LEGEND

NOTE: This legend is common to Open File 405, 406

ROCK TYPES

1A	TROCTOLITE GROUP, Trocolites
1B	GLACIO RIVER GROUP: Trocolites
2	BASALTIC volcanics, shale, trocolites
3	CLASTIC SEDIMENTS
3A	CONGLOMERATE, volcanics
3B	SHALES, sandstones, dolomite
4	METAMORPHIC sandstone
5	IGNEOUS INTRUSIVES
5A	TROCTOLITE, anorthosites, dolomite

6A	Felsic	7A	Felsic to intermediate volcanics
6B	Mafic	7B	Mafic volcanics
6C	Intermediate	7C	Felsic to intermediate pyroclastic rocks
6D	Undivided	7D	Mafic pyroclastic rocks
6E	Metasediments	7E	Undivided pyroclastic rocks
6F	Metavolcanics	7F	Undivided metavolcanics
6G	Migmatite, gneiss, paragneiss	7G	Undivided metasediments
6H	Granitoid to syenitic rocks	7H	Undivided metasediments, granitoid rocks

GEOLOGICAL CONTACTS

8A	Felsic
8B	Mafic
8C	Intermediate
8D	Undivided
8E	Metasediments
8F	Metavolcanics
8G	Migmatite, gneiss, paragneiss
8H	Granitoid to syenitic rocks

9A	Felsic
9B	Mafic
9C	Intermediate
9D	Undivided
9E	Metasediments
9F	Metavolcanics
9G	Migmatite, gneiss, paragneiss
9H	Granitoid to syenitic rocks

10A	Felsic
10B	Mafic
10C	Intermediate
10D	Undivided
10E	Metasediments
10F	Metavolcanics
10G	Migmatite, gneiss, paragneiss
10H	Granitoid to syenitic rocks

11A	Felsic
11B	Mafic
11C	Intermediate
11D	Undivided
11E	Metasediments
11F	Metavolcanics
11G	Migmatite, gneiss, paragneiss
11H	Granitoid to syenitic rocks

12A	Felsic
12B	Mafic
12C	Intermediate
12D	Undivided
12E	Metasediments
12F	Metavolcanics
12G	Migmatite, gneiss, paragneiss
12H	Granitoid to syenitic rocks

Geological contact.....

Fault.....

Dyke.....

Geology derived from the map 1204-A, Kirkhhn-Gathewau at the scale of 1 : 1,000,000. Compiled by A.J. Baer, A.R. Poole and D.V. Sandford, 1971

Geological cartography by the Geological Survey of Canada

Base-map at the same scale published by the Mapping and Charting Establishment, D.N.D. 1960-61

Province of Ontario
Ministry of Natural Resources
Geological Branch

Canada
Department of Energy, Mines and Resources
Geological Survey of Canada

31 F

Mean magnetic declination 10°, 1974.0, 9' west decreasing 5.1' annually. Readings vary from 14°52' in the S.E. corner to 19°54.0 in the NW corner of the map area

Elevation in feet above mean sea-level

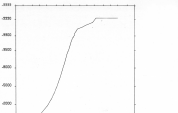
Geochemical Symbol and Data Presentation

The concentration of an element at a sample site is practically represented on one of 14 symbols. If a sample was collected but there is no data available a dot is plotted. The symbols are symmetrically arranged so that they first increase in size and then in number of bars. The symbol for the lowest concentration has only the vault crosses at the low end of the scale are used to exceptionally heavy concentrations below the analytical detection limit, or, in the data group combining the detection limit, to those values which are considered anomalous for the area. The data for the Four Canadas can be summed and bets arbitrary division has been chosen for the continuing Canada wide series of maps constituting the National Geochemical Reconnaissance. The division between symbols 7 and 8 corresponds to the 98th percentile of the values in Canada on the histogram and cumulative frequency plot for the total survey data from one, or more contiguous, open file sheets covered in one field season. The division between 8 and 9 corresponds to the 99.8th percentile. Values which would fall outside the mapfor of the data as defined by the 0.2 (100) point on the cumulative frequency plot. Some, or all, of the remaining 14 symbols are chosen on an arbitrary or asymmetric graphical basis. An example of this symbols is given below.

The symbol maps, solely based on the total survey data distributions, are unaffected by any knowledge of the geochemical character of the various rock units in the area of geology, and other environmental factors. Therefore, the raw data symbol maps are completely objective and unbiased presentations of the data. They are designed to fulfill the needs of a more specific and thorough interpretation, the raw symbol maps are supplemented by separate publications containing histograms, probability plottings and any other knowledge available. To assist in the appraisal and modification of the data in terms of the symbol map bedrock geology, a table of summary statistics for each lithology sampled in the survey is presented below the table. Lithologies are again based on the total survey data, as presented below the histogram. This table can be used along, or in conjunction, with the sample location map and data listings to evaluate the significance of anomalous values. Although the data is presented in the table of all class 11 values, more clearly than the map, the dependence of metal geochemical levels on bedrock type. It may often be also observed that within the lithologies, the concentrations of the elements may vary from one to another. Histograms or lithologic units appears to approximate a normal distribution. The proposed thresholds protected are believed to be useful in interpreting the data from a general reconnaissance point of view. However, in detailed exploration, the use of these thresholds for the rock-units they appear to be derived from, should be studied carefully. The above threshold concentration can be due to a wide range of geological and environmental factors, and not necessarily indicative of economic concentrations of the element in a form of interest to the economic geologist.

To comprehensively study an area, all available geological, environmental and geochemical data must be used. The geochemical interpretation of the data can be improved by constructing new data subsets and deriving local threshold levels based on the most detailed and up-to-date knowledge available.

The cumulative frequency plot, shown in the figure below the table is an estimate of the reliability of the geochemical map. On the basis of duplicate sampling 91 of 97 taken sampled it can be stated that there is a 95% chance that if any take is collected and analyzed in the manner described in the report, the value obtained will fall between 0.5 of and 1.9 of where X is the original value obtained. This factor takes into account variability due to both heterogeneity of the centre-take bottom sediments and sample preparation and analytical causes.



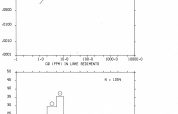


Table of Thresholds for Major Geological Units

Lithology	No. of Samples	Mean	S.D.	C.V.%	Threshold
Limestone	13	21.5	45.6	212	50
Sandstone	17	5.0	4.5	91	10
Shale	32	9.8	8.8	89	20
Lime	1	4.9	0.0	0	10
Conglomerate	103	6.3	3.5	55	15
Conglomerate	9	6.3	3.5	55	30
Arkose	7	1.3	0.5	38	40
Migmatite	79	1.5	0.8	53	40
Syenite	19	80.0	390.3	490	60
Granodiorite	107	1.1	0.5	45	40
Granodiorite	10	1.4	0.5	36	40
Gabbro	11	6.1	3.7	60	40
Diorite	5	4.0	2.3	58	40
Anorthosite	63	11.2	15.4	138	40
Gneiss	107	6.9	4.3	62	35
Paragneiss	52	10.4	10.3	99	35
Migmatite	83	13.9	17.5	125	35
Unknown	8	6.1	3.6	59	30

Data units are ppm

Reliability Factor = 1.50

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 2-1976

OPEN FILE 405

Resource Geophysics and Geochemistry Division

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Chemical analysis by Chemex Labs.

This map forms one of a series of 23 sheets released under Geological Survey of Canada, Open Files 405-426. The open files consist of data for 12 elements each, per cent loss on ignition and sample site location.

The data are also available in digital form. For further information please contact:

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NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 2-1976
OPEN FILE 405
SOUTHAMPTON ONTARIO, 1976
COBALT

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 2-1976
COBALT IN LAKE SEDIMENTS

CANADA-ONTARIO SUBSIDIARY AGREEMENT ON MINERAL EXPLORATION AND DEVELOPMENT

Scale 1:250,000

Kilometres 5 0 5 10 Kilometres
Miles 3 0 3 6 Miles

Universal Transverse Mercator Projection
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