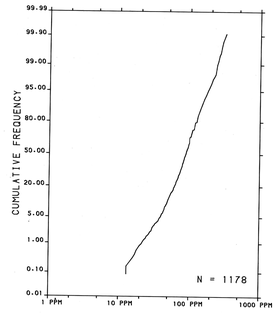
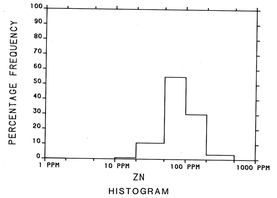
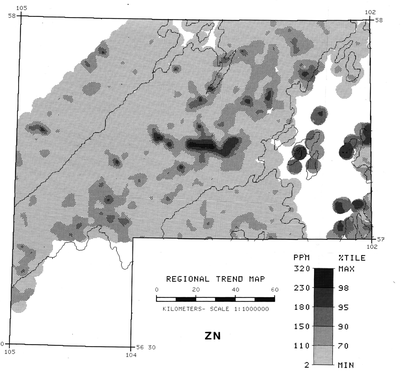
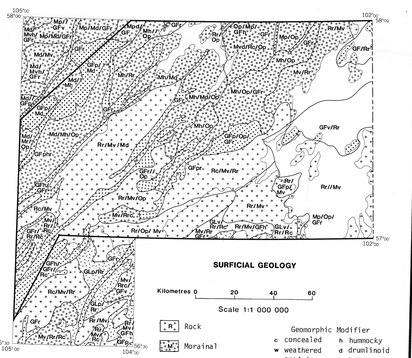
Canada
Department of Energy, Mines and Resources
Geological Survey of Canada

Province of Saskatchewan
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

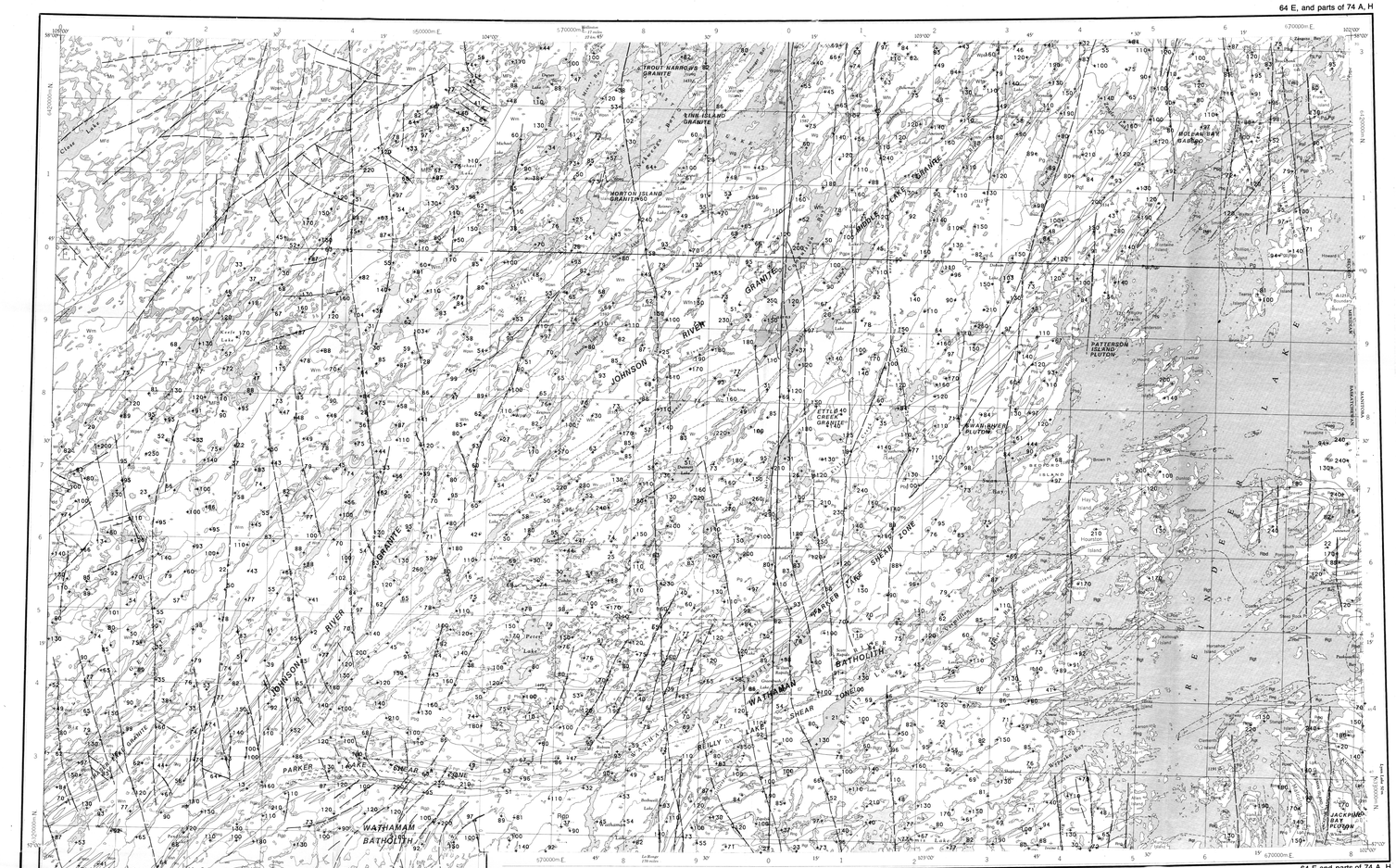


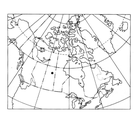


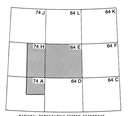




Complexes: where two or more classes of terrain are interspersed in a mosaic or repeating pattern the proportion of each component in the combination is given in a three-position designation set off by slashes denoting arbitrary percentage limits. For example, "Mv/O/R" means that at least 60% of the 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.







ZINC (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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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

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

LEGEND

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

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN)

Wpeg — **Granitic pegmatite**; variable grain size, generally massive; ± biotite ± muscovite ± garnet; contacts with megacrystic supracrustal gneisses commonly gradational

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

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

EARLY TO MIDDLE APHEBIAN

Wollaston Group

Wsh — **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 ± albite ± hornblende ± biotite ± actinolite/tremolite ± calcite ± scapolite ± grossularite; occurring as conformable bands and lenses in supracrustal sequence

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

Wmj: impure metaquartzite

Wpsm — **Pelitic to psammopelitic gneiss**; fine to medium grained, foliated to gneissic, ± biotite ± quartz ± feldspar ± graphite ± sillimanite ± muscovite ± cordierite ± garnet ± staurolite; commonly interlayered and intermixed with calc-silicate rock and marble with psammitic types locally abundant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome

Wgf: graphite-bearing pelitic gneiss

Ws — **Mixed metasediment**; variable unit both along and across strike; generally fine grained and foliated; interlayered metaquartzite, pelitic gneiss, calc-silicate rock, metapsammite, 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

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 granite granite gneiss, metavolcanic and 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

Wtn — **Felsic granitoid gneiss**; fine to coarse grained, foliated to gneissic; generally homogeneous rocks of syenogranitic to monzogranitic composition; ± biotite ± muscovite ± sillimanite, with rare hypersthene (of granulite facies metamorphic origin); local inclusions of amphibolite and/or pelitic schist; locally partially anatectic with leucogranite neosome

Wtb: biotite-hornblende bearing

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

Rpgr — **Megacrystic granitoid**; medium to coarse grained, massive to foliated, with local igneous flow banding; microcline megacrysts ± quartz megacrysts; ± hornblende ± monzonite and granodiorite; local pelite, amphibolite and/or metadiorite xenoliths; locally abundant pegmatite, aplite and non-megacrystic granited toward margins

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

Rgm — **Monzogranite-granodiorite**; containing abundant xenoliths and rafts of amphibolite and amphibole gneiss derived from unit Pb

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

Rpeg — **Granitic pegmatite**; massive to foliated; ± biotite ± muscovite ± hornblende ± garnet

Rgt — **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

Rgtz: metasomatized leucotonalite, pink, massive; porphyroblastic with introduced potassium feldspar and quartz in aureole of Wathaman Batholith

Rmg — **Amphibolite and derived migmatite**; paleosome fine to medium grained, foliated; locally layered; ± hornblende ± feldspar ± biotite ± muscovite ± garnet ± quartz; local pelitic to psammitic gneiss and calc-silicate gneiss; neosome leucocratic, quartzofeldspathic, variable in % (50 percent of unit), medium to coarse grained to pegmatitic, massive to foliated; ± biotite ± muscovite ± garnet ± hornblende

Rng — **Pelitic to psammitic gneiss and derived migmatite**; paleosome fine to medium grained, well foliated to gneissic, locally layered; ± biotite ± quartz ± feldspar ± muscovite ± garnet ± sillimanite ± graphite; neosome tonalitic, granodioritic or trondhjemitic (50 to 90 percent of unit), variable in %, medium to coarse grained, 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 granited 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 submylonitic; ± hornblende ± plagioclase ± biotite ± 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

COURTENAY-CAIRNS LAKE BELT

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

Pg — **Felsic granited**; generally medium to coarse grained, locally megacrystic, mafically intrusive; granodioritic to syenitic to granitic; ± biotite ± muscovite ± hornblende; generally only weakly foliated except in discrete shear zones; ± biotite ± amphibole; local amphibolite and/or pelitic inclusions

Pgf: late granodioritic to alaskitic and aplitic intrusive sheets

Pgp — **Megacrystic granited** (microtonalite in places from unit Pgp)

Pgpx: sheared variants

PETER LAKE COMPLEX

PROBABLY MAINLY ARCHEAN

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

includes amphibolitic rocks of possible metavolcanic origin

Ptsa: layered metagabbro, minor anorthosite, ultramafic rock and granodiorite

Ptsp: megacrystic diorite; massive with potassium feldspar megacrysts

Psf — **Quartzofeldspathic gneiss**; fine to medium grained, equigranular; generally well foliated to gneissic, locally strongly mylonitic; granitic to granodiorite; ± biotite ± hornblende; local biotite-hornblende gneiss lenses

Campbell River Group

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

WATHAMAN BATHOLITH (1980 Ma)

LA RONGE DOMAIN

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

Lgm — **Quartz monzonite**; fine to coarse grained, foliated to gneissic; ± hornblende ± biotite; abundant xenoliths of paragneiss and amphibolite; mesomes 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: dip shallow (0-29°); moderate (30-59°); steep (60-84°); subvertical (85-90°)

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

Sample location (geochronology)
1. 1785±3 Ma, Rb-Sr whole-rock isochron (Wanless et al., 1970)
2. 1785±30 Ma, Rb-Sr whole-rock isochron (Bell and Macdonald, 1980); 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 228A, 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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ZINC (ppm)
GSC OPEN FILE 1106
NORTHEASTERN SASKATCHEWAN, 1984