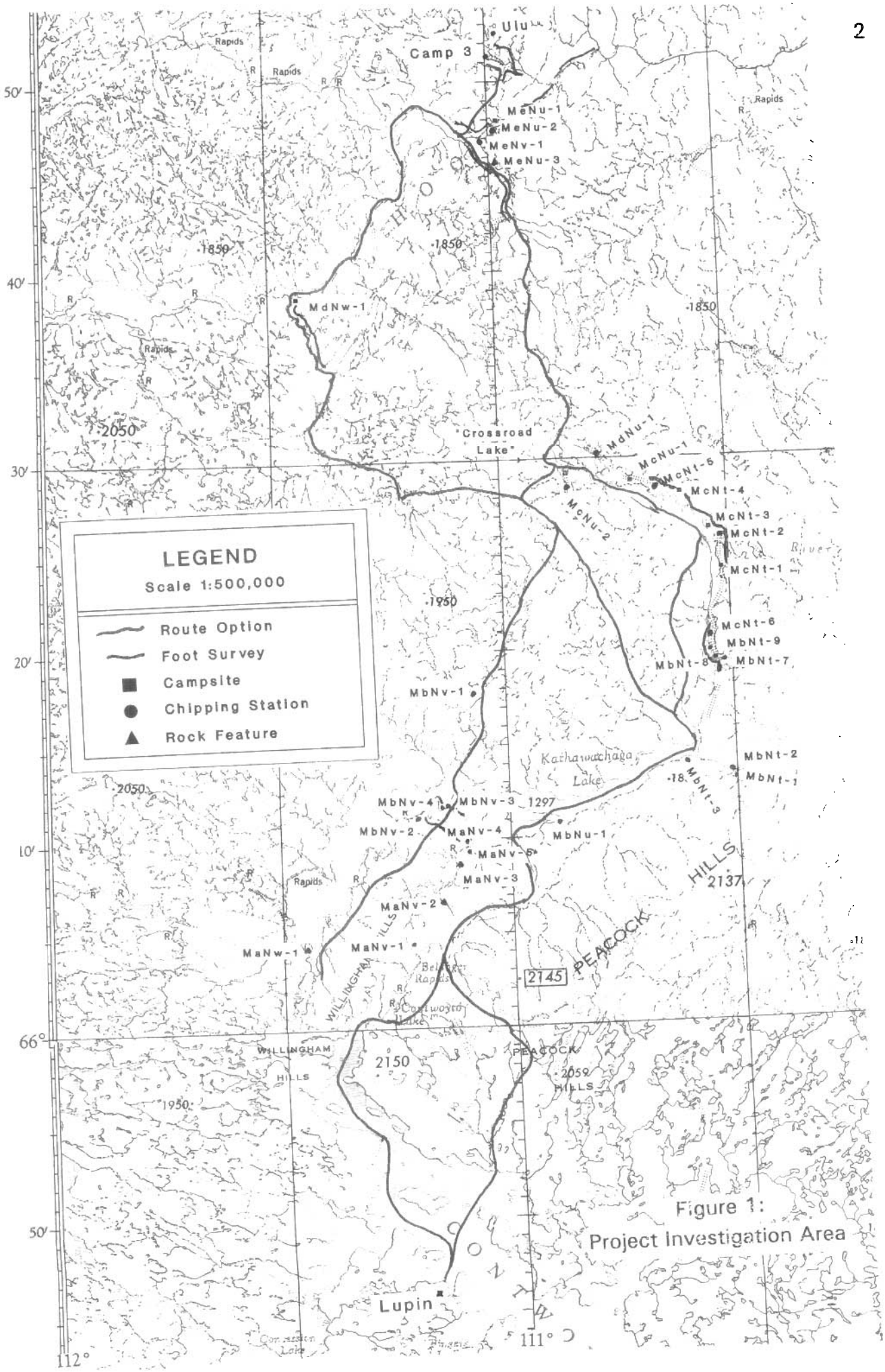

Figure 1:
Project Investigation Area

Appendix 9

- **Ulu Mine Project Archaeological Impact Assessment: Phase II, Quaternary Consultants Limited, July 1996.**

ULU MINE PROJECT ARCHAEOLOGICAL IMPACT ASSESSMENT: PHASE II

Prepared for

ECHO BAY MINES LTD.

Quaternary
Consultants
Limited
September, 1996

EXECUTIVE SUMMARY

The archaeological impact assessment for the Ulu Mine project has been undertaken in two phases. The first phase (June, 1996) examined the impact zones for the mine site and ancillary facilities. No heritage resources were found in this location. A portion of potential haul routes north of the Hood River and adjacent to Camp 3 were investigated at this time. Two archaeological sites, MeNu-1 and MeNu-2, were recorded on the Hood River at the upper rapids.

Phase II of the project (August, 1996) entailed examination of several route options for the establishment of the 1996 winter haul road. These routes begin at Lupin and terminate at the Ulu mine site. All route options were flown by helicopter. Foot survey was undertaken at locations where resources had been observed or in areas which were deemed to have a high potential for archaeological sites.

During the Phase II investigations, twenty-one new archaeological sites were recorded, resulting in a total of thirty-one known archaeological sites in the Contwoyto Lake/Hood River region. The majority of these sites occur on the Burnside River/Kathawachaga Lake system or on the major esker north of Kathawachaga Lake. Projected impact by any of the route options is considered to be minimal as all routes bypass most archaeological sites by a wide margin. Given that a large percentage of the winter haul roads are on lake or river ice, the projected land impact is minimal, particularly as most land/ice interfaces are in areas which contain no archaeological resources. The western option, from the Willingham Hills across the west arm of Kathawachaga Lake to "Crossroad Lake", comes within 0.5 kilometres of three sites which can easily be avoided. Gravel extraction activities can occur at most esker locations with no potential impact upon archaeological resources, providing the extraction occurs on the lower lateral ridges rather than the crests and upper plateaus which contain the majority of the major archaeological occupation sites.

Quaternary Consultants Ltd. can recommend the implementation of winter haul roads on any of the proposed options. The preferred terrain for developing the winter road results in traverses across areas of minimal or no archaeological potential.

ACKNOWLEDGEMENTS

The archaeological field team wishes to acknowledge the crucial assistance of Echo Bay Mines personnel involved in the Ulu Project. In particular, the logistical arrangements and technical assistance provided by Rod Cooper and Barry Lowe were essential for successful completion of this project. The accommodations for the crew at Lupin were superb.

During both phases of this project, the consideration, assistance, and hospitality provided by Kevin Mealey and the staff at Camp 3 was greatly appreciated by the archaeologists. Accommodations during Phase I were excellent.

Finally, but foremost, the invaluable assistance provided by the helicopter pilots is gratefully acknowledged. John Buckland, Randy Simone, and Steve Horton cheerfully chauffeured the archaeological team across the route options in an extremely professional manner. Their knowledge of the country was willingly shared. The consideration displayed by the pilots (juggling schedules to arrange pickup when weather conditions began to deteriorate, checking on the archaeologists during foot survey components, and plucking the crew from an esker during a hail squall) were greatly appreciated. Without the able services rendered by these pilots, the project would have been much more difficult and lasted considerably longer.

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1.0 INTRODUCTION

Echo Bay Mines Ltd. is initiating the development of a mine north of the Hood River at 66° 54'N and 110° 58'W. Accordingly, Echo Bay commissioned an archaeological impact assessment of areas which may be impacted by the mine development and an associated winter haul road to Lupin. Quaternary Consultants Ltd. of Winnipeg, Manitoba was contracted to undertake this assessment under the terms of NWT Archaeologists Permit #96-831 (Appendix A).

The Ulu Mine project consists of the development of facilities at the Ulu mine site (north of the Hood River) and the establishment of land linkages between lake ice components of the winter haul road from Ulu to Lupin, at the north end of Contwoyto Lake. Due to logistical timeframes, the project was undertaken in two phases.

1.1 Scope of Project

Phase I consisted of archaeological investigation of the mine site location and the attendant components. In addition, some investigation of potential haul road routes north of the Hood River was undertaken during the first phase (June 28 to July 2, 1996), including an investigation of the entire north side of the Hood River between the upper and lower rapids (Quaternary 1996:Figure 2).

During Phase II (August 16 to August 30, 1996), several potential route options between Lupin and the Ulu mine site (Figure 1) were examined for potential impact by a field team of two archaeologists. As much of the final winter road will be routed over ice, the land linkages are a small portion of the entire route. Impact potential can occur at the land/ice interfaces as well as aggregate extraction areas. To determine if heritage resources would be impacted by the establishment of any of the route options, all corridors were investigated. In addition, landforms which would have a potential for heritage resources were examined.

1.2 Study Team

The archaeological assessment project was directed by Sid Kroker of Quaternary Consultants Ltd. During Phase I, the field team consisted of Sid Kroker. The Phase II assessment was conducted by Sid Kroker with Patrick Carroll as field assistant. Laboratory processing was undertaken by Pam Goundry. The report was compiled by Sid Kroker and Pam Goundry.

2.0 METHODOLOGY

2.1 Field Methodology

Investigations consisted of both low-level helicopter flights along the projected route options (Figure 1) and foot survey throughout selected high-potential areas adjacent to, or within, the route rights-of-way. Foot survey consisted of parallel traverses by the investigators. Topography regulated the distance between traverses, as well as the linearity of the traverses. In most instances, the parallel traverses were twenty to twenty-five metres apart. Variations occurred on the top of eskers where the archaeologists would each traverse one of the lateral edges, with interior investigations when the width of the esker warranted. Shoreline and river investigations consisted of separated traverses paralleling the water edge.

At the time of investigation, three primary route options were under consideration. Depicted on Figure 1, they have varying degrees of ice transit and land transit. Given the technique of winter haul road development that was employed for the 1995 winter road to Camp 3, minimal impact is anticipated on the land component of the 1996 winter road—usually the only indication of the 1995 road was the presence of survey stakes, i.e., vegetational impact was too minimal for ready observation.

While the exact impact zones within each route option have not been firmly delineated, all of the corridors were overflown at a low altitude to ensure observation of small-scale structural features, e.g., tent rings or caches. Major geological features such as rivers, lakes, and eskers adjacent to or lying on the route options were also overflown and usually investigated by foot survey.

Archaeological sites were recorded by geographical location. The geographical locations are designated in N.T.S. (National Topographic Series - North American Datum 1972) coordinates rather than GPS (Global Positioning System) coordinates. Aerial photographs of most of the sites were taken. Detailed photographs of site features, tent rings, and chipping station locations were also taken. In the case of multi-component sites, a site map was prepared based upon field survey data. The data, recorded for large-scale occupation sites, was obtained through field survey and, as such, are not totally precise. Precise mapping of sites like these, which often cover more than one hectare, would require the use of a 'Total Station' surveying unit.

The primary goal was the identification and demarcation of heritage resources. As most components have a degree of flexibility for their placement, avoidance is deemed to be the optimum form of mitigation. Echo Bay Mines Ltd. concurred with this strategy, noting that no portion of the winter road options has an absolutely predetermined location. Mitigative excavation is not deemed to be necessary as avoidance is feasible for all archaeological sites that lie adjacent to any of the winter road options. Curation

of artifacts from archaeological sites was minimal during both phases. It was restricted to diagnostic specimens lying on the surface, which could be susceptible to inadvertent curation by unauthorized personnel.

2.2 Laboratory Methodology

All archaeological sites within Canada are designated by a uniform system based upon latitude and longitude (Borden 1954). A four-letter identifier indicates an area of 10 minutes latitude by 20 minutes longitude (north of 62°) or an area of 10 minutes latitude by 10 minutes longitude (south of 62°). Within this block, sites are numbered sequentially in the order of their discovery. As noted earlier, the site locations are recorded using N.T.S. coordinates. This is due to the fact that the archaeological site record system has been based on N.T.S. topographical map sheets for the past four decades.

Site discoveries (location, type of site, features, cultural identity) are recorded with the Archaeological Survey of Canada and that agency assigns the sequence number. A Federal archaeological site form is completed for each site which has been located and/or revisited. These forms are forwarded to the Archaeological Survey of Canada for inclusion on the national site database.

Curated artifacts were brought to Quaternary Consultants laboratory facilities where they were cleaned and sorted by material class. All artifacts receive a catalogue number which consists of the Borden designation for the site and a sequential number for permanent identification. All pertinent data associated with the artifact is entered into the computer cataloguing system. The cataloguing system is based upon the Canadian Heritage Inventory Network (CHIN) system (Manitoba Museum of Man and Nature 1986; Kroker and Goundry 1993:Appendix B). The computer cataloguing program is derived from **DBASE3®** and generates individual artifact catalogue cards.

For permanent identification, the catalogue number is printed on the artifact using clear polish layers and ink. Processed artifacts are prepared for storage by inserting the specimens and the catalogue card into standard plastic storage bags, then stapling the bags closed. At the end of the project, all recovered artifacts (Appendix B) will be delivered to the Prince of Wales Northern Heritage Centre.

3.0 ARCHAEOLOGICAL ASSESSMENT DATA

The premise of an assessment survey is to record the presence or the absence of archaeological sites within a projected impact zone. The highest potential locations within, and adjacent to, the corridors were examined. The presence of sites in high potential zones minimizes the probability that sites would exist in low potential areas.

3.1 Archaeological Sites

All recorded archaeological sites appear to be closely related to major geographical features. Occupation sites occurred along lake shores, adjacent to rivers, or on the eskers which form major transportation routes between the two primary rivers in the area, the Hood River and the Burnside River.

The following listing contains all sites within the area from 65° 50′ to 66° 50′N and from 110° 30′ to 111° 40′W. These include the eight sites recorded by B. C. Gordon in 1985: MaNv-1, MaNv-2, MaNv-3, MaNv-4, MaNv-5, MbNt-1, MbNt-2, and MbNt-3. Also included are the two sites recorded by Kroker during Phase I of this project (MeNu-1 and MeNu-2) and the twenty-one sites recorded by Kroker and Carroll during Phase II.

MaNv-1 66° 04′ 02"N/111° 13′ 10"W

This site is on the east bank of the Burnside River near the Little Belanger Rapids. It was recorded by Gordon and contains a single recent tent ring. It was not revisited.

MaNv-2 66° 06′ 42"N/111° 08′ 53"W

A small chipping station, on a small esker on the east bank of the Burnside River, was recorded by Gordon. The site was not revisited during Phase II, although the esker was overflown and photographed (Plate 1). It appears that there is a poorly defined, square tent ring, approximately 150 metres inland, on the esker (Plate 2).

MaNv-3 66° 08′ 41"N/111° 07′ 00"W

Gordon recorded a cache and a line of single stones on the east bank of the Burnside River. This site, observed from the helicopter during Phase II, appeared undisturbed.

MaNv-4 66° 09′ 40"N/111° 04′ 55"W

A series of opened caches were recorded, by Gordon, on the west bank of the Burnside River at the entrance into Kathawachaga Lake. The site was not revisited during Phase II foot survey. During a helicopter overflight, it appeared that several tent rings were also present (Plate 3). There are two types of generally circular rings—a continuous circle

Plate 1: Esker at Burnside River

Plate 2: Tent Ring Near MaNv-2

composed of massive cobbles and interrupted circles made of medium cobbles. Given the quantity of tent rings observed during Phase II, it is possible that the site descriptions of MaNv-4 and MaNv-5 have been transposed on the site database.

MaNv-5 66° 09′ 20"N/111° 05′ 00"W

Gordon recorded a large habitation site on the east bank of the Burnside River at the entrance into Kathawachaga Lake. It is described as consisting of seventeen tent rings, along with caches and pits. The site was not revisited during Phase II.

MaNw-1 66° 02′ 54"N/111° 25′ 53"W

This site is on an esker west of the Willingham Hills, west of the north end of Contwoyto Lake. It occurs on the south side of the river which cuts through the esker and consists of an enigmatic, roughly rectangular arrangement of cobbles on the sharp crest of the esker overlooking the river. The rock feature is 280 cm long with a maximum width of 130 cm and a minimum width of 30 cm (Plate 4). The outline is made of a nearly continuous row of medium cobbles with three cobbles in the interior. The rocks are partially embedded in the vegetation mat and show moderate lichen encrustation suggesting that the feature is more than 100 years old. There are no associated artifacts.

MbNt-1 66° 12′ 45"N/110° 31′ 15"W

This site is located on the south bank of the Burnside River, east of the exit from Kathawachaga Lake. It was initially reported to Prince of Wales Northern Heritage Centre by D. Stern in 1983. Pammett, part of Gordon's field team, revisited MbNt-1 in 1985. The site consists of two tent rings and an arrangement of approximately twenty caribou (*Rangifer tarandus*) skulls. It was not revisited during Phase II.

MbNt-2 66° 13′ 02"N/110° 31′ 00"W

This large habitation site is located on the north bank of the Burnside River, east of the exit from Kathawachaga Lake, directly opposite MbNt-1. Pammett surveyed the site and recorded numerous tent rings and caches which included recent historic material. The site was not revisited during Phase II.

MbNt-3 66° 13′ 50"N/110° 37′ 00"W

The site is on a small promontory on the south shore of Kathawachaga Lake, west of the exit of the Burnside River. Pammett recorded the presence of sled remains, camp gear, and a rifle. The site has been identified as the last camp of an individual from Bathurst Inlet. Observation from the helicopter showed that the site appears to be undisturbed, with remnants of the sled still in place. The Phase II archaeological team did not land.

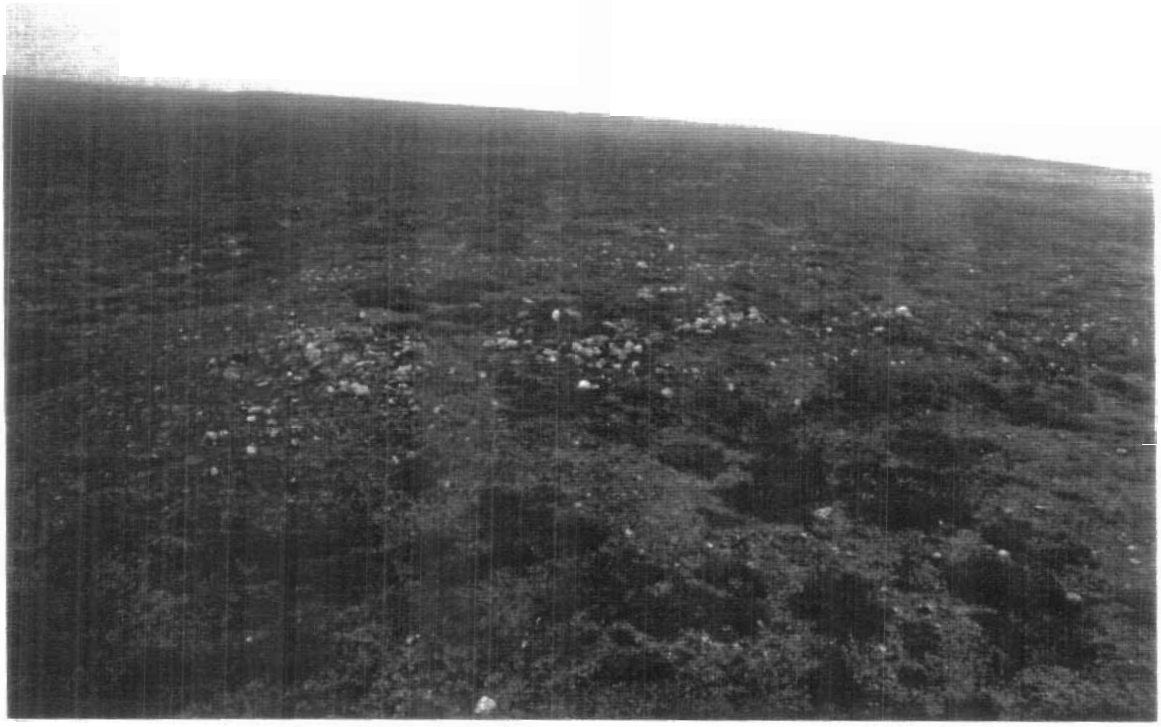

Plate 3: Tent Rings at MaNv-4

Plate 4: Rock Feature at MaNw-1

MbNt-7 66° 18′ 51"N/110° 30′ 45"W

The site is located on the major north/south esker northeast of Kathawachaga Lake, at the junction with a short eastward arm of the esker. It is located on the top of the esker (Plate 5) and appears to have been chosen as a vantage place, inasmuch as there is unobstructed vision to the horizon on all sides. The windswept aspect of the location may suggest that the occupation occurred during the insect season. The site consists of four tent rings (Table 1)—three with lateral rows of rocks for anchoring guy ropes (Plate 6) and one without (Plate 7).

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Circular	380 x 350	Irregular Medium cobbles	SSE	2 rows single rocks	Fireplace to right of entrance
2	Circular	450 x 370	Irregular Small cobbles	?	2 rows single rocks	Hearth slab at southeast corner
3	Circular	300 x 250	Irregular Medium cobbles	NW?	2 rows single rocks	Hearth slab at south end
4	Circular	320 x 360	Irregular Medium cobbles	W	None	

Table 1: Data on Tent Rings at MbNt-7

No artifacts were present to provide cultural or temporal data. A fireplace (Plate 8), adjacent to Tent Ring 1 (Plate 6), is the traditional Inuit style.

MbNt-8 66° 19′ 13"N/110° 31′ 54"W

The site is located on the major north/south esker northeast of Kathawachaga Lake, approximately one kilometre northwest of MbNt-7. It consists of a sparse scatter of quartz flakes along the eastern (lakeward) edge of the esker. Only two or three flakes occur together, suggesting movement by the stoneworker or limited stoneworking at different times. Approximately 100 metres further northwest along the top of the esker, an isolated, incomplete, bifacially-flaked, lanceolate blade made from pink quartzite was curated (Plate 9). This proximal portion of the projectile point, probably attached to a spear, is biconvex in cross-section and measures 59.4 mm in length, 31.0 mm in width, and 12.3 mm in thickness. The transverse, lamellar, expanding flaking is indicative of Northern Plano, suggesting an age greater than 5000 years. It is probably not contemporaneous with the quartz scatter.

Plate 5: Aerial View of Tent Rings at MbNt-7

Plate 6: Circular Tent Ring with Lateral Guy Rope Rocks (TR1) at MbNt-7

Plate 7: Simple Circular Tent Ring (TR4) at MbNt-7

Plate 8: Inuit Style Fireplace at MbNt-7

MbNt-9 66° 19′ 37"N/110° 32′ 25"W

This site is located on the major north/south esker northeast of Kathawachaga Lake, at the widest part of the unnamed lake to the east. It is situated on the eastern side of the esker (Plate 10) and is quite extensive, containing eleven tent rings (Table 2) and at least four cooking hearths/Inuit style fireplaces. The components of the site occur in clusters, with two tent rings on the lower ridge at the south end (TR1, TR2), four on the lower ridge at the north end (TR3 - TR6), and the remaining five on the upper ridge (Figure 2).

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Oval	235 x 330	Irregular Small cobbles	E&W	None	Near TR2
2	Oval	390 x 270	Irregular Small cobbles	E	None	16 m north of TR1
3	Circular	240 x 220	Irregular Medium cobbles	NE	circular pattern	58 m north of TR2
4	Circular	400 x 365	Irregular Medium cobbles	S?	2 rows double rocks	Fabric and milled wood artifacts
5	Circular	330 x 230	Irregular Medium cobbles	SW	2 rows double rocks	Fireplace to SW Tobacco tin lid
6	Oval	370 x 230	Irregular Medium cobbles	S	2 rows double rocks	Hearth 5 m south of TR6
7	Square	240 x 240	Irregular Medium cobbles	?	None	Poorly defined Fireplace to east
8	Square	420 x 320	Irregular Medium cobbles	N	2 rows single rocks	Fireplaces to east and west
9	Oval	230 x 140	Irregular Large cobbles	N/S?	2 rows double rocks	5 m north of TR8
10	Square	340 x 310	Irregular Medium cobbles	SE	None	
11	Oval	550 x 450	Irregular Medium cobbles	SSE	1 row double rocks	Interior hearth Tobacco tin lid

Table 2: Data on Tent Rings at MbNt-9

Tent Rings 1 and 2, sixty metres south of the main portion of the site, are not similar to those in the other two clusters, i.e., lack of guy rope rocks (Plate 11). The remaining oval/circular tent rings are similar in construction and have guy rope rocks (Plate 12).

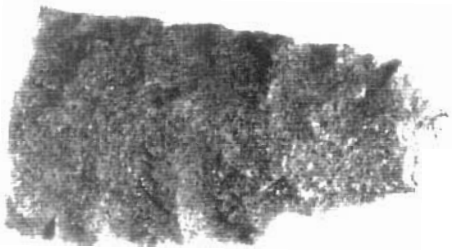

Plate 9: Northern Plano Projectile Point from MbNt-8 (actual size)

Plate 10: Aerial View of MbNt-9

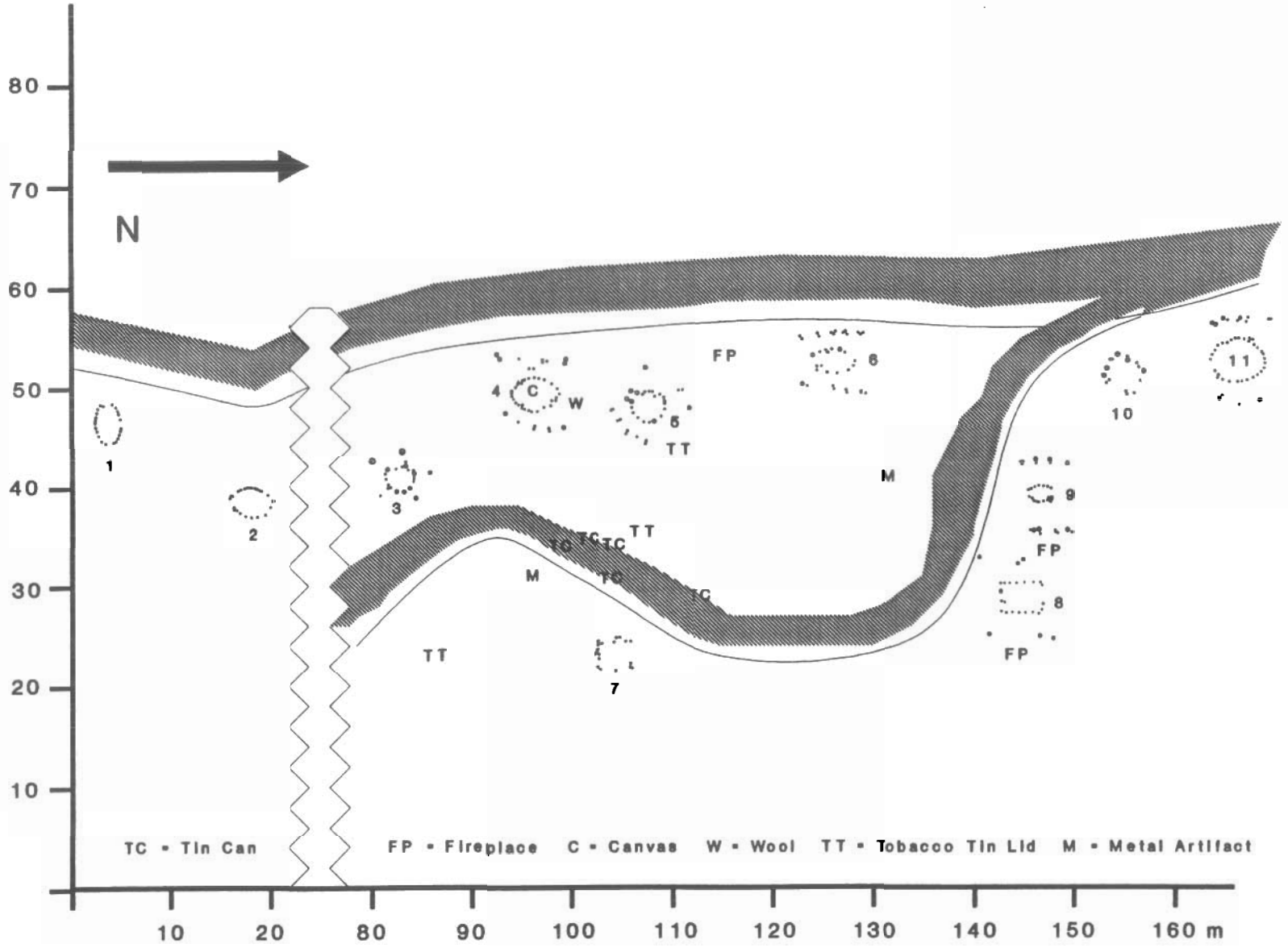

Figure 2: Map of MbNt-9

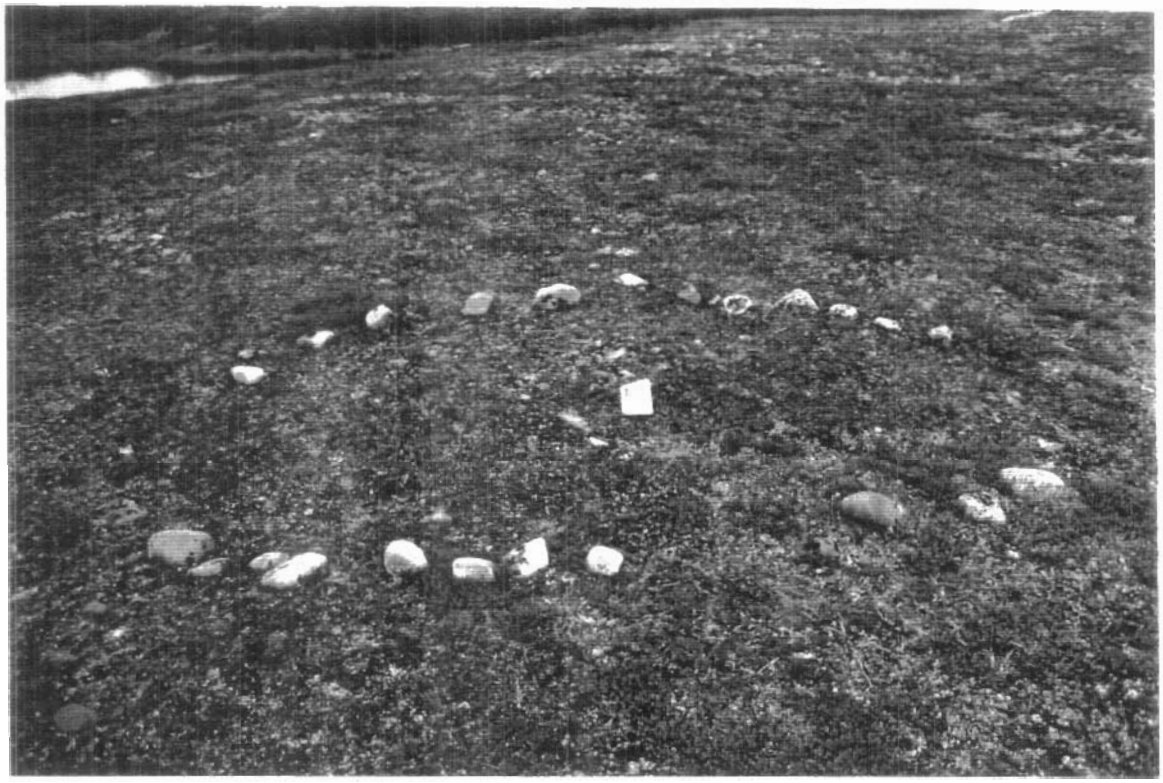

Plate 11: Oval Tent Ring without Guy Rocks (TR2) at MbNt-9

Plate 12: Circular Tent Ring with Guy Rocks (TR9) at MbNt-9

Tent Ring 11 is a very large version of the circular style (Plate 13). Tent Rings 7 and 10 are square and lack guy rocks (Plate 14), while Tent Ring 8 is also square with two rows of guy rope rocks, suggesting a similarity of tents.

There is a myriad of weathered caribou bone fragments scattered throughout MbNt-9. A few whittled wooden sticks (used for tent stakes? or pegging hides?) were observed in the upper tier of rings, as were large fragments of willow branches. Other observed artifacts include axe-cut antler, tin cans, metal fragments cut from tin cans, lids from tobacco tins produced by Imperial Tobacco, wool clothing fragments, and coarse denim or fine canvas fabric. One artifact was manufactured from tin can metal and consisted of a rectangular sleeve with four nails through it. It probably served as a reinforcement or mending component for a wooden handle. A second manufactured metal artifact consisted of the bottom of a tin can with an attached tab cut from one of the sides.

Given the variations between the tent ring types, it is unlikely that all of the tent rings are contemporaneous. The artifacts suggest that there has been an Inuit occupation of the site after WWI, more likely within the past fifty years.

MbNu-1 66° 10′ 47"N/110° 53′ 21"W

The site is located at the southeast end of the south peninsula of "The Narrows" of Kathawachaga Lake. It is on the top of the ridge that overlooks the lake shore, approximately 70 metres inland. The site, observed from the air only, consists of at least two tent rings (Plate 15). Moderate birch cover may obscure additional features. This site was not ground surveyed, as the projected haul route passes through "The Narrows" on the ice and will be more than 0.5 kilometres away.

MbNv-1 66° 17′ 44"N/111° 04′ 35"W

The site is located on the southern section of an esker, oriented southwest/northeast, situated approximately ten kilometres north of Kathawachaga Lake. Located on the south side of the esker, the site is a solitary tent ring with no associated artifacts. The tent ring is rectangular (2.0 x 1.6 metres) with outlier rocks for guy rope attachment (Plate 16).

MbNv-2 66° 11′ 18"N/111° 11′ 40"W

The site is located on the east bank of the river that flows into the southwest corner of the west arm of Kathawachaga Lake. Two tent rings are present, each on a slightly elevated frost boil, approximately 15 metres east of a small series of rapids. Both circular tent rings, composed of intermittently placed moderate cobbles, have diameters of 3.2 metres. Tent Ring 1 (Plate 17) is located upslope from the rapids. Tent Ring 2 is located 15 metres east of the river and 12.5 metres southwest of Tent Ring 1. No diagnostic artifacts are present. Three complete caribou racks plus a single antler are adjacent to Tent Ring 2 (Plate 18) and a fifth complete rack is embedded in the moss at the river edge.

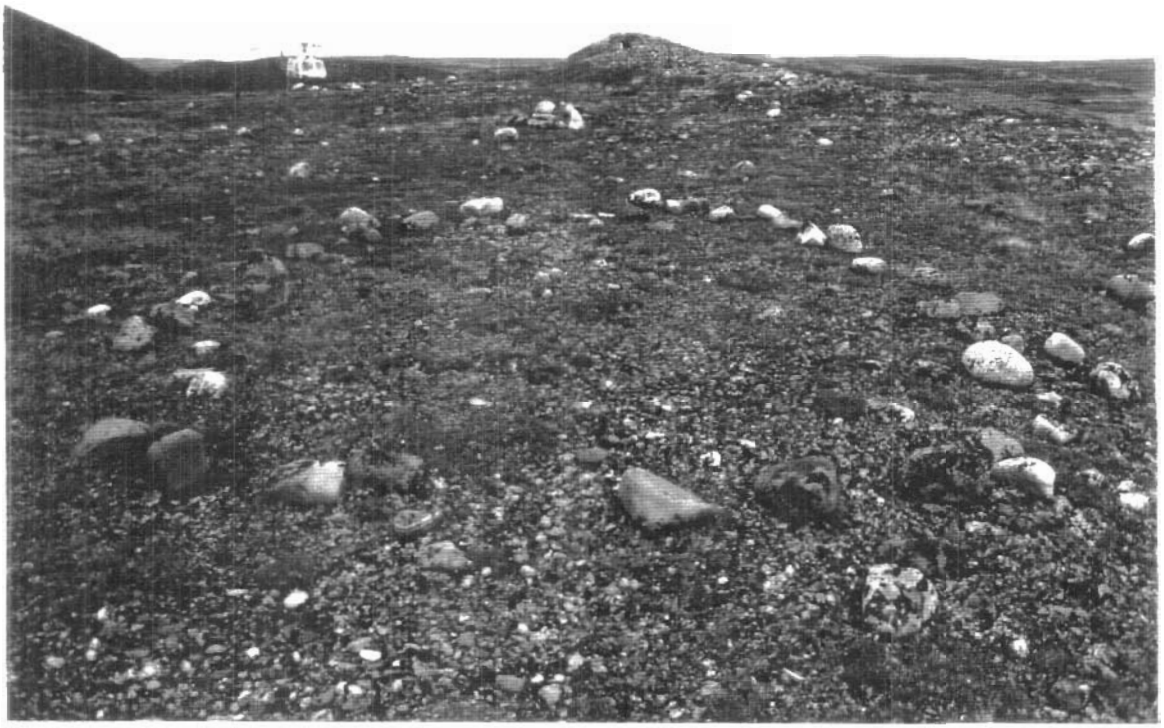

Plate 13: Large Oval Tent Ring (TR11) at MbNt-9

Plate 14: Square Tent Ring (TR10) at MbNt-9

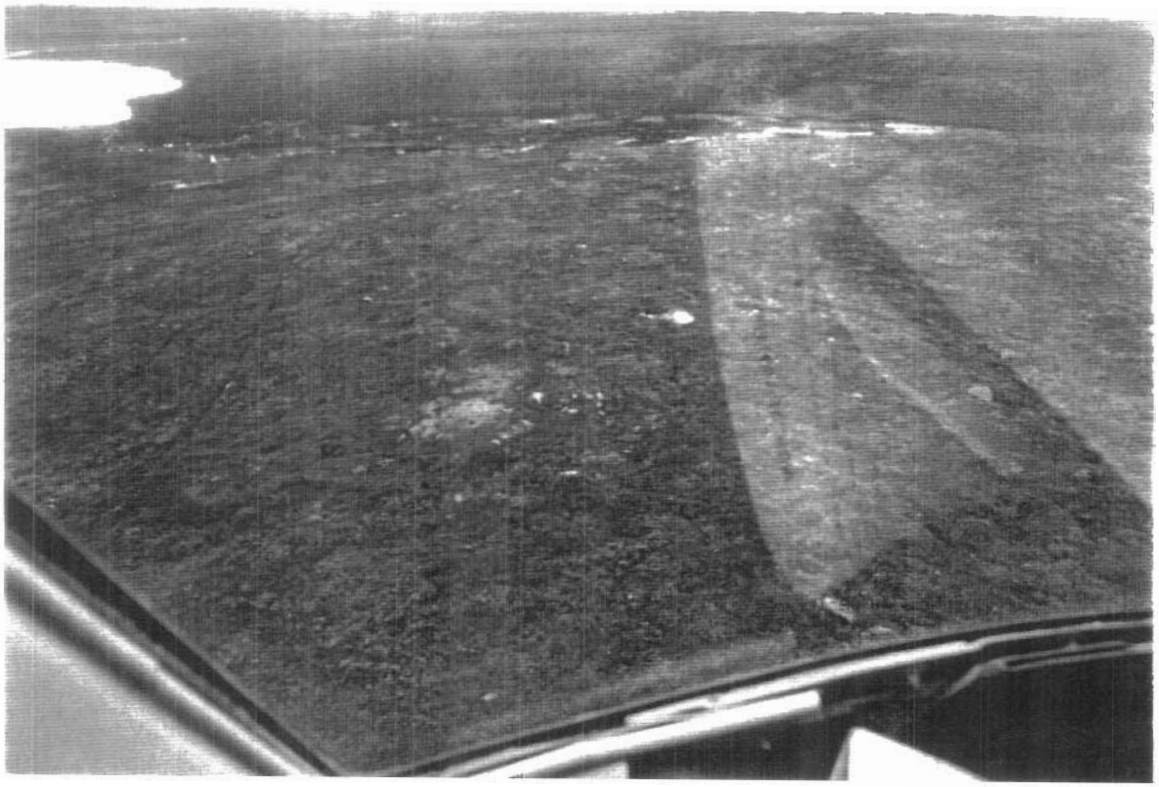

Plate 15: Aerial View of MbNu-1

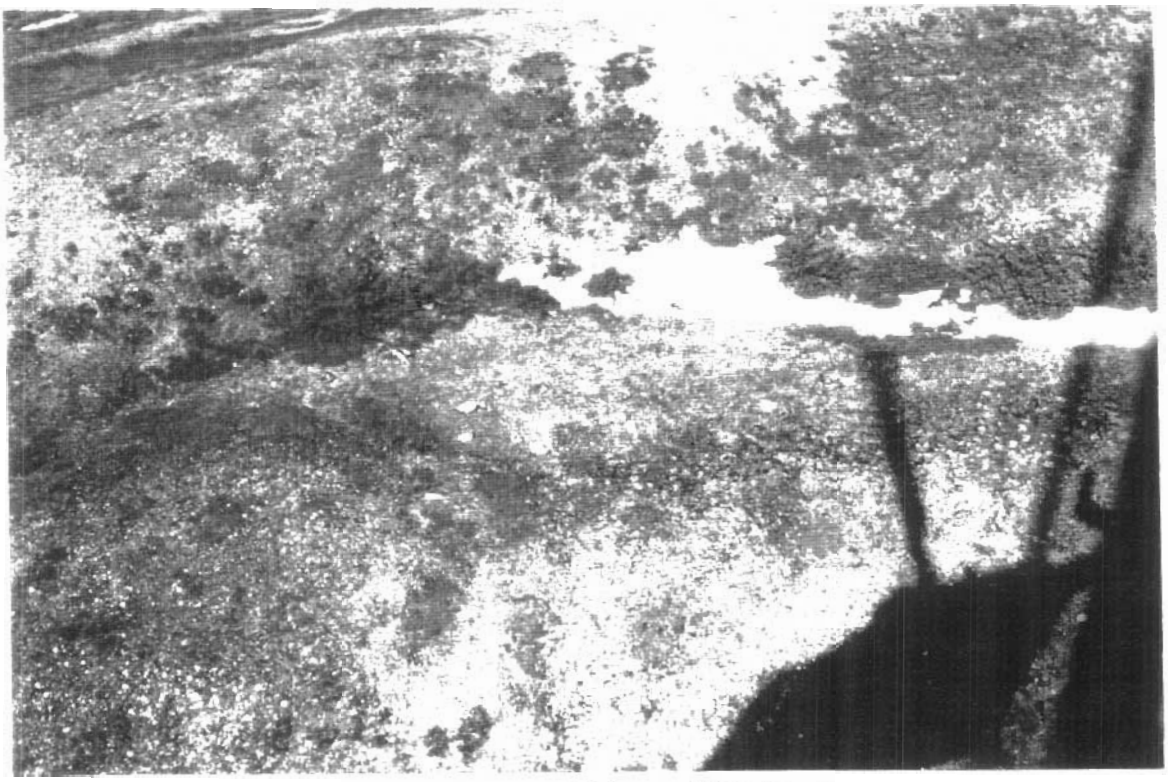

Plate 16: Aerial View of MbNv-1

Plate 17: Tent Ring 1 at MbNv-2

Plate 18: Tent Ring 2 and Antlers at MbNv-2

MbNv-3 66° 11′ 41"N/111° 08′ 16"W

The site is located on a bedrock outcrop promontory on the north shore of the west arm of Kathawachaga Lake. The bedrock outcrop overlooks a stream channel to the east and a wide level gully to the west. The top of the outcrop is cluttered with large glacial erratic boulders. A sparse scattering of quartz flakes occurs on the west side overlooking the gully. Numerous caribou trails threaded through the gully, suggesting that this location could be and always has been an optimum site for intercepting the herds. No culturally diagnostic material is present.

MbNv-4 66° 11′ 40"N/111° 08′ 34"W

MbNv-4 is located on the massive bedrock outcrop promontory on the north shore of the west arm of Kathawachaga Lake. The bedrock outcrop overlooks the gully adjacent to MbNv-3. A single, disrupted, circular (?) tent ring occurs on a small level area approximately 10 metres above the lake shore. A quantity of recent historic material occurred in the vicinity of the tent ring including a jam tin, an Imperial Oil gasoline container, a 'Klim' powdered milk can, and several formaldehyde tins. The Klim tin is probably the most temporally diagnostic artifact having been produced between the early 1950s and late 1960s. Discussion with geologists elicited the information that formaldehyde is not used in any standard mineral testing. Therefore, this is probably a biologists' field camp.

McNt-1 66° 23′ 55"N/110° 30′ 55"W

This site is located on the major north/south esker northeast of Kathawachaga Lake immediately north of the location where the river cuts through the esker. It occurs on the upper ridge of the esker as well the lower, western ridge overlooking the river (Plate 19). The site consists of numerous concentrations of quartz flakes, with an extensive scatter of flakes between the concentrations. The lithic scatter diminishes as one moves northward along the upper ridge. A second area of concentration occurs approximately 500 metres north of the first area. Some concentrations consist of clusters of more than 100 flakes of clear or white quartz. The ridge of the esker between the two major foci has isolated flakes scattered throughout. A further scatter of isolated flakes and small clusters of flakes occur as far as 200 metres north of the second focus of the site. A heavily lichen-encrusted hearth (Plate 20) occurs on the lower ridge at the southern end of the site overlooking the meander scars of the river.

From the upper ridge, one can see to the horizon of the sedge/grass plains on both sides of the esker. The dense concentration of lithic debris suggests that this was a preferred vantage spot for caribou herd observation. It would have been a likely interception spot when the caribou would funnel through the esker cut during spring and fall migrations.

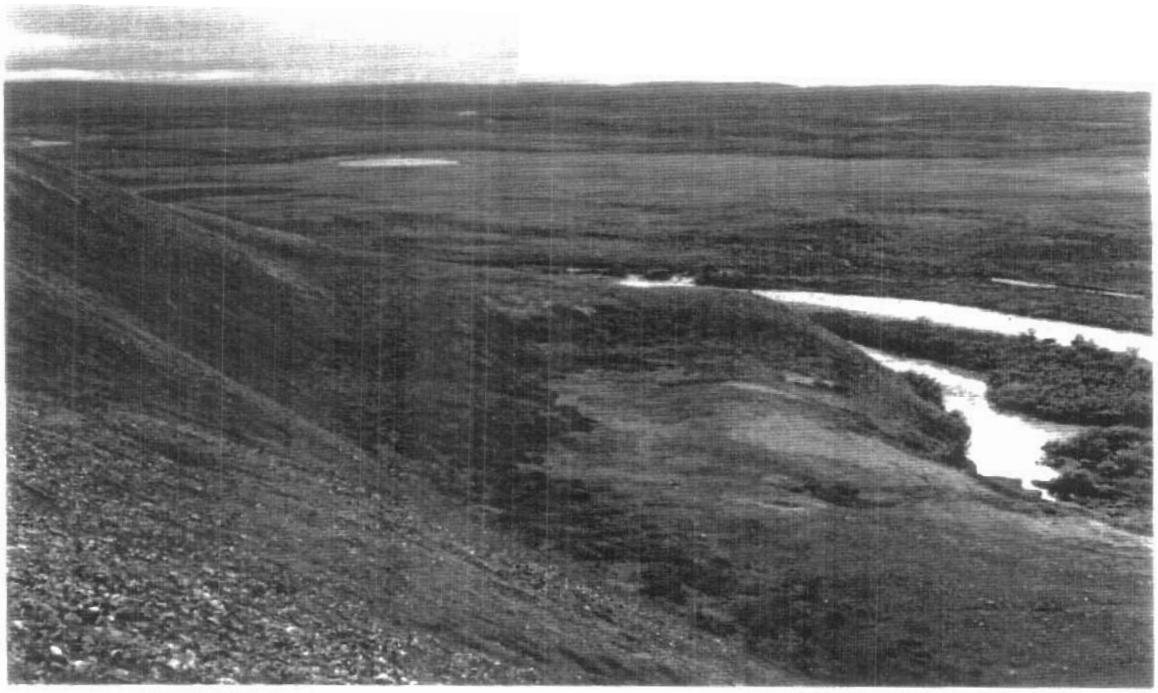

Plate 19: Southern Portion of McNt-1, Overlooking River Cut in Esker

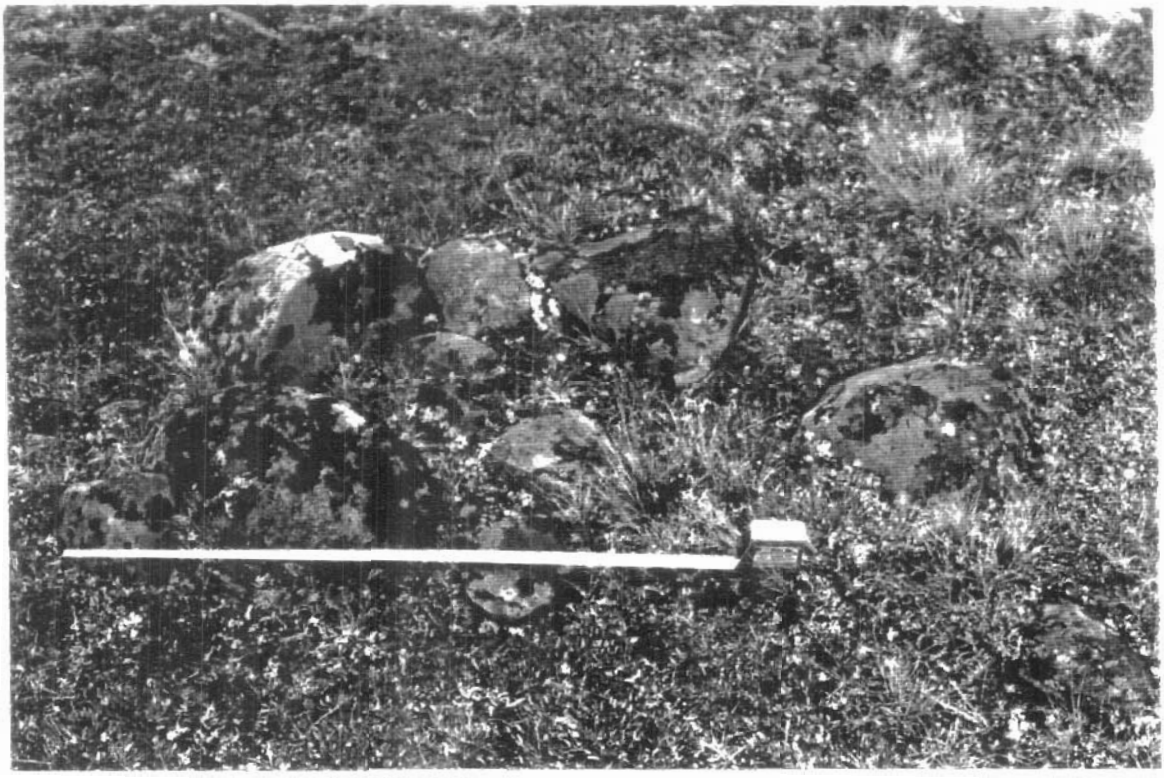

Plate 20: Hearth at McNt-1

McNt-2

66° 25′ 37"N/110° 30′ 58"W

This site occupies the southern portion of the large, flat plateau formed by the junction of the major north/south esker (northeast of Kathawachaga Lake) and an eastern esker which parallels the Cracroft River. The western edge of the esker grades into rolling terrain (Plate 21) adjacent to the lake shore. This lake, eventually draining into the Burnside River, probably is a seasonal (possibly year round) source of fish. Willow (*Salix* sp.) grows to a considerable height, up to two metres, in the protected areas along the river valley (Plate 22). The sides of the esker are covered with blueberries (*Vaccinium* sp.), crowberries (*Empetrum nigrum*), and bearberries (*Arctostaphylos uva-ursi* or *Arctostaphylos rubra*). The presence of these food resources make the location attractive for human occupation as well as bear. During the survey, fresh tracks and scat of an adult and cub were observed. This, plus the presence of an adult grizzly bear (*Ursus arctos*), resulted in the tent ring site, on the upper plateau, being named "Mesa Ursus".

McNt-2 is situated at the southern end of the plateau (Plate 23) and has a good view of the surrounding countryside. The site consists of thirteen tent rings in three more or less parallel rows (Figure 3). Three types of tent rings are present: large, circular patterns with lateral guy rope rows (Plate 24), large circular patterns with circular guy rope rock placements (Plate 25), and simple oval/circular patterns (Plate 26). All tent rings were measured and surveyed (Table 3).

Several associated rock features occur at the site. A semi-circular stone structure, possibly a hunting blind (Plate 27), is located at the eastern edge of the plateau. Clusters of cobbles were present throughout the site, perhaps as source piles for tent ring construction. Three cairns (or piles of cobbles) occurred on the edges of the plateau, perhaps serving as inuksuit. One was present on the eastern edge adjacent to Tent Ring 10, while two were on the southwestern edge of the plateau. A linear row of contiguous medium cobbles occurred north of Tent Ring 11 (Plate 28).

Associated artifacts included numerous weathered caribou bones, sawn caribou antler, a fragment of sawn wood, clusters of quartz flakes (especially north of the northern row of tent rings), and a .30-30 cartridge case. The tent rings with guy rope rocks (either linear rows or circular patterns) could represent relatively recent Inuit occupation. The tent rings without guy rope rocks may represent earlier Inuit occupation and the quartz flaking debris would derive from a Precontact component. Vegetational cover is moderate and would obscure small artifacts and lithic manufacturing locations.

Plate 21: View of Lake and Western Edge of Esker near McNt-2

Plate 22: River Draining Lake South of McNt-2

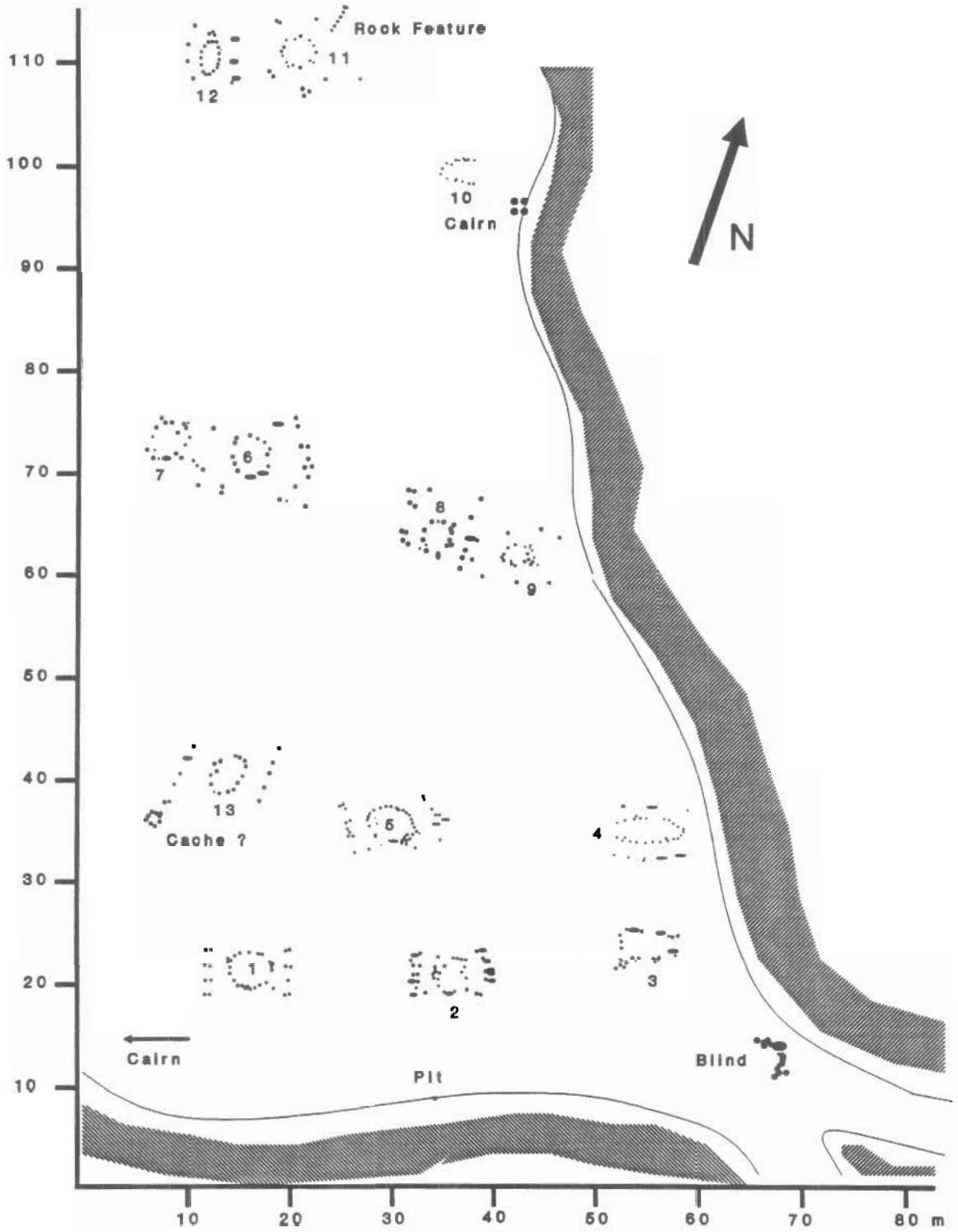

Figure 3: Map of McNt-2

Plate 23: Aerial View of McNt-2 (Mesa Ursus)

Plate 24: Circular Tent Ring with Lateral Rows of Guy Rope Rocks (TR12) at McNt-2

Plate 25: Circular Tent Ring with Circular Placement of Guy Rope Rocks (TR6) at McNt-2

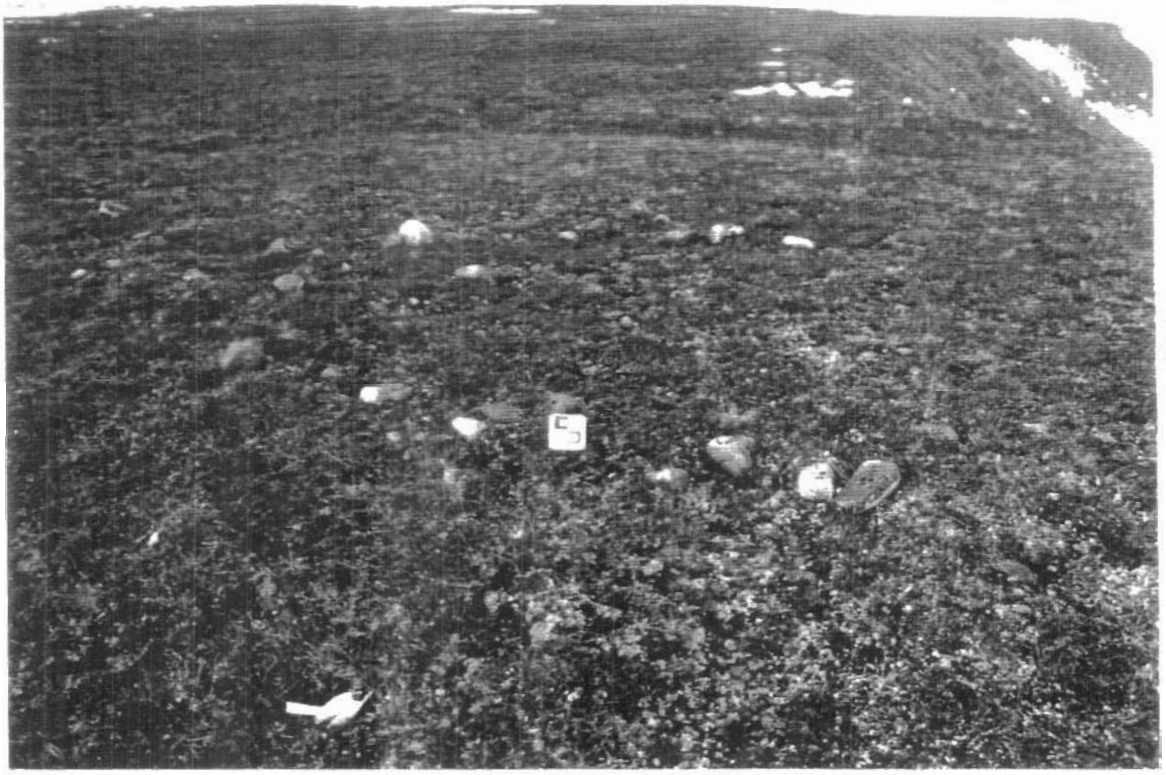

Plate 26: Oval Tent Ring without Guy Rope Rocks (TR10) at McNt-2

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Circular	420 x 350	Irregular Medium cobbles	NNW	2 rows double rocks	Interior divisions
2	Circular	320 x 240	Irregular Medium cobbles	NNW	2 rows double rocks	
3	Circular	225 x 270	Irregular Medium cobbles	ENE	None	Extremely disrupted
4	Circular	240 x 330	Irregular Medium cobbles	W	2 rows single rocks	
5	Circular	410 x 300	Nearly contiguous Medium cobbles	SSE	2 rows double rocks	Cobble cluster at southeast end
6	Circular	330 x 240	Irregular Medium cobbles	NW	circular pattern	
7	Oval ?	350 x 220	Irregular Medium cobbles	SSW	None	Poorly defined
8	Oval	300 x 210	Irregular Large cobbles	SSW	2 rows: double rocks single rocks	
9	Circular	220 x 210	Irregular Medium cobbles	S	circular pattern	Cobble cluster at southeast end
10	Oval ?	290 x 270	Irregular Small cobbles	E	None	Incomplete, open at east end
11	Circular	360 x 320	Irregular Small cobbles	SE	sparse circular pattern	Rock feature adjacent
12	Circular	290 x 230	Irregular Medium cobbles	SSE	2 short rows of single rocks	Small cobble cluster at south end
13	Circular	390 x 300	Irregular Medium cobbles	S	2 rows single rocks	Overgrown

Table 3: Data on Tent Rings at McNt-2

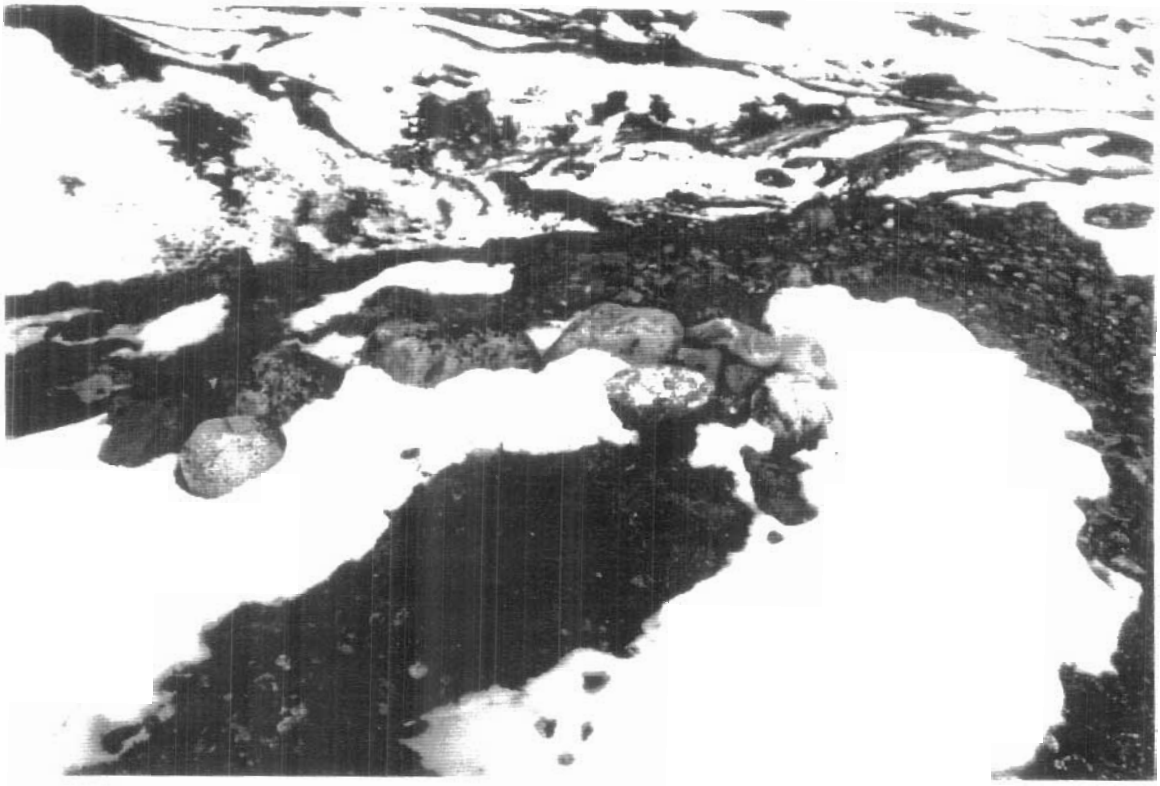

Plate 27: Blind Feature at McNt-2

Plate 28: Linear Rock Feature at McNt-2

McNt-3 66° 26′ 14"N/110° 32′ 50"W

The site is located at the western end of the western extension of the major north/south esker northeast of Kathawachaga Lake. A small scatter of quartz flakes occurs on the high ridge of the esker overlooking the lake. This small site (20 m^2) has an unobstructed view of the plains to the east as well as the lake shore and plains to the west.

McNt-4 66° 28′ 03"N/110° 36′ 40"W

This small chipping station is located on the east end of the west continuation of the major north/south esker northeast of Kathawachaga Lake. It is in a wind-eroded portion of the ridge overlooking the lake. The quartz flakes are in a small concentration which occupies approximately 4 m^2.

McNt-5 66° 28′ 15"N/110° 37′ 56"W

McNt-5 is located on the west continuation of the major north/south esker northeast of Kathawachaga Lake, directly north of the small pond at the north end of the large unnamed lake. The site extends along the western edge of the esker (Plate 29) with two tent rings widely separated from the main grouping. Tent Ring 16 is approximately 250 metres west of the main cluster and Tent Ring 17 (Plate 30) is approximately 250 metres west of Tent Ring 16.

The site is extensive, comprised of seventeen tent rings, several fireplace hearths, and at least three rock features (Figure 4). Four distinct styles of tent rings were observed (Table 4):

a. a relatively square arrangement—Tent Ring 13;
b. an oval/circular style composed of interrupted medium cobble placements—Tent Rings 1, 7, 8, 11, 12, 14, 15, 16, 17 (Plate 31);
c. an oval/circular style composed of nearly contiguous medium cobbles—Tent Ring 3; and
d. an oval/circular contiguous or nearly contiguous pattern of large cobbles—Tent Rings 2, 4, 5, 6, 10 (Plate 32).

Tent Ring 9 is so severely disrupted that the shape, dimensions, and orientation cannot be ascertained, although it may have been circular to begin with.

It is worth noting that, in contrast with the majority of tent rings recorded at McNt-2, none of the tent rings at McNt-5 have rocks for guy rope attachments, either lateral rows or circular placements. The tent rings at McNt-5 range in size from Tent Ring 12 (430 x 340 cm) to Tent Ring 6 (180 x 140 cm). The size of the tent rings may be a function of the size of cobbles used for the generally smaller contiguous tent rings.

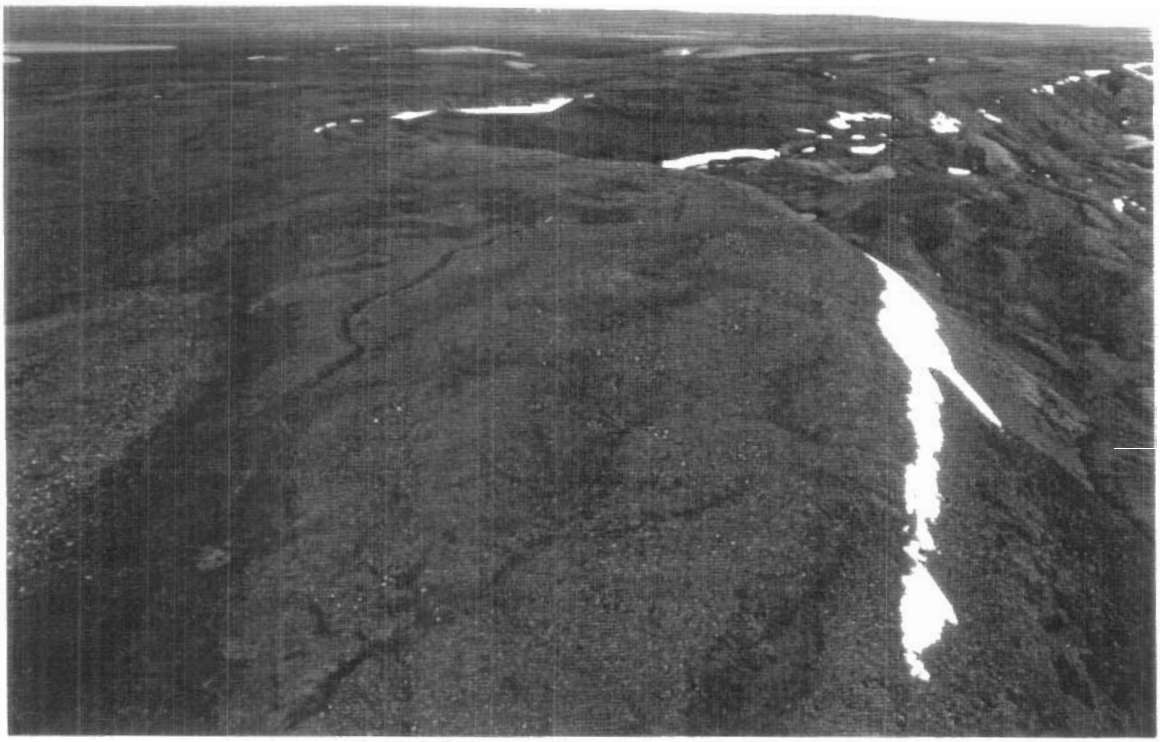

Plate 29: Aerial View of McNt-5

Plate 30: Aerial View of Tent Ring 17 at McNt-5

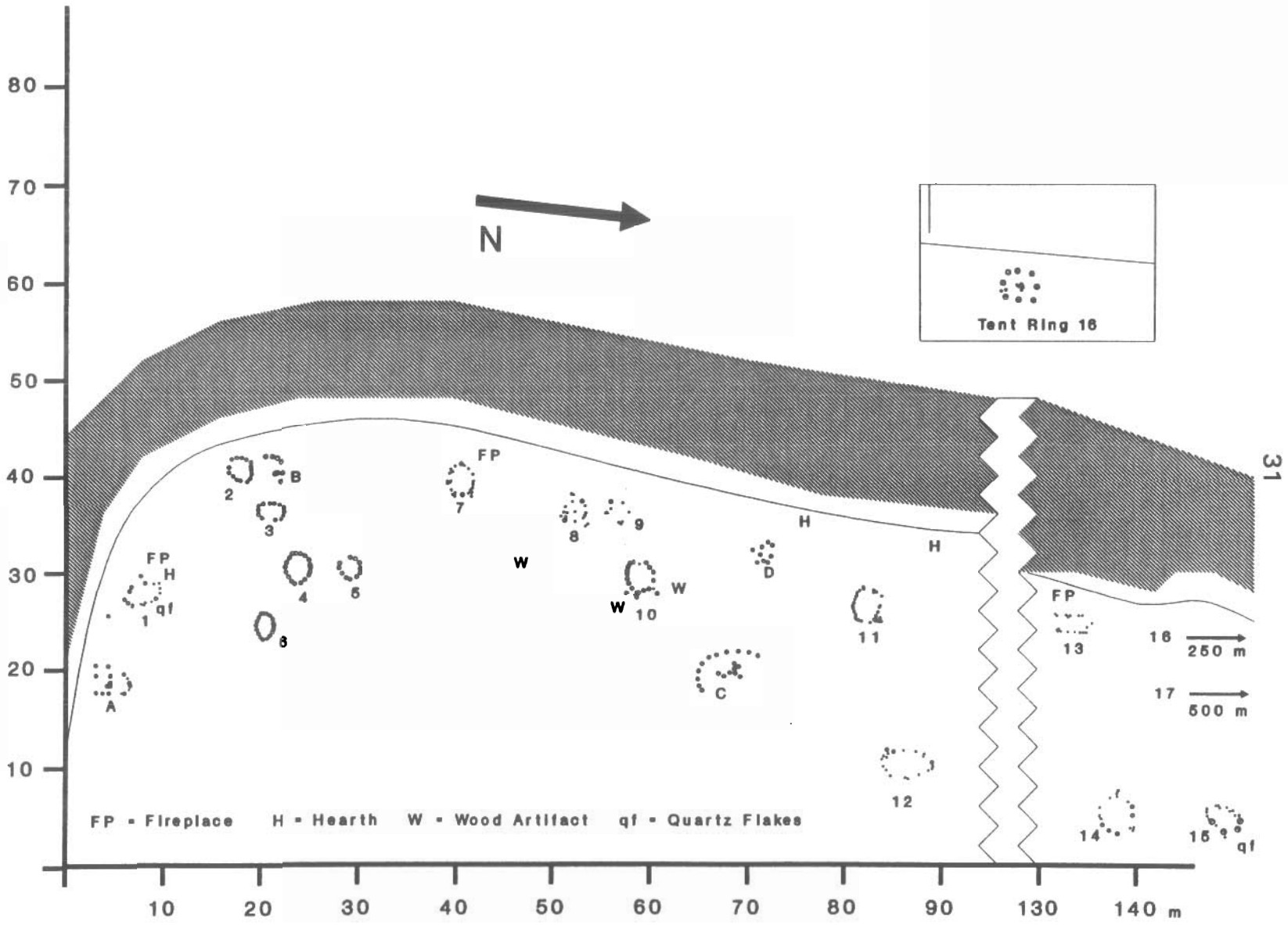

Figure 4: Map of McNt-5

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Circular	300 x 230	Irregular Medium cobbles	W	None	2 fireplaces at northwest corner
2	Circular	200 x 270	Nearly contiguous Large cobbles	S	None	Cannibalized tent ring to north
3	Circular	240 x 210	Nearly contiguous Medium cobbles	WSW	None	
4	Circular	260 x 220	Contiguous Very large cobbles	?	None	
5	Circular	210 x 160	Contiguous Very large cobbles	SE	None	
6	Circular	180 x 140	Contiguous Large cobbles	?	None	
7	Circular	270 x 210	Irregular Medium cobbles	SW	None	Fireplace to west on esker edge
8	Circular	240 x 180	Irregular Medium cobbles	?	None	Partially disrupted
9	Not known	? x ?	Irregular Medium cobbles	?	None	Extremely disrupted
10	Circular	300 x 220	Nearly contiguous Large cobbles	W	None	
11	Circular	270 x 240	Irregular. Small & medium cobbles	NE	None	Cluster of cobbles at NNE
12	Circular	430 x 340	Irregular Medium cobbles	S?	None	
13	Square	220 x 190	Irregular Medium cobbles	?	None	Partly disrupted, fireplace to SW
14	Circular	390 x 360	Irregular Large cobbles	?	None	Tabular stones at SW exterior
15	Circular	320 x 240	Irregular Medium cobbles	SW/ NE	None	Quartz flakes at north end
16	Circular	230 x 190	Irregular Medium cobbles	?	None	Cluster of rocks in centre of ring
17	Circular	350 x 300 (estimate)	Irregular Medium cobbles	W	None	Only observed from helicopter

Table 4: Data on Tent Rings at McNt-5

Plate 31: Interrupted Circular Pattern (TR15) at McNt-5

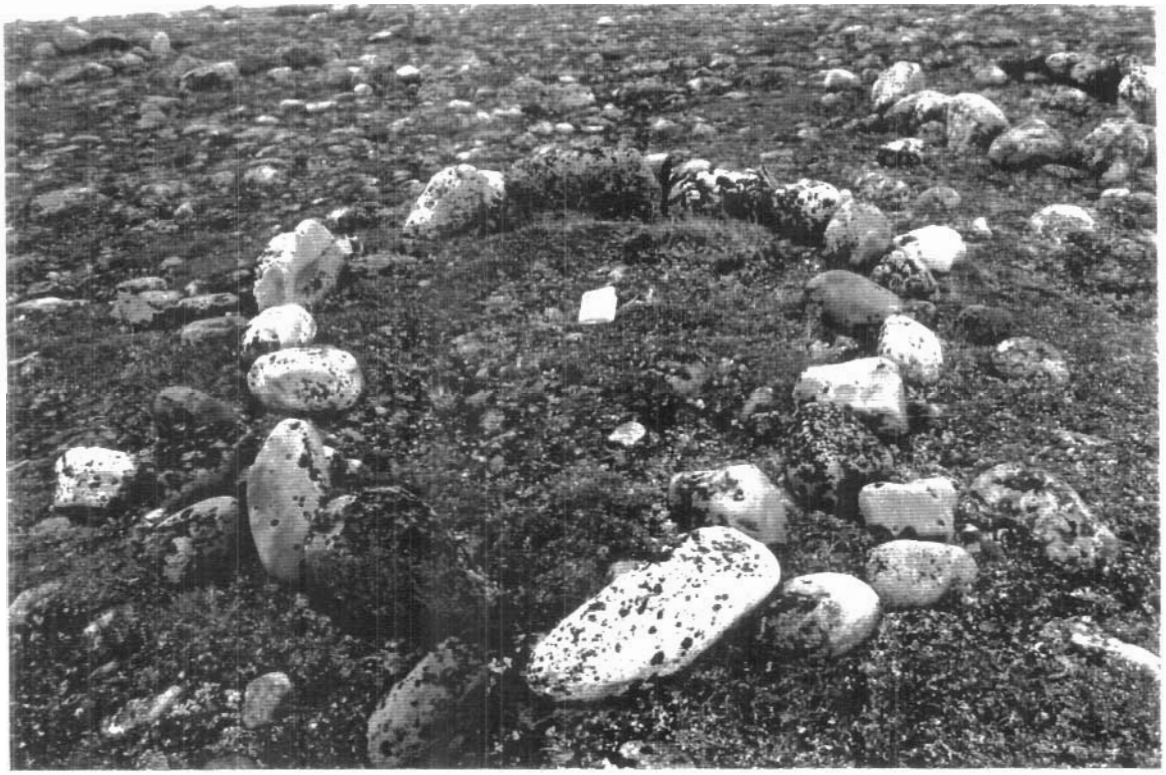

Plate 32: Contiguous Cobble Pattern (TR4) at McNt-5

Several rock arrangements were observed at McNt-5. Feature A, at the southern end of the site, has a generally squarish pattern with internal and external cobbles. Oriented north/south, the dimensions are 350 x 190 cm. Three outlier rocks form a linear row parallel to the west perimeter. This feature may be a disrupted square tent ring. Feature B is a partial arc of large cobbles very near Tent Rings 2 and 3. Given the degree of curvature and style of construction, it is probable that this is a cannibalized tent ring of the contiguous circle style (cf. Plate 32). Feature C (Plate 33) is an enigmatic arrangement of cobbles, placed in a semi-circular arrangement with an internal feature that resembles an open rectangle (opening towards the arc of stones) and a short perpendicular row of cobbles on the closed side (Figure 4). It may be purely coincidental but the short perpendicular row lined up with two white cobbles/boulders on the far ridge to the north. Several Inuit-style fireplace structures occurred throughout the area: two adjacent to Tent Ring 1, one adjacent to Tent Ring 7, and another adjacent to Tent Ring 13. Circular hearths occurred near Tent Rings 11 and 12. Throughout the site, tabular stones are present, occasionally surrounded by arcs or partial circles of small to medium cobbles. These also may represent cooking areas. Feature D, a stockpile of tabular stones, occurs near the edge of the esker between Tent Rings 10 and 11.

Associated artifacts consisted of several pieces of worked wood. One wooden artifact (3 x 2 cm) may have been a portion of a snowshoe as it has a slight degree of curvature, notching for attachment to other components, as well as a bevelled end for overlap joining with another part of the complete artifact. A considerable quantity of weathered caribou bone was scattered throughout the site. A muskox (*Ovibos moschatus*) skull was observed, as was a section of muskox horn which had been modified by cutting. The above artifacts suggest an historic occupation, although no commercially-manufactured goods were observed. This observation is based upon the type of cutting and carving evident on the wood and horn artifacts. An earlier Precontact utilization of this location is suggested by the presence of a small cluster of quartz flakes adjacent to Tent Ring 15 as well as two isolated flakes near Tent Ring 1.

McNt-6 66° 20′ 29"N/110° 32′ 19"W

This site is located on the major north/south esker northeast of Kathawachaga Lake, near the northern constriction of the large unnamed lake to the east. The extensive site overlooks a small lake on the west side of the esker (Plate 34). It extends along the western side of the esker with the tent rings on three successive levels (Plate 35).

McNt-6 is composed of seventeen tent rings and a few possible hearths (Figure 5). The majority of the tent rings occur on the western slope of the esker which grades into a peak to the north. Tent Ring 13 is on a higher level portion of the ridge, with Tent Rings 14-17 at a small plateau immediately below the crest of the esker. Four different styles of tent rings were observed (Table 5): a simple oval/circular arrangement—Tent Rings 2, 12-14; an oval/circular arrangement with lateral rows of rocks for guy ropes—Tent Rings 1, 3-11 (Plate 36); a simple square arrangement—Tent Ring 17 (Plate 37); and a

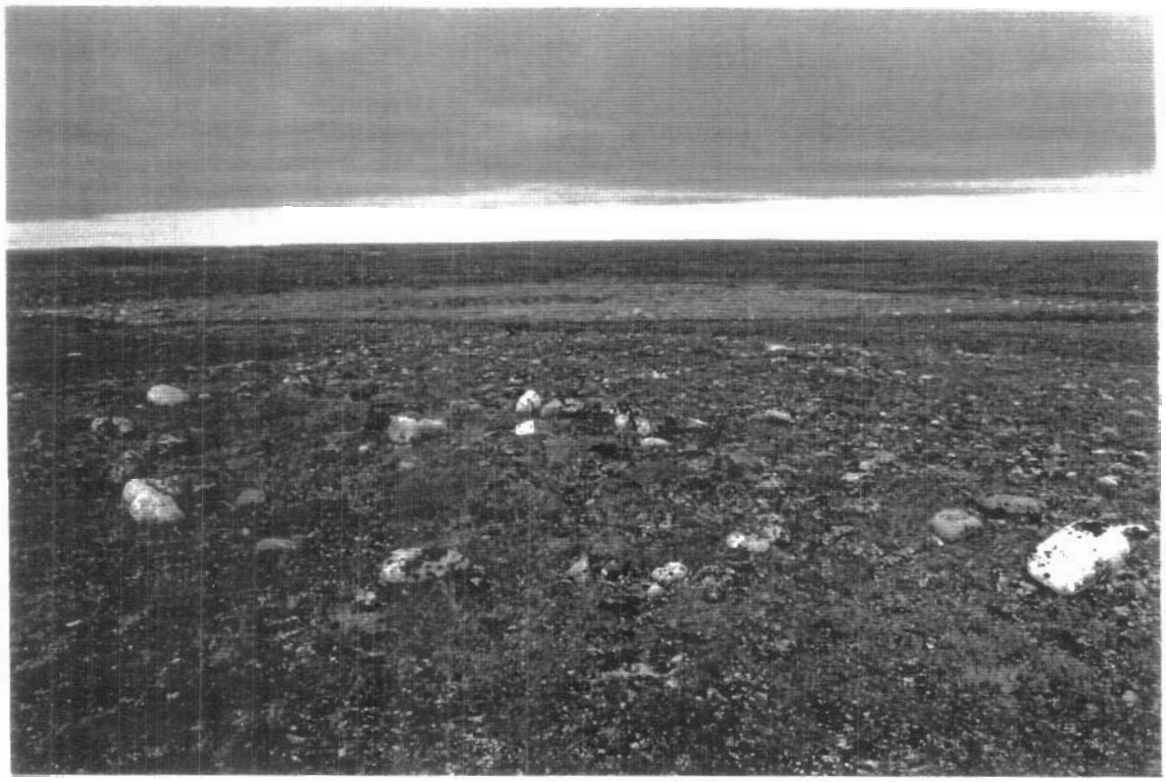

Plate 33: Feature C at McNt-5

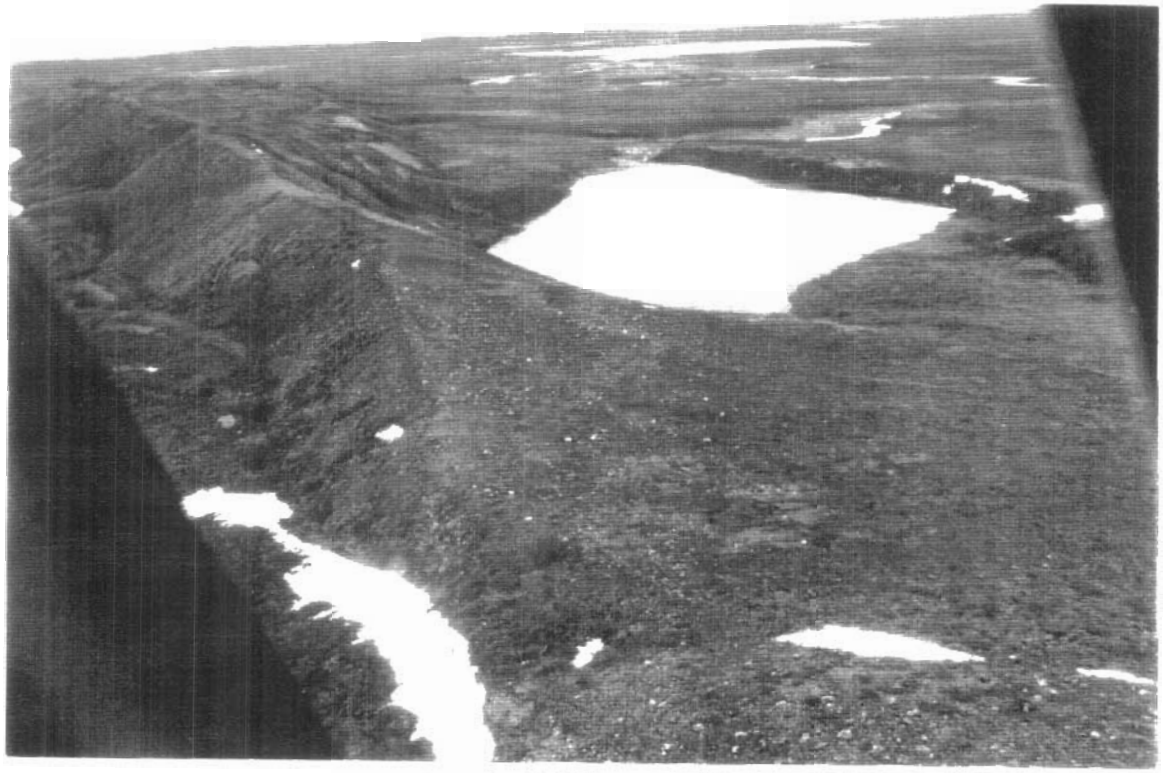

Plate 34: Aerial View of McNt-6

Plate 35: View of McNt-6 Looking Upslope to the North

Plate 36: Circular Tent Ring with Lateral Guy Rope Rocks (TR1) at McNt-6

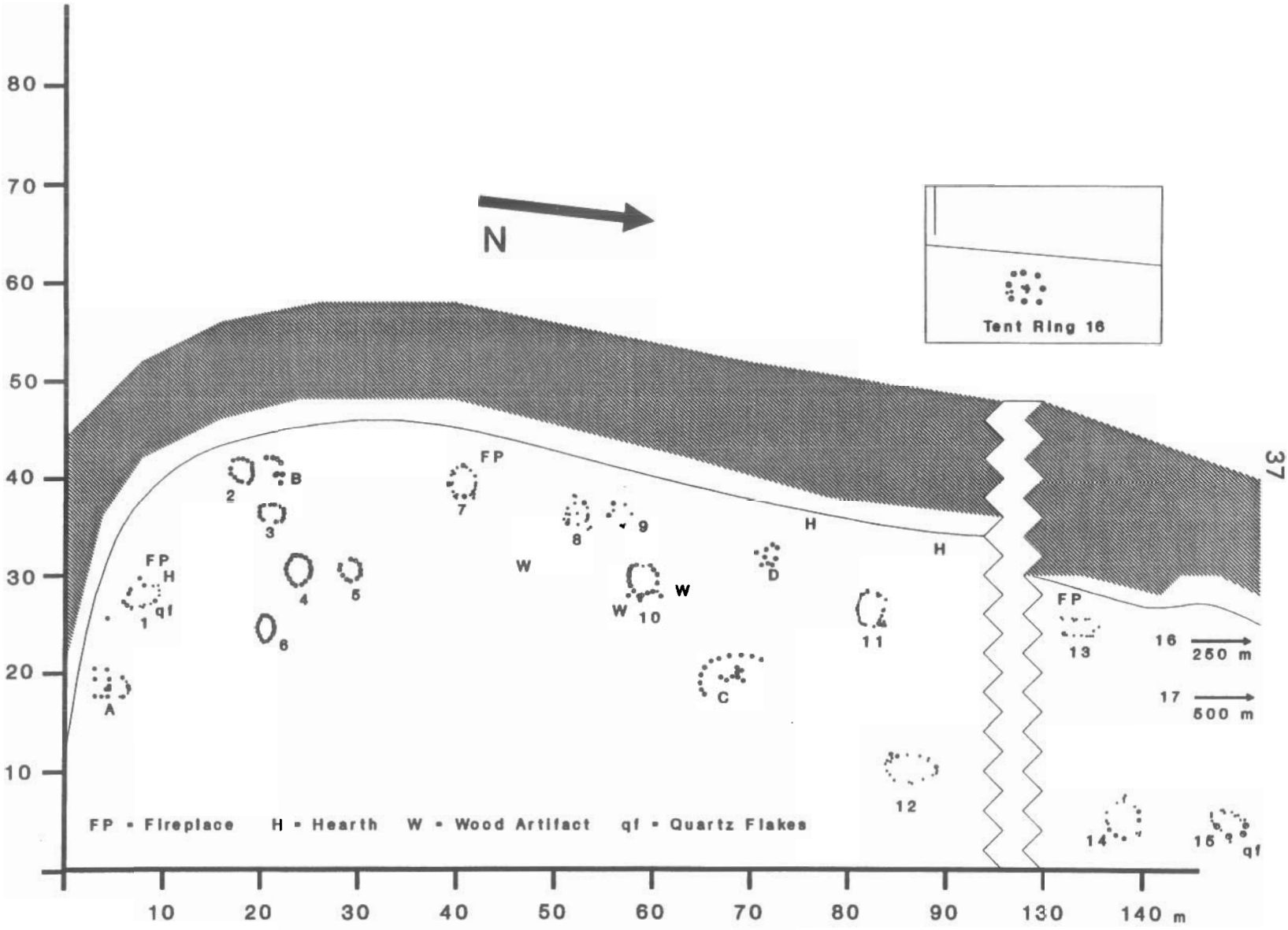

Figure 5: Map of McNt-6

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Circular	390 x 310	Irregular Medium cobbles	SSW	2 rows single rocks	
2	Circular	250 x 220	Irregular Medium cobbles	SW?	None	
3	Circular	310 x 270	Irregular Medium cobbles	NE?	2 rows single rocks	Disrupted
4	Circular	230 x 240	Irregular Medium cobbles	?	2 rows single rocks	Disrupted Inner hearth?
5	Circular	370 x 350	Irregular Medium cobbles	SE	2 rows single rocks	Inner hearth? Shares guy rocks with TR6
6	Circular	320 x 260	Irregular Medium cobbles	?	2 rows single rocks	Shares guy rocks with TR5
7	Circular	320 x 270	Irregular Medium cobbles	SW	2 rows single rocks	
8	Circular	210 x 170	Irregular Medium cobbles	?	1 row single rocks	Extremely disrupted
9	Circular	350 x 270	Irregular Medium cobbles	N	2 rows single rocks	Shares guy rocks with TR10
10	Circular	260 x 230	Irregular Medium cobbles	S/N	2 rows single rocks	Shares guy rocks with TR9
11	Circular	270 x 240	Irregular Medium cobbles	SSE	2 rows single rocks	
12	Oval	210 x 140	Irregular Medium cobbles	S?	None	Overgrown
13	Circular	320 x 230	Irregular Medium cobbles	?	None	Extremely disrupted
14	Circular	170 x 140	Irregular Small cobbles	NE	None	
15	Circular	180 x 170	Irregular Small cobbles	NNE	None	
16	Square	270 x 170	Irregular Medium cobbles	NNE	2 rows single rocks	
17	Square	200 x 140	Irregular Medium cobbles	SW	None	

Table 5: Data on Tent Rings at McNt-6

square arrangement with lateral rows of rocks for guy ropes (Tent Ring 16). Hearths were not readily observed due to the surface pavement of cobbles and a moderate vegetation cover. One fire pit/hearth is located on the highest level near Tent Rings 14 and 15. Other poorly-defined hearths may be present on the lowest level among the majority of the tent rings. Tabular stones and small cobble arrangements, suggesting interior hearths, were present in Tent Ring 4 and Tent Ring 5. Two unusual rock arrangements were observed. Each consisted of a single, large, oblong, pink cobble standing upright which is flanked by smaller white cobbles on opposite sides. These two features are placed one metre apart.

Other than a small quantity of weathered mammal bone throughout the site, very few artifacts were present. The most diagnostic is a rectangular tin box with a hinged lid. The metal box indicates that at least one of the occupations occurred after the people had access to commercial goods. It is most likely that this access would have been with the coastal trading posts, established after 1916.

McNu-1 66° 28′ 49"N/110° 42′ 30"W

The site is located on the west continuation of the major north/south esker northeast of Kathawachaga Lake, near the middle of the chain, overlooking a small unnamed lake. It is a small chipping station consisting of quartz flakes scattered over an area five metres x five metres. The location is severely wind-eroded with minimal vegetation.

McNu-2 66° 28′ 23"N/110° 50′ 59"W

This site is on a small point on the east shore of "Crossroad Lake", west of the small interrupted western esker. A single tent ring, albeit apparently disrupted, has a square/rectangular appearance (Plate 38). A small chipping station consisting of about a dozen quartz flakes was visible in moderately dense dryas to the northwest of the tent ring. The two are probably not contemporaneous.

MdNu-1 66° 30′ 22"N/110° 47′ 07"W

MdNu-1 occurs on a flat area at the western end of the west continuation of the major north/south esker northeast of Kathawachaga Lake, approximately 4 kilometres east of the north arm of "Crossroad Lake". The site consists of two circular tent rings with no associated artifacts.

Tent Ring 1 measures 330 x 280 cm and has an opening at the south (Plate 39). Tent Ring 2 measures 370 x 340 cm and has an opening at the southeast (Plate 40). Both tent rings are composed of an irregular placement of medium cobbles and neither has guy rope attachment rocks. A severely weathered muskox skull is embedded in the moss in the gully below the site.

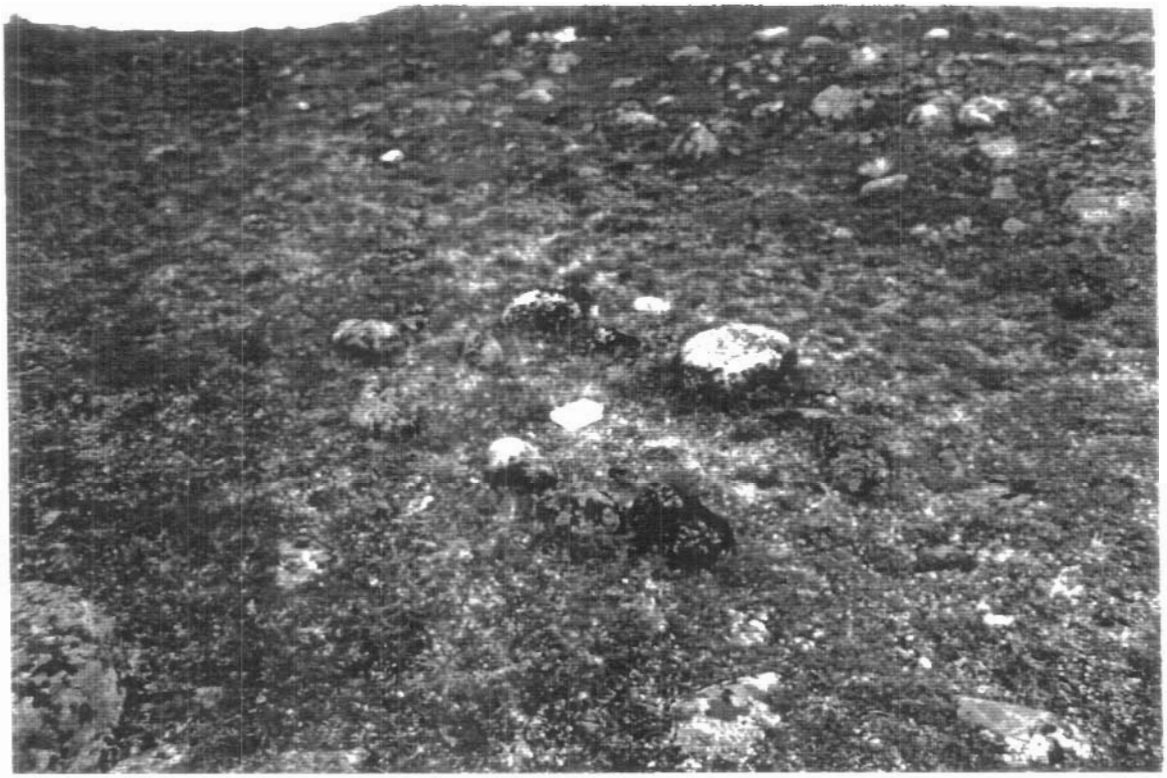

Plate 37: Small Rectangular Tent Ring (TR17) at McNt-6

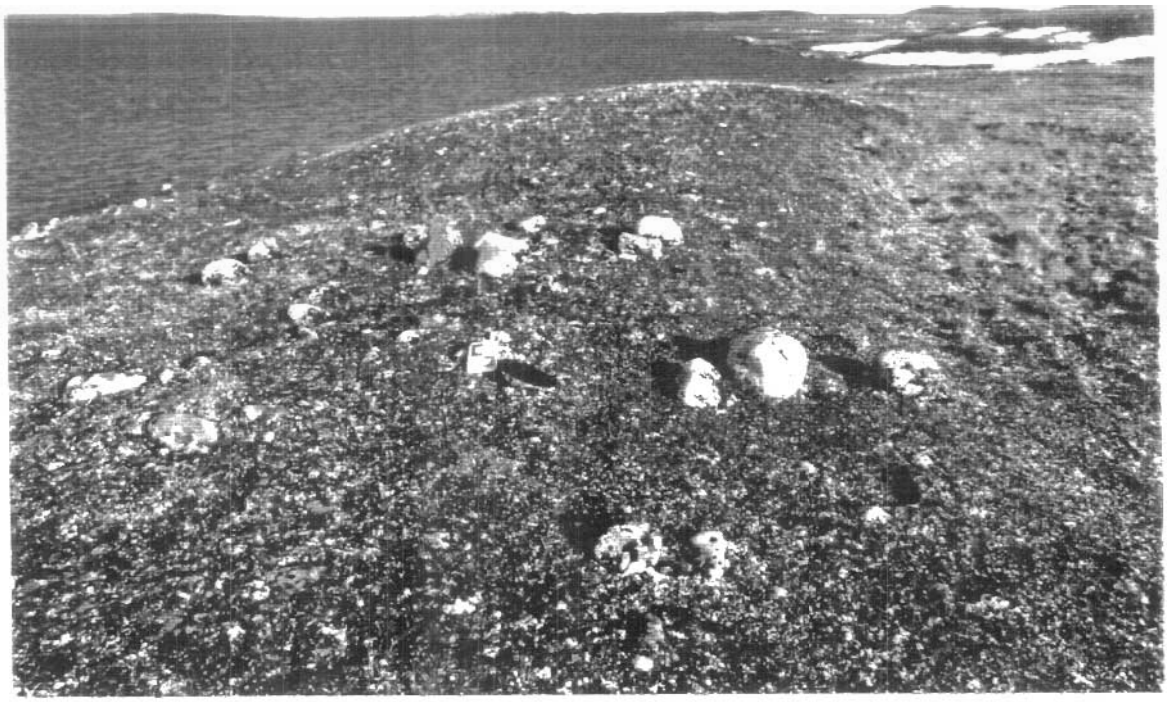

Plate 38: Tent Ring at McNu-2

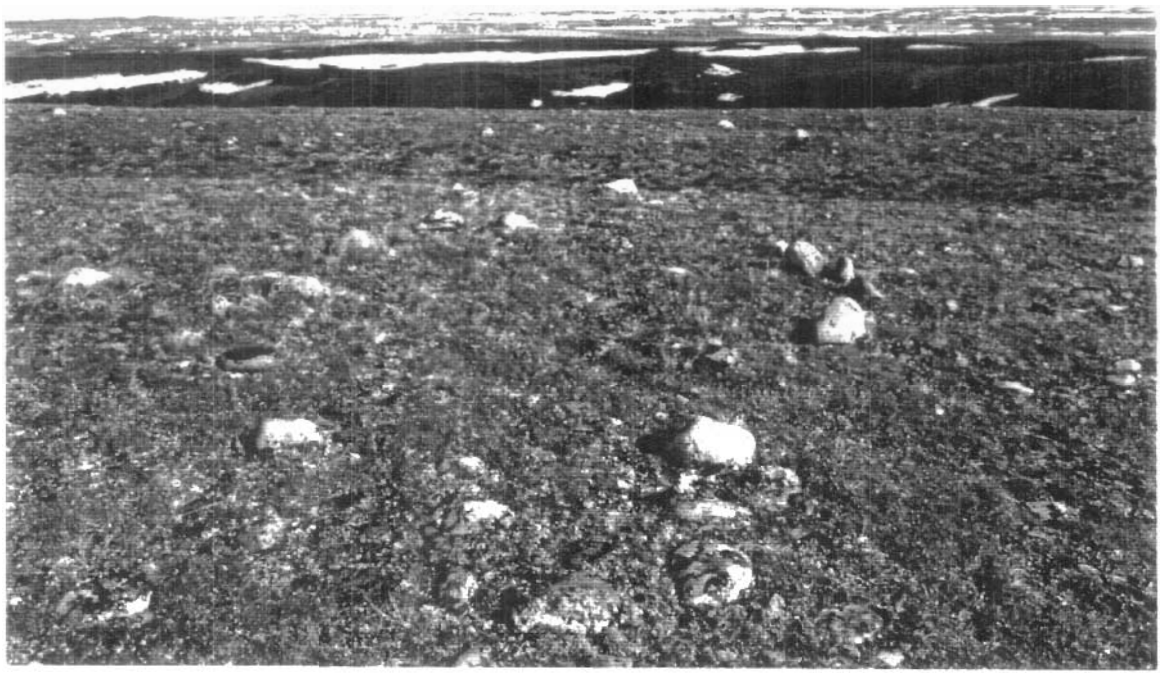

Plate 39: Tent Ring 1 at MdNu-1

Plate 40: Tent Ring 2 at MdNu-1

MdNw-1 66° 38′ 43"N/111° 26′ 22"W

This small chipping station is located on a deflated esker on the east bank of a tributary of the Hood River. It consists of approximately fifty white quartz flakes exposed through wind erosion (Plate 41). The esker extends along the east side of the tributary river and had no further evidence of occupation. Isolated components of the esker occurred on the west side of the river at the mouth and at the first bend to the south (Plate 42). Although these two locations may hold some potential for occupation sites, they were not examined as they are beyond the projected impact zone and the logistical timeframe precluded additional foot survey.

MeNu-1 66° 47′ 48"N/110° 59′ 00"W

This site, consisting of two quartz flake concentrations, occurs east of the upper rapids on the Hood River. It is located on the middle terrace of the north bank of the river. MeNu-1 was recorded by Kroker during Phase I of the Ulu Mine Project and is fully described in that report (Quaternary 1996:15).

MeNu-2 66° 47′ 30"N/110° 59′ 26"W

MeNu-2 is located on the upper plateau on the south bank overlooking the upper rapids of the Hood River. It consists of three simple tent rings and numerous quartz flake concentrations as well as an extensive quartz flake scatter (Quaternary 1996:15-21). The site, first recorded during Phase I, was revisited during Phase II. The lithic scatter was found to extend 30 metres further west than previously recorded and a complete chert projectile point (MeNu-2/2) was observed on the surface. This artifact, measuring 41.1 mm in length, 17.1 mm in width, and 5.4 mm in thickness, has the characteristic style of flaking identified with Arctic Small Tool and is identified as Dorset (200 B.C. to A.D. 1000). This complete projectile point, MeNu-2/2 (Plate 43a), is considerably different than the quartzite projectile point fragment, MeNu-2/1 (Plate 43b), curated during Phase I and identified as Thaltheilei.

MeNu-3 66° 45′ 50"N/110° 59′ 01"W

This site is a small cairn located on the west bank of the river which flows into the Hood River downstream of the upper rapids. MeNu-3 is approximately 3.5 kilometres south of MeNu-2. The cairn (Plate 44) is a moderate cluster of cobbles three metres from the edge of a rapidly eroding bank. It is circular with a basal diameter of 90 cm. The feature has a low profile and is not readily observable from a distance. The lowest rocks are deeply embedded. Considerable grass grows around the cairn suggesting moderate time depth as well as utilization of the immediate vicinity by birds as a perch thereby providing fertilizer for enhanced vegetative growth. There are no associated artifacts.

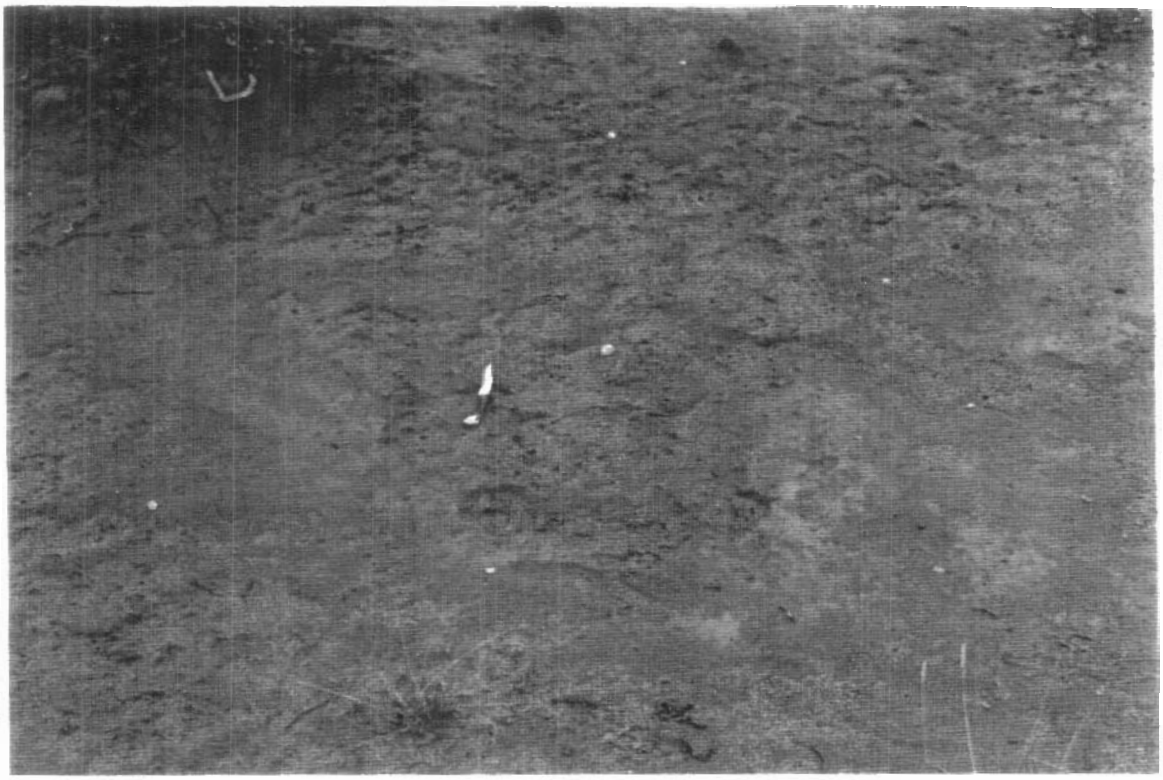

Plate 41: Chipping Station near Confluence of Tributary and Hood River (MdNw-1)

Plate 42: Esker Complex at South Bend of Tributary

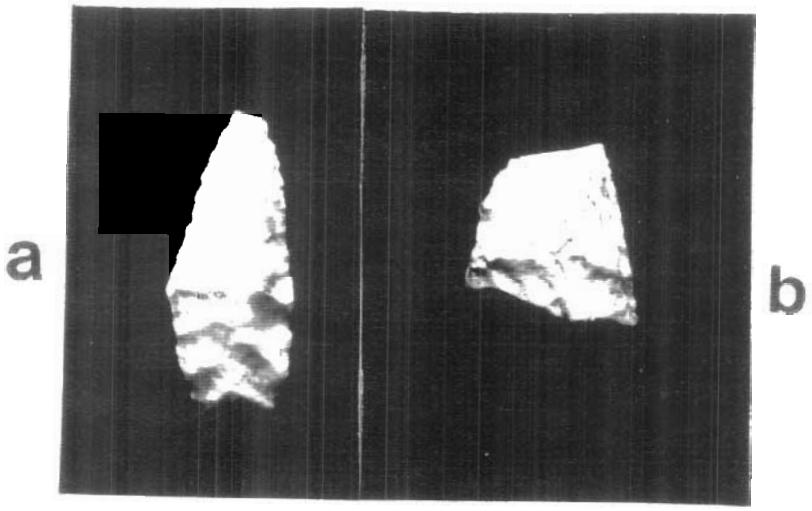

Plate 43: Lithic Projectile Points from MeNu-2 (actual size)

Plate 44: Cairn at MeNu-3

MeNv-1

66° 46′ 57"N/111° 01′ 01"W

This site is located upstream from the upper rapids on the Hood River and has ten tent rings at three different elevations (Figure 6). As has been the case in most occupation sites, the types of the tent rings at MeNv-1 are varied (Table 6).

Tent Ring	Shape	Dimension N/S x E/W	Rock Placement	Door	Guy Rocks	Comments
1	Square	325 x 285	Irregular Medium cobbles	W	Isolated no pattern	
2	Square	320 x 280	Irregular Medium cobbles	?	Isolated no pattern	Disrupted
3	Square	400 x 265	Irregular Medium cobbles	?	Isolated no pattern	Sparse outline
4	Circular	210 x 330 280 x 330	Irregular Small cobbles	?	None	Double ring or superimposed
5	Circular	310 x 290	Irregular Small cobbles	W?	None	Embedded
6	Square	350 x 250	Irregular Medium cobbles	?	None	Disrupted
7	Square	350 x 250	Irregular Medium cobbles	?	None	Extremely disrupted
8	Circular	320 x ?	Irregular Medium cobbles	?	None	Most missing
9	Circular	350 x 350	Sparse Medium cobbles	N	None	Very recent
10	Circular	380 x 350	Sparse Medium cobbles	N	None	Very recent

Table 6: Data on Tent Rings at MeNv-1

Different types of tent rings appear to cluster both by elevation and location. The three tent rings on the upper plateau west of the gully (Tent Rings 1, 2, and 3) are all square with similar patterns of guy rope attachments (Plate 45). Alternatively, the outlier rocks could have been used for anchoring a tarp awning or the outstretched fly of a "Bill Mason" style of tent. These probably are relatively recent tent rings and may be the result of early mineral exploration in the area.

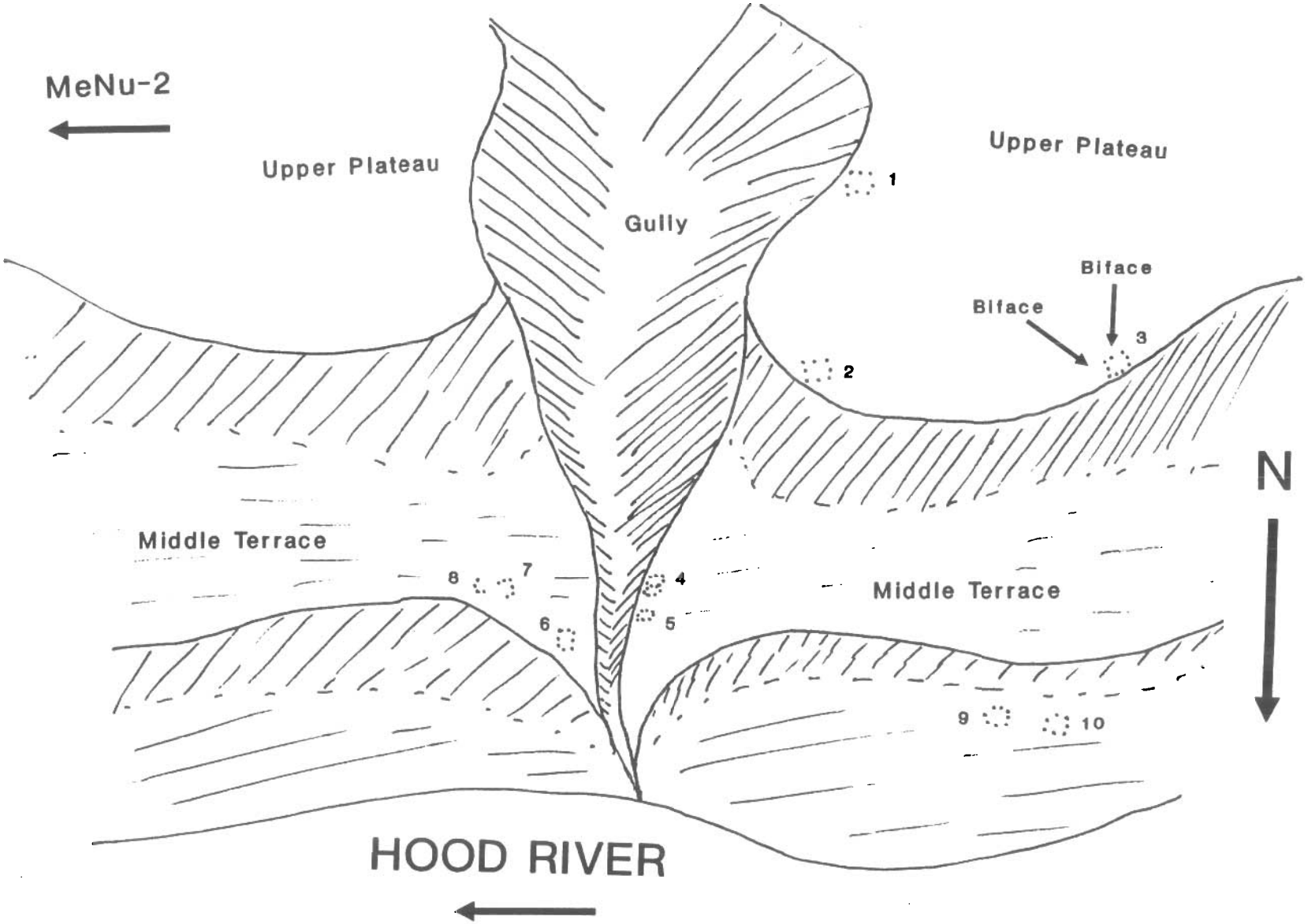

Figure 6: Sketch Map of MeNv-1 (not to scale)

Three poorly defined tent rings occur on the middle terrace to the east of the gully. Tent Ring 6 is relatively complete, while Tent Rings 7 and 8 are severely disrupted—probably cannibalized. Again, these appear to be relatively recent although not as recent as Tent Rings 9 and 10 (Plate 46) on the bank of the Hood River west of the gully. These lowest tent rings are probably the result of present-day tourists who travel down the Hood River by canoe.

The oldest tent rings, almost totally obscured by vegetation cover, occur on the west lip of the gully on the middle terrace. Tent Ring 4 may be a double tent ring or two immediately adjacent tent rings. The outer perimeter(s) are complete ovals of small cobbles but there only appears to be a single row of cobbles between the two. This could also result from a subsequent tent ring being constructed on top of, and using part of, a previous ring. Tent Ring 5 (Plate 47) has similar dimensions as either half of Tent Ring 4. No artifacts were visible in the immediate vicinity although the vegetation cover would obscure lithic flakes and/or tools. These two tent rings are similar to the three tent rings recorded at MeNu-2.

Two lithic artifacts were found at the location of Tent Ring 3 on the upper plateau. MeNv-1/1 is a black chert biface (Plate 48a) that measures 62.9 mm in length, 32.8 mm in width, and 10.7 mm in thickness. This tool has been produced from a lanceolate flake and has evidence of expanding overlapping flake scars around the perimeter. MeNv-1/2 is an ovate, white quartz biface (Plate 48b). It measures 73.5 mm in length by 48.3 mm in width with a thickness of 17.3 mm. The chert biface occurred in the interior, while the quartz biface was located slightly west of Tent Ring 3. These implements are not contemporaneous with the tent ring.

3.2 Corridor Surveys

All corridors begin at Lupin and head north with the ultimate terminus at the Ulu Mine site. The 1995 winter haul road followed lake ice to the north end of Contwoyto Lake, along the east side of the Burnside River, east on the ice of Kathawachaga Lake to the east end, north to the Cracroft River (crossing the major esker), and angling north-northwest to the Hood River, and then to Camp 3. The 1995 northern section, from the esker crossing near the Cracroft River to the Hood River crossing, has been eliminated from current route options. The options under current consideration (Figure 1) are described below. The archaeological team flew over each potential corridor by helicopter. Foot survey was undertaken at areas which held potential for archaeological sites.

3.2.1 Unit Lake Option

The Unit Lake route is a potential corridor which would bypass the Belanger Rapids and join up with the previously used corridor (1995 route). This route would cross Contwoyto Lake in a northeast direction arriving at the stream draining Unit Lake. The route then would angle northwest to meet the 1995 route.

Plate 45: Square Tent Ring (TR1) at MeNv-1

Plate 46: Tent Rings 9 and 10 at MeNv-1

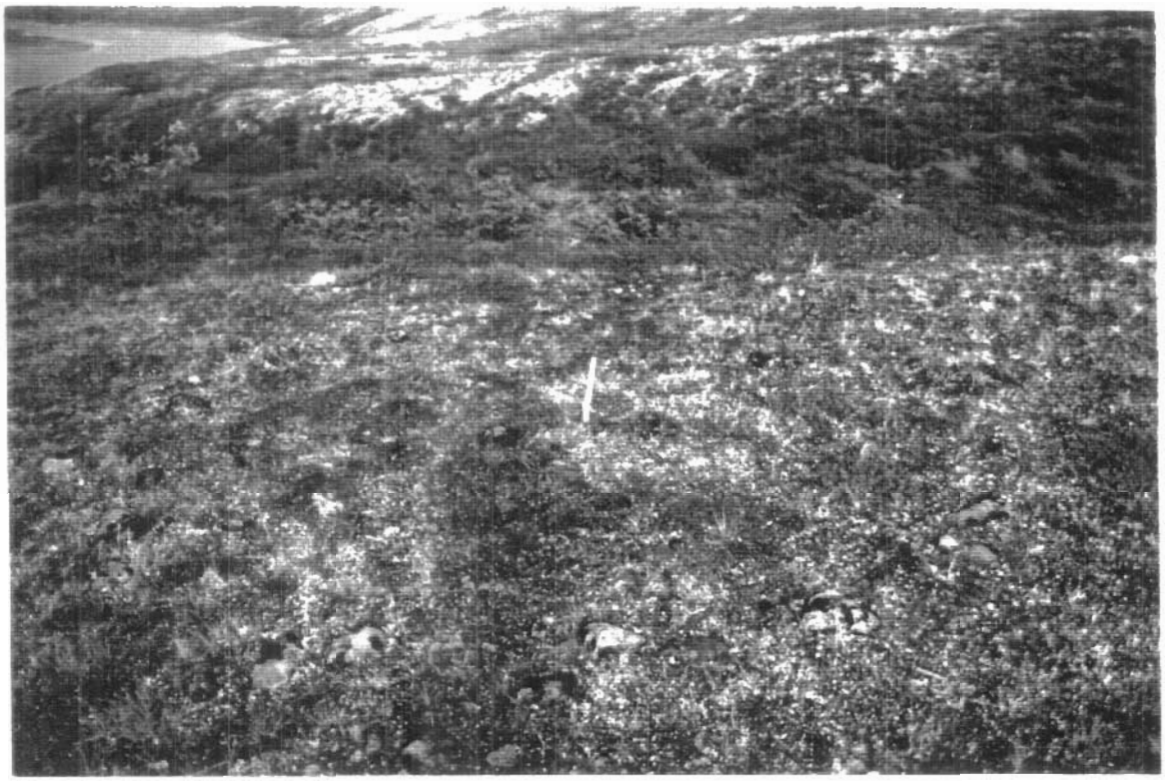

Plate 47: Tent Ring 5 at MeNv-1

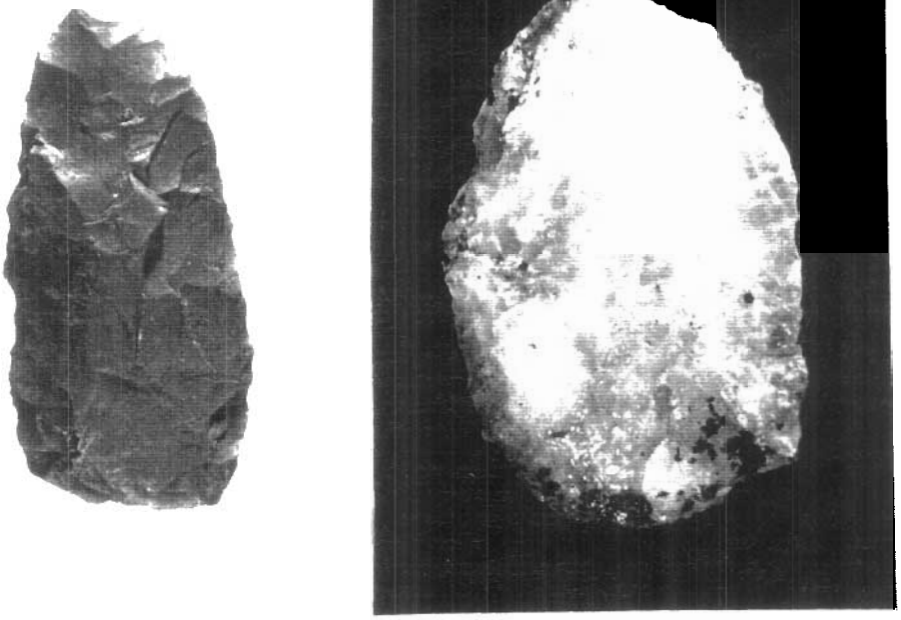

Plate 48: Bifaces from MeNv-1 (actual size)

The route, after crossing Unit Lake on the ice, follows a valley in the bedrock and passes over the top of the Peacock Hills before joining the 1995 corridor. The route was flown by helicopter and only two areas were noted which had archaeological potential, albeit relatively low. The bay containing the Unit Lake river has a small esker which appeared to contain no archaeological sites. This locality was not foot surveyed as priorities required investigation of higher potential areas first. The second area is the esker running northeast from the Peacock Hills into the lake where the two routes meet (west of the Belanger Rapids). As the esker could be a source of gravel, it was overflown at a low altitude. No archaeological sites were observed.

3.2.2 Eastern Route from Kathawachaga Lake to "Crossroad Lake"

This route extends almost due north from Kathawachaga Lake to the medium-sized lake on the west side of the major north/south esker and northwest to "Crossroad Lake", still on the west side of the esker. The potential corridor was overflown and consists of relatively level sedge and grass plains (Plate 49). The low relief means that drainage is poor and, as there had been a rainy period prior to the onset of Phase II, much of the ground was saturated and had standing water. As the esker, immediately to the east, could be a potential source of gravel, it was intensively examined both by helicopter and foot survey (Plate 50). The presence of the large number of sites (Figure 1) on this esker complex made it extremely unlikely that any occupation sites would have occurred in the lower, poorly-drained, resource-poor meadows. Lake/land interfaces within the potential corridor were examined by helicopter and in no instances were there any visible indications of archaeological sites. In most cases, the terrain at the lakeshore was not conducive to human utilization, i.e., poor visibility, lack of lithic resources, poor drainage.

3.2.3 Central Route from Kathawachaga Lake to "Crossroad Lake"

This route angles north-northwest across the relatively level plains. Occasional bedrock outcrops and boulder till deposits occur among saturated sedge meadows (Plate 51). No esker complexes are within the corridor although it does pass to the northeast of a small section of the discontinuous western esker. Potential along the entire route ranges between minimal and zero.

3.2.4 Western Route to "Crossroad Lake"

This route begins near the Lytton mine site west of the Willingham Hills. The Lytton site is already linked with Lupin by an established winter road. The projected route passes to the east of the esker and northeast to the Kathawachaga Lake crossing. The corridor traverses glacial outwash deposits and level upland plains (Plate 52). Kathawachaga Lake will be crossed, on the ice, over the western arm. Foot surveys of the north and south shores were undertaken, resulting in the identification of three archaeological sites (MbNv-2, MbNv-3, and MbNv-4), all of which lie west of the projected corridor.

Plate 49: Plains West of the Major Esker

Plate 50: Foot Survey on the Major Esker

Plate 51: Muskox and General Terrain along Central Corridor

Plate 52: Southern Section of Western Route to "Crossroad Lake"

The next section runs at a north-northeast angle, more or less paralleling the disjunct components of the west esker (Plate 53). Most of the area is low marshy meadow interrupted by low relief bedrock outcrops (Plate 54). All portions of the disjunct esker were foot surveyed, with only the southernmost containing a site (MbNv-1). Generally, the potential of the entire route is extremely low and the corridor, located east of the esker segments, would encounter no archaeological sites.

3.2.5 Eastern Route from "Crossroad Lake" to Hood River

This corridor runs slightly west of north. The area immediately north of "Crossroad Lake" is a glacial outwash plain which was intensively examined by helicopter as it could be a potential location for a midway way station on the route. The route follows a minor river system for most of the distance, passing east of a minor esker complex. The corridor angles away from the minor river to meet the Hood River at the wide section west of the upper rapids. The intermediate section of this route, north of "Crossroad Lake" to the esker south of the Hood River, is characterized by numerous low relief bedrock outcrops (Plate 55) interspersed with small lakes and sedge/grass meadows. Several linear lakes (wide sections of the river) are oriented north/south and would form a major component of the route.

During the helicopter investigation of the area, none of the lakes and/or adjacent terrain appeared to be potential locations for archaeological sites. The northern portion of this route was surveyed on foot, yielding only the identification of a small cairn (MeNu-3) on the bank of the minor river. The terrain, observed during the foot survey, was relatively flat with few opportunities for long-range observation of game animals. The small lakes, being linked with the relatively sterile piscine environment of the Hood River, would not hold any attraction as a food resource location.

3.2.6 Western Route from "Crossroad Lake" to Hood River

This route runs west from "Crossroad Lake", over the minor height of land, and then northwestward along a tributary of the Hood River. The terrain of the initial portion of the route is very similar to that of the central Kathawachaga-"Crossroad" route. It consists of relatively flat sedge/grass plains interspersed with small lakes and marshy areas (Plate 56). When the route turns northward, the corridor traverses several small and medium lakes, eventually turning due north and paralleling the river channel until reaching the Hood River. The haul road would follow the Hood River, on the ice, to the north end of this section of the winter road.

Ice conditions at the locations of the series of rapids on the tributary will determine whether or not this portion of the route can be established on the river ice. During helicopter examination of the shores of the tributary at these rapids, the archaeological team found no evidence of archaeological sites. North of the major bend in the tributary, there are no more rapids and it is projected that the route will be on ice. The glacial

outwash/esker complex (Plate 57) on the east side of the tributary near the confluence of the Hood River was foot surveyed. A small chipping station (MdNw-1) was located.

Inasmuch as the Hood River is relatively wide and the route will be on river ice, minimal observation of the shoreline occurred. Overflights were at an elevation which would have allowed the identification of large-scale tent ring campsites such as McNt-2 or MbNt-6. Small, partially-embedded tent rings, like those at MeNu-2, may not have been observed. Occupation sites are possible at some locations along the Hood River, although no impact is probable.

3.2.7 Hood River to Ulu Mine Site

This section runs from the north shore of the Hood River over the bedrock upland to Reno Lake. The route traverses the ice on Reno Lake and joins the existing road facilities between Camp 3 and the Ulu Mine site.

Although no impact is probable on the southern shore of Reno Lake, it had been foot surveyed during Phase I (Quaternary 1996:10-12). The access route onto the north bank of the Hood River was foot surveyed during Phase II. The survey extended from a point 2 kilometres northwest of the projected corridor to the upper rapids. In the northern portion of the foot survey area, the terrain sloped from the high bedrock valley rim to the water, often with a moderately defined middle terrace. In the southern and eastern part of the area, the terrain was characterized by steep sharply-inclined bedrock slopes (Plate 58). No archaeological sites were present.

The middle section, traversing a moderate swale through the bedrock, was overflown by helicopter several times en route to other localities. This section has no potential for archaeological sites.

Plate 53: Middle Section of Disjunct West Esker

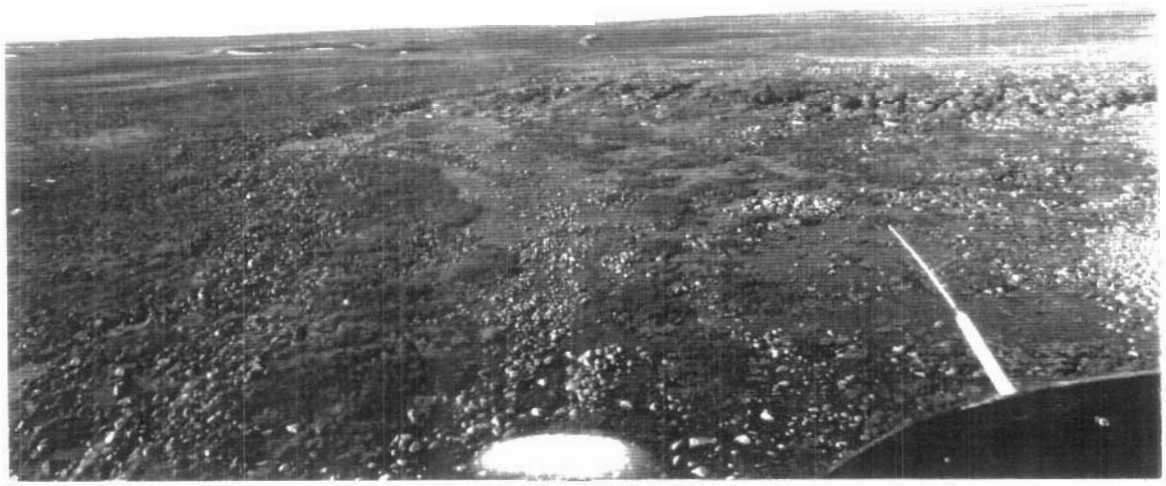

Plate 54: General Terrain of Western Route to "Crossroad Lake"

Plate 55: Looking North on Eastern Route North of "Crossroad Lake"

Plate 56: Southern Section of Western Route from "Crossroad Lake" after snowfall - August 21, 1996

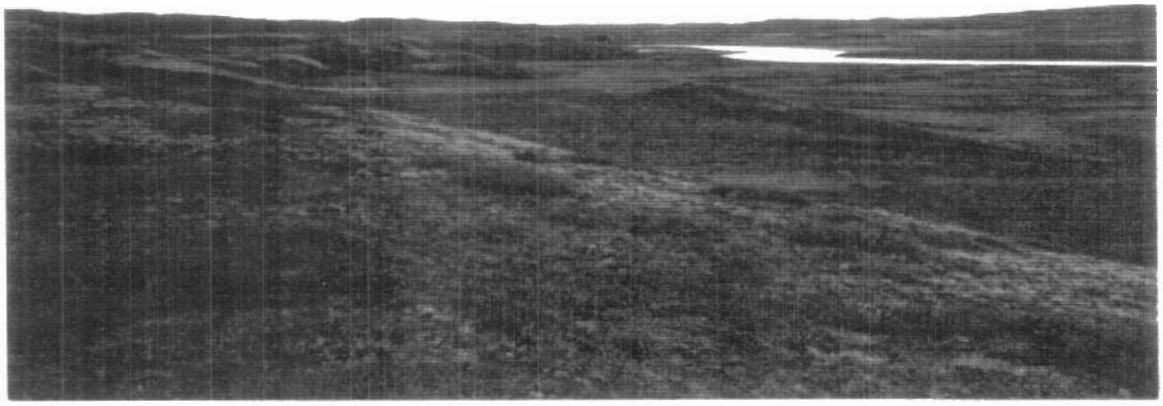

Plate 57: Esker Complex at Hood River Tributary

Plate 58: Hood River Downstream of Crossing

4.0 DISCUSSION AND SUMMARY

4.1 Interpretation of Archaeological Data

The recorded archaeological sites encompass an extensive temporal range, as well as being manifestations of different functions. Table 7 summarizes the types of sites.

Site	Location	Type	Age	Culture
MaNv-1	Riverbank	Campsite	Recent	Undetermined
MaNv-2	Riverbank/Esker	Chipping Station Campsite?	Precontact	Undetermined
MaNv-3	Riverbank	Cache, Feature	Undetermined	Undetermined
MaNv-4	Riverbank/ Lake shore	Cache Campsite	Recent	Undetermined
MaNv-5	Riverbank/ Lake shore	Campsite	Undetermined	Undetermined
MaNw-1	Esker	Feature	Undetermined	Undetermined
MbNt-1	Riverbank	Campsite	Precontact	Undetermined
MbNt-2	Riverbank	Campsite	Undetermined Recent	Undetermined
MbNt-3	Lake shore	Campsite	Recent	Inuit
MbNt-7	Esker	Campsite	Historic?	Inuit?
MbNt-8	Esker	Chipping Station	Precontact	Northern Plano Undetermined
MbNt-9	Esker	Campsite	Historic	Inuit
MbNu-1	Lake shore	Campsite	Undetermined	Undetermined
MbNv-1	Esker	Campsite	Recent?	Undetermined
MbNv-2	Riverbank	Campsite	Historic	Undetermined
MbNv-3	Lake shore	Chipping Station	Precontact	Undetermined
MbNv-4	Lake shore	Campsite	Recent	Euro-Canadian

Table 7: Summary of Archaeological Sites

Site	Location	Type	Age	Culture
McNt-1	Esker	Chipping Station	Precontact	Undetermined
McNt-2	Esker	Campsite	Precontact Historic	Undetermined Inuit
McNt-3	Esker	Chipping Station	Precontact	Undetermined
McNt-4	Esker	Chipping Station	Precontact	Undetermined
McNt-5	Esker	Campsite	Precontact Historic	Undetermined Inuit
McNt-6	Esker	Campsite	Historic	Inuit
McNu-1	Esker	Chipping Station	Precontact	Undetermined
McNu-2	Lakeshore/Esker	Campsite Chipping Station	Undetermined Precontact	Undetermined Undetermined
MdNu-1	Esker	Campsite	Undetermined	Undetermined
MdNw-1	Riverbank/Esker	Chipping Station	Precontact	Undetermined
MeNu-1	Riverbank	Chipping Station	Precontact	Undetermined
MeNu-2	Riverbank	Campsite Chipping Station	Precontact	Thaltheilei? Dorset
MeNu-3	Riverbank	Cairn	Undetermined	Undetermined
MeNv-1	Riverbank	Campsite	Precontact Recent Contemporary	Undetermined Undetermined Tourist

Table 7: Summary of Archaeological Sites (continued)

Nearly half of the sites (51.6%) are associated with eskers: sixteen of the thirty-one sites recorded in the investigation area. These locations appear to be chosen as much for their well-drained surface as for the opportunity for unobstructed vision over the surrounding area. Only a few of the visited sites (MbNv-1, MbNv-4, and McNu-2) did not have this vantage point feature. MbNv-1, located near rapids on a small river, appears to have been an opportunistic campsite resulting from successful caribou hunting. MbNv-4, a very recent research campsite, was selected for reasons that had nothing to do with subsistence activities. McNu-2 is located adjacent to an esker, but on the lee side.

The second strong associational characteristic is the frequency of sites on the Burnside River/Kathawachaga Lake system: twelve sites (38.7%) as opposed to five (16.1%) on, or adjacent to, the Hood River. The presence of caribou and muskoxen is relatively similar for both river systems, so the difference in utilization must be attributed to the poorer fish resources in the Hood River. Needless to say, both figures will need to be revised upward as more intensive investigations will undoubtedly identify additional sites. Comprehensive foot survey has only occurred on the north bank of the Hood River, selected locations on the south side of the Hood River, and parts of the west arm of Kathawachaga Lake. It is not known if Gordon's survey in 1985 combined shoreline foot survey with canoe survey.

The least common type of site is an isolated rock feature which does not occur in conjunction with other evidence of habitation. Only three sites (9.7%) fall into this category: MaNv-3, a cache and row of rocks on the Burnside River; MaNw-1, a rectangular outline of rocks on the esker west of the Willingham Hills; and MeNu-3, a small cairn south of the Hood River.

The type of site with the next highest frequency is a chipping station—a location where stoneworking, for the production of lithic tools, was undertaken. This activity often occurs at sources of adequate lithic raw material or in conjunction with other activities, such as at a campsite or while watching for game from a vantage spot. Eight sites (25.8%) were solely chipping stations but evidence of this activity was also recorded at five campsite locations, bringing the total up to thirteen (41.9%)

The campsite category is the most frequent type of archaeological site—twenty-one of the thirty-one sites (67.7%). In part, this may be a function of visibility, as a large site composed of several tent rings is readily visible from the air. It is probable that site location selection is actually the main criterion that results in this category being the most prevalent. Locations for campsites appear to have been selected with several characteristics in mind: good view of the surrounding area, access to lithic resources, varied micro-habitat. At campsite locations, rock features are often constructed, e.g., McNt-2 and McNt-5, or lithic flaking occurs.

At the various campsites, different types of tent ring construction were observed during Phase II. The following data compilation does not include the campsites recorded by Gordon in 1985. Four major types of tent rings occurred throughout the investigation area:

- Type I - an oval or circular pattern of stones;
- Type II - an oval or circular pattern of stones with outlier rocks serving as anchors for guy ropes;
- Type III - a square or rectangular pattern of stones; and
- Type IV - a square or rectangular pattern of stones with outlier rocks serving as anchors for guy ropes.

Within the Type I grouping, three sub-categories were observed:

Type Ia - an oval pattern of smaller stones, usually 15 cm or less in dimension, in a closely spaced but not necessarily continuous pattern;

Type Ib - a circular/oval pattern of larger cobbles in an irregularly spaced pattern; and

Type Ic - a circular/oval pattern of massive cobbles in a contiguous pattern.

Type II has two subcategories:

Type IIa - the guy rocks are in parallel linear rows; and

Type IIb - the guy rocks are placed in a circular pattern around the tent ring.

Many of the sites have a variety of types (Table 8). This may indicate idiosyncratic variation or, more likely, multiple occupations by different population groups at different times, each constructing their tent rings using the current cultural norms.

	Types of Tent Rings							
Site	Ia	Ib	Ic	IIa	IIb	III	IV	Total
MaNv-2						1		1
MbNt-7		1		3				4
MbNt-9	2	1		5	1	1	1	11
MbNu-1		2						2
MbNv-1							1	1
MbNv-2		2						2
MbNv-4		1						1
McNt-2		3		7	3			13
McNt-5		10	6			1		17
McNt-6	2	3		10		1	1	17
McNu-2						1		1
MdNu-2		2						2
MeNu-2	3							3
MeNv-1	2	3				2	3	10
TOTAL	9	28	6	25	4	7	6	85

Table 8: Summary of Tent Ring Types Recorded During the Ulu Project

The multiple occupation scenario is partially borne out by the temporally diagnostic artifacts, sparse though they are. The following analysis of the temporal periods represented by the artifacts present at the sites can be correlated, to a certain degree, with the types of tent rings.

The earliest artifact is the incomplete quartzite projectile point from MbNt-8. This specimen is representative of the Northern Plano Tradition. Artifacts relating to these peoples have been located throughout the Barren Grounds (Gordon 1975:92, 1976:47-49; Wright 1976:86-91). Radiocarbon dates have not produced a viable chronology, although a range of 8000 to 5000 years ago is generally agreed upon by Arctic archaeologists.

The next earliest culture represented is the Arctic Small Tool Tradition, which extended from the Alaskan coastline to northern Greenland to Labrador. This coastal-based tradition began approximately 4000 years ago and lasted until approximately A.D. 1000. Within this tradition, several temporal and regional variants are recognized:

- Pre-Dorset (up to 1000 B.C.);
- Independence I (a High Arctic manifestation resembling Pre-Dorset and lasting until 1700 B.C.);
- Independence II (a High Arctic manifestation similar to early Dorset circa 1100 to 500 B.C.); and
- Dorset (the widespread cultural pattern that lasted until A.D. 1000 when the people were displaced/assimilated by the peoples of the Thule whaling culture) (McGhee 1976:Volume 2:109-115).

A complete projectile point, MeNu-2/2, from a site on the Hood River is representative of the Dorset Phase, more probably the latter portion of the time range of that culture. An incomplete projectile point, MeNu-2/1, representing a different culture, an inland, forest-based hunting culture designated as Thaltheilei, was also recovered from the same site. This incomplete projectile point is identified as representative of Middle to Late Thaltheilei, representing a temporal period from A.D. 100 to 1000. It must be noted that not all Dorset artifacts have the finely-detailed flaking represented by MeNu-2/2 and that the incomplete projectile point, MeNu-2/1, could also be Dorset. The tent rings at MeNu-2 are all Type Ia, a style that is present at McNt-9 (two rings), McNt-6 (two rings), and MeNv-1 (two rings). If the correlation is accurate, four sites would be representative of the populations using the area one to two thousand years ago.

The bifaces from MeNv-1 are not identifiable to a specific cultural phase or a time period. The lithic material and the type of flaking on the black chert biface, MeNv-1/1, suggest that this artifact has considerable time depth, perhaps relating to either of the two cultural occupations at the nearby MeNu-2 site. The type of flaking appears more related to the Dorset projectile point (MeNu-2/2) than the incomplete projectile point (MeNu-2/1). Due to the character of vein quartz, culturally diagnostic flaking techniques are not often identifiable and the quartz biface (MeNv-1/2) could be a tool which was made by any one from the earliest inhabitants (the Northern Plano people) to relatively recent Inuit

hunters prior to the introduction of iron knives. Similarly, the many chipping stations contained no tools which would have permitted the identification of the occupants.

Most of the larger sites contain some artifacts which can be identified as dating to after A.D. 1900, i.e., MbNt-9, McNt-2, McNt-5, and McNt-6. However, based upon the variation of tent ring styles, the occupation that deposited the historic artifacts may only be the latest of a long series of occupations. The reasons for which the campsite locations were chosen would be equally valid whether the occupying group is engaged in pre-Fur Trade subsistence hunting, ancillary Fur Trade hunting for food supplies, or as a settlement-based group moving inland for a short period to harvest caribou.

On a speculative basis, the presence of square tent rings could represent a latter period within the Fur Trade period, when canvas tents were used rather than traditional tents of caribou hide. This, of course, is assuming that the square tent rings are not residual from activities of early Euro-Canadian prospectors. Three of the square tent rings at MeNv-1 appear to have an outline that suggests the presence of a "Bill Mason"-style tent.

Most of the tent styles are represented at several locations (Table 7). However, one specific style—Type Ic—is only present at McNt-5. This massive style of construction is unlike any other type in the investigation area and would represent an occupation by a distinct group of people. This distinction may be cultural or temporal and, as yet, information is insufficient to ascribe any identification to the builders of these different tent rings.

4.2 Ethnohistorical Data

Historical land use studies have shown intermittent utilization of the investigation area by peoples based at Coppermine, Bathurst Inlet, and Cambridge Bay. Prior to the establishment of trading posts at coastal communities (Period I as defined in the "Inuit Land Use and Occupancy Project"), inland use was primarily a summer activity undertaken to obtain supplies of caribou. Peoples from the Coppermine region (Kogloktomiut and Asiakmiut) would move inland down the Coppermine or Asiak Rivers as far as the south end of Contwoyto Lake. The caribou hunting was supplemented with muskoxen and fish. Both groups wintered on the ice of Coronation Gulf (Farquharson 1976:34-36). Peoples from the southern part of the Bathurst Inlet region (Kilusiktomiut) and the Contwoyto Lake people did not usually winter on the sea ice. The Kilusiktomiut sometimes stayed inland all winter while the Contwoyto Lake people only visited the coast when their caribou supply was exhausted or for trading purposes (Farquharson 1976:50).

The introduction of trading posts had major societal ramifications. The "change from subsistence hunting to a combined hunting-and-trapping economy radically changed the peoples way of life. Many more stayed inland all winter to hunt and trap" (Farquharson

1976:50). This intensified use of inland resources was practised by people from the Coppermine area, the Bathurst Inlet area, as well as the autochthonous Contwoyto Lake people. The resources sought were directly related to the fur trade, i.e., fox and later wolf and wolverine. An intensive network of trap lines existed around Contwoyto and Kathawachaga Lakes (Freeman 1976:Volume 3, Map 24, Map 29, and Map 36). In addition to the trapping, subsistence activities, which focused upon caribou, fish, and waterfowl, were extensive (Freeman 1976:Volume 3, Map 25, Map 31, and Map 37). Caribou were harvested during spring and fall migrations, with the latter providing meat for winter food supplies. Birds were usually trapped during the summer moult and muskoxen were hunted at various times throughout the year. Net fishing occurred throughout the year, with jigging through the ice during the winter. This period, delineated as Period II in the "Inuit Land Use and Occupancy Project", came to an end with the building of the DEW line.

After the construction of the DEW line, people tended to concentrate more in the coastal settlements, reducing inland activities until the introduction of the snowmobile. Even though many people settled into the communities of Coppermine, Bathurst Inlet, and Cambridge Bay, "some continued to live at Contwoyto Lake the year round, and many others live in Coppermine only during the winter and spend the rest of the year in the Contwoyto Lake area" (Farquharson 1976:41). The major change in the Contwoyto Lake area had been the adoption of a more sedentary way of life with the construction of more permanent base camps from which to operate. These base camps at Concession Lake, Pellatt Lake, and Nose Lake, consisting of wood and canvas structures, were ephemeral albeit more established than the previously short-term hunting and/or fishing camps during Period II. The extent of trap lines in the Contwoyto/Kathawachaga area had diminished during Period III (Freeman 1976:Volume 3, Map 26, Map 33, and Map 38). Concomitantly, the intensity of game resource harvesting had also diminished Freeman 1976:Volume 3, Map 27, Map 35, and Map 39).

The period covered by the studies for the "Inuit Land Use and Occupancy Project" ended in 1974. The two decades since that date have seen more reliance on wage economy and a subsequent reduction of trap line/subsistence economy.

Most of the studies of land use in the Contwoyto Lake area emphasize that the lake and its immediate environs, including Kathawachaga Lake and the upper Burnside River, are the most intensively utilized. "However, the area northeast of Kathawachaga Lake...was basically unused (by the Coppermine people), nor was it used by the Tree River people or the Bathurst Inlet people" (Farquharson 1976:41). A more specific reference states that "the area north-northeast of Contwoyto Lake, on the upper reaches of the James and Hood Rivers, was seldom used, although caribou hunting was said to be good there" (Farquharson 1976:52).

The most extensive trapping period (Period II) indicates only two trap lines north or northeast of Kathawachaga Lake although several exist on the east side of the upper

Burnside River. One trap line extends diagonally from the western arm of Kathawachaga Lake to the major north/south esker. The tent ring at MbNv-1 may be related to this activity as may some components of the occupation sites on the major esker.

In view of the lack of documented utilization of the area north of Kathawachaga Lake, the tent ring campsites on the major esker may be earlier than the land use data obtained by the researchers of the "Inuit Land Use and Occupancy Project". A second alternative is that data regarding subsistence/utilization activity of the Contwoyto Lake people is under-represented on the utilization maps (Freeman 1976:Volume 3). The major campsite locations, e.g., MbNt-9, McNt-2, McNt-5, and McNt-6, indicate more than one period of occupation with the latest ones extending into the Period II time frame. It is probable that these campsite locations were important foci in the seasonal round, particularly as it related to the interception of the spring and fall migrations of the Bathurst caribou herd.

4.3 Conclusions

With regard to the Ulu mine project, it appears that extractive mineral development and heritage resource protection and preservation are not incompatible. The Ulu mine site and ancillary components are situated on a bedrock outcrop. Such outcrops are relatively vegetation-poor, providing little inducement for caribou or muskoxen. Interim sites, such as Camp 3, are often situated on well-drained land which is on, or adjacent to, eskers but on a low portion or side ridge of the main esker. The data derived from the survey of the major north/south esker northeast of Kathawachaga Lake indicates that archaeological sites are usually located on the higher portions of the esker in order to obtain an unobstructed view of the surrounding countryside.

The projected winter haul road route options generally traverse low-lying (in comparison to the eskers) terrain and, as such, will not encounter areas of proven archaeological potential. Traversing eskers, with their undulating nature and rapid changes in elevation, is not practical for speedy, economical transport. In addition, while large sections of the major esker are quite wide and could easily accommodate a winter road, other portions are very narrow and would require considerable modification prior to use as a road location. The logistics of transporting heavy equipment to the specific locations, as well as the expense of the operation, would argue against the transformation of eskers into haul roads.

The land/ice transitions of the winter haul roads are areas where there could be impact on archaeological sites which had been chosen for their proximity to water-based resources. This is not a problem in the central portions of any of the routes as the smaller lakes, shallow and/or fish-poor, would have been ignored by subsistence-oriented populations in favour of lakes like Kathawachaga, Contwoyto, or Concession Lake (Farquharson 1976:41).

The utilization of Kathawachaga Lake, documented in the "Inuit Land Use and Occupancy Project", suggests that there is a potential for numerous archaeological sites around the perimeter. In practical terms, campsite locations would not be selected at random, but with specific criteria in mind. These criteria would include proximity to a river for transportation and harvesting fish during spawning season, well-drained areas elevated above the lake shore, higher locations which would provide observation across a considerable expanse of countryside, and ease of travel into the hinterland. The implementation of these criteria means that certain locations are occupied sequentially throughout the centuries, while other, less favourable locations are never used. A combination of helicopter survey and subsequent foot survey of the more favourable locations can delineate the sites which have been used—usually at a considerable distance from each other. Inasmuch as soil accretion is minimal, buried archaeological sites are minimally likely. Soil deflation through wind and water erosion will usually provide some surface evidence of past utilization of a location.

The results of the investigations of the west arm of Kathawachaga Lake are the identification of five archaeological sites: two campsites on opposite sides of the mouth of the Burnside River known from the 1985 survey by Gordon (MaNv-4 and MaNv-5); a campsite adjacent to the river which flows into the southwest corner of Kathawachaga (MbNv-2); a chipping station on an isolated bedrock outcrop on the north side (MbNv-3); and a recent biological research campsite on a steep slope of a bedrock outcrop on the north side (MbNv-4). The four sites west of the Burnside River can be easily avoided by the haul route corridor.

An adjunct component of the projected winter haul road would be the establishment of a way station in the vicinity of "Crossroad Lake" or the larger lake south of it. During helicopter survey of the routes and the major esker, the archaeological team watched for areas which could be considered as possible locations. Any location which appeared to be suitable was investigated, even though it was not directly on any of the projected haul routes. The location that appeared to be the most suitable, to an unpractised eye, is located north of the small lake immediately north of "Crossroad Lake". The expanse of glacial outwash is archaeologically sterile. Other locations in the region were also examined and found to contain no obvious archaeological resources.

5.0 RECOMMENDATIONS

As a result of the intensive foot survey of the Ulu Mine locality during Phase I, Quaternary Consultants Ltd. had recommended that development of the mine site, collateral facilities, and permanent campsite could proceed (Quaternary 1996:22).

Investigations of the various options for the establishment of a winter haul road between Ulu and Lupin were undertaken. Most of the twenty-one archaeological sites identified during the Phase II survey were considerably beyond the impact zone of the projected haul road corridors. In general, Quaternary Consultants Ltd. can **recommend that any of the proposed routes can be used without impact upon heritage resources, providing they remain within, or in close proximity to, the projected placement (Figure 1).**

However, some recommendations regarding precautions for certain portions of some of the options are germane. **It is recommended that the western route avoid impinging upon the archaeological site adjacent to the river flowing into the southwestern corner of the west arm of Kathawachaga Lake (MbNv-2).** Further, **it is recommended that the western route avoid impinging upon the archaeological site on the esker northeast of the west arm of Kathawachaga Lake (MbNv-1).**

Utilization of eskers as gravel sources is quite feasible, providing that the extraction areas are on the lower sides and lateral ridges of the esker complexes. The archaeological sites associated with the eskers are usually located at the higher portions of the esker and, as such, would not be affected by excavations at lower locations. Accordingly, Quaternary Consultants Ltd. **can recommend that gravel extraction is an acceptable activity, providing that the excavations occur at low elevations and on the lateral esker ridges.** As a further precaution, **it is recommended that gravel extraction does not occur within 250 metres of an identified archaeological site.**

When the location is chosen for a way station campsite, it is suggested that the surveyors selecting the location be familiar with the types of tent rings which would characterize an archaeological campsite. This would ensure the avoidance of impact upon any archaeological site which may not have been recorded by the archaeological survey team during the Phase II investigations. Such familiarity will also enhance future heritage resource management, as geological exploration teams would be able to identify larger archaeological sites very early in the development process.

Finally, it is to be hoped that the data obtained during this project will be utilized by future researchers to delineate the culture history of the Contwoyto Lake area. Definite gaps in archaeology and ethnohistory of this area exist due to the area-specific nature of research projects in the Barren Grounds. Bridging of these gaps would be a viable academic goal for a Master's or Doctoral candidate. If a bona fide researcher proposes such a project, Echo Bay Mines could consider providing a degree of logistical support.

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APPENDIX A

NWT ARCHAEOLOGISTS PERMIT

APPENDIX B

CATALOGUE OF ARTIFACTS

SITE: MbNt-8
LOCATION: 66° 19′ 13"N/110° 31′ 54"W

Artifact #	NAME	MATERIAL	LOCATION	DATE
MbNt-8/1	Projectile Point	Quartzite	Ridge	19960828

SITE: MeNu-2 (Upper Rapids)
LOCATION: 66° 47′ 28"N/110° 59′ 26"W

Artifact #	NAME	MATERIAL	LOCATION	DATE
MeNu-2/1	Projectile Point	Quartzite	43S/25W	19960702
MeNu-2/2	Projectile Point	Chert	West end	19960824

SITE: MeNv-1
LOCATION: 66° 46′ 57"N/111° 01′ 01"W

Artifact #	NAME	MATERIAL	LOCATION	DATE
MeNv-1/1	Biface	Chert	Tent Ring 3	19960824
MeNv-1/2	Biface	Quartz	Tent Ring 3	19960824

NORTHWEST TERRITORIES ARCHAEOLOGISTS PERMIT #96-831

Under the authority of the *Northwest Territories Act* and the Archaeological Sites Regulations, authorization is granted

To: Sid Kroker

Affiliation: Quaternary Consultants Ltd., Winnipeg, Manitoba

Representing: Echo Bay Mines Ltd.

Name of project: **Ulu Mine Site Project**

For the purpose of: Survey, including assessment and mitigation, of the archaeological resources on the Ulu Gold Property, north of the Hood River and west of Bathurst Inlet at approximate coordinates 66°52'30" North, 111°00'10" West. The work includes but is not limited to survey and mitigation of the following areas: the mine site and permanent camp; the ore storage facility; aggregate borrow locations; the access road between the mine site and Reno Lake (Camp 3); selected locations along the road route from Lupin to Camp 3, in particular the long esker north of Kathawachaga Lake and Lupin's laydown area; the Hood River crossing for a distance of a kilometre on either side of the crossing; the esker north of the Hood River crossing which is part of the proposed road route. Mitigation measures are to be proposed and approved by the Prince of Wales Northern Heritage Centre.

The artifact repository is to be decided by the Inuit Heritage Trust as per Article 33.7.6 of the Nunavut Final Agreement.

The permittee shall abide by the attached Permit Requirements. This Permit is valid from 21 June 1996 to 31 December 1996. This Permit is issued in the City of Yellowknife, Northwest Territories on July 16, 1996.

Distribution of documentation and/or submission of artifacts: The permittee shall distribute the listed materials to the agencies identified below according to this schedule.

	Repositories Prince of Wales Northern Heritage Centre	Canadian Museum of Civilization	Other
Required by 31 December			
1. Report	x	x	Inuit Heritage Trust
2. Site forms and maps		x	
3. Field notes	x		Inuit Heritage Trust
4. Artifacts or artifact catalogue and loan arrangements	x		
Required by 31 September			
5. One-page non-technical summary and 2 photos	x		

Helen Maksagak

Commissioner of the Northwest Territories

Addresses for submissions

Prince of Wales Northern Heritage Centre
Box 1320
Yellowknife NT X1A 2L9

Canadian Museum of Civilization
Box 3100, Station B
Hull PQ J8X 4H2

Environmental Impact Screening Committee
Box 2120
Inuvik NT X0E 0T0

Inuit Heritage Trust
Box 2080
Iqaluit NT X0A 0H0

Inuvialuit Land Administration
Box 290
Tuktoyaktuk NT X0E 1C0

Gwich'in Tribal Council
Box 1509
Inuvik NT X0E 0T0

Sahtu Secretariat Incorporated
Box 155
Deline NT X0E 0G0

Dogrib Treaty 11 Council
Box 24
Rae/Edzo NT X0E 0Y0

Yellowknives Dene First Nation
Box 2514
Yellowknife NT X1A 2P8

Attachments: Archaeologists Permit Requirements

4292/0294