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/0/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.

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

Province of Saskatchewan
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

64 E, and parts of 74 A, H

64 E and parts of 74 A, H

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:

The Director
Computer Science Centre
Department of Energy, Mines and Resources
Ottawa, Ontario
K1A 0E4

NICKEL (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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NICKEL (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 **Diabase-gabbro**: fine to coarse grained, massive to weakly foliated; ± olivine ± biotite ± hypersthene

PALEOHELIKIAN

ATHABASCA GROUP

MF **Manitou Falls Formation**: sandstone and conglomerate

MFc: fluvial sandstone member, locally pebbly
MFh:conglomerate member

LATE APHEBIAN (HUDSONIAN)

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

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN)

Wpgn **Granitic pegmatite**: variable grain size, generally massive, ± biotite ± muscovite ± garnet; contacts with migmatitic supracrustal gneisses commonly gradational

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

Wgdo **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

Wollaston Group

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

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

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

Wmq: impure metaquartzite

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

Wpyr: graphite-bearing pelitic gneiss

Wx **Mixed metasediment**: variable unit both along and across strike; generally fine grained and foliated; interlayered laminated slate, meta-argillite, metaquartzite, meticulous meta-arkose, calc-silicate rock, marble and rare banded iron formation

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

COURTENAY-CAIRNS LAKE BELT

PROBABLY EARLY APHEBIAN (LATE ARCHEAN?)

Wr **Meta-arkose**: fine to medium grained, massive to foliated, locally layered and cross stratified; ± muscovite ± magnetite ± lithic fragments; local conglomerate with pebbles of vein quartz and quartzite; local metasedimentary clasts; local interbedded pelitic schist ± andalusite ± staurolite ± garnet

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

UNCONFORMITY

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

Wfm **Felsic granitoid gneiss**: fine to coarse grained, foliated to gneissic, generally homogeneous rocks of syenogranitic to granodioritic composition ± biotite ± amphibole ± muscovite ± garnet; local rafts of mafic to felsic gneiss metamorphic origin; local inclusions of amphibolite and/or pelitic schist; locally partially anatectic with leucogranite neosome

Wfm: biotite-hornblende bearing

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

WATHAMAN BATHOLITH (c.1800 Ma)

Rgp **Mesocratic granitoid**: medium to coarse grained, massive to foliated, with local igneous flow banding; microcline megacrysts; ± biotite ± hornblende; ± muscovite; monzogranite and granodiorite; local pelitic, amphibolite and/or metadiorite xenoliths; locally abundant pegmatite, aplite and non-megacrystic granitoid toward margins

Rgpx: sheared variants, with strongly foliated groundmass and flattened microcline megacrysts, locally submylonitic

Rgm **Monzogranite-granodiorite**: containing abundant xenoliths and rafts of amphibolite and amphibolite gneiss derived from unit Rbd

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

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

ROTTENSTONE GRANITOID COMPLEX

Rgl **Tonalite, granodiorite and trondhjemite**: compositionally variable, generally potassium feldspar poor, fine to coarse grained, locally pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende; local amphibolite and/or pelite inclusions

Rgtx: metamorphosed leucotonalite, pink, massive, fine grained (aplitic), with equigranular potassium feldspar and quartz in aureole of Wathaman Batholith

Rmg **Amphibolite and derived migmatite**: paleosome fine to medium grained, foliated, locally layered; ± hornblende ± biotite ± muscovite ± garnet ± quartz; local pelitic to psammopelitic gneiss; neosome tonalitic, granodioritic or trondhjemitic (30 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende

Rmg **Pelitic to psammitic gneiss and derived migmatite**: paleosome fine to medium grained, well foliated to gneissic; locally layered; ± biotite ± muscovite ± sillimanite ± cordierite ± garnet ± sillimanite ± graphite; neosome tonalitic, granodioritic or trondhjemitic (30 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende

PETER LAKE DOMAIN

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

PARKER LAKE GNEISSES

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 subsymmetric granitoid rock ± biotite ± hornblende ± flattened microcline megacrysts

Pn **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 subsymmetric; ± hornblende ± plagioclase ± biotite ± quartz ± potassium feldspar; local pods of weakly foliated to massive mafic rock

Pcng: area cut by numerous granitic dykes and sills likely derived from the Wathaman Batholith

COURTENAY-CAIRNS LAKE BELT

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

PETER LAKE COMPLEX

Pg **Felsic granitoid**: generally medium to coarse grained, locally megacrystic; multiply intrusive; granodioritic to syenitic to alaskitic and aplitic; local relict igneous textures, generally only weakly foliated except in discrete shear zones; ± biotite ± amphibole; local amphibolite and/or pelite inclusions

Pgd: lake granodioritic to alaskitic and aplitic intrusive sheets

Pgp **Mesocratic granitoid** (hindsinguishable in places from unit Rgp)

Pgpx: sheared variants

PROBABLY MAINLY ARCHEAN

Pbg **Mafic plutonic rocks**: fine to coarse grained, massive to weakly foliated; metagabbro to metadiorite to metagabbro; local relict ophitic to subophitic texture; ± hornblende ± plagioclase ± biotite ± actinolite/tremolite, with local metasedimentary xenoliths;

includes amphibolite rocks of possible metavolcanic origin

Pbx: layered metagabbro, minor anorthosite, ultramafic rock and granodiorite
Pbp: megacrystic diorite, massive with potassium feldspar megacrysts

'Campbell River Group'

Pgd **Granodiorite-tonalite gneiss**: fine to medium grained, homogeneous, generally well foliated to gneissic; locally compositionally banded; granitic to granodioritic ± biotite ± hornblende; local biotite-hornblende gneiss lenses

Psl **Slate, phyllite and biotite schist**: very fine to fine grained, well foliated, locally layered; ± biotite ± muscovite ± pyrite/pyrrhotite ± carbonaceous material; local hornblende-biotite schist, psammites, amphibolite and metagabbro

LA RONGE DOMAIN

PROBABLY HUDSONIAN s.s. (c.1740 Ma)

Lgd **Granodiorite and quartz monzonite**: medium-grained, well foliated to gneissic, biotite ± hornblende, abundant xenoliths of paragneiss and unit Lgm

Lgm **Quartz monzodiorite**: fine to coarse grained, foliated to gneissic, ± hornblende ± biotite; abundant xenoliths of paragneiss and amphibolite; enclosures of granodiorite to quartz monzonitic material in migmatitic contact zone

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: antiform; synform
- Trend and approximate dip of dominant foliation surface: (regional 30-45°; moderate (30-59°); steep (60-84°); subvertical (85-90°)
- Mineral prospect:
  1. George Lake Zn-Pb (Kerr-Addison Mines Ltd. and Brunner, 1970; Coombe, 1977)
- Sample location (geochronology):
  1. 1975±35 Ma, K-Ar muscovite (Wanless et al., 1970)
  2. 1780±30 Ma, Rb-Sr whole rock isochron (Bell and Macdonald, 1983); this location is approximate source of collecting site
- 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

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

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