countries, representing approximately half of the countries of the world. It is accessed most frequently from Canada and the commodity of greatest interest is gold (Stapleton *et al.*, 2015).

SUMMARY

During 2019, consistent delivery of MODS data continued to be achieved through the query form and the graphical interface, with both updated and new non-confidential records copied to the public domain on a 24-hour basis. This

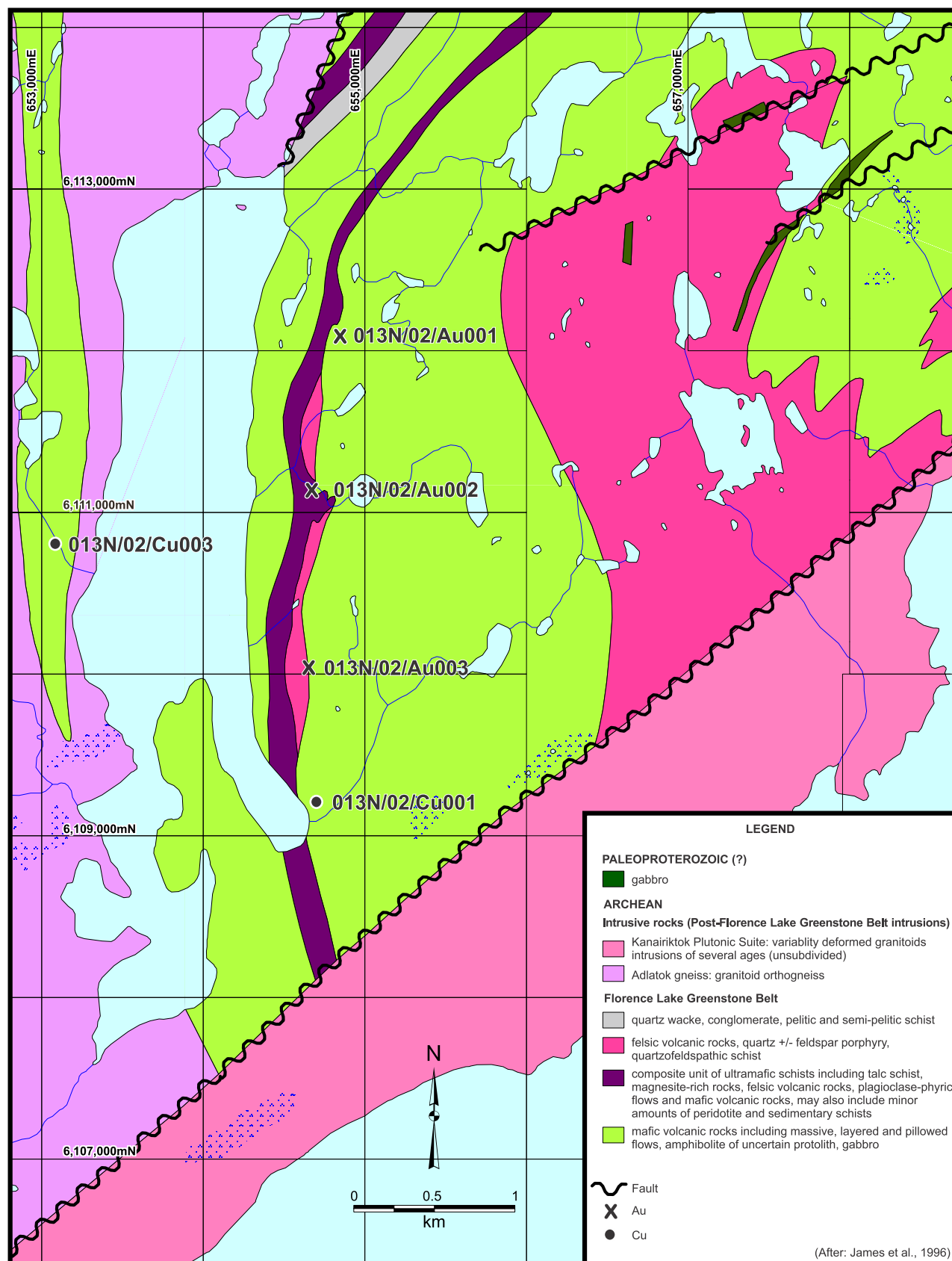


Figure 6. *Geology and mineral occurrence map, Thurber Dog Lake area (geology after James et al., 1996).*

updated database provides the mineral exploration sector and other clients with a more current dataset. The data generated by the Mineral Inventory Project contribute toward longer term benefits evidenced by increased investment in the provincial mineral exploration and mining industries (Stapleton *et al.*, 2014).

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