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Passer à
L'ACTION

Uqauhirnit
HAVAAMUT

From Words
TO WORK



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Pivalliyuliyikkut Ingilrayuliyitkullu
Department of Economic Development & Transportation
Ministère du Développement économique et des Transports



EDT's Artisan Carving Stone Program: New Resources for Nunavut's Arts Industry

2010-2013 NU Carvingstone Deposit Evaluation Program

2014 Nunavut Mining Symposium, Iqaluit

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Passer à
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*Highlights from a Four-Year Evaluation
of Carving Stone Resources in Kitikmeot, Kivalliq
and Qikiqtaaluk Regions, Nunavut, Canada*

[Mike Beauregard, NU Carving Stone Program]

Minerals & Petroleum Resources Division

Dept. of Economic Development & Transportation

Head Office in Iqaluit and

Resident Geologist Offices in Arviat and Cambridge Bay



Walter Gibbins (~1991) c/o Moira Cameron,
Yellowknife, NT



John Ivalutanar (2010)



Eric Prosh (2013)

*This Nunavut carving stone presentation is dedicated to the memory of
Elder carver **John Ivalutanar** of Repulse Bay
INAC geologist **Walter Gibbins** of Yellowknife
EDT-MPR director and geologist **Eric Prosh** of Iqaluit*

John Ivalutanar had a lifelong commitment to finding and sharing soapstone.
Walter Gibbins pioneered carver+geologist visits during his years devoted to soapstone.
Eric Prosh advanced and promoted geoscience for all Nunavutmiuts.

The Hamlets & Sponsors Who Made it Possible

We thank the EDOs, SAOs, Hamlet Councils and Mayors throughout Nunavut for their assistance and acknowledge the support by sponsors and partners.



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BUREAU GÉOSCIENTIFIQUE
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Aboriginal Affairs and
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Kitikmeot Carvers and Guides of 2013



- - *guidance to and assistance at western mainland Arctic carving stone sites* - -

Alex Buchan, Joseph Kiyok

and **Clarence Klengenber**g of Cambridge Bay

elder **Paul Eliheetooq, Simon Hiqiniq, Paul Kammalik,**

Ben Putuguk and project carver **Uriash Puqignak** of Gjoa Haven

Levi Illuitok and **Bartholomew Nirlungayuk,**

Emiliano Qirnquq and **Alina Tungilik** of Kugaaruk

project carver **Bobby Anavilok,** **Robert Arablak, Roger Hikolok,**

Charlie Klengenberg and elder **Joseph Niptanatiak** of Kugluktuk

Simon Oleekatalik of Taloyoak

Kivalliq Carvers and Guides of 2010, 2011 & 2012



- - *guidance to and assistance at eastern mainland Arctic carving stone sites* - -

elder **John Ivalutanar** and carver **Paul Malliki**, Naujaat (Repulse Bay)

elder **Johnny Kataluk** and hunter **Mark Paniyuk**, Salliq (Coral Harbour)

elder **Elie Kimmaliadjuk**, Igluligaarjuk (Chesterfield Inlet)

elder **Sam Arualuk**, Tikirarjuaq (Whale Cove)

carver **Robert Hallauk**, Arviat

carver **Salomonie Pootogook** of Qamanittuaq (Baker Lake)

carver **Jocham Karvik** and quarrier **Harry Ittinaur** of Kangiqliniq (Rankin Inlet)

Qikiqtaaluk Carvers and Guides of 2011, 2012 & 2013



- - *guidance to and assistance at maritime Arctic and High Arctic carving stone sites* - -

Oluyuk Naqitarvik and **Paul Oqalluq** of Ikpiarjuk (Arctic Bay)
elder **Qimiataq Nunusuitaq**, **Ajaganyuk Shaa**, **Nuna Parr** and
former stone manager **Jimmy Manning** of Kinngait (Cape Dorset)
elder **Peter Paneak** and **Ilkoo Anguitjuak** of Kangiqtugaapik (Clyde River)
project carver **Looty Pijamini** of Ausuittuq (Grise Fiord)
Ike Angotialuk of Sanirjak (Hall Beach), project carver **Jerry Ell** of Iqaluit
elder **Eugene Ipkarnak** of Igluulik (Igloodik), **Sandy Akavak** of Kimmirut
Philipoosie Kooneeliusie and project carver **Jako Ishulutag** of Pangnirtung
elder **Markossie Audlakiak** and **Gary Arnaqq** of Qikiqtarjuak
Simon Idlout of Qausuittuq (Resolute Bay)
project carver **Jimmy Iqaluq Snr** and **Ippak Iqaluq** of Sanikiluaq

2010-2013 Nunavut Carving Stone Deposit Evaluation Program

With funding provided by the Governments of Nunavut and Canada, NCSDEP acted on the most pressing need as stated by carvers as being ***Find More Carvingstone in***

“Ukkusiksaqtarvik: The Place Where We Find Stone”

EDT’s 2007 Carvingstone Supply Action Plan.

Our 4 year program set out to verify the quality and size of traditional hand-mined soapstone gathering sites plus identify new carving stone deposits throughout Nunavut.



Large carving in Gjoa Haven



Coral Harbour’s Qilaliaqvik Deposit

Four Summers of Helicopter-Supported Fieldwork



*Arctic Bay carver
Oluyuk Naqitarvik
at Frabicius Fiord*

Guidance to Sites by Gatherers was Key to Success

From site visits flowed results such as rock type, deposit size, GPS location, photos, sampling for geochemical analysis and polished demonstration pieces. Local carvers collaborated with project carvers to determine artisan suitability of all soft stone seen.

Cultural soft stone sites throughout Nunavut have made the transition from traditional artifacts to modern community-based art industry.



Second Key to Program Success:

Winter-Gathered Sites Often Led Us To Summer-Visible Resources

Soapstone sites must be exposed above the snow in order to be found by hunters and travellers. Additional resources were confirmed upon visiting traditional sites during summer. *For example, being taken to boulders and finding a nearby deposit at Hall Beach's Kingajuak site.*

2010-2013 Nunavut Carving Stone Deposit Evaluation Program



*Gjoa Haven carvers
Ben Putuguk and
Paul Kammalik*

Consultation, Fieldwork and Results

206 traditional sites were brought forward by more than 140 persons from winter consultations at 25 communities. Another 20 sites were brought forward from geological mapping. 104 sites in all were visited during summer fieldwork. With guidance provided by 48 carvers and guides, 69 surface-accessible carving stone deposits of all sizes are now confirmed in the vicinity of 23 hamlets.

Information Gathered

Consultation information and fieldwork results are shared with:

- Communities, Regional Inuit Associations and NACA
- Territorial & Federal Government Agencies and other interests
- Final regional reports to be published in all languages of Nunavut
- Each community to be visited winter 2014-15 to report back results.



***Project carver
Jerry Ell***

***University student
Rebecca Pikor***



Additional resources include:

- Carving Stone Archives, Library in Arviat and future Website
- Project carver Jerry Ell who has worked on stone from all sites
- University of Manitoba MSc thesis student Rebecca Pikor

The main supplier of soapstone in the Arctic is Cape Dorset's exceptional quarry, up to 100 times bigger than any other quarry.



This is a large & long-term supply of Hand-Mined carving stone.

***Kangiqsukutaaq* supports perhaps 1/3 of Nunavut's carvers.**

Estimated average production of one million pounds per year during its lifespan

50,000 ton excavation in two pits with total length of 125 m (400 ft)

A tidewater place where soapstone has been extracted by pry-bar since the 1970s

The "South Baffin stone" used by the carvers of Cape Dorset, Kimmirut and Iqaluit

**Sanikiluaq carvers have the 2nd
and 3rd largest quarries in Nunavut**



Qullisajanniaviik, Sanikiluaq's active Main Quarry has produced ~2000 tonnes or 4.4 million pounds by plugger-and-feather method.

The former Aqituniavvik quarry, a long narrow and deep seam, was closed 15 years ago after producing ~1000 tonnes.

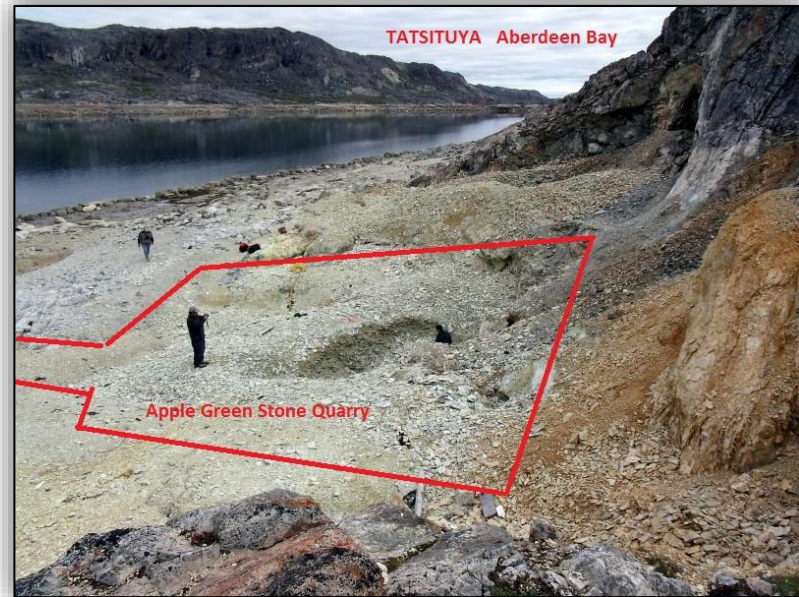




Murchison River Quarry is shared by three eastern Kitkkeit hamlets. It has produced about 250 tonnes of artisan serpentinite with ~500 tonnes remaining.

The plugger-and-feather method is used here.

Nunavut's 4th and 5th largest quarries



Kimmirut's Aberdeen Bay tidewater quarry has produced ~500 tonnes of apple green marble. Tatsiituq "the place of fog" yields Nunavut's most famous soapstone.

Quality or Grade of Carving Stone

Excellent	softer, 2.0 - 2.5 on Mohs Scale of Hardness
Good	medium, H = 2.5+, lacks somewhat with an attribute
Fair	harder, H = 3.0+, lacks an attribute or more
Poor	still takes a file, variable, small pieces

All carvers use carbide hand-files to determine soft, medium or hard.

Carver-Derived Attributes for High-Quality Carving Stone (Serpentinite) across Nunavut

overall consistency	toughness
holds fine detail	good colour
\$\$ available in large blocks \$\$	polishes well

Most full-time Inuit carvers compare any soft stone in hand to high-quality soapstone from Cape Dorset's Korok Inlet quarry.

Hand-mined, never blasted. Use of explosives will ruin carving stone.

Size of Carving Stone Deposits

“An Inuk shall have the right to remove up to 50 cubic yards per year of carving stone from Crown lands without a permit _”

Section 19.9.2, Nunavut Land Claim Agreement

Yearly Gather Limit per Person = up to 227,500 pounds or 103 metric tonnes = more than 100 komatik loads of stone

Carver-derived Size of Carving Stone Deposits in Nunavut

- Tiny deposit, less than 25 tons/tonnes (less than 50,000 pounds)
- Small deposit, up to 100 tons/tonnes (individual yearly gather limit)
- Modest deposit, up to 1000 tons/tonnes (23 community-sized)
- Large deposit, at least 10,000 tons/tonnes or more (3 regional-sized)
- Major deposit, up to million tons/tonnes (2 confirmed)

Across Nunavut, “Soapstone” is mostly Artisan Serpentinite



Un sourced, winter-gathered serpentinite boulders on Curtis River gravel bar, north of Repulse Bay.

- *Soft rock of any colour or any variety that can be trimmed with an axe or easily shaped by hand-file is “soapstone” to an Inuit artist.*
- Dark-coloured ultramafic rock can be changed by heat and pressure into artisan serpentinite, a soft, durable rock composed of serpentine and other minerals. *All artisan serpentinites seen are magnetic.*
- For exploration companies, any competent, easily scratched rock should be left with carvers at the nearest community for testing.
- If deemed carving stone, please notify the Hamlet and EDT’s Carving Stone Program with site coordinates, photos and details.

**Alternate Stone in Nunavut is Artisan Carbonate Rocks
Marble, “Argillite” (banded skarn marble), Dolomite or Limestone
1 out of 3 deposits are artisan carbonate rocks, most sites are small**



*There is much carbonate rock in Nunavut, most of it is too brittle to carve.
Artisan carbonate rock such as this flawless limestone near Coral
Harbour can provide attractive stone for carvers with power tools.*

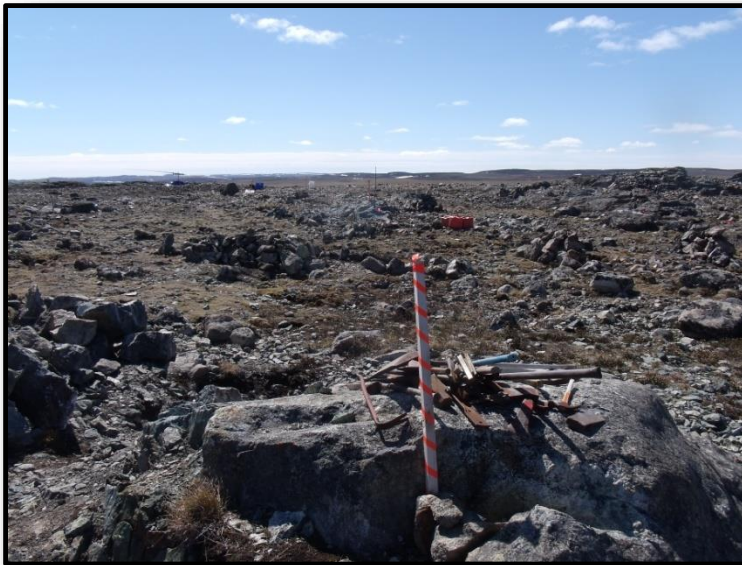
Asbestos is a mineral found in some ultramafic rocks



- Asbestos is a fibrous white mineral that pulls apart like thread.
- *Airborne dust particles of asbestos are hazardous to the health.*
- Samples from all sites will be examined by microscope for asbestos and asbestiform minerals.

Kitikmeot Carving Stone Summary

- 16 soapstone deposits were evaluated on behalf of 5 hamlets.
- *The eastern Kitikmeot quarry at Murchison River was summer-inspected for the first time by Gjoa Haven, Taloyoak and Kugaaruk.*
- Cambridge Bay, Kugluktuk and Kugaaruk have newly augmented carving stone resources in their vicinity.
- *Taloyoak remains locally impoverished for carving stone deposits.*



Murchison River Quarry's good stone is a zone of three small outcrops within a large field of rubble

Kivalliq Carving Stone Summary

- 20 soapstone deposits were evaluated on behalf of 7 hamlets, including a large marble deposit and a small limestone site.
- ***Substantial to major resources are confirmed for Repulse Bay, making Repulse Bay the “South Baffin” of the Kivalliq for stone.***
- Baker Lake and Coral Harbour have newly augmented carving stone resources in their vicinity.
- ***Carving stone-impoverished Arviat, Whale Cove, Chesterfield Inlet and Rankin Inlet each have tiny quarries with little stone remaining.***



Carver Paul Malliki atop newly located large marble deposit on skidoo trail between Repulse Bay and Hall Beach

Qikiqtaaluk Carving Stone Summary

- 31 carvingstone deposits were evaluated on behalf of 13 communities.
- Cape Dorset, Kimmirut, Pangnirtung & Sanikiluaq have large quarries.
- *Hall Beach, Igloolik and Pond Inlet have new regional-sized resources.*
- Arctic Bay, Clyde River and Iqaluit have newly augmented carving stone resources in their vicinity.
- *Qikiqtarjuaq, Resolute Bay and Grise Fiord remain impoverished for carving stone.*

Carver Ilkoo Anguitjuak of Clyde River at pink marble quarry standing on new black marble and new green marble resources



Nunavut-wide Carving Stone Summary

- 8 communities have access to 5 “South Baffin”-sized soapstone resources: 1. Cape Dorset’s quarry (+ Kimmirut), 2. Pangnirtung’s quarry plus deposits outside 3. Pond Inlet (at Mary River), 4. Kingora (Hall Beach + Igloolik) and 5. Kovic (Repulse Bay + Kugaaruk).
- 9 communities have sufficient resources for a decade or more.
- 8 communities remain locally impoverished for soapstone: 4 hamlets in the south Kivalliq, 1 hamlet in the eastern Kitikmeot and 3 hamlets in the North Baffin, emphasizing the need for regional distribution.



Baker Lake’s undeveloped grey and green soapstone sites at Schultz Lake

**“Find More Stone” of the past
should be replaced by
“Bring Home Stone” for what lies ahead**

- EDT’s 4-year reconnaissance program has more than doubled the number of Nunavut’s significant carving stone sites.
- FIFTEEN new undeveloped deposits can now be added to 11 quarries. Among the new resources are:
- FOUR “South Baffin”-sized deposits as big as or bigger than Cape Dorset’s quarry. These lie outside Pangnirtung, at Mary River, inland from Hall Beach / Igloolik and inland from Repulse Bay / Kugaaruk.
- Substantial carving stone resources throughout Nunavut await further study and future development.

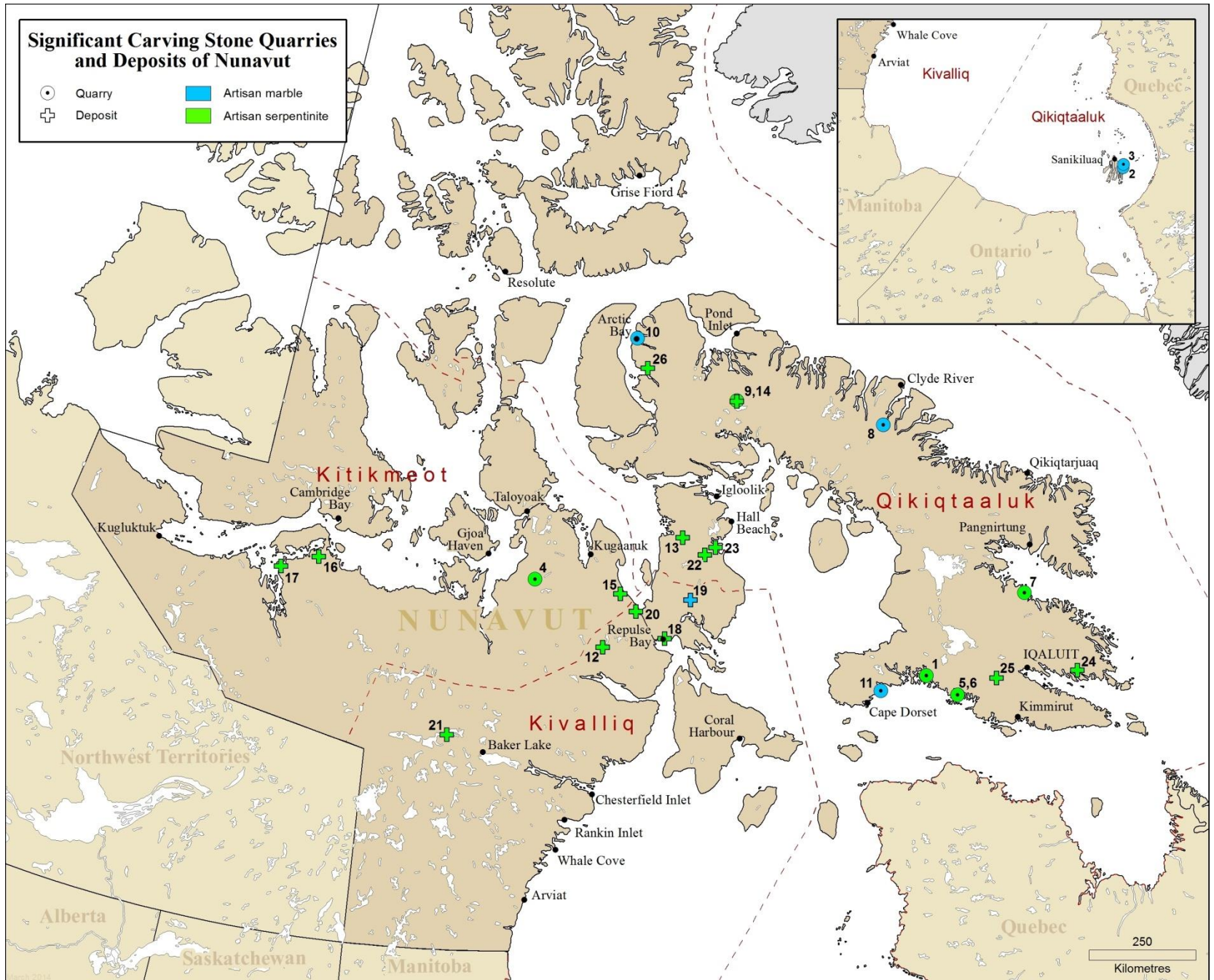
***Pangnirtung carver
Philipoosie Kooneeliusie***



***Project carver Jerry Ell
at Clearwater Fiord***

Significant Carving Stone Quarries and Deposits of Nunavut

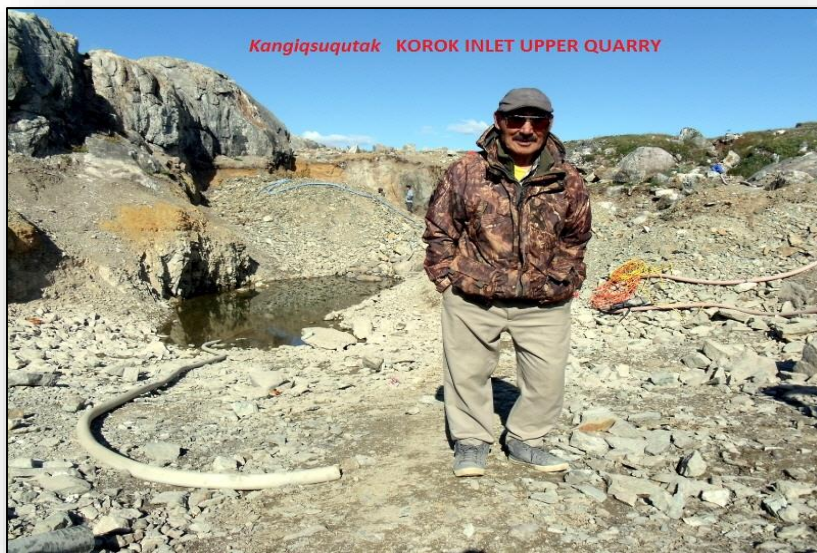
- Quarry
- Deposit
- Artisan marble
- Artisan serpentinite



Significant Carving Stone Resources of Nunavut
11 Quarries (Q) & 15 Deposits (D) of Size (April 2014)
(additional 41 tiny to small sites & quarries not included)
(* are the 5 Regional-Sized Resources)**

NQ-1S	QIK	Cape Dorset	Kangiqsukutaq, Korok Inlet ***	64° 23' 50"	73° 19' 10"
NQ-2M	QIK	Sanikiluaq	Qullisajaniavvik, Belcher Islands	56° 10' 37.3"	78° 53' 43.0"
NQ-3M	QIK	Sanikiluaq	Aqitniavvik, Belcher Islands	56° 16' 49.1"	78° 48' 27.2"
NQ-4S	KIT	Gjoa Haven	Aqututavik, Murchison River	68° 03' 32.4s"	93° 09' 18.0"
NQ-5M	QIK	Kimmirut	Tatsiituaq, Aberdeen Bay	63° 46' 02.9"	72° 11' 52.3"
NQ-6S	QIK	Kimmirut	Tatsiituaq Tiniiniya, Aberdeen Bay	63° 46' 02.8"	72° 11' 59.5"
NQ-7S	QIK	Pangnirtung	Opingivik, Cumberland Sound ***	65° 15' 01.6"	67° 04' 25.2"
NQ-8M	QIK	Clyde River	Marble Quarry, Clyde River	69° 48' 52.2'	70° 37' 44.9"
NQ-9S	QIK	Pond Inlet	Community Quarry, Mary River	71° 17' 48"	79° 08' 46.2"
NQ-10M	QIK	Arctic Bay	Old Main Quarry, Townsite	73° 02' 23.5"	85° 06' 38.3"
NQ-11M	QIK	Cape Dorset	Marble Site, Andrew Gordon Bay	64° 23' 29"	75° 43' 40"
ND-12S	KIV	Repulse Bay	Kovic, Pearce Lake ***	66° 30' 15.0"	89° 35' 06.3"
ND-13S	QIK	Hall Beach	Kingora, Kingora River ***	68° 38' 34.8"	84° 16' 57.4"
ND-14S	QIK	Pond Inlet	Koonark, Mary River ***	71° 17' 01"	79° 09' 25"
ND-15S	KIT	Kugaaruk	Kitungyuk, Committee Bay	67° 36' 53.9"	88° 20' 08.5"
ND-16S	KIT	Cambridge Bay	Soapstone Hill, Kuugaarjuk Lake	68° 13' 21.7"	105° 49' 00.1"
ND-17S	KIT	Cambridge Bay	Utkohihaktiavak, Buchans Bay	67° 51' 54.3"	107° 52' 13.7"
ND-18S	KIV	Repulse Bay	Naujaat, Townsite Back Harbour	66° 32' 03.0"	86° 11' 24.6"
ND-19M	KIV	Repulse Bay	Marble Site, Qukiutitalik Lake	67° 16' 40.2"	84° 27' 14.4"
ND-20S	KIV	Repulse Bay	Uluta, Curtis River	67° 11' 51.9"	87° 34' 16.0"
ND-21S	QIK	Baker Lake	Innusutuarjuak, Schultz Lake	64° 39' 41.2"	97° 52' 15.2"
ND-22S	QIK	Hall Beach	Fast Money' Area, Ajaqutalik River	68° 11' 08.7"	83° 10' 46.8"
ND-23S	QIK	Hall Beach	Kingajuak, Parry Bay	68° 17' 51.6"	82° 29' 14.5"
ND-24S	QIK	Iqaluit	Ikatuyak (CNGO-M67), Hamlen Bay	63° 13' 51.7"	66° 21' 29.5"
ND-25S	QIK	Iqaluit	GSC-1997, North of Livingstone River	~63° 48'	~70° 06'
ND-26S	QIK	Arctic Bay	Soft Green Stone, Frabicius Fiord	72° 22' 32.0"	84° 43' 22.6"

The only regional supplier of soapstone in Nunavut is Cape Dorset's quarry on tidewater in the South Baffin.
How much stone is left?



QIA is looking at Kangiqsukutaaq. Lower quarry will need cleaning if reactivated; active upper quarry will need to be deepened. (2013 photo)

Carver Ajaganyuk Shaa standing on top of what should become the next lift of "beautiful black stone" in the upper quarry at Korok Inlet. (2011 photo)

Given the scale of the past 50+ years of Nunavut's stone art industry, the next 50 years will -soon- need to see the development of one or more "South Baffin"-sized quarries.

Pangnirtung's near-tidewater Opingivik quarry is on an island on the south side of Cumberland Sound across from the hamlet. This quarry has high-quality stone and potential to be a regional supplier. Further work is recommended.



*carver Jaco Ishulutak
at Opingivik quarry
above freshwater lake*



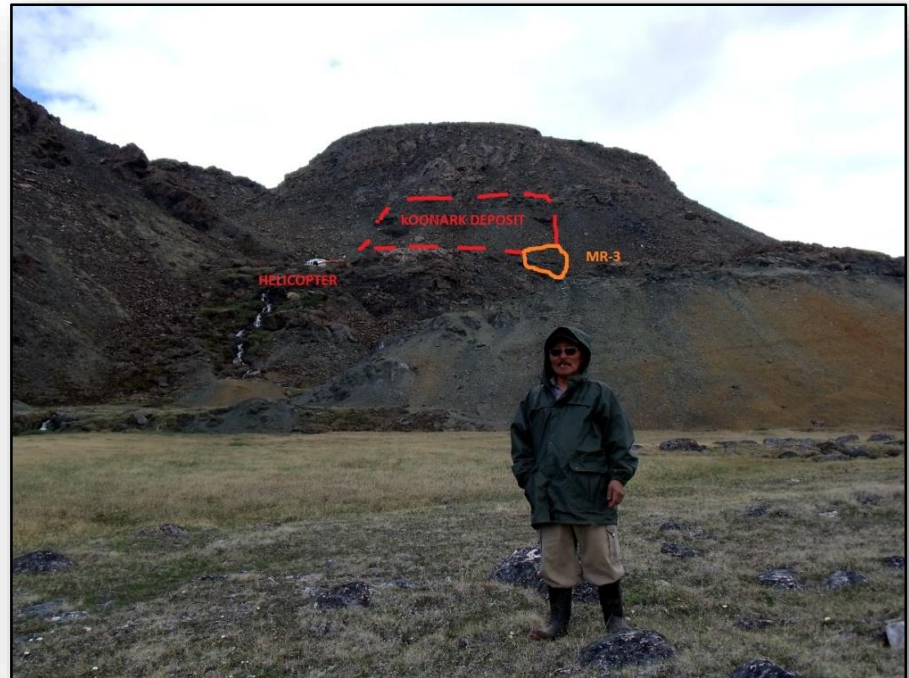
Opingivik Site
Q = Quarry
1 = New Stone in Dirt
2 = Big Stone Outcrop
3 = Not Carving Stone



Pond Inlet has a newly confirmed high-quality large deposit, plus its community quarry and many tiny sites at Mary River. More work on the Mary River Serpentinite Belt is recommended.



Baffinland geologist & carver



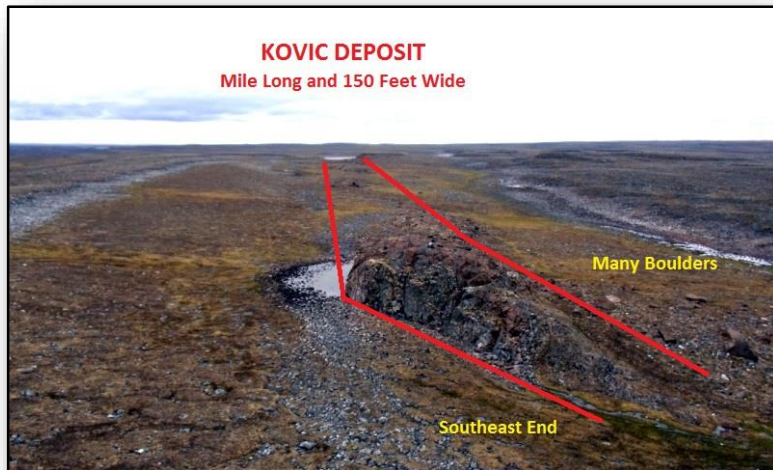
Pond Inlet carver Moses Koonark standing on bench above railway right-of way and below regional-sized deposit of black stone



Pond Inlet's community quarry at Mary River

Two Newly Confirmed Major Deposits

- Repulse Bay - Kugaaruk's new resource is 100 times bigger than Cape Dorset quarry. Many boulders means no digging for decades by winter gatherers. Good to excellent quality wherever examined.
- Hall Beach - Igloolik's new resource is 40 times bigger than Cape Dorset quarry. Of fair quality with excellent quality sections.



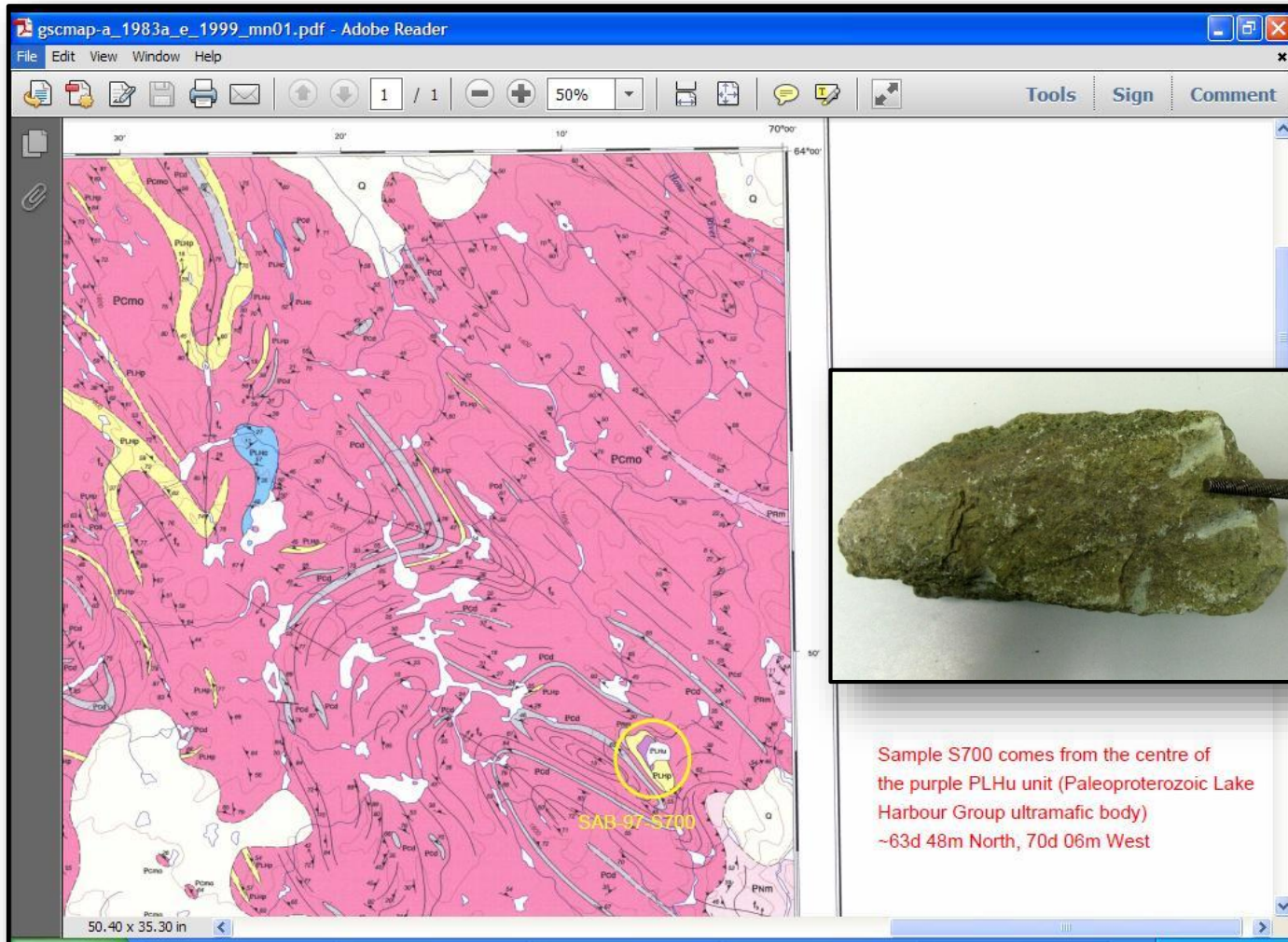
KOVIC

Repulse Bay's major deposit is 1 mile long x 150 ft wide, 93 miles (150 km) inland



KINGORA

Hall Beach's major deposit is 2000 ft long x 125 ft wide, 75 miles (120 km) inland



Sample S700 comes from the centre of the purple PLHu unit (Paleoproterozoic Lake Harbour Group ultramafic body) ~63d 48m North, 70d 06m West

Iqaluit #1 = New site of good-quality soft stone 48 miles (77 km) west of Iqaluit, beyond the Armshow River and north of Livingstone River on the west side of a small lake, brought forward from 1997 GSC mapping, ~ 63d 48m N, 70d 06m W



Iqaluit #2 = New site of medium-hard excellent-quality stone some call *Ikatuyak* 80 miles (127 km) southeast of Iqaluit, mid-peninsula between Hamlen Bay and Newton Fiord, brought forward by CNGO 2011 mapping, 63d 13m 51.7s N, 66d 21m 29.5s W

Iqaluit #3 = New site of speckled green artisan marble (looks like narwhale skin) on a riverbank 50 miles east (CNGO's F001 site at 591080 East, 7071450 North)

Iqaluit #4 = New site of medium-hard "nice dark stone" 120 miles east (CNGO's H091 serpentinite site on tidewater at 691400 East, 7130480 North)

Mark Paniyuk, “Lost Soapstone Site” Hunter



A 200 foot extension? to Paniyuk’s small hand-pit, 12 miles (19 km) north of Coral Harbour’s airport

- *One out of every two traditional gathering sites across Nunavut are “heard about” places. Unless followed up by local persons, these sites are lost.*
- *By following directions from elders, Coral Harbour hunter Mark Paniyuk has relocated a number of ‘Ukkusisaqtarviq’ or ‘Places Where We Find Stone’.*
- *Whether impoverished for stone or not, every community needs proficient ‘Ukkusisaqtaarvingni’ or “people who look for places where we once gathered stone”. Carvers, hunters or Canadian Rangers can be prospecting for old soapstone sites on behalf of grant-supported Hamlets and HTOs.*

***Bringing home stone
from Repulse Bay's
Back Harbour deposit***



The focus for Nunavut's untracked community commodity has always been on the Carvings, and not on the 500 to 800 tons of Material gathered every year by many carvers.

- ***Artisan Carving Stone in Nunavut is a long-term commodity hand-mined by many individuals from many surface-accessible deposits.***
- A four-year government-supported site evaluation program has jump-started our understanding of the supply side for Nunavut soapstone.
- ***Future development of new resources will require more site studies, local infrastructure and regional-scale coordination for marine distribution.***
- But until such time, carver-selected soapstone in Nunavut will continue to be gathered and hauled back to the nearest community one load at a time.
- ***Once in the hands of a community carver, blocks of artisan carving stone are transformed into the Inuit sculpture highly regarded around the world as an icon of Canada.***

Qujannamiik, Mat'na, Koana, Merci and Thank You!



Quarrying (~1970s) c/o Hamlet of Sanikiluaq, NU

From EDT's 2010-2013 Nunavut Carving Stone Deposit Evaluation Program