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MRD 93 – Geological Compilation of the Swayze Area, Abitibi Greenstone Belt

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Ayer, J.A.; Trowell, N.F.; Valade, L.; Nevills, M and Madon, Z.; 2002. Geological Compilation of the Swayze Area, Abitibi Greenstone Belt. Ontario Geological Survey, Miscellaneous Release Data 93

This map is the fourth in a series of 1:100,000 maps to augment the former Timmins- Kirkland Lake Map 2205 (scale 1 inch to 4 miles). Preliminary Maps (P. Map) and Miscellaneous Data Releases (MR-D) published to date include; the Timmins Area (P. Map 3379, MRD 36); the Lake Abitibi area (P. Map 3398, MRD 46); and the Kirkland Lake area (P. Map 3425, MRD 58).

This geological map of the Swayze area was compiled from published maps and reports of the Ontario Geological Survey (OGS) and the Geological Survey of Canada (GSC). In addition, information from unpublished reports and maps on file with the OGS, university theses, papers in professional journals, geophysical maps and satellite images were incorporated. Geological interpretation was further enhanced by utilizing the Earth Resources and Land Information System (ERLIS) databases such as the Airborne Magnetic and Electromagnetic Surveys (AMEM - 1000 Series), Assessment File Resource Inventory (AFRI), the Drill Hole (DH) database, the Lithochemical (LGC) database and the Mineral Deposit Inventory (MDI) database.

The Abitibi Subprovince is an 800 by 300 km Archean "granite-greenstone" domain situated along the southern margin of the Superior Province. It is dominated by supracrustal and granitoid rocks with a range of ages from 2.75 to 2.67 Ga (Jackson and Fyon 1991). Historically, the Abitibi greenstone belt was considered to be that portion of the Abitibi Subprovince extending to the western margin of the extensive granitoid

complexes west of Timmins. New mapping and geochronological evidence (Heather et al, 1995) shows that the Swayze greenstone belt contains many of the structures and stratigraphic ages typical of the Abitibi belt in the Timmins-Kirkland Lake area and is now interpreted to represent a deeper erosional level of a once-continuous Abitibi greenstone belt extending to the Kapuskasing Structural Zone. The Abitibi greenstone belt is one of the world's largest, best preserved and most economically productive greenstone belts. The Swayze map sheet covers the area from approximately 15 km east of Gogama as far west as the Kapuskasing Structural Zone and from the southern margin of the 1:100 000 Timmins map sheet to approximately 20 km south of Gogama. Rocks are classified on the basis of their dominant lithology using textures, structures and both approximate and specific compositions to refine the classification. Geological information has been primarily compiled from previous mapping. New interpretations of the extent of lithological units specifically in the areas lacking outcrop have greatly benefited from the use of the reprocessed geophysical data for this area (Gupta 1995, 1996). As well geochemical data have allowed for the further subdivision of the metavolcanic rocks.

Significant gold occurrences and past producing gold mines indicate the area's potential for gold mineralization. Copper-zinc mineralization is found in association with sulphide facies iron formation and with metavolcanic sequences. Potential exists for nickel-copper-platinum in the ultramafic/komatiitic rocks identified in the area. Industrial minerals including barite and silica have been produced in the past while the Penhorwood Mine is presently producing talc.

A vector mosaic, at a scale of 1:50,000, was digitally compiled using 1:20,000 scale Ontario Base Mapping Program - Digital Topographic Data Base (OBM - DTDB) map files. The resulting mosaic is based on the Universal Transverse Mercator (UTM) projection and grid system, Zone 17, North American Datum 1927. This multi-year and multi-component compilation project will produce a series of 1:100,000 scale geological maps covering the Abitibi greenstone belt (AGB) in Ontario, in both hardcopy and digital formats. It will serve to identify areas for future mapping projects and will be used as a basis for tectono-stratigraphic interpretation of this mineral-rich area. The compilation products are designed to facilitate exploration for new deposits in areas of high economic potential by providing current geological data that incorporates the results of on-going research into the metallogeny and tectonic evolution of the AGB, and specific mineral-deposit-related issues.