Rocks of Ontario ᐅᓇᑎᐅ ᐊᑭᒃ ᐊᓯᓂᒃ

ONTARIO BENEATH YOUR FEET ᐅᓇᑎᐅ ᐊᑭ ᑲᑕᑯᑲᑕᒪᓇ

GEOLOGY IS THE STUDY OF THE EARTH • **MINERALS** ARE SOLID MATERIALS THAT OCCUR NATURALLY • **ROCKS** ARE MADE UP OF TWO OR MORE MINERALS

ᒥᐅ·ᐁ ᐊᓯᓂ·ᐃ ᓇᓇᑕ·ᐃᑭᑫᓇᒋᑫ·ᐃᓇ ᑲᐃᓱᒋᑫᓇᓂ·ᐊᒃ ᐊᑭᒃ • ᐊᓯᓂᒃ ᒪᖅᑲ·ᐊᐱᑭᓯ·ᐊᒃ ᐁᐱᒥᐅᓱᐅ·ᐊᒡ • ᐅᑯ ᑎᓄ·ᐃ ᐊᓯᓂᒃ ᓂ·ᖓᒃ ᑫᒪ ᐊ·ᐊᓱᒥ ᐃᓱᒪᒪᔭᑭᓇᑯᓯ·ᐊᒡ

Rock Types ᑎᓄ·ᐃ ᐊᓯᓂᒃ

Igneous rocks cool from magma (inside the Earth) or lava (outside the Earth).

ᐃᒃᑐᔭᔅ

ᐅᑯ ᑎᓄ·ᐃ ᐊᓯᓂᒃ ᑲᓂᑕᑲᐱᑭᓱᓄ·ᐊᒡ ᐊᓇᒪᑭᒃ ᑲᔭ·ᐊᒡ ᕿᒪ ·ᐊᑭᑕᑲᒥᑲᒃ ᑲᐱᔅᑭᒋᒋ·ᐊᒃ ᑲᐃᖅᑯᒐ·ᐊᑲᒥᓯᒡ ᐊᓯᓇ.

Metamorphic rocks are rocks that have been changed by heat and/or pressure.

ᒥᑕ·ᒪᕐᐱᒃ

ᐅᑯ ᐊᓯᓂᒃ ᐊᓇᒋᓇᑯᓯ·ᐊᒃ ᑲᑭ ᑭᓴᐱᑭᓯ·ᐊᒡ ᕿᒪ ᑲᔭ ᑲᑭᒪᑯᖅᑯᓯ·ᐊᒡ.

Sedimentary rocks are formed from bits of other rocks or shells of marine life laid down in water bodies.

ᑲᒪ·ᐊᓇᑐ·ᐊᐱᑭᖅᑲᒡ

ᐅᑯ ᑎᓄ·ᐃ ᐊᓯᓂᒃ ᐱᒥᒪ·ᐊᓇᑐ·ᐊᐱᑭᑕ·ᐊᒃ ᑯᑕᑭᔭᒃ ᐊᓯᓂᒃ ᕿᔭᒃ ᐊᓇᒥᓇᑎᒪ ᑲᐊᔭ·ᐊᒡ.

Quartzite
Hard, light-coloured rock changed from sandstone under high heat and/or pressure.

·ᑲᕐᑕᔭᔅᑕ

ᒪᑲᑌ·ᐊᐱᑭᓯ, ·ᐊᐱᖅᑲᐱᑭᓯ ᑲᑭᐅᓇᒋᒡ ᑲᓄᓯᑭᔅ ᐊᓯᓇ ᕿᑭ ᑭᒋᑭᓴᐱᑭᓯᒡ ᕿᒪ ᕿᑭᒪᑯᖅᑯᓯᒡ.

Rhyolite
Light-coloured rock, with small mineral grains, cooled from lava erupted from volcanoes.

ᕋᔭᔪᓕᔭ

·ᐊᐱᖅᑭᓯ ᐊᓯᓇ ᐊᑦᑕᑯᕐᐊᓇ ᑐ·ᐊᓇᑯᓇ, ᑭᐅᓇᒋᔭ·ᐊᒃ ᑲᐱᔅᑭᒋᒋ·ᐊᒃ ᑲᐃᖅᑯᒐ·ᐊᑲᒥᓯᒡ ᐊᓯᓇ ᐊᓇᒥ·ᐊᒋᒃ ᑲᐸᖅᑭᒐᒃ.

Limestone
A light coloured rock formed from the remains of animals and shells on the bottom of a warm, shallow ocean.

ᓄᓯᑭᐊᓯᓇ

·ᐊᐱᖅᑲᐱᑭᓯ ᐊᓯᓇ ᑲᑭᐅᓇᒋ ᐅᑦᐅᒐ ᐊᐊ·ᐃᓱᒃ ᑲᔭ ᐁᔭᒃ ᑲᐊ·ᑲᓇᒋᓄ·ᐊᒐ ᐊᓇᒥᓇᑎᒪ ᑲᐃᑦᑭ·ᓱᑲᒥᒃ ᑭᒋᑲᒥᒃ.

Sandstone
A light coloured rock formed from grains of sand.

ᑐ·ᐊᓇᑯᐊᓯᓇ

ᑲ·ᐊᖓᐊᐱᑭᓯᒡ ᐊᓯᓇ ᑲᑭᐅᒋᐅᑦᐅᒐ ᑐ·ᐊᓇᑯᒃ.

Shale
A light- to dark-coloured rock, with very small mineral grains, formed from silt, clay or mud. It easily breaks into flat pieces.

ᖓᓄ

ᑲ·ᐊᖓᐊᐱᑭᓯᒡ ᐱᓂᖅ ᑲᒪᑲᑌ·ᐊᐱᑭᓯᒡ ᑲᔭ ᑭᑲᑯᕐᐊᒃ ᑐ·ᐊᓇᑯᓇ, ᑭᐅᒋᐅᑦᐅᒪᑲᓇ ·ᐊᐱᑲᓂᒃ ᕿᒪ ᐊᑦᑭᑲᒃ. ·ᐊᕐᑯ·ᐃ ᐸᐸ·ᕐᐊᐱᑭᔭ.

Granite
Rock with larger pink, black and white mineral grains formed by magma cooling under the Earth's surface.

ᐊᓯᓂ·ᐊᑕ·ᐊᒃ

ᐊᓯᓇ ᑲᒪᒪᓇᓯᓇ·ᐊᐱᑭᓯᒡ ᒥᑦᑯᓯ, ᒪᑲᑌ·ᐃᓯ ᑲᔭ ·ᐊᐱᓯ ᑲᔭ ᐅᓇᒋᐅᑦᐅ ᑲᓂᑕᑲᐱᑭᓯ·ᐊᒡ ᐊᓇᒪᑲᒥᑲᒃ ᑲᑭᐱᐅᒋ·ᐊᑭᑕᑲᒥᑭ·ᐊᒡ.

Basalt
A dark-coloured rock, with small mineral grains and pillow-like shapes, that formed from lava erupted under water from volcanoes.

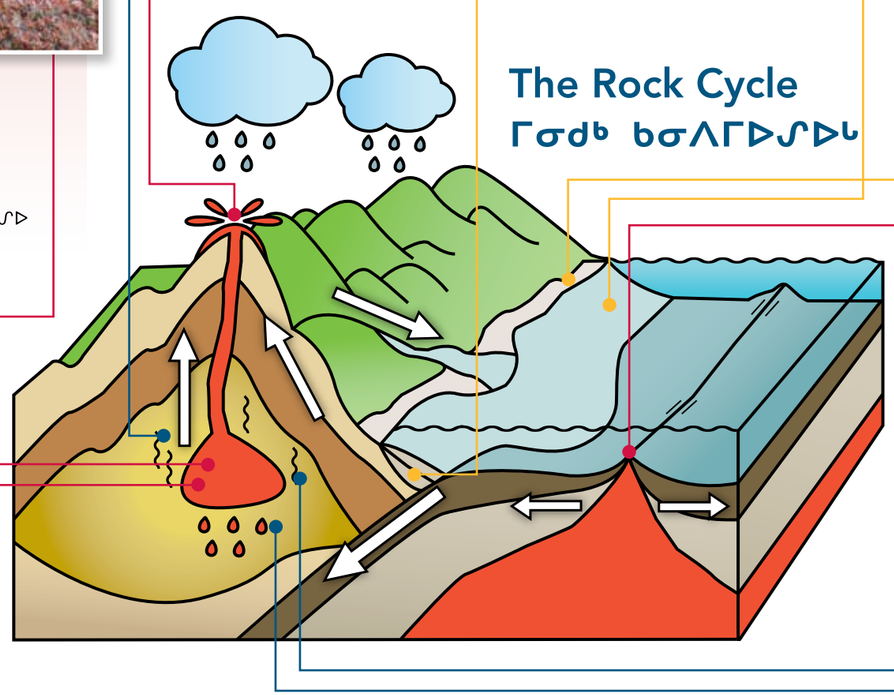
ᐸ·ᔭᓕᑕ

ᒪᑲᑌ·ᐊᐱᑭᓯ ᐊᓯᓇ, ᑭᑲᑯᕐ ᑐ·ᐊᓇᑯᓇ ᑲᔭ ᐊᐱ·ᕐᐊᒧᓇ ᐃᓇᐱᑭᓯ·ᐊᒃ, ᑭᐅᒋᐅᑦᐅ ᐊᓇᒥᓇᑎᒪ ᑲᑭᐅᒋᐸᖅᑭᒐᒃ ᐃᖅᑯᒐ ᐊᓯᓂ·ᐊᐳ ᐊᓇᒥ·ᐊᒋᒃ.

Gabbro
Dark rock with larger mineral grains formed by magma cooling under the Earth's surface.

ᑲᐸᕈ

ᒪᑲᑌ·ᐊᐱᑭᓯ ᐊᓯᓇ ᑲᔭ ᑐ·ᐊᓇᑯ·ᐊᓇ ᑲᑭᐅᓇᒋ ᐅᑦᐅᒪᑲᒃ ᐊᓇᒪᑲᒥᑲᒃ.

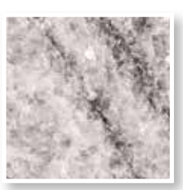


The Rock Cycle ᒥᓂᑯᒃ ᑲᓂᐱᒥᐅᑦᐅᒐ

Gneiss
Rocks showing multi-coloured layers formed under high heat and/or pressure.

ᓂᓯ

ᐅᑯ ᑎᓄ·ᐃ ᐊᓯᓂᒃ ᑲᓇᓇᑲ·ᐃᓇᑯᓯ·ᐊᒡ ᑲᔭ ᐊᑭᑕ·ᐊᐱᑭᓯ·ᐊᒡ ᑭᐅᒋᐅᑦᐅ·ᐊᒃ ᑲᑭᓴᐱᑭᓯ·ᐊᒡ ᕿᒪ ᑲᒪᑯᖅᑯᓯ·ᐊᒡ.



Marble
Sparkly light-coloured rock changed from limestone under heat and/or pressure.

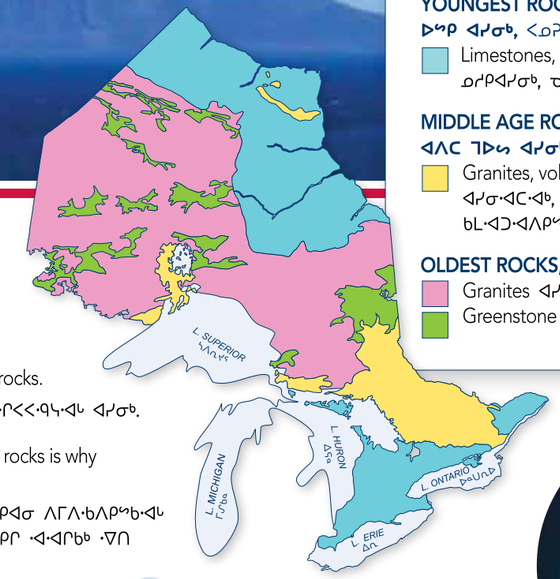
ᒪᕐᐳ

ᑲ·ᐊᖓᐊᐱᑭᓯᒡ ᐊᓯᓇ ᑭᐅᓇᒋ ᓄᓯᑭᐊᓯᓂᑲᒃ ᑲᑭᓴᐱᑭᓯᒡ ᕿᒪ ᑲᒪᑯᖅᑯᓯ·ᐊᒡ.

English and Ojibway

Rocks of Ontario ᐅᓇᑎᐅ ᐊᑭᒃ ᐊᓯᓂᒃ

THROUGH FIRE, EARTH AND WATER ᐃᐃᒪ ᐃᓇᑭ ᐃᖅᑯᑎᒃᒃ, ᐊᑭᒃᒃ ᒃᓴ ᓂᐱᒃᒃ



YOUNGEST ROCKS, Phanerozoic
ᐅᖅᑭ ᐊᓯᓂᒃ, ᐸᓄᑭᓯᐃᒃ
- Limestones, sandstones
  ᓄᓯᑭᐊᓯᓂᒃ, ᓀᐊᑯᐊᓯᓂᒃ

MIDDLE AGE ROCKS, Proterozoic
ᐊᐱᑕ ᒥᐅᓴ ᐊᓯᓂᒃ, ᐸᕈᑐᕈᓯᒃ
- Granites, volcanic rocks, sedimentary rocks
  ᐊᓯᓂᐊᑕᐊᒃ, ᐳᓚᑲᓂᒃ ᐊᓯᓂᒃ, ᑲᒪᐊᑐᐊᐱᑭᖅᑲᒃ ᐊᓯᓇ

OLDEST ROCKS, Archean ᒥᐅᓴ ᐊᓯᓂᒃ, ᐊᕐᑭᐊᓇ
- Granites ᐊᓯᓂᐊᑕᐊᒃ
- Greenstone rocks ᓇᓂᔭᐊᓯᓂᒃ

Ontario Geological Timeline ᑲᑭᐱᐅᓇᒋ ᒪᑕᓄᑲᒋᑲᒐᒃ ᐅᓇᑎᐅ ᐊᓯᓂᐧᐃ ᓇᓇᑕᐧᐃᑭᑫᒋᑫᐧᐃᓇ

OLDEST ROCKS (age, million years) ᒥᐅᓴ ᐊᓯᓂᒃ (ᑕᓯᐱᐳᓇ, ᒥᑦᓴᓇ ᑕᓯᐱᐳᒃᐧᐃᓇ)

4600 ····· 4000

HADEAN
Oceans of Fire
ᐊᑎᐊᓇ
ᑲᐃᖅᑯᑎᐧᐊᒃ
ᑭᒋᑲᒥᓇ

The Sudbury Structure: A large meteorite hit the Earth and created the Sudbury impact crater.

ᓴᑦᐯᓇ ᐧᐊᓇᐃᑲᓇ: ᒪᔭ ᐃᐃᒪ ᐊᑭᑲᒃ ᑭᓯᐸᓇᑭᓯᓄᑯᐸᓇ ᐊᓇᓇᒃ ᒥᑕᖅ ᑲᐅᒋᐃᓯᓂᑲᑎᒃ ᓴᑦᐯᓇ ᐧᐊᓇᐃᑲᓇ.

2500

ARCHEAN
Life is Small
ᐊᕐᑭᐊᓇ
ᐊᑲᓯᓇ ᐱᒪᑎᓯᐧᐃᓇ

Canadian Shield:
Large region made of granites and greenstone rocks – the oldest rocks and middle age rocks of Ontario.

ᑲᓂᑎᔭᓇ ᐊᓯᓇ ᑲᒥᓯᑎᐊᐱᑭᓱᒃ: ᒥᓯᑎᐊᐱᑭᓱᓇ ᐊᓯᓇ ᑕᐱᖅᑯ ᐊᓯᓂᐧᐊᑕᐧᐊᒃ ᑲᓴ ᐊᓇᒪᑲᒥᒃ ᐊᓯᓂᒃ – ᒥᐅᓴ ᐊᓯᓂᒃ ᑲᓴ ᐊᐱᑕ ᒥᐅᓴ ᐅᐅᒪ ᐅᓇᑎᐅ.

Granites: The first crust.

ᐊᓯᓂᐧᐊᑕᐧᐊᒃ: ᒪᐧᐊᒃ ᓂᑕᒪ ᑲᓂᒪᖅᑲᐧᐃᓯᒃ

Greenstone Rocks:
Formed from Ontario's first volcanoes – often contain valuable mineral resources.

ᓇᓂᔭᐧᐊᓯᓂᒃ: ᒥᐃᒪ ᑲᑭᐅᒋᐅᓱᐅᐧᐊᒃ ᒪᐧᐊᒃ ᓂᑕᒪ ᐅᓇᑎᐅ ᐊᓇᒥᐧᐊᒋᒃ ᐃᖅᑯᑎ ᑲᐸᑭᖅᑎᒃ – ᑭᔭᐧᐊᒃ ᓇᓂᔭᐧᐊᓯᓂᒃ.

1850 ····· 541

PROTEROZOIC
We Can Breathe
ᐸᕈᑐᕈᓯᒃ
ᑲᑭᐸᑭᑕᓇᒧᒥᓇ

Emerging Earth: The land was pushed and pulled into pieces, creating oceans, volcanoes and mountains. Early life created oxygen.

ᑲᑭᐊᓂᒧᑭᒪᑲᒃ ᐊᑭ: ᐊᑭ ᑭᐸᐸᐧᒥᐱᖅᑯᑎ ᐅᑭᐊᓂᑭᐱᖅᑭᓴᒃ, ᐅᑭᐊᓂ ᐅᓯᐅᒪᑲᑭᓇ ᑭᒋᑲᒥᓇ, ᐊᓇᒥᐧᐊᒋᓇ ᑲᐸᖅᑭᑎᑭᓇ ᑲᓴ ᐧᐊᒋᓇ. ᓂᑕᒪ ᐱᒪᑎᓯᐧᐃᓇ ᑲᓂᑕᐧᑲᒃ ᑭᐊᓂᐊᔭᒪᑲᓇ ᑲᐅᒋᐸᑭᑕᓇᒧᓇᓂᐧᐊᒃ.

541 ····· 252 ····· 66

PHANEROZOIC *Life Gets Big* ᐸᑐᕈᓯᒃ ᒪᒋᑭᓇ ᐱᒪᑎᓯᐧᐃᓇ

Paleozoic ᐸᓗᐅᓯᐃᒃ						Mesozoic ᒥᓯᓯᐃᒃ			Cenozoic ᓴᓄᓯᐃᑦ		
Cambrian	Ordovician	Silurian	Devonian	Carboniferous	Permian	Triassic	Jurassic	Cretaceous	Paleogene	Neogene	Quaternary
ᑲᒪᐸᓇᔭᓇ	ᐅᕐᑐᐱᓂᓇ	ᓯᓗᓇᔭᓇ	ᑎᐳᓂᔭᓇ	ᑲᕐᐳᓂᐳᓇᔅ	ᐱᕐᒥᔭᓇ	ᑕᓇᐊᓯᒃ	ᒍᕋᓯᒃ	ᑲᖑᐃᓂᔅ	ᐸᓕᐅᒋᓇ	ᓂᐅᒋᓇ	ᐧᑲᑐᕐᑐᓇ

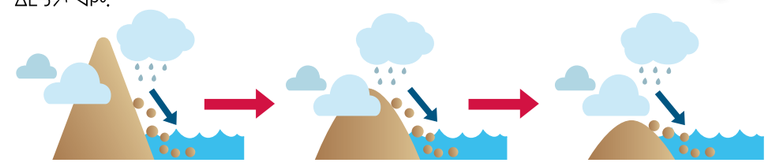
YOUNGEST ROCKS (Today) ᐅᖅᑭ ᐊᓯᓂᒃ (ᓄᓇᑯᒪ ᑲᑭᓂᑲᒃ)

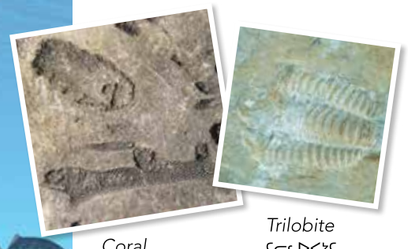
Weathering: Wind, water, ice, heat and pressure break down rocks.

ᑲᐊᐃᓂᐧᐅᐸᒃ: ᑲᓄᑎᓇᒃ, ᓂᐱᒃ, ᒥᐧᑲᒥᒃ, ᑲᑭᓂᑎᒃ ᑲᓴ ᑲᒪᑯᖅᑯᑎᒃ ᑲᐅᒋᐸᐸᐧᕿᓴᐧᐊᒃ ᐊᓯᓂᒃ.

Erosion: Movement of broken rocks. This wearing away of the rocks is why Ontario no longer has mountains as high as the Himalayas.

ᑲᑭᐱᖅᑲᐱᑭᖅᑲᒃ: ᑲᑭᐊᓂ ᐱᒥᐧᐊᑲᐧᐃᖅᑲᐧᐊᒃ ᑲᐱᐧᑲᐱᑭᖅᑲᐧᐊᒃ ᐊᓯᓂᒃ. ᑲᑭᐊᓂ ᐱᒥᐱᐧᑲᐱᑭᖅᑲᐧᐊᒃ ᐊᓯᓂᒃ ᒥᑕᖅ ᐅᓇᑎᐅ ᑲᐅᒋ ᑕᐧᑲᓯᓄᒃ ᑭᒋᐧᐊᒋᓇ ᑕᐱᖅᑯ ᑲᐃᓂᓇᐧᑲᒃ ᑲᑭᒋ ᐧᐊᐧᐊᒋᑲᒃ ᐧᐅᑎ ᐃᒪᓗᔭᐧ ᐊᑭᒃ.





Coral
ᐧᑲᕐᓚ

Trilobite
ᑕᓕᓚᐅᐸᔭᑦ

Tropical Seas: Warm, shallow ancient seas periodically covered most of Ontario, leaving behind many animal and plant remains seen today as fossils.

ᐱᓂᓂᒃ ᑲᓂᑭᓇᐧᐊᑲᒥᒃ ᓯᐱᓇ: ᑭᑲ ᒥᓯᐧᐅ ᐅᓇᑎᐅ ᑭᐱᒧᖅᑭᐱᐧᐊᓇ ᐱᓂᓂᒃ ᐅᑭᑭᓇᐧᐊᑲᒥᒃ ᓂᐱ, ᐱᓂᖅ ᑭᐊᓂ ᐃᖅᑲᑎ ᐸᑎᓇᑐᓇ ᑲᐧᐊᐸᒋᑲᑎᑭᓇ ᐊᐊᐧᐃᓂ ᐅᑲᓇᓇ ᑲᓴ ᑭᑎᑲᓇᓇ ᐅᒪᓯᓇᐧᐊᐱᑭᓯᓇ ᓄᑯᒪ ᑲᑭᓂᑲᒃ.

Ice Ages: During the most recent ice age, glaciers covered most of Ontario, up to 4 km thick! As glaciers moved forward, they carved out the Great Lakes. Evidence of the melting of glaciers is seen today on land as striations and erratic boulders.

ᑲᑭ ᒥᑯᒥᐧᐊᑲ: ᒪᒋᖅ ᑲᑭ ᒥᑯᒥᐧᐊᑭᐸᓇ, ᑭᑲ ᒥᓯᐧᐅ ᐅᓇᑎᐅ ᑭ ᑭᒋᑦ ᒥᐧᑲᒥᐧᐊᓇ ᑭᑲ 4 ᑭᓚᒥᑐᕐᖅ ᐊᐱᒋᑭᐸᑭᓯ. ᐊᐸᓐ ᑲᐊᓂᐱᒥ ᐧᐊᑲᐧᐃᖅᑲᖅ ᑭᒋᒥᐧᑲᒪ ᒥᐃᒪ ᑲᑭᐊᓄᒋ ᐅᓗᐅᒪᑲᑭᓇ ᑭᒋᖅᑲᐃᑲᓇᓇ. ᓄᓇᑯᒪ ᓇᐧᑲᓇ ᑲᑭᐱᓗ ᓇᓂᑭᓯᖅ ᑭᒋᒥᐧᑲᒪ ᑲᐃᓗ ᑕᖅᑲᐱᑭᓯᐧᐊᖅ ᐊᓯᓂᒃ ᑲᓴ ᑲᑭᒪᒪᒋᐧᐅᐱᖅᑯᓯᐧᐊᖅ ᑭᒋᐊᓯᓂᒃ.

Erratic Boulder: Boulder moved to different area by glaciers. The rock type of the erratic boulder and the rock under the boulder are often different.

ᑲᑭᒪᒪᒋᐧᐅᐱᖅᑯᓯᐧᐊᖅ ᐊᓯᓂᒃ: ᑭᒋᐊᓯᓂᒃ ᑭᒪᒪᒋᐧᐅᐱᖅᑯᓯᐧᐊᒃ ᑲᑭ ᑭᒋᒥᑯᒥᐧᐊᒃ. ᐅᑯ ᑎᓄᐧᐃ ᑭᒋᐊᓯᓂᒃ ᑲᑭᒪᒪᒋᐧᐅᐱᖅᑯᓯᐧᐊᖅ ᑲᓴ ᐊᓇᒪᑲᒥᒃ ᑲᑭᐊᔭᐧᐊᖅ ᐊᓯᓂᒃ ᐸᐸᑲᓂᓯᐧᐊᒃ.

Striations: Long, straight parallel lines or gouges formed as glaciers scratched the underlying rock.

ᑲᑲᖅᑲᐱᑭᖅᑲᐧᐊᒃ: ᑭᑲᑲᖅᑲᐱᑭᖅᑯᓯᐧᐊᒃ ᐊᓇᒥᓯᑯᒪ ᑲᑭᔭᐧᐊᐸᓇ ᐊᓯᓂᒃ ᑲᓴ ᑭᐸᐸᐧᕿᐊᐱᑭᖅᑯᓯᐧᐊᒃ.