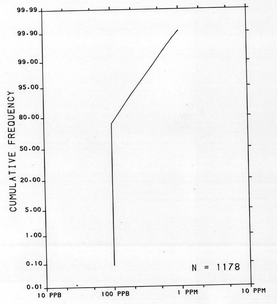
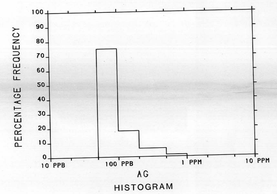
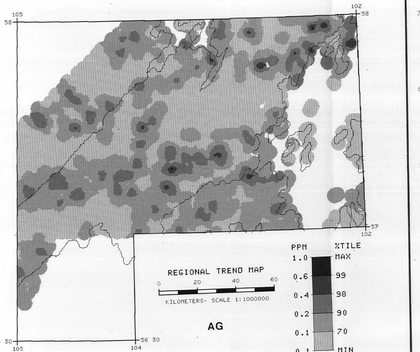
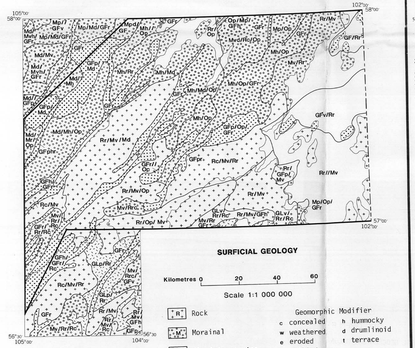
Canada
Department of Energy, Mines and Resources
Geological Survey of Canada

Province of Saskatchewan
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

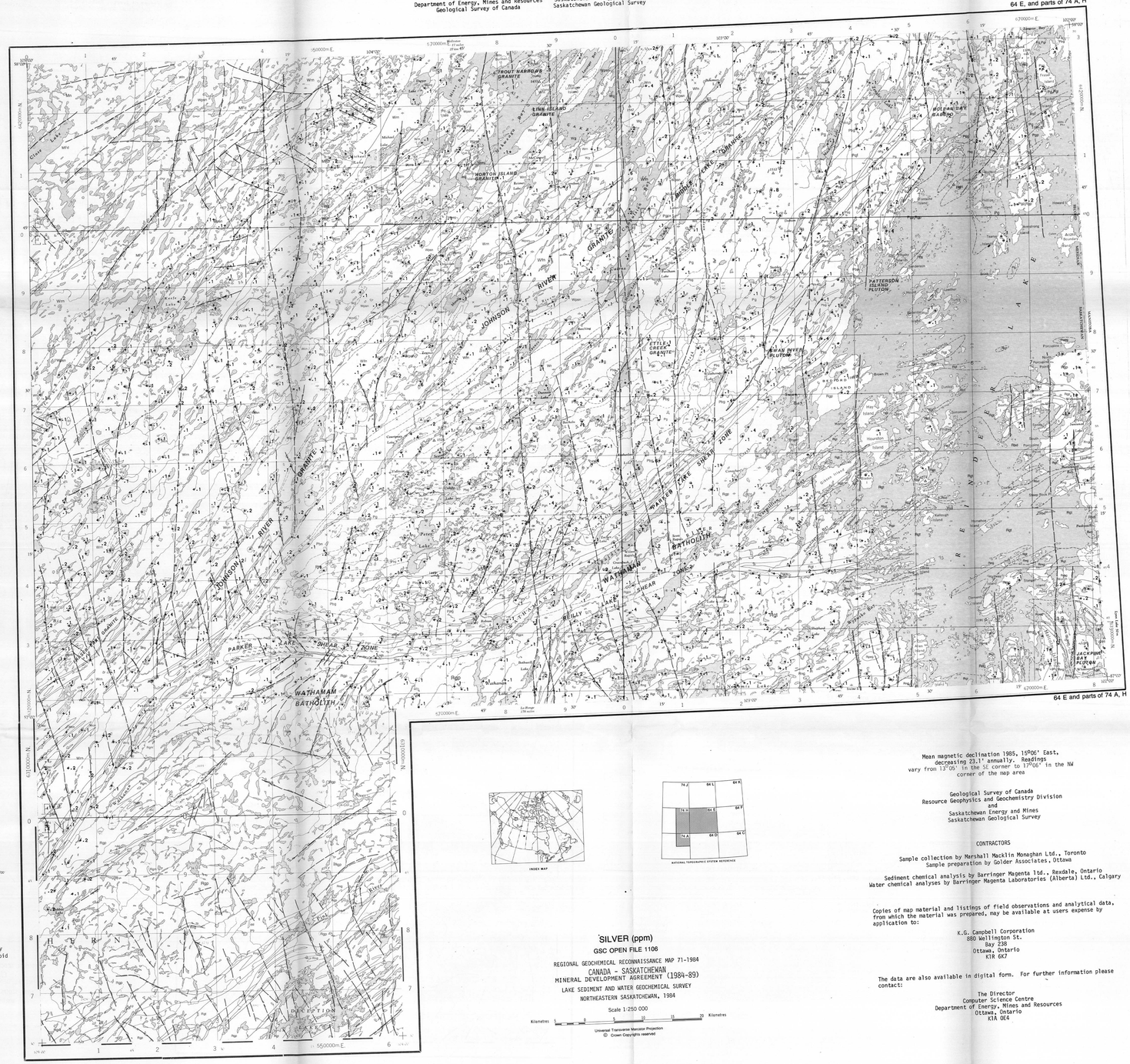








Complexes: where two or more classes of terrain are interspersed in a mosaic or repeating pattern the proportion of each component in the combination is given in a three-position designation set off by slashes denoting arbitrary percentage limits. For example, "Mv/O/R" means that at least 60% of the area is underlain by thin till, with up to 40% boggy areas, and less than 15% scattered rock outcrops. "Rc/R" indicates more than 60% bedrock concealed by vegetation and less than 15% outcrop.



Mean magnetic declination 1985, 15°06' East, decreasing 23.1' annually. Readings vary from 13°05' in the SE corner to 17°06' in the NW corner of the map area

Geological Survey of Canada
Resource Geophysics and Geochemistry Division
and
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

CONTRACTORS

Sample collection by Marshall Macklin Monaghan Ltd., Toronto
Sample preparation by Golder Associates, Ottawa

Sediment chemical analysis by Barringer Magenta ltd., Rexdale, Ontario
Water chemical analyses by Barringer Magenta Laboratories (Alberta) Ltd., Calgary

Copies of map material and listings of field observations and analytical data, from which the material was prepared, may be available at users expense by application to:

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

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SILVER (ppm)
GSC OPEN FILE 1106

REGIONAL GEOCHEMICAL RECONNAISSANCE MAP 71-1984
CANADA - SASKATCHEWAN
MINERAL DEVELOPMENT AGREEMENT (1984-89)
LAKE SEDIMENT AND WATER GEOCHEMICAL SURVEY
NORTHEASTERN SASKATCHEWAN, 1984

Scale 1:250 000

Kilometres 5 0 5 10 15 20 Kilometres

Universal Transverse Mercator Projection

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SILVER (ppm)
GSC OPEN FILE 1106
NORTHEASTERN SASKATCHEWAN, 1984

LEGEND

Note: This legend is common for Regional Geochemical Reconnaissance Map 71-1984, Open File 1106

NEOHELIKIAN/HADRYNIAN

dd — **Dubose gabbro**: fine to coarse grained, massive to weakly foliated ± olivine ± biotite ± hypersthene

PALEOHELIKIAN

ATHABASCA GROUP

MF — **Martins Falls Formation**: sandstone and conglomerate
MFc: fluvial sandstone member, locally pebbly
MFb: conglomerate member

LATE APHEBIAN (HUDSONIAN*)

X — **Calaverite**: mylonite and sheared rocks of the Needle Falls Shear Zone; derived from rocks of the Wollaston and Peter Lake Domains

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN*)

Wpeg — **Granitic pegmatite**: variable grain size, generally massive, ± biotite ± muscovite ± garnet; occurs as with migmatitic supracrustal gneisses commonly gradational

Wg — **Granite and aplite**: fine to coarse grained, massive to foliated; ± biotite ± muscovite ± hornblende ± magnetite ± microcline megacrysts; contacts with migmatitic supracrustal gneisses commonly gradational

Wgrb — **Biotite granodiorite/tonalite**: medium to coarse grained, massive to foliated; grey to buff; local xenoliths and rafts of amphibolite, mica schist and psammitic gneiss

EARLY TO MIDDLE APHEBIAN

Wsh — **Wollaston Group**

Wcn — **Quartz-muscovite schist**: pelitic to psammopelitic, fine to medium grained, ± biotite; locally intensely sheared

Wm — **Calc-silicate gneiss, marble and amphibolite**: medium grained to pegmatitic, variable composition and texture, ± diopside ± epidote ± hornblende ± biotite ± actinolite/tremolite ± calcite ± scapolite ± grossularite; occurring as calcareous bands and lenses in supracrustal sequence

Wpm — **Meta-arkosic gneiss**: fine to medium grained, massive to foliated to gneissic, locally layered, ± biotite ± hornblende ± cordierite ± muscovite ± sillimanite ± garnet ± magnetite ± pyrite; locally interlayered with metaquartzite, pelite and calc-silicate rock; commonly anatectic with more than 50 percent leucogranitic neosome

Wq — **Pelitic to psammopelitic gneiss**: fine to medium grained, foliated to gneissic, ± biotite ± quartz ± feldspar ± graphite ± sillimanite ± muscovite ± cordierite ± garnet ± pyrite; pyrrhotite; interlayered metaquartzite, pelite, calc-silicate rock and marble with psammitic types locally predominant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome

Wg1 graphite-bearing pelitic gneiss

Ws — **Mixed metasediment**: variable unit both along and across strike, generally fine grained and foliated; interlayered quartzofeldspathic metaarenite, metaquartzite, metachert, quartzofeldspathic meta-arkose, calc-silicate rock, marble and rare banded iron formation

Wq — **Metaquartzite**: fine grained, massive to foliated, locally layered; ± muscovite ± biotite ± garnet ± feldspar ± cordierite ± graphite ± sillimanite; local conglomerate and interlayered graphitic meta-argillite ± andalusite ± garnet ± sulphide

PROBABLY EARLY APHEBIAN (LATE ARCHEAN?)

Wr — **Marble**: fine to medium grained, massive to foliated, locally layered and cross stratified, ± muscovite ± magnetite ± lithic fragments; local conglomerate with granite, granite gneiss, metavolcanic and metasedimentary clasts; interbedded pelitic schist ± andalusite ± sillimanite ± garnet

Wv — **Amphibolite**: fine grained, massive to poorly foliated, locally pillowed; local intercalated pelitic gneiss

COURTENAY-CARING LAKE BELT

UNCONFORMITY

ARCHEAN; DEFORMED AND METAMORPHOSED WITH APHEBIAN SUPRACRUSTAL ROCKS DURING THE HUDSONIAN OROGENY

Wfn — **Felsic granitoid gneiss**: fine to coarse grained, foliated to gneissic, generally homogeneous rocks of syenogranitic to granodiorite composition ± biotite ± garnet ± muscovite ± sillimanite; with rare hypersthene; of granitic facies metamorphic origin; commonly associated with amphibolite and/or pelitic schist; locally partially anatectic with leucogranitic neosome
Wfn: biotite-hornblende bearing

BOTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

Pgp — **Megacrystic granitoid**: medium to coarse grained, massive to foliated; ± biotite ± hornblende ± magnetite ± microcline megacrysts ± biotite ± hornblende-quartz monzonite, monzogranite and granodiorite; local pelite, amphibolite and/or metabasite xenoliths; locally abundant pegmatitic sills and non-megacrystic granitoid toward margins
Pgp1: sheared variants, with strongly foliated groundmass and flattened microcline megacrysts, locally submylonitic

Pgm — **Macrogranite-granodiorite**: containing abundant xenoliths and rafts of amphibolite and amphibolite gneiss derived from unit Pm

Pbd — **Quartz monzodiorite, diorite and gabbro**: fine to coarse grained, massive to foliated, ± hornblende ± phlogopite ± potassium feldspar ± quartz ± biotite; local paragneiss inclusions; contact zones commonly injected with granitic material

Pgneg — **Granitic pegmatite**: massive to foliated, ± biotite ± muscovite ± hornblende ± garnet

WATHAMAN BATHOLITH ~1880 Ma

Pgl — **Tonalite, granodiorite and monzonite**: compositionally variable, generally leucocratic feldspar-poor, fine to coarse grained, locally pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende; local amphibolite and/or pelite inclusions
Pgl1: metasomatized leucotonalite, pink, massive, porphyroblastic, with introduced potassium feldspar and quartz in aureole of Wathaman Batholith

Pmg — **Amphibolite and derived migmatite**: pulhosome fine to medium grained, foliated, locally layered, ± hornblende ± feldspar ± biotite ± muscovite ± garnet ± quartz; neosome: ± paramelanic gneiss and calc-silicate gneiss; leucosome: granodiorite to tonalite; commonly anatectic (50 to 90 percent of unit); medium to coarse grained to pegmatitic, massive to foliated; ± biotite ± muscovite ± garnet ± hornblende

Pmg — **Pelitic to psammitic gneiss and derived migmatite**: pulhosome fine to medium grained, well foliated to gneissic, locally layered; ± biotite ± quartz ± feldspar ± muscovite ± garnet ± sillimanite ± cordierite; neosome: granodiorite or tonalite/granite (50 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated; ± biotite ± muscovite ± garnet ± hornblende

ROTTENSTONE MIGMATITE COMPLEX

PETER LAKE DOMAIN

APHEBIAN AND ARCHEAN ROCKS, STRONGLY REWORKED PROBABLY LATE IN THE HUDSONIAN

Pv — **Mylonite**: fine grained to aphanitic, streaky to finely laminated; interlayered mafic and felsic gneiss

Pgn — **Felsic gneiss**: medium grained, strongly foliated to gneissic; locally submylonitic granitoid rock ± biotite ± hornblende ± flattened microcline megacrysts

Pb — **Hornblende-biotite gneiss**: tonalitic to gabbroic composition, medium to coarse grained, with minor metagabbro and amphibolite

Pbn — **Mafic gneiss**: fine to medium grained, foliated to gneissic, locally submylonitic; hornblende ± biotite ± plagioclase ± quartz ± potassium feldspar; local pods of weakly foliated to massive mafic rock
Pbng: area cut by numerous granitic dykes and sills likely derived from the Wathaman Batholith

PARKER LAKE GNEISSES

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

Pg — **Felsic granitoid**: generally medium to coarse grained, locally megacrystic, multiple intrusives, granodiorite to pyroxenite in composition, ± biotite ± hornblende ± muscovite, generally only weakly foliated except in discrete shear zones, ± biotite ± amphibole; local amphibolite and/or pelite inclusions
Pg1: late granodiorite to alaskite and aplitic intrusive sheets

Pgp — **Megacrystic granitoid** (indistinguishable in places from unit Pgp)
Pgps: sheared variants

PETER LAKE COMPLEX

PROBABLY MAINLY ARCHEAN

Psg — **Mafic plutonic rocks**: fine to coarse grained, massive to weakly foliated, metagabbro to metadiorite to metapyroxenite, locally ultramafic to subophitic texture; ± hornblende ± plagioclase ± biotite ± actinolite/tremolite with local metasedimentary xenoliths;
includes amphibolitic rocks of possible metavolcanic origin
Psa: layered metagabbro, minor anorthosite, ultramafic rocks; local granodiorite
Psg1: megacrystic diorite, massive with potassium feldspar megacrysts

Pgf — **Quartzofeldspathic gneiss**: fine to medium grained, equigranular, generally well foliated to gneissic, locally compositionally banded; granitic to granodiorite ± biotite ± hornblende; local biotite-hornblende gneiss lenses

"Campbell River Group"

Psl — **Slate, phyllite and biotite schist**: very fine to fine grained, well foliated; biotite layered; ± biotite ± muscovite ± hornblende ± chlorite ± carbonaceous material; local hornblende-biotite schist; psammite, amphibolite and metagabbro

SYMBOLS

Single bedrock exposure; approximate area of abundant bedrock exposure

Geological contact: defined to approximate; inferred

Structural lineament, possible to probable fault; as interpreted from geological, geophysical and/or airphoto evidence

Major fold axial trace: anticline; syncline

Trend and approximate dip of dominant foliation surface: dip shallow (0-20°); moderate (30-50°); steep (60-84°); subvertical (85-90°)

Mineral prospect
1 George Lake; Zn-Pb (Karup-Møller and Brummer, 1970; Coombe, 1977)

Sample location (geochronology)
1 Pg; 1900-1880 Ma, Rb-Sr whole rock isochron (Wanless et al. 1970)
2 1780-1730 Ma, Rb-Sr whole rock isochron (Bell and Macdonald, 1982); map location is approximate centre of collecting area

* No analytical result

* A mnemonic name recorded as rock types as part of field observations

This legend was modified and the geology derived for these geochemical maps from Compilation Bedrock Geology Series 220A, 229A and 232A, Saskatchewan Energy and Mines, Saskatchewan Geological Survey

This map forms one of a series of maps released by the Geological Survey of Canada, Open File 1106. The Open File consists of maps of various geochemical variables: 16 for lake sediment, 3 for lake water and 1 sample site location

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