

# RESEARCH BULLETIN

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## Archaeological Investigations in Elk Island National Park 1984

Elk Island National Park is the only undisturbed Parkland area remaining in central Alberta (Fig. 1). Extensive cultivation has significantly altered the rest of Alberta's Parkland area and as a result, the park assumes considerable importance in terms of the prehistory of the region. Only in Elk Island National Park can one expect to find largely undisturbed prehistoric sites once common across the Parkland. Until 1984, research into heritage resources inside the park had been confined to site inventory of a preliminary nature (Wilson and Head 1978). In 1984, a fairly extensive survey and testing program was conducted involving inspection of eleven specific areas within the park (Sumpter 1984) and test excavations at 2 sites (Haley 1984b). All of the projects were undertaken as a direct response to planned development and/or expansion of park facilities.

Elk Island National Park is located in the forested uplands of the Beaver Hills and lies approximately 40 km due east of the City of Edmonton. Physiographically, the park is part of the interior plains of North America and in the central area of the Alberta Plateau (Bostock 1970; Lang 1974), a generally flat plain with areas of widely separated low hills. Topographic features are typical of a hummocky disintegration moraine. Till knobs and ridges, kettles and prairie mounds are present as are areas of lower local relief. A large number of lakes, ponds and marshes occupy glacial meltwater channels and kettles. Permanent watercourses are rare although many intermittent streams connect the lakes.

The flora and fauna reflect the transitional nature of the Parkland. For example, over 280 plant species have been recorded in the park (Techman Ltd. 1979). Animal species include bison, elk, moose and deer as well as migratory waterfowl, shorebirds and upland game birds. This diversity in the flora and fauna increases the types of resources available to prehistoric peoples. Therefore one would expect to find a large number of sites relating to the prehistoric period in the area. Conversely, the early decisions to set aside a forest reserve (1899) in the area and to create Elk Island Park (1908) would have limited the number of historic period sites located within the park boundaries. The initial inventory of sites (Wilson and Head 1978) reflected these expectations with 158 prehistoric and eight historic sites being located and recorded.



### 1984 Survey Program

As already noted, eleven proposed development projects were examined, undertaken by a two-person field crew over a period of four weeks. The projects included road/boundary fence realignments, hiking/skiing trail improvements, a recreational area improvement, a picnic area, a parking facility with associated trailhead development and a kiosk structural assessment (Fig. 2).

In general, the research objectives of the study were to:

1. Undertake heritage resource impact assessments (HRIAs) in Elk Island National Park, on projects with potential impact to heritage resources;
2. Identify, locate and evaluate known and unknown heritage resources relating to the above HRIAs,
3. Provide recommendations for each heritage resource site regarding mitigative measures necessitated by the development projects.

With these objectives in mind, the project methodology involved a two-stage approach based upon prefield and field studies. The former entailed a literary search and examination of site data files maintained by the Archaeological Research Unit and Regional Library, Parks Canada, Calgary, and the Archaeological Survey of Alberta, Edmonton. This information search was conducted to determine the extent of earlier research in the study region and the number and location of previously recorded resource sites associated by way of physiographic area, as well that directly associated with individual development project areas. Prefield activities also included the examination of relevant topographic maps, aerial photographs and interim development plans in order to acquaint the researchers with the project areas to be investigated and to assist in the assessment of the heritage resource potential of the area.

Field studies entailed an on-ground foot reconnaissance with a judgemental and/or systematic shovel-testing program of project areas and significant peripheral areas in an attempt to identify known or to discover new heritage resources. The extent of the field research was determined by the nature and scope of the proposed development project and its impact. For linear projects, that is, road and trail improvements, foot transects along the proposed right-of-ways were conducted, however, due to time constraints, systematic subsurface inspections were limited to locales evincing moderate to high potential for site recovery. With respect to aerial surveys both judgemental and systematic placed shovel probes were employed. Subsurface shovel testing was an integral part of the field studies, with surficial dimensions of the probes ranging in size from 40 cm to 60 cm per side depending upon factors such as the area, landform and matrix. Existing exposures were also examined to supplement those exposures caused by shovel testing. Included in this category were small mammal and rodent borrows, bison wallows, road cuts, tree throws and erosional areas.

In all, 57 kilometres of linear survey and approximately 71 hectares of aerial survey were involved in the program. Twelve previously recorded sites were relocated and ten new sites identified.

Recommendations for the various heritage sites and development projects ranged in scope, from no further work needed to conservation/mitigative measures to be undertaken if sites could not be avoided by development. Of the twenty-two heritage resources located, three (sites 520R, 521R, and 522R) were found to be of special concern as they were in direct conflict with proposed development. These are briefly described below:

1. The East Road Site, 520R (Project WRA-84-68F). A series of shovel tests across the surface of a small knoll landform revealed the presence of a large ungulate. A number of moderately preserved faunal elements were recovered from one shovel probe, approximately 15 cm to 25 cm below surface, in association with a palaeosol and a thin charcoal lense. No artifacts were noted. Future park development calls for the widening and improvement of the existing east boundary road of the isolation area and was found to be in conflict with site 520R. It was recommended, as site avoidance was unlikely, that conservation archaeology studies be conducted at this site locality prior to scheduled road improvement. Significant information could be attained and contribute to the further understanding of prehistoric diet, butchering techniques and resource exploitation.

2. The Narrows Site, 521R (Project WRA-84-68D). This particular resource was identified as a large prehistoric site with surficial cultural and faunal remains scattered over several hectares. A majority of the cultural items were exposed on the surfaces of bison wallows. Current and future disturbance factors include continued use of the bison wallows, the employment of new wallows and the increase in park visitor accessibility as a result of proposed trail improvements. Recommendations call for an extensive surface survey, a controlled surface collection of diagnostic tools, site recording and mapping. It was felt that due to its contributinal potential for testing archaeological methodology, theory, techniques and answering research questions, that a detailed study of the site area could provide pertinent information on the spatial usage of the site by its prehistoric occupants and the spatial placement/distribution of cultural and faunal resources.

3. The Beaver Bay Site, 522R (Project WRA-84-68G). This prehistoric campsite was located on a high knoll that juts into the southern margins of Astotin Lake. Through the employment of a surface and subsurface inspection program four isolated cultural activity localities were located within an area approximating 80 m by 50 m. Of high heritage value, locality #4 was found to warrant further intensive subsurface exploratory investigations due to the high frequency of lithic materials recovered from the initial testing program and the site's conflict with present picnic facilities. Site 522R was seen as having high potential in answering research questions pertaining to lithic resource utilization and technological systems, and has excellent interpretive value.

#### 1984 Test Excavations

Two sites were tested under controlled circumstances by a two-person archaeological team. Both tests were conducted in advance of proposed development. The first, located in the southeast quarter of the park adjacent to the east boundary had a four square metre block removed. The second, on the shores of Astotin Lake in the northwest quarter of the park, received more attention with eight square metres excavated.

#### The East Road Site, 520R (Project WRA-84-68F)

Initially, the site, situated on a small knoll, cross-cut by the East Boundary Road, was identified by the location of two lithic artifacts found on the surface on the east side of the road. Shovel tests across the site proved negative with one exception. One test on the east side of the road revealed a large bone imbedded in its wall. Testing was terminated and recommendations made that a limited controlled test excavation be carried out at that spot (Figs. 3,4) since widening of the roadway had been planned (Sumpter 1984). Excavation revealed a buried soil between the glacial clay and the present surface. Cultural material was confined to the palaeosol and the matrix immediately above it.

Within the 2 m by 2 m unit, only 11 lithics were recovered. One, an irregular cobble fragment had been edge-modified either intentionally to act as a large scraping tool or through use in some task requiring a large amount of force (ex. bone smashing). The remaining artifacts included quartzite flakes, flake fragments or shatter. The majority were from a single cobble.

Fauna, consisting of 194 bone fragments in poor condition, were concentrated in only two areas. Preliminary studies suggest that these are the remains of only two bones - a pelvis and a metapodial - tentatively thought to belong to a large ungulate, perhaps an elk. No butchering marks were observed but that may have been the result of poor preservation.

Very little cultural material was recovered during the excavation of the East Road site. Essentially only 11 lithic artifacts and two identifiable bones accounted for all of the material recorded. The lithics contained no diagnostics or tools other than an edge-modified cobble fragment. The flakes were indicative of primary lithic reduction or early stage tool manufacturing. Beyond that little can be said. The faunal remains, the pelvic bone and metapodial of an ungulate, were fragmentary and no human modification of them could be seen.

This site probably represents the marginal remains of a larger campsite that may have been destroyed by initial construction of the East Boundary Road. Note that that construction removed up to 1.5 m of fill from the ridge the site was on and that surficial cultural remains were found on the west side of the road. A slight increase in artifact density to the east within the excavation block could suggest that part of the site remains undisturbed in the wooded area just east of the block. If that is the case, that portion of the site is outside the park and the proposed development area.



Beaver Bay Site, 522R (Project WRA-84-68G)

In response to proposed upgrading of the Astotin Lake/Beaver Bay picnic area and related hiking areas, an examination of the area was conducted (Sumpter 1984). It was ascertained that locality #4 of the Beaver Bay site would be impacted. Initial shovel testing suggested that the site area was small, less than 25 square metres in area, and was the remains of a lithic reduction activity area (Fig. 5). Limited excavation (8m<sup>2</sup>) significantly revised the original estimation and upgraded the site to a single component site of as yet undetermined proportion.

The site is located on the eastern edge of a small peninsula jutting out into Astotin Lake (Fig. 6). From the site, there is an excellent view of the bay and the land beyond. Actually, the entire peninsula has been given the site designation but subdivided into localities. The only area threatened by development is locality #4, the area discussed here.

In contrast to the East Road Site, the Beaver Bay Site yielded a large number of artifacts including lithics, fire-broken rock and faunal and floral remains (Fig. 7). One cultural feature, a hearth (Fig. 8), was also discovered. It was an unlined oval bowl-like stain measuring 60 cm by 35 cm. A pocket of grey silty clay defined the top of the hearth at about 11 cm below the present surface. The feature was surrounded by an area of stained silty clay extending only a short distance out from the hearth edge on three sides but covering a fairly large space on the south side (Fig. 7). This staining was probably the result of wind disturbance of hearth material.

Feature fill was collected and screened through a 2 mm mesh wet sieve. Contents of the hearth consisted of 40 lithic artifacts (9.6 percent), 332 faunal remains (46.2 percent) and 3 pieces of fire broken rock 16.6 percent). In addition, 83 seeds/nuts and fragments were recovered from the fill. Each type of cultural material will be discussed below. However, it should be noted that the faunal remains consisting of small burnt bone fragments were concentrated in the northern third of the feature while all other cultural material was randomly scattered within the hearth. This suggests that one or two bones were discarded into the fire and fractured by the heat.

A total of 415 lithic artifacts were collected during the excavations. This total does not include materials recovered during initial testing of the site which included 60 flakes (and bone fragments) found in the conjoining shovel tests.

The lithic raw material can be divided into three broad types with 14 varieties or subtypes represented. The majority of artifacts (67.2 percent) were of a milky quartz. Quartzite accounted for another 25.1 percent of the assemblage. The remaining 7.7 percent (n = 32) were either chert, siltstone or chalcedony (Knife River Flint). All but the latter stone type were readily available in the form of cobbles (quartz and quartzite) or pebbles (chert and siltstone) from glacial tills that blanket central Alberta and are frequently exposed in river valleys and erosional channels (Newton and Pollock 1979; MacPherson and Kathol 1973). These stone types can then be considered local materials. Knife River Flint however is an 'exotic' as it is not known to occur locally. Although it has been found in other central Alberta prehistoric sites (Haley 1984a), it never occurs in large quantities and pieces recovered tend to be quite small. Sources of this fine deep brown chalcedonous material are unknown in Alberta and it may have been imported from as far away as Wyoming or Manitoba (Syms 1969), known source areas for the material. This

does not imply direct trade links to these areas but does suggest a continuous overlapping of cultural contacts across the intervening territories.

Four tools or fragments were recovered. Three of these were milky quartz, tended to be irregular in shape with one margin or edge retouched either unifacially ( $n = 2$ ) or bifacially ( $n = 1$ ). The worked edge tended to be oval with retouch shallow and discontinuous. None of these three can be considered finished tools. Rather they appear to be either 'failed' preforms or were modified, utilized and discarded as expedient tools. The fourth tool was a large quartzite split cobble chopper. Cultural modification consisted of first splitting a large oval cobble and second, removing relatively large flakes from one end of one half of the cobble. No other modifications were evident.

The remaining lithic artifacts are classified as debitage, manufacturing by-products or waste products, and fabricators, hammerstones. There were five of the latter. All were oval quartzite cobbles showing evidence of battering in one or more locations, usually the narrow ends, on their surfaces. They were small, ranging in size from 105 mm to 65 mm along the maximum dimension with the average size being approximately 81 mm. Debitage, the largest artifact class, numbered 409 specimens and was split into 11 types. A further division was based on raw material source. In other words, if a pebble was used as a raw material source, this indicated a different lithic reduction strategy than if a cobble was utilized as a starting point. It is not entirely coincidental that chert as a lithic type is synonymous with pebbles as a source and quartzite as a type is synonymous with the reduction of cobbles. Nor is it surprising that the pebble reduction technology produces far less artifactual remains.

Pebble reduction is initiated by the splitting of the pebble using a bipolar technique (Binford and Quimby 1963; Forsman 1975). Resulting artifacts have distinctive characteristics such as flake scars located at opposing poles and/or flat fracture planes. At the Beaver Bay Site, four split pebbles were recovered as were two pebble fragments.

Cobble reduction on the other hand involves a less clearly delineated strategy and a wider range of end products potentially available. It is generally assumed however that biface production was the major lithic reduction intent and debitage is classified with that model in mind. As a result, eight flake classes and a single core type were utilized.

Eight of the nine cores, seven of which were quartz, were all cobbles in various stages of exhaustion. Most were small, with little cortex remaining. Platforms appear to be expedient in nature as each core has two or more, and all useable surfaces have served as platforms. It is possible that the milky quartz cores are fragments of a single large cobble or nodule that has been reduced as much as possible. The single yellow quartzite was not reduced as extensively but its oval shape may have reduced its utility. Experiments in cobble reduction conducted by the co-author (Haley) have demonstrated that thick, oval cobbles such as the one in question rapidly become unuseable if they are not split prior to their use as cores. The ninth core is a chert with discontinuous flake scars on three faces. It should probably be reclassified as a split pebble but it lacks the distinctive characteristics of bipolar reduction.

The vast majority of artifacts (94.2 percent) ( $n = 391$ ) can be properly classified as flake debitage. Primary decortification flakes ( $n = 7$ ) are flakes with one surface entirely covered by cortex. These are thought to represent the initial stage of cobble reduction during which cortex is removed from the cobble in preparation for the next step. Based on lithic material types, it can

be suggested that at least three cobbles were being reduced. Secondary decortification flakes ( $n = 16$ ) have cortex on only part of one surface or only on the platform remnant and represent the completion of cortex removal or the beginning of intentional flake removal. These flakes could have been intended as tool blanks or simply as core preparation. Only seven (43.8 per cent) were milky quartz, while the remainder were of five different quartzite types.

Thinning flakes, also referred to as reduction flakes have no cortex on any surface, exhibit a plain platform and represent either the major source of blanks for flake tool production or primary shaping flakes if a biface is the intended outcome of the process. Thirty-six thinning flakes were identified in the assemblage. They ranged in length from 8 mm to 52 mm with the average length being 19 mm. Because of the generally small size of these flakes, it is suspected that they were by-products of biface production rather than as end products or flake blanks. Over sixty per cent were milky quartz and the remainder were quartzite. Twelve were red quartzite and orange and grey quartzite were represented by one specimen each.

Bifacial thinning flakes have distinctive platform remnant characteristics. The platform is faceted and clearly part of the edge of a biface. These flakes are being detached during the shaping of a biface and are usually discarded immediately (only large ones are added to the biface blank reduction system). Nineteen such flakes were found at the Beaver Bay Site. Seven (36.8 per cent) were quartz, and quartzites, cherts and siltstones were represented. The diversity of lithic types in this category is indicative of a number of bifaces being manufactured at the site.

Retouch flakes, usually thought to be the result of pressure flaking, are the final flakes detached to finish a tool. They are small, thin and delicate with a characteristic isolated platform. At the Beaver Bay Site, 21 were recovered ranging in length from 3 mm to 14 mm. Stone type was diverse again indicating several tools being finished and/or sharpened.

The final flake category is a catchall included to account for the eleven artifacts that could not be assigned to the above debitage classes. This type is morphologically highly varied and artifacts within it ranged in length from 7 mm to 43 mm.

Flake fragments are just that, artifacts identifiable as flakes but lacking key characteristics such as platform remnants. Fifty-six such artifacts were contained in the Beaver Bay Site assemblage. Most (67.9 per cent), ( $n = 38$ ) were milky quartz, two were Knife River Flint and the remainder were of various quartzites. By far the largest category, shatter, with 215 specimens, is also the most general. Every lithic reduction operation produces breakage ranging in size from extremely small (microscopic) to quite large. This breakage, known as shatter, tends to be angular, irregular, totally lacking in flake morphology. It also tends to be as diverse in raw material type as the entire assemblage was as a whole. For example, of the 14 lithic types represented at Beaver Bay, shatter accounts for 12. The two not present in the shatter category are chert pebble fragments ( $n = 2$ ) representing only 0.98 per cent of the total assemblage.

In general, the lithic assemblage suggests that limited tool manufacturing took place at the site. The low frequencies of primary and secondary decortification flakes as well as the overall small-sized debitage indicate that primary reduction of quartzite cobbles was accomplished elsewhere and blanks

brought to the site. Bifaces are being shaped, thinned and finished on site but in relatively small numbers. Perhaps others were resharpened as well. Apparently, a cobble or nodule of quartz was reduced at the site and either finished tools or blanks taken elsewhere. Two clusters of quartz flakes, one near the hearth and the other a short distance to the northwest (Fig. 6), were noted. Hammerstones and cores were noted in proximity to both clusters. Either two stoneworkers were involved or one stoneworker moved from one spot to another and continued work on the same cobble/nodule at the second locale. The other flakes showed no discernable spatial distribution. Pebble splitting was also carried out though to a limited degree.

Only 18 fragments of fire-broken rock were recovered during the excavation. Eight were found in the general vicinity of the hearth feature while the remaining 10 were within two metres of the feature. There appears to be no apparent pattern in the spatial distribution of this artifact type (Fig. 6). All fire-broken rock fragments were quite small with the largest measuring only about 8 cm by 6 cm in size. Most were significantly smaller than that.

A total of 719 bone fragments were recovered from the Beaver Bay Site excavations. Ten (1.4 per cent) of these fragments were randomly distributed across the area while the majority were clustered in two distinct areas. The first, located within the hearth feature and adjacent to it (Fig. 6), contained 336 fragments of bone most of which had been burnt. This cluster was small, less than 30 cm in diameter. The second cluster was larger, about 120 cm across, and irregular in shape. Contents included 372 bone fragments and one complete bone. Over 90 per cent of the former were calcined.

Despite the large faunal assemblage, only the one complete bone and 15 fragments were potentially identifiable. Given the lack of a readily available comparative faunal collection and time constraints, detailed identification of the faunal remains was not complete at the time of the writing of this report. All that can be said at this point is that the faunal remains are bird bone fragments and that they are the remains of large birds the size of a duck, goose or grouse. The bone was too fragmentary to allow for the detection of butchering marks or other cultural modification.

From within the hearth fill, which was wet screened through 2 mm mesh, a small number of seed/nut shell fragments ( $n = 83$ ) were recovered. Several were complete enough to identify and all appeared to be of the same species. Tentative identification of the flora indicated that it was either hazelnut (*Corylus cornuta*) or chokecherry (*Prunus virginiana*, *P. pensylvanica*) (J. White 1984: pers. com.). There is ethnographic evidence for use of hazelnuts as a food resource in British Columbia (Turner 1975) and it is reasonable to assume that Parkland peoples ate them as well. Currently, *Corylus cornuta* is an extremely common plant all across the park. Its nuts ripen in early fall and the presence of hazelnut shells at the site suggests that the site may have been used during that season.

The Beaver Bay Site appears to be the remains of a prehistoric campsite located on the shores of Astotin Lake. It is a single component occupation of unknown temporal placement. Indications of seasonality are such that an autumn occupation is suggested. Ordinary day to day activities are represented at the site. For example, meat (bird) processing cooking and consumption, plant (nut) consumption and stone tool manufacture and maintenance are evidenced in the remains. It is obvious that this site was considerably more extensive than



first thought and can provide a significant amount of information on prehistoric lifeways. This preliminary study of the Beaver Bay Site has only hinted at the possibilities. Since it is a relatively undisturbed single occupation the potential is very high. In the absence of temporally sensitive diagnostic artifacts, radiocarbon dating of the faunal remains should be used to ascertain the date of occupation. Detailed faunal and floral analysis will increase our knowledge of resource utilization at the site. More rigorous lithic studies may bring to light utilized flakes and other tools. In short, this present study could easily be expanded with positive results.

#### Conclusion

Archaeological investigations in Elk Island National Park during the 1984 field season were limited to eleven heritage resources impact assessments and two test excavations. It represented only the second step towards understanding the prehistory of the park and the Alberta Parkland. We now have a basic inventory of sites in the park although it is far from complete. We also have an understanding of the contents and context of two sites. Subsequent archaeological research will not have to be conducted in a vacuum. If nothing else, the 1984 study has indicated the enormous potential for research in Elk Island National Park. It remains up to future researchers to realize that potential.

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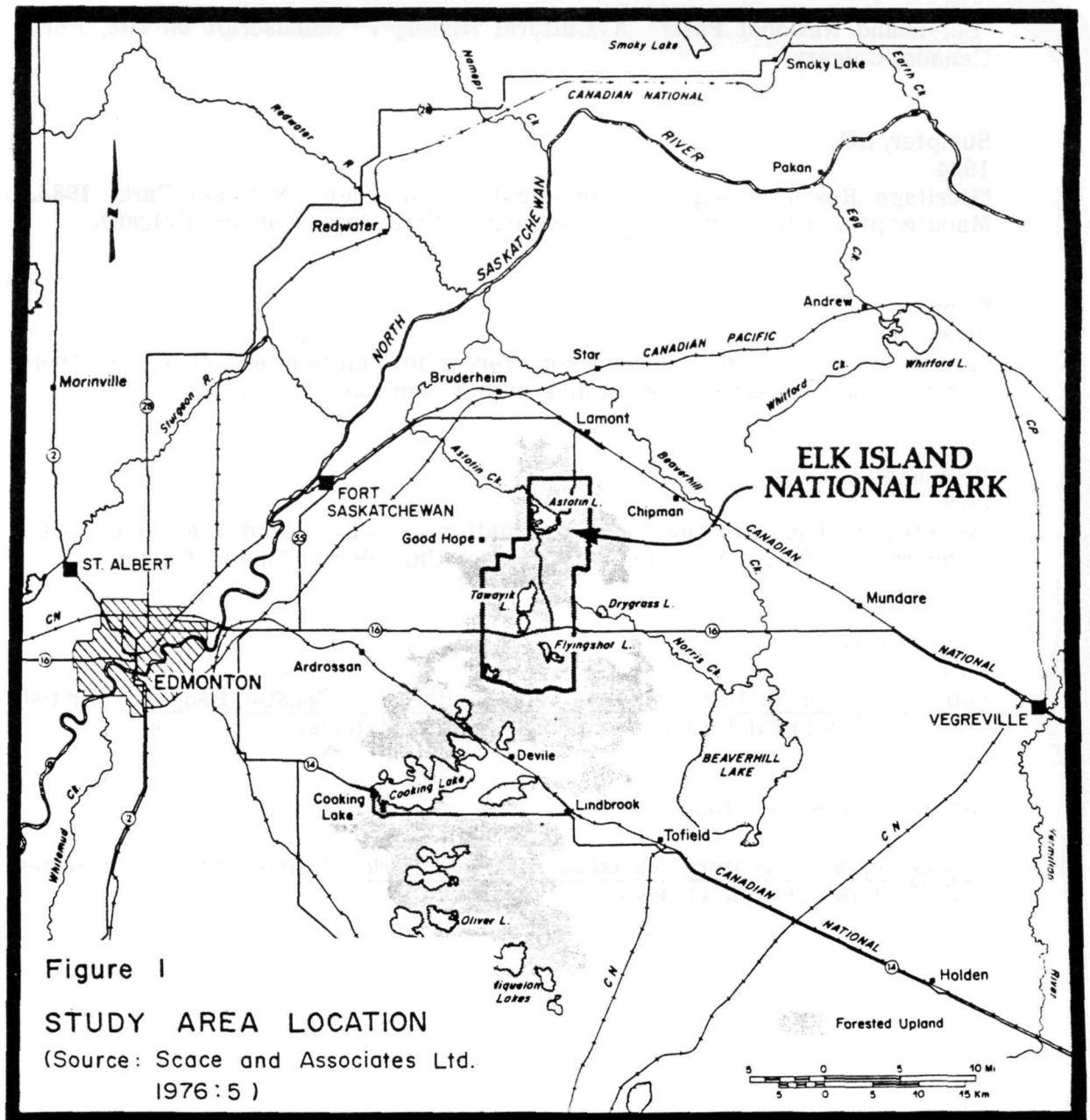
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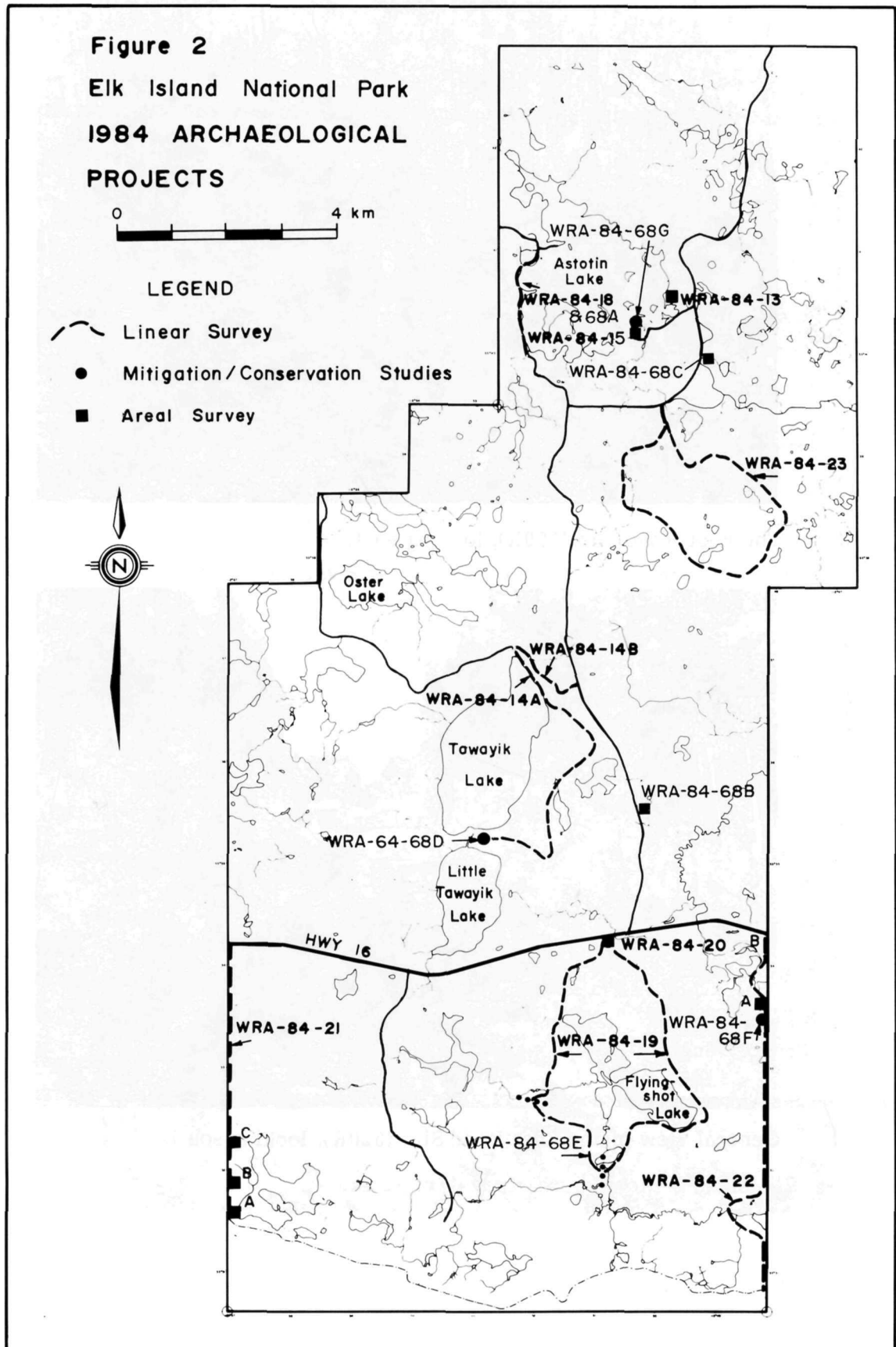
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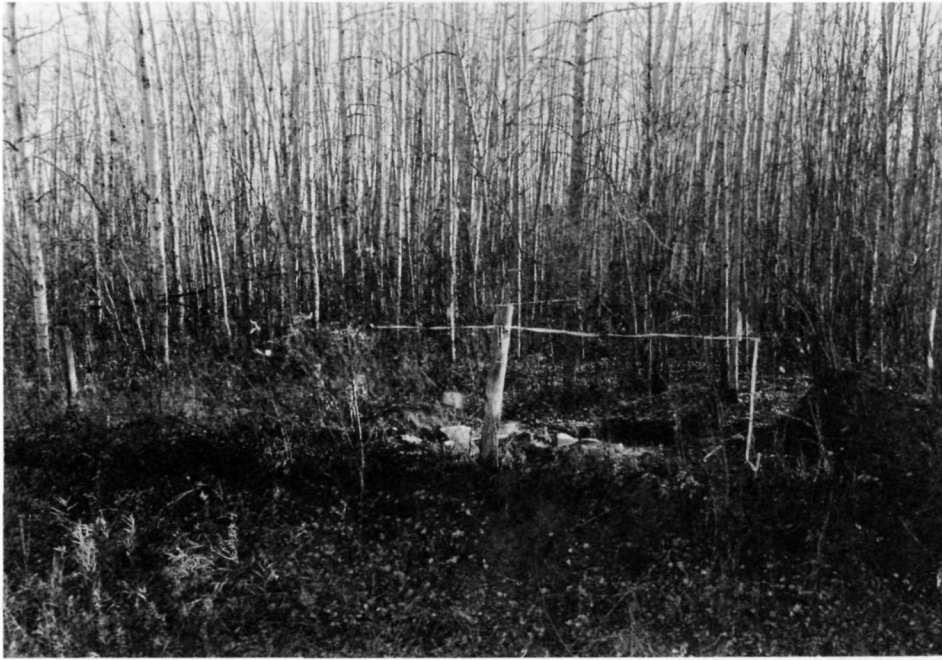


1 Elk Island National Park Study Area Location.





2 Location of 1984 archaeological projects (Drawing by R. Lalonde).



3 The East Road Site (520R), looking east.



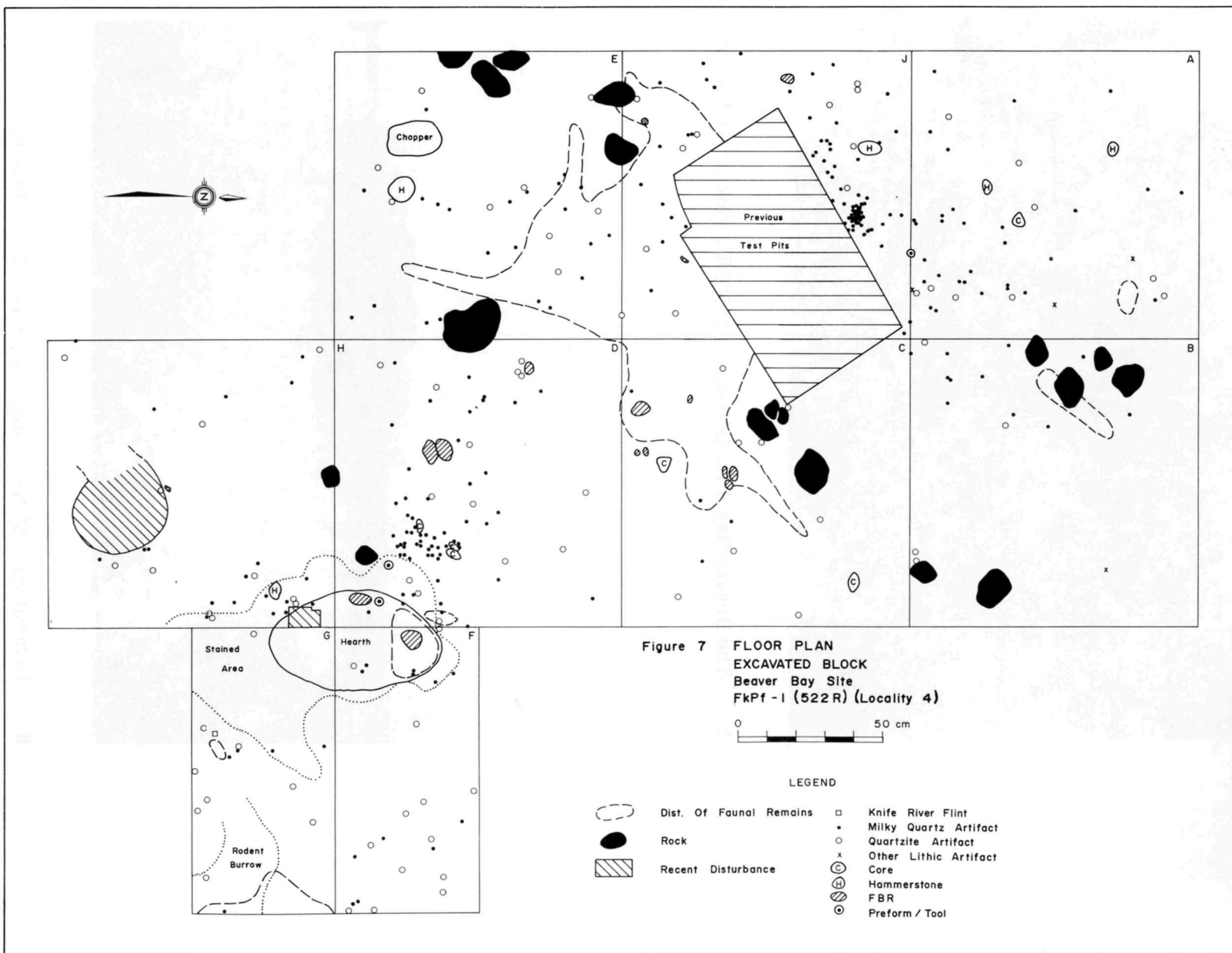
4 General view of the East Road Site (520R), looking south.



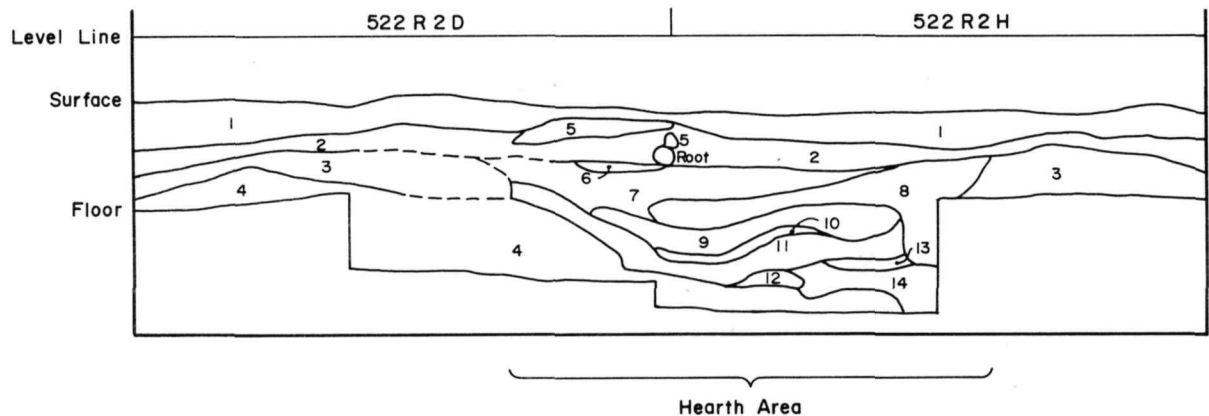
5 The Beaver Bay Site, Locality #4 (522R), looking southwest.



6 General view of the Beaver Bay Site (522R), looking south.







**Figure 8 EAST WALL PROFILE**  
**HEARTH FEATURE AREA**  
**Beaver Bay Site**  
**FkPf-1(522 R) (Locality 4)**

0 50 cm

**LEGEND**

- |                                   |  |
|-----------------------------------|--|
| 1. Root Mat 10YR2/2               | 8. Hearth - Grey Clay 10YR5/2              |
| 2. Ah - Dark Organic 5YR2/1       | 9. Hearth - Light Grey Sandy Clay 7.5YR3/0 |
| 3. Ae - Light Grey Clay 10YR5/2   | 10. Hearth - Brown Sandy Clay 10YR4/3      |
| 4. C - Greyish Brown Clay 10YR4/3 | 11. Hearth - Black Organic 5YR2/1          |
| 5. Dark Grey Clay 10YR5/2         | 12. Hearth - Ash 10YR5/4                   |
| 6. Dark Grey Clay 10YR4/2         | 13. Hearth - Grey Clay 10YR5/2             |
| 7. Hearth - Black Organic 5YR2/1  | 14. Hearth - Dark Grey Clay 10YR3/2        |

8 East Wall Profile, hearth feature, Beaver Bay Site (522R) (Drawing by R. Lalonde)

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