ASSESSMENT OF LANDSCAPE ARCHAEOLOGICAL POTENTIAL IN TENLEN, SANDY AND JIGGLE LAKE NOGAP AREAS

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1.0 INTRODUCTION

A study was undertaken during the summer of 1987 to map and predict the archaeological potential of landscape within the i) Tenlen Lake area and ii) Sandy Lake/Jiggle Lake areas.

1.1 General Approach

In order to evaluate the archaeological potential of the landscape, terrain units were defined through air photo interpretation and previous Quaternary mapping of the area. The archaeological potential of these basic landscape units was then classified. These units commonly have consistent geomorphic, stratigraphic, drainage, edaphic and biologic characteristics and are affected by similar geologic processes. The similar characteristics of units will then result in each unit offering similar potential for its utilization by man. Terrain units were further divided according to their position relative to other physical phenomena, e.g. accessibility to water bodies, vistas, that might affect their utilization by man. The envisaged utilization allows an assessment of the archaeological potential for each landscape unit.

It is realized that some cultural practices of man and some patterns of faunal migration, especially during the winter season, will not necessarily be primarily controlled by terrain character. Thus limits to the utilization of landscape units in predicting archaeologic potential are present.

1.2 Geological Setting

The Tenlen Lake and Sandy Lake/Jiggle Lake areas are located on the Anderson Plain near Travaillant Lake. Tenlen Lake forms the headwaters of the Kugaluk River, whereas Sandy and Jiggle Lake drain via Travaillant Lake south to the Mackenzie River. The terrain is characterized by chains of large lakes within drift-filled preglacial valleys; and hills and ridges, which rise between 300 and 700 feet above the valleys. Most of the landscape is presently covered by boreal forest.

The entire area has been glaciated during the Wisconsinan, but a good portion of it that lies north of the Tutsieta Phase glacial ice limit was deglaciated prior to 12000 BP (either in Early Wisconsinan time circa 100000 to 50000 BP or in early Lake Wisconsinan time between 30000 and 20000 BP). Glacial lakes may have formed in some valleys during this initial Wisconsinan deglaciation. However lacustrine sediments (Glacial Lake Tenlen-Phase I) have only been identified in the Tenlen Lake valley at elevations above those assigned to the Tutsieta Phase.

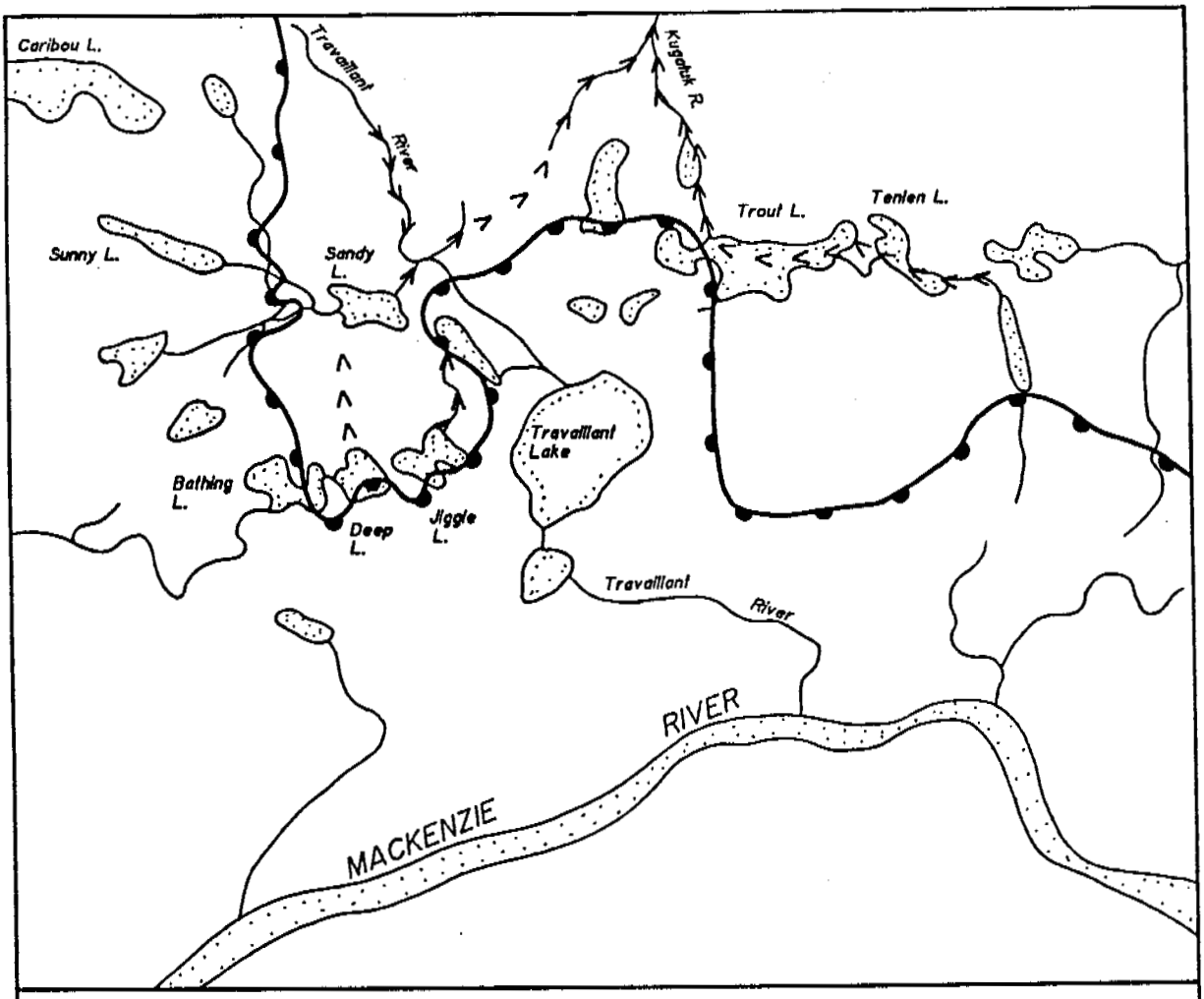
These may have been channelized as lake outlets (Kugaluk River valley being one possible outlet) were lowered due to fluvial erosion.

Around 13000 BP, glacial ice stood at a well defined limit (Figure 1) that can traced from Sitidgi Lake in the north to south of Tutsieta Lake (this limit may have been formed through a pause in glacial ice retreat or through a re-advance of the ice). When ice was at its maximum extent a glacial lake was present in the Tenlen Lake valley to an elevation of about 540 ft - numerous wave cut benches have been noted to near 545 feet elevation in the Tenlen Lake valley, both beyond and just within the Tutsieta glacial limit. In addition a glaciofluvial delta grades to near this elevation near the outlet of Trout Lake. Subsequent erosion of the Kugaluk River spillway allowed the lakes to achieve their present configuration. A major bench at 520 feet elevation and minor benches at lower elevations indicate an irregular rate of down-cutting of the lakes outlet.

During the maximum the glacial limit was at the south edge of Deep and Jiggle Lakes and occupied the west half of Bathing Lake. A glacial lake to an elevation of about 710 feet elevation must have occupied the Bathing Lake/Deep Lake/Jiggle Lake valley. A glaciofluvial delta is present at the east end of Bathing Lake that grades to this elevation. This lake drained north via spillways to Sandy Lake and Tregantchiez Lake. In the Sandy Lake Basin a glacial lake (Glacial Lake David) to an elevation of 640 feet was initially present at the Tutsieta maximum (two glaciofluvial complexes grade to this level). This lake drained a spillway occupied by David Lake to the Kugaluk River drainage. Subsequent lowering of the outlet resulting in lowering of the lakes in the Sandy Lake basin to their present level. Benches circa 585 feet and 560 feet elevation indicate that the rate of lowering of the David Lake spillway was irregular.

Series of low beaches at the southeast ends of lakes throughout the area and the drowned mouth of the Travaillant River may be the result of isostatic rebound slowly continuing to the present.

The area is generally underlain by permafrost. High ice contents in fine grained lacustrine sediments and tills can result in retrogressive thaw flow slides and rotational failures where slopes are exposed to basal erosion through wave or stream action. The permafrost results in the maintenance of a thick ground cover of moss and the buildup of peat in depressions. Surface-water seepage leads to the build-up of organics and slope wash on slopes. Only well-drained sands and gravels present in high relief glaciofluvial complexes, along wave-or stream-cut scarps and on lacustrine or fluvial benches are free of thick moss covers. Their features will have thick active layers.



LEGEND

TUTSIETA PHASE GLACIAL LIMIT
(Hachures on glacier side of limit)

> > > MELTWATER CHANNELS OF TUTSIETA PHASE

FIGURE 1

TUTSIETA GLACIAL FEATURES IN SUNNY, JIGGLE, AND TENLEN LAKE AREAS.

2.0 METHODOLOGY

The study was completed in three phases: (A) preliminary investigations; (B) field investigations; and (C) final map and report preparation.

2.1 Preliminary Investigation

Initially, the location of known archaeological sites, as provided by Dr. Jean-Luc Pilon, were compiled. In order to appreciate the geologic and geographic controls on the present known sites, the geology and other physical characteristics of the known sites were determined through a review of published (Hughes et al 1972 a, b) and unpublished (Duk-Rodkin) maps of surficial geology and geomorphology, and air photo interpretation. It was apparent from this review that known archaeological sites were clustered near lake shorelines and stream courses. They seemed most prevalent in areas where late Pleistocene lacustrine benches had developed due to a Late Wisconsinan ice advance (the Tutsieta Phase; see section on Geological Setting), especially where outwash from this advance allowed for the development of sandy and gravelly beaches and benches at the strandlines. The latter features are usually well drained.

The air photos were then reviewed to characterize the nature of the shorelines and adjacent terrain units according to their geomorphology and drainage. Units of differing perceived favourability for archaeological sites were outlined for field investigation. The air photos were also reviewed to identify terrain units and access any characteristics that might influence man's utilization of them (e.g. drainage, elevation relative to surrounding terrain) or the preservation (e.g. processes leading to a slowly aggrading landscape) or discovery of archaeological sites (e.g. landscape stability).

2.2 Field Investigation

Reconnaissance traverses of the pilot study areas were completed during June, 1987 via float plane and walking jointly by Jean-Luc Pilon and the author to evaluate the archaeological potential of the landscape units determined during the preliminary phase. Known archaeological sites were examined and a search for new sites within the study areas was completed. Physical conditions favouring the presence of the archaeological sites were noted and compared to those predicated to be important to archaeological potential.

Generally, field investigations confirmed that landscape units based primarily on terrain units and other physical features could be utilized in evaluating archaeological

potential, and that the physical features perceived to be important to occupation, preservation and discovery were relevant in the evaluation. A number of other physical features, e.g. the ease of excavation of terrain units was also found to be significant to archaeological potential, as house pits seemed to be a common component of many archaeological sites. Thus, sites having thick active layers, which would allow easy excavation, would have a higher archaeological potential than those having thin active layers. Generally terrain underlain by sand and gravel and being well drained will have a thicker active layer than terrain underlain by clay, silt or till and being imperfectly or poorly drained. Typically, glaciofluvial and fluvial deposits and lacustrine landforms developed within these deposits are underlain by sand and gravel. Examination of these landforms frequently revealed house pits or other signs of former occupation. Sites were especially numerous on sandy lacustrine benches adjacent to major lakes.

2.3 Final Map and Report Preparation

A map was prepared for each area giving each landscape unit an archaeological potential. A unique numeral was assigned to each landscape unit in order that the physical features favorable to archaeological potential, history and antiquity of each landscape unit could be described in tabular form. This allows a user to search out units according to any parameter regardless of the potential assigned herein (and possibly assign his own potential if necessary). It also possibly allows one to delineate areas most favorable to certain cultures once their chronology, life styles, etc. are determined.

The archaeological probability classifications determined for the final evaluation were as follows:

(A) High - good possibility of archaeological site being easily discovered over most of the landscape unit due to its geographic location, geomorphic, stratigraphic, drainage, edaphic and biologic characteristics and history.

(B) Medium - moderate possibility of archaeological site being discovered over the landscape unit or good possibility of archaeological site being discovered at certain favoured locales within landscape unit following moderately detailed search of these locales (the latter generally having geomorphic, stratigraphic, drainage, edaphic or biologic character more favorable than landscape unit in total).

(C) Low - little possibility of archaeological site being discovered within unit, but some possibility of archaeological site being discovered at few favoured locales with moderately detailed search.

(D) Nil - almost no possibility of archaeological site being discovered due to unique geomorphic (e.g. rock cliff) or history (e.g. recently-deposited organic deposits).

In order to assign a probability classification the characteristics of terrain units that would affect their archaeological potential, especially their potential to yield prehistoric camp sites and burial grounds were noted. The characteristics that would influence the initial occupation of a terrain unit, preservation of cultural materials, and their present probability of discovery or disturbance were identified. Those physical characteristics that were considered as favorable to occupation of terrain units were good drainage, prominent elevation relative to that of the surrounding countryside, closeness to water bodies (both in the sense of transportation corridors and as sources of game), relationship to special topographic features such as major valleys and passes, and increasing antiquity. Those physical characteristics that were considered as favorable to preservation of archaeological material are processes leading to a slowly aggrading landscape surface such as alluvial (mainly overbank), eolian, organic and colluvial (including solifluction) deposition; and landscape stability, i.e. much of the unit has not been subject to rapid erosion by such processes as fluvial or lacustrine erosion, or mass wastage. Obviously, characteristics favorable to preservation only become significant on units that are favorable for occupation. Finally, those characteristics that were considered favorable to discovery are geomorphic and edaphic properties leading to sparse vegetation cover, and erosional processes that might expose buried archaeological material such as lacustrine and fluvial erosion, wind scour and rapid mass wastage failures such as slumps, landslides and thermokarst (e.g. retrogressive thaw flow-slides). These characteristics are only significant in areas where occupation and preservation of cultural materials have prevailed.

Evaluation of terrain units through map review and air photo interpretation revealed that certain units, even at a scale of 1:100,000 warranted subdivision because of significant differences in drainage, for example, the outer edges of well drained benches adjacent to lakes were considered to have more potential than flat poorly-drained portions of these terraces. Thus landscape units were delineated for assessment based on terrain units and physical parameters considered of importance in archaeological potential.

Finally in order to facilitate the grouping of units having similar archaeological potential, the units were categorized according to (1) genetic origin, e.e. morainal, glaciofluvial, alluvial, colluvial, lacustrine, and geographic position in the landscape, e.e. shorelines, vistas and (2)

similarity in archaeological potential, e.g. high and medium vs. low and nil.

3.0 RESULTS AND DISCUSSIONS

The archaeological potential and numerous identifier for the landscape units given on Map 1. Tables 1 and 2 give the geomorphology, factors affecting occupations, preservation and discovery, age, archaeological potential and category for each landscape unit. The category is grouping of the units according to genetic origin, landscape position and common archaeological potential.

3.1 Rating of Units

The ratings of landscape units was down through an assessment of factors perceived to affect archaeological potential. Rating of landscape can be complicated as most factors affecting preservation and discovery have opposite effects on whether archaeological sites are preserved and discovered. For example, colluviation sites preserves artifacts through burial, but coincidentally the burial covers the artifacts and inhibits discovery. However, the colluviation does lead to preservation of artifacts and is rated as a positive factor toward the location of an archaeological site on a landscape unit; disturbance of these units can then lead to their discovery. On the other hand, thermokarst, although leading to the discovery of artifacts in section, eventually can lead to the complete erosion of archaeological sites. Where sites are primarily located close to shorelines, thermokarst, especially rapid thermokarst, can lead to their complete removal and must be viewed as a negative factor toward the location of an archaeological site.

Factors affecting occupation listed in Tables 1 and 2 are physical attributes that intuitively are believed to affect the possibility of occupation. For example, closeness to lakes is considered a positive factor because of their probable use as a source of game and their utilization for travel. These physical factors do not take into account such phenomena as the present day migration route of caribou, nesting and staging areas for waterfowl, fish spawning streams, etc. Such phenomena however could be addressed on a regional scale from Land Use Series Information Maps of IAND and DOE.

Initially assigning most landscape units (or polygons) a unique number, rather than grouping (or categorizing) apparent similar landscape units is advantageous in that small dissimilarities that may be significant in determining archaeological potential can be realized. Additionally, similar units can be evaluated separately as other data introduces factors affecting their archaeological potential (with the

TABLE 1: ARCHAEOLOGICAL POTENTIAL OF TENLEN LAKE AREA

UNIT No.	GEOMORPHOLOGY	AGE IN kaBP (origin)	FACTORS AFFECTING OCCUPATION	FACTORS AFFECTING PRESERVATION AND DISCOVERY	RATING	CATEGORY AND OTHER COMMENTS (see Section 3.2 for Description of Categories)
1	Kames	>13	+Well drained, +Thick active layer, +Moderate vista	+Hill crests stable	Medium	GR
2	Rolling moraine	>13	-Featureless rolling terrain, -Only small lakes	+Moderate organic accumulation on low slopes	Low	M
3	Lakeshore in moraine	>13	+Adjacent moderate-sized lake, -No sandy shorelines	+Some colluviation on slopes +Moderate organic accumulation on low slopes	Medium-Low	LSM
4	Shoreline and lacustrine benches	13	+Adjacent moderate-sized lakes, +Few sandy shorelines, -Low benches imperfectly drained	+Organic accumulation on flat benches	Medium-Low	LSM
5	Shoreline and lacustrine benches at lake outlet	13	+Adjacent moderate-sized lakes, +Few sandy shorelines, -Low benches imperfectly drained	+Organic accumulation on flat benches	Medium	LSM
6	Rolling moraine	13	-Featureless rolling terrain, -Only small lakes	+Moderate organic accumulation on low slopes	Low	M
7	Lakeshore and lacustrine benches	13	+Adjacent large lake, +Some sandy benches, -Some benches imperfectly drained	+Sandy areas stable, +Organic accumulation on flat benches	High-Medium	LSH; Morainic area adjacent high strandline may contain oldest cultures
8	Fenland	<10	-Poorly drained	+Organic accumulation	Low-Nil	O
9	Lakeshore and lacustrine benches	13	+Adjacent moderate-sized lake, -No sandy shoreline obvious, -Imperfect drainage on benches	+Moderate organic accumulation on low slopes	Low	LSL
10	Valley-wall slopes	10-13	-Moderate to steep slopes	+Colluviation	Nil-Low	C
11	Alluvial plain	<13	+Small stream, +Through valley, -Poorly drained	+Organic accumulation	Low	AL
12	Outwash delta	13	+Moderately-well drained, Isolated occurrences of thick active layer, -Flat featureless terrain	+Local organic accumulation, +Bare gravel areas stable	Low	GF
13	Shoreline	10-13	+Adjacent moderate-sized lake, +Gravelly shorelines	Some expansion due to thermokarst	Medium	LSH
14	Shoreline bluff	13	+Good vista adjacent lake, +Well drained at crest, -High steep slope	+Crest is stable	Medium-Low	LSH

Table 1 (cont)

15	Shoreline bluff and benches	10-13	+Large lake, +Well drained, +Thick active layer	+Thermokarst leads to active exposure in bluffs composed of outwash	Medium	LSM
16	Lacustrine bench	13	+Outlet of large lake, +Well drained, +Some areas of thick active layer	+Stable surface, +Minor erosion	High	LSH
17	Shoreline bluff	13	+Large lake, +Good vista, +Steep slope	+Some colluviation	Low	LSL
18	Valley-wall slope	10-13	-Moderate to steep slopes	+Colluviation	Low-Nil	C; Includes some alluvial f
19	Floodplain and stream terraces	<13	+Adjacent main stream, -Poorly drained, -Subject to flooding	+Alluviation and organic accumulation on flat surfaces, +Erosion along stream	Medium-Low	AM
20	Alluvial-fans (and colluvium)	<13	-Poorly drained	+Some alluviation and colluviation	Low	AL
21	Glaciofluvial terrace	13	+Isolated gravel knobs on edge, -Generally poorly drained	+Gravel knobs stable, +Some organic accumulation on surface	Low-Medium	GF
22	Shoreline and lacustrine benches	13	+Large lake on main stream, +Local well drained beaches with thick activer layer, -Many inperfectly drained areas	+Beaches stable, +Some organic accumulation	High-Medium	LSH
23	Alluvial delta	<10	+Adjacent large lake, +Crossed by stream, -Poorly drained, -Subject to flooding	+Alluviation, +Stream erosion	Medium	AM
24	Shoreline bluff	13	+Moderate-sized lake, +Good vista, -Slope	+Colluvation	Low	LSL
25	Lacustrine bench	13	+Near moderate-sized lake, -Poorly drained	+Organic accumulation	Low	LSL
26	Till-covered slopes	13	+Moderate slopes, -Relatively featureless terrain	+Local areas of colluviation and organic accumulation	Low	M
27	Shoreline and lacustrine bench	13	+Adjacent large lake, -Bench narrow and indistinct, -Generally sloping	+Some colluviation and alluviation	Low-Medium	LSL
28	Shoreline and lacustrine bench	13	+Adjacent large lake, +Benches seem developed in sand and gravel, -Bench poorly drained	+Sandy areas stable, +Some organic accumulation	High-Medium	LSH
29	Shoreline bluffs	<10	+Adjacent large lake, -Steep slopes to shoreline general, -Active thermokarst, -Clayey soil	+Colluviation, +Active thermokarst	Low-Medium	LSL

Table 1 (cont)

30	Lakeshore in moraine	>13	+Adjacent moderate-sized lake, -No sandy shoreline	+Some colluvation on slopes, +Moderate organic accumulation on low slopes	Medium-Low	LSM
31	Colluvial fans	<10	-Imperfect drainage	+Colluvation	Low-Nil	C
32	Shoreline and beaches	<13	+Adjacent large lake, +Generally moderately well drained, +Local sandy areas with thick active layer	+Organic accumulation in some areas, +Sandy benches stable	High	LSH
33	Valley wall slopes	10-13	-Moderate to steep slope	+Colluvation	Low-Nil	C
34	Glaciofluvial terrace	>13	+Moderately well drained, +Adjacent medium-sized lake	+Sandy surface has deep active layer, stable surface	Low-Medium	GF
35	Shoreline bluff and bench	<13	Adjacent large lake, +Moderate vista, -Imperfect drained	+Organic accumulation on upper bench, +Active thermokarst erosion	Medium-Low	LSM
36	Lakeshore on lacustrine plain	10-15	+Adjacent moderate-sized lake, +Near large lake, -No adjacent sandy benches	+Organic accumulation	Medium-Low	LSM
37	Lacustrine strandlines	13	+Near large lake, -Imperfectly drained except near scarp	+Some organic accumulation	Medium-Low	LSM
38	Lacustrine plain	<13	-Poorly drained	+Organic accumulation	Low	LP
39	Shoreline and lacustrine bench	13	+Adjacent large lake, +Adjacent lake narrows, -Much of bench poorly drained	-Organic accumulation	Medium	LSM
40	Lacustrine bench + stream terrace	13	+Adjacent large lake, +Main inlet stream, +Some well drained areas	+Sandy areas have thick active layers, +Some alluviation, +Main stream erosion	High	LSH
41	Floodplain and stream terrace	<13	+Adjacent stream, -Poorly drained, -Subject to floods	+Alluviation and organic accumulation on flat surface, +Erosion along stream	Medium-Low	AM
42	Shoreline bluff and bench	<13	+Adjacent large lake, +Good vista, -Active thermokarst, -Bench surface poorly drained	+Organic accumulation, +Active thermokarst	Low	LSL
43	Shoreline bluff and bench	13	+Adjacent large lake, +Low benches at points and adjacent small streams, +Well drained	+Some colluvation	Medium-High	LSM
44	Lacustrine plain and rolling moraine	>13	-Featureless rolling terrain	+Moderate organic accumulation on low slopes	Low	LP & M
45	Colluvial slope	<10	-Slope, -Imperfect drainage	+Colluviation	Low-Nil	C

Table 1 (cont)

46	Allivial plain	<13	+Small stream, -Poorly drained	+Alluviation, +Organic accumulation	Low	AL
47	Floodplain and stream terrace	<13	+Adjacent small stream, -Poorly drained	+Alluviation, +Organic accumulation	Low-Medium	AM
48	Hummocky moraine	>13	+Some hills have well-drained crests and slopes, +Numerous small lakes	+Colluviation on slopes, +Organic accumulation in depressions	Low	M
49	Shoreline bluff and benches	13	+Adjacent large lake, -Benches indistinct and narrow, -Generally sloping, -Imperfect drainage	+Colluviation of slopes	Medium-Low	LSM
50	Lacustrine benches and shoreline	13	+Adjacent large lake, +Moderately well drained benches in part	-Some organic accumulation on flat areas	Medium	LSM
51	Lacustrine plain and shoreline	13	+Area protrudes into lake, -Gnerally poorly drained	+Organic accumulation	Low-Medium	LSL
52	Lacustrine bench and stream terrace	13	+Adjacent large lake, +Main outlet stream, +Few well drained areas	+Some alluviation, colluviation and organic accumulation	High	LSM
53	Shoreline bluff in lacustrine stream.	13	+Adjacent large lake, -Steep unstable slope to lake, Upper surface poorly drained	+Organic accumulation on upper surface, +Scarp erosion at shoreline	Low-Medium	LSL
54	Shoreline and lacustrine benches	13	+Adjacent large lake, +Low benches adjacent lake, -Imperfect drainage, +Edge of upper bench well drained	+Organic accumulation, +Upper bench edges stable	Medium	LSM
55	Shoreline and beaches	13	+Adjacent medium-sized lake and outlet stream, +Well drained beaches	+Some organic accumulation, +Beaches stable	Medium	LSM
56	Shoreline in colluvial slopes	<10	+Adjacent medium-sized lake, -Slope, -Imperfect drainage	+Colluviation	Low	LSL
57	Shoreline, lascustrine benches and beaches	13	+Adjacent medium-sized lake, -Much area poorly drained,	+Organic accumulation	Low-Medium	LSL
58	Moraine hummocky	>13	+Moderate vista, +Well drained, -Isolated	+Crests are stable	Medium-Low	M
59	Shoreline bluff	13	+Adjacent moderate-sized lake, -Indistinct lacustrine benches, -Sloping	+Some colluviation	Low	LSL
60	Lacustrine plain and shoreline	13	+Adjacent moderate-sized lake, -Poorly drained	+Organic accumulation	Low	LSL

Table 1 (cont)

61	Fens and bogs	<10	-Poorly drained	+Organic accumulation	Nil-Low	O
62	Shoreline bluff with beaches	13	+Adjacent moderate-sized lake, +Well-drained beaches, -Sloping	+Some colluviation	Medium-Low	LSM
63	Shoreline and lacustrine benches	13	+Adjacent large lake, +Some well drained benches	+Some colluviation	Medium-High	LSM
64	Lacustrine bench and stream terrace	13	+Adjacent large lake, +Main inlet stream, +Well drained benches, +Sandy areas with thick active layer	+Some alluviation, +Sandy benches stable	High	LSH
65	Floodplain and stream terrace	<13	+Adjacent stream, +Lakes and ponds, -Poorly drained, -Subject to flooding	+Alluviation and organic accumulation on flat surface, +Erosion along streams and adjacent thermokarst lakes	Medium-Low	AM
66	Lacustrine plain and rolling moraine	>13	+Many small lakes, Variable drainage	+Organic accumulation in depressions, Some colluviation on slopes	Low-Medium	M & LSL
67	Strandline of high lake level	13	+Near large lake, +Moderate vista, +Well drained near scarp	+Some colluviation on slopes, +Organic accumulation on flat areas	Low-Medium	LSL
68	Shoreline and lacustrine benches	13	+Adjacent large lake, Only few benches well drained, +Generally poorly drained	+Organic accumulation on flat area	Low-Medium	LSL
69	Shoreline and benches in lacustrine plain and moraine	10-13	+Adjacent medium-sized lake, Some strand lines well drained, -Much area sloping and poorly drained	+Some colluviation and organic accumulation	Medium	LSM
70	Shoreline in moraine	>13	+Adjacent medium-sized lakes, -Sloping with indestinct benches	+Colluviation	Low	LSL
71	Shoreline in moraine	13	+Adjacent large lake, Low sloping terrain, -No distinctive well-drained benches	+Colluviation	Medium	LSM
72	Shoreline and benches	13	+Adjacent large lake, +Benches present near points of land and small inlet streams	+Some colluviaiton on slopes, +Some organic accumulation on flat areas	High	LSH
73	Kames	>13	+Good vistas, +Well drained, +Thick active layers	+Crests stable	Medium	GR
74	Shoreline and lacustrine benches in outwash	13	+Adjacent large lake, +Moderate vista on higher benches, +Well drained near bench edges, -Broad benches poorly drained	+Flat sandy areas stable, +Colluviation on slopes, +Organic accumulation on flat areas	High	LSH
75	Shoreline in outwash	13	+Adjacent medium-sized lake, +Some well-drained strandlines, -Poorly drained flat areas	+Some organic accumulation	Medium	LSM

Table 1 (cont)

76	Pitted outwash	>13	+Well drained, +Deep active layers	+Stable surface	Low-Medium	GF
77	Lacustrine benches and floodplain	13	+Adjacent large lake, +Stream inlets, variable drainage	+Organic accumulation on some areas	High	LSH

TABLE 2: ARCHAEOLOGICAL POTENTIAL OF SANDY LAKE AND JIGGLE LAKE AREA

UNIT No.	GEOMORPHOLOGY	AGE (origin)	FACTORS AFFECTING OCCUPATION	FACTORS AFFECTING PRESERVATION AND DISCOVERY	RATING	CATEGORY AND OTHER COMMENTS (see Section 3.2 for Description of Categories)
1	Undulating moraine plain	13	-Flat featureless terrain, -Drainage commonly imperfect to poor	+Some organic accumulation, +Colluviation on long slopes	Low-Nil	M
2	Colluvial slopes	<10	-Slopes	+Colluviation	Nil	C
3	Crests of major scarps	13	+Good vistas, -Not directly adjacent water bodies		Medium	V; probably only flaking stations present
4	Shoreline and lacustrine benches	13	+Adjacent large lake, Drainage imperfect except on isolated benches	+Some organic accumulation	Medium-High	LSM
5	Shoreline lacustrine benches, floodplain	<10	+Adjacent large lake, +Inlet streams, -Poorly drained	+Alluviation and organic accumulation	Medium	LSM
6	Lacustrine plain	13	-Poorly drained	+Organic accumulation	Low	LP
7	Alluvial plain and colluvium	<10	-Poorly drained	+Colluviation and organic accumulation	Low	AP + C
8	Shoreline and lacustrine benches	13	+Adjacent large lake, -Poorly drained	+Organic accumulation	Low-Medium	LSL
9	Hummocky moraine	13	+Many small lakes, +Hills and ridges well drained	+Organic accumulation in depressions	Low	M
10	Shorelines in hummocky moraine	13	+On medium-sized lake, +Some areas adjacent lake well drained, sloping shorelines	+Colluviation on slopes	Medium-Low	LSM
11	Shoreline and lacustrine benches and shoreline	<13	+Adjacent large lake, Only few indistinct benches, -Slopes	+Some colluvation and organic accumulation	Medium-Low	LSM
12	Shoreline in morainic plain	13	+Adjacent large lake, Few indistinct benches, -Shoreline marked by slopes and imperfect drainage	+Some colluvation and organic accumulation	Low-Medium	LSL
13	Shoreline in morainic plain	13	+Adjacent medium-sized lake, -Shoreline marked by slopes and imperfect drainage	+Some colluvation and organic accumulation	Low	LSL
14	Lacustrine benches and shoreline in morainic plain	8-13	+Adjacent medium-sized lake, +Distinct lacustrine benches	+Some colluviation on slopes	Medium	LSM

Table 2 (cont)

15	Lacustrine benches and shoreline	13	+Adjacent large lake, +Some benches well drained, +Sandy benches with thicker active layers	+Benches stable, +Minor colluviation and organic accumulation, +Minor wave erosion	High	LSH
16	Lacustrine plain and shorline	13	+Adjacent large lake, -Poorly drained	+Organic accumulation	Low-Medium	LSL
17	Shoreline, lacustrine benches, floodplain	<13	+Adjacent large lake, +Major outlet stream, +Well drained benches, -Low areas poorly drained and subject to flooding	+Alluviation and organic accumulation on low areas, +Sandy benches stable	High	LSH + AM
18	Morainic plain	>13	-Flat featureless terrain, -Drainage commonly imperfect to poor	+Some organic accumulation	Low-Nil	M
19	Colluviated till-covered slopes	>13	-Slopes	+Colluvation	Nil	M + C
20	Lacustrine plain (pitted)	13	-Poorly drained	+Organic accumulation	Low	LP
21	Shoreline, lacustrine benches and floodplain	<13	+Adjacent medium-sized lake, +Some well drained benches, +Lake outlet	+Well drained benches stable, +Some alluviation	High	LSH + AM
22	Lacustrine benches in plain	13	+Adjacent medium-sized lake, Local areas well-drained	+Some colluviation and organic accumulation	Medium-High	LSM
23	Floodplain and stream terraces	<13	+Adjacent streams, +Adjacent terrain well drained, -Floorplain poorly drained and subject to flooding	+Alluviation and organic accumulation on flat areas, +Erosion along stream	Medium-High	AM
24	Shoreline, lacustrine benches, and floodplain	<13	+Adjacent large lake, -Much area poorly drained and subject to flooding	+Organic accumulation and alluviation	Medium-Low	LSM + AM
25	Hummocky moraine and kames	13	+Knolls and ridges, +Well drained, +Isolated gravelly areas	+Some colluvation	Medium	M + GR
26	Lacustrine benches, shoreline and stream	13	+Adjacent large lake, +Stream connects lakes along chain, +Benches well drained	+Benches stable	High	LSH
27	Lacustrine benches and shoreline	13	+Adjacent medium-sized lake, +Along chain of lakes, +Well drained sandy benches with deep active layer	+Benches stable	High	LSH

Table 2 (cont)

28	Shoreline lacustrine benches, and floodplain	<13	+Adjacent medium-sized lake, +Along chain of lakes, +Inlet stream, +Some well beaches, -Flat areas poorly drained and subject to flooding	+Benches stable, +Some organic accumulation and alluviation	High	LSH
29	Floodplain and stream terraces	<13	+Adjacent stream connecting chain of lakes, +Adjacent terrain well drained, -Floodplain subject to flooding	+Alluviation and erosion along stream	High	AH
30	Outwash delta	13	+Moderately well drained, -Flat featureless surface	+Surface stable	Low	GF
31	Lacustrine benches and shoreline	13	+Adjacent large lake, +Sandy benches with some exposed deep active layers, -Flat areas imperfectly drained	+Benches stable, +Some organic accumulation on flat areas	High	LSH
32	Shoreline in lacustrine plain	13	+Adjacent major lake, -Poorly drained gradual slope	+Some organic accumulation and colluviation	Low-Medium	LSL
33	Lacustrine plain	13	-Poorly drained	+Organic accumulation	Low-Nil	LP
34	Shoreline and lacustrine benches	13	+Adjacent large lake, +Inlet stream, -Well-drained benches rare	+Organic accumulation	Medium-Low	LSM
35	Shoreline in morainic plain	13	+Adjacent large lake, imperfectely drained slopes	+Some organic accumulation and colluviation	Low-Medium	LSL
36	Shoreline and lacustrine benches in morainic plain	13	+Adjacent large lake, +Few well drained benches, -Many imperfectly drained slopes	+Some organic accumulation and colluviation	Medium	LSM
37	Shoreline in hummocky morainic and glaciofluvial terrain	13	+Adjacent large lake, +Crest of slopes well drained, +Moderate vista, Narrow benches at shoreline, -Sloping to lake	+Crest of slopes stable	Medium-High	LSM
38	Shoreline and lacustrine benches in in morainic and glaciofluvial terrain	13	+Adjacent large lake, +Some benches and hillocks well drained, -Low areas poorly drained	+Organic accumulation in depressions, +Minor colluviation	High	LSH
39	Shoreline and lacustrine benches in outwash	13	+Adjacent large lake, +Well drained terrain, +Moderate vista, +Thick active layer under gravel and sand	+Benches stable, +Minor organic accumulation in swales	High	LSH
40	Lacustrine benches and beaches in lacustrine plain	13	+Adjacent large lake, +Narrow isthmus, -Poorly drained except for beaches	+Organic accumulation	Medium-High	LSM

Table 2 (cont)

41	Lacustrine plain	13	+Narrow isthumus, -Poorly drained	+Organic accumulation	Low	LP
42	Shoreline and benches in lacustrine plain	13	+Adjacent large lake, +Narrow isthumus, -Generally poorly drained	+Minor organic accumulation and colluviation	Medium	LSM
43	Lacustrine benches and terrain along stream	13	+Adjacent stream joining lakes along major chain, Rare well drained bench	+Some colluviation	High-Medium	LSH
44	Lacustrine benches and shoreline in morainic plain	13	+Adjacent large lake, -Benches imperfectly drained	+Some colluviation and organic accumulation	Medium	LSM
45	Lacustrine plain and organic terrain	<10	-Very poorly drained	+Organic accumulation	Nil	LP + O
46	Shoreline and lacustrine benches in lacustrine plain	<10	+Adjacent medium-sized lake, -Generally poorly drained	+Organic accumulation	Low	LSL
47	Outwash complex (?)	>13	Few scarp crests well drained, -Generally imperfectly drained	+Minor organic accumulation	Low	GF
48	Lacustrine benches, shoreline and floodplain	<10	+Adjacent medium-sized lake, -Generally poorly drained	+Some organic accumulation and colluviation	Medium-Low	LSM + AM
49	Kames and eskers	>13	+Well drained, +Gravelly with deep active layer	+Stable surface	Medium	GR
50	Hummocky moraine	>13	+Some small lakes	+Organic accumulation in depressions	Low	M
51	Outwash complex, floodplain, lacustrine benches and shoreline	<13	+Stream connecting lakes, +Adjacent medium-sized lake, +Well drained benches, -Local thermokarst activity	+Benches stable, +Alluviation and minor erosion along stream	High-Medium	LSH + GF/GR & AM
52	Shoreline in morainic plain	13	+Adjacent medium-sized lake, Few benches present, -Imperfectly drained slopes	+Minor colluviation	Low-Medium	LSL
53	Shoreline in colluvial slopes	13	+Adjacent medium-sized lake, -Sloping ground	+Colluvation	Low	LSL
54	Shoreline in colluvial slope	13	+Adjacent large lake, -Sloping ground	+Colluviation	Low	LSL
55	Shoreline, and lacustrine benches in morainic plain	13	+Adjacent large lake and stream joining large and medium-sized lake, +Some well drained benches	+Benches stable, +Colluviation on slopes	High	LSH

Table 2 (cont)

56	Morainic plain	>13	+Lowland adjacent major lake		Low	M
57	Shoreline and lacustrine benches in morainic plain	13	+Adjacent large lake, +Some benches well drained	+Benches stable, +Minor colluviation on slopes	Medium-High	LSM
58	Shoreline and lacustrine benches in morainic plain	13	+Adjacent large lake and stream system connecting large lakes, +Some well drained benches	+Benches stable, +Minor colluviaiton on slopes	High	LSH
59	Shoreline and lacustrine benches in morainic plain	13	+Adjacent large lake, Narrow indistinct benches, -Imperfectly drained slopes	+Some colluviation	Low-Medium	LSL
60	Shoreline and lacustrine benches in outwash	13	+Adjacent large lake, +Benches well drained, +Thick active layer	+Stable benches, +Colluviation on slopes	High-Medium	LSH
61	Shoreline and lacustrine benches in outwash	13	+Adjacent medium-sized lake, +Some well drained benches	+Colluviation on slopes	Medium	LSM
62	Shoreline and lacustrine benches in morainic plain	13	+Adjacent large lake, +Some well drained benches	+Benches stable, +Colluviation on some slopes	High	LSH
63	Shoreline in lacustrine plain	<10	+Adjacent large lake, -Very poorly drained	+Organic accumulation	Low	LSL
64	Escarpment	>13	-Steep slopes	+Colluviation	Nil	C
65	Lacustrine terrace	13	+On narrow isthumus between lakes, +scarp edge well drained		Medium	LP
66	Shoreline in hummocky moraine	13	+Adjacent large lake		Low-Medium	LSL
67	Eroding shoreline in hummocky moraine	<10	+Adjacent large lake, -Active thermokarst	+Active thermokarst	Low	LSL
68	Shoreline and lacustrine benches in hummocky moraine	13	+Adjacent large lake, Benches and slopes with variable drainage	+Some organic accumulation and colluviation	Medium-High	LSM
69	Floodplain and terrace	<13	+Stream connects two large lakes, -Terraces poorly drained, -Floodplain subject to flooding, -Stream small	+Some alluviation and organic accumulation	Low-Medium	AM
70 79-7	Bedrock (glacially scoured)	13	+Good vista, +Well drained, -Slopes	+Some colluviation	Medium	V; Probably only flaking stations present
71	Lacustrine plain and colluvial fans	<13	-Poorly drained	+Organic accumulation and colluviation	Nil	LP + C

72	Lacustrine beaches benches, and shoreline	<13	+Adjacent large lake, +Inlet stream, -Beaches generally poorly drained	+Some organic accumulation and colluviation	Medium-Low	LSM
73	Lacustrine and morainic plain	13	-Imperfectly drained	+Some organic accumulation	Low-Nil	LP & M
74	Shoreline in lacustrine plain	13	+Adjacent large lake, Few benches	+Some organic accumulation	Medium-Low	LSM
75	Shoreline and benches	13	+At outlet to major lake, +Some well drained benches	+Some organic accumulation	High	LSH
76	Lacustrine plain	13	-Flat, -Imperfectly drained	+Organic accumulation	Nil-Low	LP
77	Floodplain and alluvial terraces	<13	+Adjacent major stream, +Some well drained scarps, -Much areas imperfectly drained and subject to flooding	+Some organic accumulation and alluviation, +Stream erosion	Medium-High	AM
78	Alluvial terrace	13	+Adjacent major stream, +Scarp edges well-drained, -Generally poorly drained	+Some organic accumulation	Medium-High	AM
79	Shoreline in hummocky terrain	13	+Adjacent medium-sized lake along major stream, Indistinct benches	+Some colluviation	Medium	LSM
80	Shoreline in lacustrine plain	12	+Adjacent medium-sized lake, -Very poorly drained	+Organic accumulation	Low	LSL
81	Lacustrine plain	12	-Poorly drained	+Organic accumulation	Nil	LP
82	Shoreline in lacustrine plain	12	+Adjacent large lake, +Flooded outlet stream, -Terrain imperfectly drained	+Organic accumulation	Medium	LSM
83	Shoreline in lacustrine plain	12	+Adjacent large lake, -Terrain imperfectly drained	+Organic accumulation	Low	LSL

possible results that similar geomorphic units will have different ratings). The maps with description of each landscape unit or polygon as a unique numeral, and the tables with descriptions of each polygon also allow for computerization of the data to allow a sorting of landscape units. For example, if landscape units were digitized, their descriptions computerized and areas favorable for archaeological sites dating between 10,000 years B.P. and 15,000 years B.P. were found to be outwash deltas and lacustrine features formed around 13,000 B.P., a map showing the location of all these favorable units could be produced utilizing computer techniques. Entry of the unit descriptions into a data base would also allow sorting of units according to individual descriptors.

3.2 Unit Categorization

Each category of landscape generally has common geomorphic, drainage and edaphic characteristics that result in the category having a relatively consistent archaeological potential. This potential can be altered by position or geographic location of a category relative to other physical phenomena such as water bodies and vistas. A description of the categories is given in the following paragraphs.

Two categories of alluvial landforms have been identified, each of which seems to have common archaeological potential. Alluvial plains (AP) were generally deposited in valley bottoms by small streams since deglaciation. They are generally poorly drained and frequently have patches of organic deposits on their surface. They are deemed to have low archaeological potential because of these characteristics. Alluvial terraces and floodplains (AM) are located adjacent to modern streams. They are still being actively formed due to stream activity, although most have been formed during the Late Wisconsinan and Holocene. Drainage is commonly variable with only areas adjacent to the crest of escarpments being well drained. Floodplains are, of course, subject to seasonal inundation. Active alluviation can lead to preservation of archaeological sites, and stream bank erosion can lead to their exposure and discovery. The actual occupation of floodplains and terraces would be most prevalent along large streams, especially those connecting major lakes. Conversely, the possibility of occupation along minor streams is low. Generally alluvial terraces and floodplains along most streams will have medium archaeological potential along most streams.

Colluvial slopes (C) are generally underlain by morainal deposits or weathered bedrock that have been subjected to mass wastage processes, due in part to slope steepness. Near-surface or surface seepage of water is common on these slopes, even though colluviation was the dominant process immediately following deglaciation. The slopes have thin active layers due

to clayey nature of the underlying strata and the wetness of this environment. Colluvial slopes have low to nil archaeological potential because of their slope and/or wet ground conditions offers little attraction to occupation.

Glaciofluvial deposits are present as two main types of landforms. Glaciofluvial Deposits Having Relief (GR) are generally kames, eskers and kame and kettle complexes that were deposited as ice-contact deposits during deglaciation. They are composed primarily of sand and gravel. Due to the texture of the deposits and their relief, active layers are thick. The deposits offer good sites for camps, especially where house pits are necessary. Some colluviation may occur on slopes, and organic accumulation in depressions. This may preserve some archaeological material. Most important, the crests of slopes are relatively stable and may be thinly vegetated allowing preservation and easy discovery of artifacts on these crests. Most glaciofluvial deposits having relief probably have medium archaeological potential, except where they are isolated from water bodies and other special features. Flat Glaciofluvial Deposits (GF) are also composed of sand and gravel. They were deposited as proglacial valley trains and outwash deltas during deglaciation. In spite of their composition, their flatness in this region of permafrost inhibits drainage and leads to organic accumulation, which further causes deterioration in drainage. Upon deposition these deposits may have offered good camp sites, especially outwash deltas that abut lakes. Subsequently, except for isolated areas near escarpments, campsite potential deteriorated. These landforms probably were generally unattractive to occupation because of their flatness, and they have only low archaeological potential.

Lacustrine plains (LP) are generally composed of silt and clay and were deposited during deglaciation. Their texture and relief leads to poor drainage and an accumulation of organic deposits, which minimize their archaeological potential. Only in special situations where the deposits are terraced or where they underlie an isthmus between lakes do these landforms hold any archaeological potential.

Lakeshores and Lacustrine Benches and Beaches Adjacent to Lakes (LS) have varied archaeological potential according to the landforms and materials composing the shorelines and the size of the lakes, which the shorelines and strandlines features encompass. Lakeshore and Related Lacustrine Features Having High Archaeological Potential (LSH) generally are developed in glaciofluvial deposits composed of sand and gravel. Lacustrine benches and beaches formed on glaciofluvial deposits are similarly composed of sand and gravel, are usually well drained and characterized by thick active layers, (the latter may have been even more relevant during the Hypsithermal when mean annual ground temperatures were higher than present). Thus sandy or

gravelly lacustrine benches and beaches and the crests of scarps developed in glaciofluvial deposits are all good sites for camps, especially where house pits are required. Shorelines developed in hummocky moraines also usually have high archaeological potential as well-drained sites in relatively coarse-textured soils are commonly present. Other factors leading to high archaeological potential of shorelines are their closeness to lake inlets and outlets.

A number of factors may reduce the potential of potential of lakeshores and related lacustrine features to Lakeshores and Related Lacustrine Features Having Medium Potential (LSM) or Lakeshores and Related Lacustrine Features Having Low Potential (LSL). In contrast to High Potential Shorelines, etc. (LSH), Medium Potential Shorelines, etc. (MSH) occur in similar materials or have similar associated features, except that they occur on smaller lakes. Medium Potential Shoreline, Etc. (MSH) also occur on large lakes where the development of well drained benches and beaches is limited, mainly due to the texture of the deposits adjacent to a lake. Also, some well drained benches will occur at the crest of shoreline scarps. Low Potential Shorelines, etc. (LSL) are common to small lakes, or shorelines developed in lacustrine, colluvial or, in some places, morainic deposits. Generally well drained benches with thick active layers do not develop on these deposits. Steep shoreline bluffs are also considered to have low archaeological potential due to the lack of camp sites on the bluffs.

Morainal Deposits (M) are generally flat to rolling and composed of silty or clayey tills. Moraines are generally flat, gently sloping or undulating. The texture of the tills and slopes result in much of the moraines being imperfectly drained with organic deposits accumulating in depressions. These factors plus the relative featureless nature of the morainic terrain result in it having a low archaeological potential. Hummocky moraines with their improved drainage on hills and greater frequency of lakes offer better camp sites and may have medium archaeological potential.

Organic Deposits (O) develop in flat poorly drained areas. Accumulation has probably been most rapid during the Holocene and continues today. Archaeological potential is low to nil due to the very poor drainage conditions.

Vistas (V) are special situations where great distances can be viewed because of the elevation of the site. They usually occur at the crest of high steep escarpments or on hills. These sites could well be the locale for flaking stations, being

occupied when hunters were spotting game. They appear to be too exposed for lengthy occupations as camps. As such, most vistas have been assigned medium archaeological potential.

3.3 Valley Lake Systems and Their History

Most known archaeological sites appear to be concentrated along the large lakes and interconnecting streams located along major valleys. These lakes are corridors for movement throughout the area, especially during the summer season, and offer a source of game and sites for killing of game. Most shorelines and associated shoreline features have been available since 13 KaBP for occupation as it was during this time (the Tutsieta Phase) that glacier ice advanced to a position covering some of the lakes at this time. The outlets to most other major lakes were also dammed at this time and meltwater drainage was diverted into the Kuglak River system (Figure 1). High lake elevations caused lacustrine benches and beaches to be formed during this period.

Within the lake systems, archaeological potential would seem to be most favorable where sandy and gravelly deposits form the shorelines. These well drained materials and the lacustrine benches developed within them are level, well-drained sites with thick active layers (allowing easy house pit excavation) and have easy access to the lakes. However other biological or cultural factors may also affect the potential of shorelines. For example, lake narrows, isthmuses and areas adjacent inlet and outlet streams may also have high archaeological potential.

3.4 Antiquity of Landforms

The Tusieta Phase glacial limit clearly separates the study areas into two parts, each having divergent histories. Landforms in that area beyond the Tutsieta Phase glacial limit appear to have been formed during a glacial advance that occurred either between 18 and 30 KaBP or 70 to 110 KaBP. Landforms within the area covered by the Tutsieta Phase glacial limit date from about 13 KaBP when glacier ice advanced to this limit. Deglaciation following this event was probably rapid. During the Tutsieta Phase, much of the lower parts of valleys occupied by Sandy, Deep, Jiggle, Trout, Tenlen and other large lakes were covered by glacially-damned lakes. Kugaluk River valley and upper reaches of the Travaillant River valleys were also filled with outwash and were utilized as spillways during this 13 KaBP glacial advance.

The only areas having an age significantly younger than 13 Ka are alluvial terraces formed during the Holocene, and organic deposits formed during postglacial organic accumulation. Some slopes may have also been subjected to significant down-slope movement of materials during the postglacial. Even though

most landforms within the areas were formed during glacial events, they will have been subjected to some mass wastage (colluviation) during the course of time.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Landscape units, based on (a) terrain units and (b) areas within these terrain units having similar characteristics perceived to affect archaeological potential, have been defined and mapped that allow subjective evaluation of archaeological potential of the total landscape. Numbering and description of the landscape units not only allows for their individual descriptions, but allows for the reassessment of a landscape unit relative to other similar landscape units as new data is presented that may affect the potential of that particular landscape unit.

Factors affecting archaeological potential for each landscape unit have been listed to allow realization of the factors considered in assigning archaeological potential. Tables could be expanded if warranted to list parameters other than physical parameters that may affect archaeological potential. On a regional scale, data from Land Use Series Information Maps (IAND) may be utilized to realize biological parameters that may affect archaeological potential. Archaeologists should have direct input into cultural parameters that may affect archaeological potential of landscape units.

Continuing field investigations are required to confirm and reassess the archaeological potential established through air photo interpretation and field investigation. These field investigations should also be utilized to continually assess the relevance of different parameters considered in assigning archaeological potential ratings to landscape units. Further analysis and descriptions of parameters affecting potential and the manner in which they may affect potential may be warranted.

Computerization of tabular data might also be considered. However prior to this process a more quantitative detailed break-down for parameters affecting archaeological potential might be considered. For example, a factor such as colluviation should be rated for each landscape unit according to degree and percentage of area affected. Such quantification, although perhaps introducing more consistency into ratings, would also involve more time and expense.

Shoreline features, such as lacustrine benches and beaches adjacent lakes forming transportation corridors in the major valleys, are favorable archaeological sites. Field investigations to date confirm this assumption. Those shoreline features developed in well-drained sand or gravel with thick active layers allowing easy excavation appear to have the highest

archaeological potential. Shoreline features developed in other materials would appear to have slightly less potential.

Most shoreline features have been available for occupation since 13 KaBP when glaciers advanced to the Tutsieta Phase glacial limit that crosses the area (Figure 1). Terrain adjacent to interconnecting streams has also been available since this time. Some segments of this terrain will have been available for a shorter period of time as they have been subjected to fluvial processes during postglacial time.

Other landforms having good archaeological potential are eskers and kame and kettle complexes composed of sand and gravel. Portions of these landforms are well drained with thick active layers. Certain vistas may have also been favorable for utilization by man in the past.

More detailed investigations of landforms adjacent shorelines and interconnecting streams may be warranted to evaluate their potential in detail. This would involve assessing the potential of these landforms according to their geomorphology, drainage, accessibility from lake or stream, size of adjacent water body, and the biological significance of the water body as a source of game. Such an assessment would require not only detailed study of areas perceived to have high archaeological potential for reasons cited within this report, but also of areas perceived to have low archaeological potential. This would test the correctness of presumptions leading to assigning landscape units a high potential.

5.0 REFERENCES

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