CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

PALAEOZOIC

ORDOVICIAN

17 — Dolomite

POST-LAGUNA

16 — Diabase

15 — Pegmatite

14 — Granite; 14a, contact breccia

13a | 13b — 13a: quartz gabbro, diorite; 13b: quartz diorite, granodiorite

12 — Amphibolite

11 — Conglomerate, greywacke, arkose

10 — Quartz-feldspar porphyry

ARCHEAN (EARLY PRECAMBRIAN)

9 — Biotite dacite, dacite breccia

LAGUNA SERIES

8 — Rhyolitic flows, tuffs and breccias; small bodies of 10

7 — Laminated feldspathic chert and greywacke; interbeds of andesite

6 — Andesite, basalt, breccia and tuff; small bodies of 9

5 — Greywacke, arkose, conglomerate, slate, tuff, breccia

PRE-LAGUNA

2 — Greywacke, argillite, tuff; minor volcanic rocks

4 — Garnetiferous gneisses and schists derived from 2

1 — Andesite, basalt, tuff and breccia; minor sedimentary beds; derived schists and gneisses

3 — Staurolite schist derived from 2

A — Granite, derived gneiss; garnetiferous gneisses derived from 2

NOTE 1: This area is underlain by greywacke and conglomerate that are believed to be of post-Laguna age but may be in part Laguna rocks.

Area of few or no rock outcrops

Bedding (inclined, vertical, overturned)

Bedding (direction of dip known, upper side of bed unknown)

Anticlinal axis

Synclinal axis

Fault

Glacial striæ

Mineral occurrences (Gold; Copper-Nickel) ×Au, ×Cu-Ni

Road well travelled

Road not well travelled

Bush road, trail, and portage

Building

School

Mine shaft

Township boundary (surveyed)

Township boundary (unsurveyed)

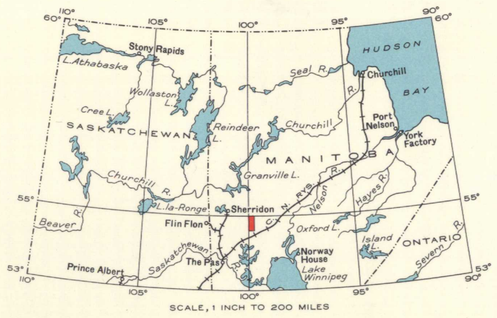
Stream (position approximate)

Fall and rapid F. R.

Height in feet above Mean sea-level 840′

Geology by J.E. Armstrong, 1939.

Base-map prepared by the Topographical Survey, 1940, from Federal Government maps published in 1928, and 1936, and from aerial photographs by the Royal Canadian Air Force 1924, and 1925. Cartography by the Drafting and Reproducing Division, 1941.



SCALE, 1 INCH TO 200 MILES

100°00′ 55′ 50′ 99°45′ — 55°00′ — 54°40′ — 45′

TP.69, R.17 · TP.69, R.16 · TP.68, R.17 · TP.68, R.16 · TP.67, R.17 · TP.67, R.16 · TP.66, R.17 · TP.66, R.16 · TP.65, R.17 · TP.65, R.16

Wolverton Lake · Johnson Lake · Herblet Lake · Wekusko Brook · Snow Lake · Snow Creek · Anderson Lake · Snow Bay · Herb Bay · Wedge Pt. · Woosey Island · Rice Island · Berry Bay · Berry Cr. · Taylor Bay · Wekusko Falls · Grass River · Tramping Lake · Wekusko Lake · Crowduck Bay · Ballard I. · Dog I. · Campbell I. · Bingo Shaft · LAGUNA MINE · Lucky I. · Herb Lake · Note 1 · McCafferty lift over · Puella Bay · Rex Lakes · Jean Lake · Goose Bay · Hayward Creek · Broad Bay · Buzz Lake · Unexplored

Au · Cu-Ni · Cu-Ni×

100°00′ PUBLISHED, 1941.

MAP 665A

WEKUSKO

MANITOBA

Scale, ~~63,360~~ 1 or 1 Inch to 1 Mile

Miles 0 1 2 3

Approximate magnetic declination, 15° East.

DESCRIPTIVE NOTES

The pre-Laguna volcanic and sedimentary formations are mapped separately, except in places where repeated minor intercalations of the two rock types have necessitated the drawing of arbitrary boundaries. The volcanic rocks (1), are mainly andesites and basalts that have been altered, in most places, to dark green hornblende schist or to distinctly banded, hornblende-feldspar gneiss. In several places south of Snow Creek elongated pillows were observed. Intercalated with the lavas are assemblages of tuff, breccia, and agglomerate. These are largely altered to banded, garnetiferous, hornblende-feldspar gneiss and to garnetiferous, hornblende schist. The pre-Laguna sedimentary rocks consist of interbedded greywacke and argillite (2) and their metamorphosed equivalents (3, 4). Greywacke beds range from 3 inches to 10 feet thick, and commonly grade upward into argillite. Outcrops often show good crossbedding. Argillite beds are a fraction of an inch to a foot thick. In most parts of the map-area they constitute 10 to 25 per cent of the sedimentary rocks, but at Herblet Lake they represent less than 5 per cent of these rocks.

In the northwestern part of the map-area the pre-Laguna rocks have been folded into a syncline whose axis follows, roughly, the south shore of the west arm of Herblet Lake. South of the axis the uppermost, pre-Laguna rocks comprise about 5000 feet of metamorphosed greywacke and minor argillite. Conformably below them lie about 1500 feet of interbedded tuffs, breccias, and lavas. These are underlain by 2000 feet of altered sedimentary rocks, chiefly greywacke. At greater depths the succession could not be determined with certainty, due to a lack of reliable structural data. North of the synclinal axis the pre-Laguna rocks are believed to be folded, along the northwest arm of Herblet Lake, into a northwesterly-trending anticline made up of at least three bands of sedimentary rocks and two of volcanic rocks. These bands could not be correlated with those on the southern limb of the Herblet Lake syncline. The belt of interbedded greywacke and argillite extending from Taylor and Berry Bays of Wekusko Lake northeast to Wedge Point, Herb Bay, and Wekusko Brook is folded into a succession of anticlines and synclines 1000 to 4000 feet wide. The presence of the fault less than a mile west of Snow Bay is indicated by shearing, by offsetting of formations, and by a divergence of 30 degrees in the strikes of the foliations of the rocks on opposite sides of the fault. Important faulting may also mark the contact between the highly altered volcanic rocks, along the northwest shore of Snow and Berry Bays, and the relatively unaltered sedimentary rocks to the southeast. The fault along Hayward Creek valley probably swings or branches to extend northeasterly along Goose Bay and thence across Wekusko Lake and up Crowduck Bay. Such a fault would serve to explain why the pre-Laguna beds along the north shore of Goose Bay appear to overlie the Laguna volcanic rocks south of the bay. It would also account for the marked difference in metamorphism between the Laguna and pre-Laguna rocks on opposite sides of Crowduck Bay.

The Laguna series has been named from a conformable succession of sedimentary and volcanic rocks well exposed in the vicinity of Laguna mine. In the area lying between Crowduck and Puella Bays, the series occupies a northeasterly-trending syncline. Andesitic and basaltic lavas (6) with interbeds of rhyolitic rocks (8), and of laminated feldspathic chert and greywacke (7) occupy the central part of the structure. Sedimentary beds (5) underlie the lavas and outcrop on the northwest limb of the fold. Elsewhere in the map-area the structure of the Laguna rocks is not known. At Herb Lake settlement a band of greywacke (5), 200 feet thick, is exposed and thickens to 500 feet near Laguna mine. Many outcrops show good crossbedding. Conglomerate (5) forms a well-exposed band that narrows from 300 feet thick, at Laguna mine, to 15 feet, at the settlement. Pebbles in it are well rounded and up to 5 inches in diameter. They are chiefly of quartz and acid volcanic rocks but include a few of granite and basic volcanic rocks. Overlying the conglomerate, to the east of Laguna mine, is a fine-grained, well-bedded tuff (5) composed of tiny fragments of acid volcanic rocks, quartz, and dark schist. The tuff grades upward into coarse volcanic breccia (5) composed almost entirely of angular fragments of rhyolite. Rhyolite tuffs and breccias also outcrop as a narrow band within the overlying lavas (6) for a mile northeast of McCafferty lift over. The lavas (6) of the Laguna series are dark grey to green rocks varying from fine-grained, slightly schistose types to coarse-grained varieties resembling diorite. Locally the flows are porphyritic, with lath-shaped phenocrysts of feldspar up to ½ inch long. Pillow structures were observed in several localities. Many of the lavas hold numerous amygdules of quartz. Beds of thinly laminated sediment (7) lie between some of the andesitic flows (6). Single bands of laminated rock vary from 10 to 100 feet thick, and alternate with thin flows of andesite and sills of lamprophyre to form assemblages up to 700 feet thick. Bedding laminations are from one to three inches thick and consist of layers of pink and light grey, cherty material alternating with darker coloured layers of greywacke.

Many bodies of biotite dacite and dacite breccia (9) are associated with the Laguna rocks. They are usually readily separated from the sedimentary formations but where they occur in areas of volcanic rocks they are not easily distinguished and south of Puella and Goose Bays have not been mapped separately. Some biotite dacite bodies were observed to cut across Laguna sedimentary beds, indicating that they are of intrusive origin. In places biotite dacite passes gradually into a dacite breccia.

The intrusive quartz-feldspar porphyry (10) is much like the rhyolite of the Laguna series and is identical in appearance with the porphyritic rhyolite fragments that occur in the tuff and breccia (5 and 8) of this series. The resemblance is such as to suggest that the porphyry is genetically related to the Laguna volcanic rocks.

The post-Laguna sedimentary rocks (11) occupy a syncline. The lowest member is a coarse conglomerate and is best exposed on the point at the junction of the two arms of Puella Bay. It is about 700 feet thick and includes a few beds, up to 25 feet thick, of crossbedded greywacke. Pebbles and boulders are sub-rounded to rounded and as much as 3 feet in diameter. They decrease in size towards the top of the conglomerate. The pebbles consist mainly of rhyolite, quartz, quartz-eye granite, quartz-feldspar porphyry, and garnetiferous gneiss, and include a few of basic volcanic and other rocks. Overlying the conglomerate is about 1000 feet of crossbedded greywacke and arkose containing a few beds of conglomerate up to 6 feet thick. A second band of conglomerate and greywacke, about 800 feet thick, overlies the greywacke and arkose, and is succeeded by about 2,500 feet of crossbedded greywacke and arkose containing a little conglomerate.

The contact between the Laguna series and the post-Laguna sedimentary rocks was nowhere observed but, as mapped, the lower conglomerate of the younger series appears to overlie various Laguna formations. It also overlies dacite breccia along the northeast arm of Puella Bay. Further, horizons in the Laguna series do not parallel those in the post-Laguna beds but show a divergence, in plan, of about 20 degrees. As the pebbles and boulders of the lower, post-Laguna conglomerate consist largely of rhyolitic rocks, the conglomerate is probably basal. These facts suggest an unconformity between Laguna and post-Laguna formations. There is also evidence to indicate that the post-Laguna sedimentary rocks (11) overlie quartz-feldspar porphyry (10) unconformably. This is based on the similarity of the porphyry to pebbles in the basal conglomerate; on the absence of porphyry cutting the post-Laguna rocks; and on the possibility that the porphyry may be genetically related to the rhyolites of the Laguna series.

Dykes, stocks, and sill-like bodies of dark green, medium to coarse grained, amphibolite and plagioclase amphibolite (11) intrude pre-Laguna rocks. The borders of the larger bodies are commonly schistose and contact relations with enclosing formations are obscure. At least 95 per cent of the smaller bodies is amphibole, but the larger bodies may contain up to 35 per cent plagioclase feldspar.

The quartz gabbro (13a) exhibits minor variations in composition. It grades into diorite in many places but no areas large enough to be mapped as such were observed. Quartz diorite and granodiorite (13b) form bodies in which the granodiorite grades into and is bordered by quartz diorite. Contacts of the granitic intrusives (13, 14) with older rocks are, in most places, sharply defined. In certain areas, as east of Herblet Lake, wide contact zones exhibit a mixture (A) of granitic and variously metamorphosed rocks but indicate no continuous gradation across the zones. An area of such mixed rocks, between Anderson and Wekusko Lakes, may represent a roof zone of a granite batholith. The contact breccia (14a) differs in that it consists of angular blocks of lavas, sediments, diorite, and gabbro enclosed by granite. The included blocks range from a few inches to many feet long and the breccia as a whole contains less than 50 per cent granitic material. Blocks of gabbro in the breccia indicate that the gabbro is older than the granite.

Mineralized quartz veins in the Wekusko Lake area were first described by J. B. Tyrell in 1900. Active prospecting began in 1914 when gold-bearing quartz veins were discovered on the east shore of Wekusko Lake about a mile north of Puella Bay. In the next few years many other deposits were found in this vicinity and, between 1918 and 1925, underground work was done on several of them. In this period the Laguna (Rex) mine produced gold to the value of about $150,000. Minor production is also recorded from two other properties. None of these ventures was profitable and, except for sporadic prospecting, the area saw little further mining activity until 1934 when the Laguna mine was reopened. Production commenced in August 1936 and continued until December 1939, during which period gold to the value of about $1,850,000 was mined. The property was then closed due to a decrease in the grade of ore which made further operations unprofitable. Diamond drilling and surface work have been done on several other properties since 1934 but no production has resulted.

The gold deposits between Crowduck and Puella Bays occur as quartz veins lying wholly, or in part, within stocks of quartz-feldspar porphyry (10). Most of the veins range in width from a few inches to 1½ feet and have been traced along their strike for several hundred feet. The vein at Laguna mine averages 2½ feet wide, attains a maximum width of 6 feet, and has been traced for 2100 feet. Arsenopyrite is the most abundant metallic mineral. It occurs in the quartz veins as scattered, small crystals or as parallel streaks of finely crystalline sulphide. It also forms disseminated crystals in the wall-rocks. Other metallic minerals include pyrite, galena, sphalerite, chalcopyrite, pyrrhotite and native gold. Accessory gangue minerals are tourmaline, feldspar, muscovite and a carbonate. The veins are probably related in origin to the quartz-feldspar porphyry.

The gold deposit west of Rex Lakes consists of mineralized quartz veinlets and lenses and occurs along joint and foliation planes in granite. The veins carry sparsely disseminated pyrite, arsenopyrite, and chalcopyrite. A little free gold was observed. Other gold deposits in the map-area occur as mineralized quartz lenses and stringers along joint and shear zones in pre-Laguna gneisses. The maximum observed width of these mineralized zones is 15 feet, and at the property west of Wolverton Lake such a zone is exposed for 800 feet.

Nickeliferous pyrrhotite and chalcopyrite have been found along joint and shear zones in quartz gabbro (13a). The larger bodies of sulphide-bearing rock are from 40 to 75 feet wide, and 100 to 300 feet long. Their average metal content is low.

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