

AD-A164 331

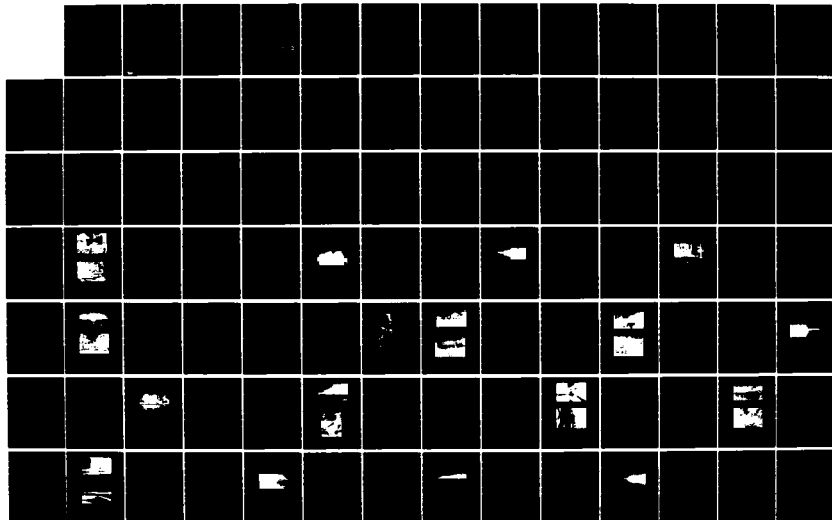
CULTURAL RESOURCES INVENTORY OF LANDS ADJACENT TO BIG
SANDY LAKE VOLUME 1(U) SCIENCE MUSEUM OF MINNESOTA ST
PAUL G J HUDAK ET AL. 18 JAN 79 DACM37-77-C-0097

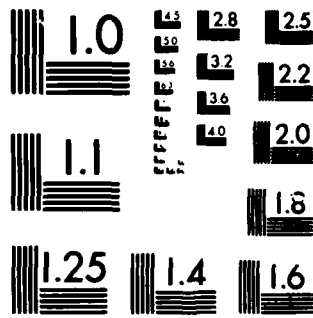
1/3

UNCLASSIFIED

F/G 5/6

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

AD-A164 331

1

CULTURAL RESOURCES INVENTORY OF
LANDS ADJACENT TO BIG SANDY LAKE
VOL. 1

DTIC FILE COPY

DTIC
ELECTE
S FEB 6 1986 D
B

DISTRIBUTION STATEMENT A
Approved for public release
Distribution Unlimited

86 2 3 178



UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
	AD-A164331	
4. TITLE (and Subtitle) CULTURAL RESOURCES INVENTORY OF LANDS ADJACENT TO BIG SANDY LAKE VOL. 1		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) G. Joesph Hudak & Timothy L. Ready		8. CONTRACT OR GRANT NUMBER(s) DACW37-77-C-0097
9. PERFORMING ORGANIZATION NAME AND ADDRESS The Science Museum of Minnesota		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Corps of Engineers, St. Paul District 1135 USPO & Custom House St. Paul, MN 55101-1479		12. REPORT DATE January 1979
		13. NUMBER OF PAGES 197 p.
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; Distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) ARCHAEOLOGY MINNESOTA BIG SANDY LAKE RESERVOIR		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Thirty-five archaeological sites are documented through surface collections, test excavations, and/or information from private collectors. Additional areas are described, but lack sufficient data or land-owner permission to test, to be considered actual sites. Significant continuing water erosion is severely damaging 21 of these recorded sites, and one additional site was destroyed by Corps of Engineer public use development at the Big Sandy Lake dam. Intensive testing and/or mitigation is recommended for these 21 sites.		

DD FORM 1473 1 JAN 73 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

CULTURAL RESOURCES INVENTORY
OF
LANDS ADJACENT TO BIG SANDY LAKE

Submitted to:
The U.S. Army Corps of Engineers
Saint Paul District
(Contract No. DACW37-77-C-0097)

by
G. Joseph Hudak
Principal Investigator
Field Director
and
Timothy L. Ready
Staff Archaeologist
Laboratory Analyst

The Science Museum of Minnesota
January 18, 1979

DTIC
ELECTE
S FEB 6 1986 D
B

VOLUME I

TABLE OF CONTENTS

i	ABSTRACT	
I.	INTRODUCTION1
II.	PROJECT BACKGROUND7
	Environmental Context	
	Erosional and Inundation Assessment	
	Cultural Context	
	Previous Investigations	
III.	METHODOLOGY28
IV.	SITE DESCRIPTIONS, EVALUATIONS & RECOMMENDATIONS (with site photographs)	34
V.	CONCLUSIONS	140
	 APPENDIXES	
A.	REFERENCES144
B.	RESUMES	148
C.	GENERAL PHOTOGRAPHIC PLATES	162
D.	CORPS OF ENGINEERS LETTER OF EXPLANATION175
E.	HISTORIC OUTLINE AND BIBLIOGRAPHY	178
F.	CATALOGUE OF RECOVERED MATERIAL	185

VOLUME II: Contains Maps 1 and 2, specific site locations with maps.
Not for general distribution.

ABSTRACT

A reconnaissance archaeological survey of the shoreline of the Big Sandy Lake Reservoir was completed in 1977-78 for the St. Paul District, U. S. Army Corps of Engineers. The survey was conducted under contract by The Science Museum of Minnesota, with G. Joseph Hudak as the Principal Investigator and Field Director, Timothy Ready, Jeanne Schaaf, and Clark Dobbs as Field-Staff Archaeologists.

Thirty-five archaeological sites are documented through surface collections, test excavations, and/or information from private collectors. Additional areas are described, but lacked sufficient data or land-owner permission to test, to be considered as actual sites.

Significant continuing water erosion is severely damaging twenty-one of these recorded sites, and one additional site may be destroyed by Corps of Engineers Public Use Development at the Big Sandy Lake dam. Intensive testing and/or mitigation is recommended for these twenty-two sites.



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

I. INTRODUCTION

The cultural resources reconnaissance survey of the Big Sandy Lake reservoir, in Aitkin County, Minnesota, was conducted by archaeologists from The Science Museum of Minnesota under contract to the U. S. Army, Corps of Engineers - St. Paul District. The actual field study was conducted between August 15 and September 23, 1977. This research was the result of the Corps of Engineers efforts towards inventorying lands adjacent to waterways under Corps jurisdiction, for cultural resources. Big Sandy Lake, in addition to Leech Lake, Lake Winnibigoshish, Pokegama Lake, Gull Lake, and the Whitefish chain of lakes, comprise the headwaters for the Mississippi River. The Corps of Engineers controls water levels of these six reservoirs, and is responsible for assessing potential adverse effects on cultural resources caused by fluctuations of water levels in the reservoirs.

This report is intended to serve as a planning document to aid the Corps in fulfilling its obligations to preserve and protect those cultural resources within the area affected by Corps operation of the reservoir. Big Sandy Lake is the second headwaters-reservoir for which a reconnaissance survey of this type has been conducted, being preceded by that of Lake Winnibigoshish in 1976. In addition, a background study was provided in 1973 by the Center for Environmental Studies, Bemidji State College for all six headwaters-reservoirs ("Environmental Review of the Headwaters of the Mississippi Reservoir Projects").

The scope-of-work for the present study dictated that: "The cultural resources investigation will include a literature search and records-review and an on-the-ground examination of the areas specified..."

(Appendix "A", sec. 1.05, Contract No. DACW37-77-C-0097), and that:

2.03 "The on-the-ground examination will be reconnaissance survey and testing of the area of sufficient intensity to determine the number and extent of cultural resources, their scientific importance and the requirements for their preservation or recovery. An attempt will be made to locate any resources previously recorded in the project area, and their condition as it may affect their significance will be evaluated. Insofar as a limited amount of testing may be required, the disturbed areas will be returned as close as is practical to presurvey conditions." (Appendix "A", sec. 2.03, Contract No. DACW37-77-C-0097).

The following chapter, from the contract referred to above, served to delineate the study boundaries:

6. PROJECT DESCRIPTION

6.01 The areas of concern for this cultural resources investigation are the shoreline of Big Sandy Lake Reservoir, and the dam site and recreation area. The various areas of concern will be considered according to the following priority arrangement:

1. Shoreline of Big Sandy Lake and included islands - approximately 40 miles.
2. The approximately 120 acres of Corps-owned land at the dam site.
3. Shoreline of Aitkin Lake - approximately 13 miles.
4. Shoreline of the Prairie River Bay up to the mouth of the river - approximately 6 miles.
5. Shoreline of Sandy River Lake upstream to the crossing of State Highway 232 - approximately 5 miles.
6. Shoreline of Flowage Lake upstream to the narrows at the head of the lake in the NW $\frac{1}{4}$ of Section 36, T 49 N, R 24 W approximately 7 miles.

6.02 For the shoreline portion of the study, the area to be examined will include all lands within 50 meters of the water's edge at the time of the field work, with the following exceptions:

a. Those areas of wetlands and steep slopes which, on the basis of knowledge about past water levels and professional archaeological judgment, can be determined to have insignificant potential for containing prehistoric or historic archaeological sites.

b. If an elevation of 1225 feet is exceeded within 50 meters of the water's edge and there is no evidence of erosion, the reconnaissance will include only the land from the water's edge to elevation 1225 feet.

c. In those areas of the shoreline where there is evidence of erosion, the reconnaissance will include all lands 50 meters inland from the top of the eroded bank, regardless of elevation.

6.03 The Corps owns approximately 120 acres of land at the dam site and adjacent recreation areas. Most of this property is low-lying swamp land and/or previously disturbed by various construction activities. Therefore, it is anticipated that the archaeological survey of this property will be a relatively minor part of this project. In those areas for which archaeological survey is deemed necessary and appropriate, the contractor will conduct an intensive survey, regardless of distance from water or elevation. The objective of this portion of the survey will be to determine the boundaries of all sites, and to evaluate the significance of each site, with consideration of effects on the sites of various types of potential development (such as foot trails, parking lots, camp sites, surface structures, structures with foundations, etc.). In addition, such sites will be evaluated in terms of their potential for development as educational facilities for the public.

Big Sandy Lake is a natural 'ice block' lake within a region of till plain and outwash deposits. Since 1895 the U.S. Army Corps of Engineers has operated a dam at the Sandy River outlet, located 1.25 miles above the confluence of the Sandy and Mississippi Rivers. The purpose of this reservoir, and the five other headwaters-reservoirs, primarily is to store water for release during late summer in order

to improve navigation on the Mississippi River, and also to aid in flood-control downstream.

At present the normal operating stage is 9.0 feet which creates a pool elevation of 1,216.31 feet above mean sea-level. The original operating limits of the reservoir maintained a pool elevation between a minimum of 1,207.91 and a maximum of 1,218.31; this produced a capacity of 73,000 acre-feet. These limits were revised during the 1930's, mainly due to the reduced importance of the dams for river navigation following the construction of twenty-seven locks and dams below St. Paul, and also due to adverse effects upon resorts and residences along the lake shore. As a result of these revisions the reservoir currently maintains a pool elevation minimum of 1,214.31 and a maximum of 1,218.31, creating a capacity of 38,000 acre-feet. Thus, normal water-level fluctuations of 4 feet occur annually. However, the maximum pool elevation is occasionally exceeded under certain circumstances (e.g. the 1950 floods when the water-level reached 1,224.82).

Dam construction and subsequent rise of the water-level (and associated water table) by approximately 9 feet has resulted in a reservoir area of 16.6 square miles, as compared to the original lake area of only 8 square miles. This increase is a product of the considerable enlargement of Aitkin Lake, Prairie and Sandy River flowages, and also inundation of upland beyond the original Big Sandy shoreline. These alterations have resulted in a significant negative impact on the cultural resources within the study area.

Prior to entering the field, a literature-and-records search was conducted, providing the necessary background information for the study. Jeanne Schaaf, a graduate student at the University of Minnesota and SMM archaeologist, compiled the available data concerning the prehistory of the area. The historic review was conducted by Richard C. Kagan, an Associate Professor of History at Hamline University in St. Paul. This research provided the field crew with knowledge of previously known site locations, the nature and extent of former investigations, potential site locations, and the names of local informants and collectors. Pertinent data from both the prehistoric and historic literature searches is included in this report. The bulk of Professor Kagan's review has been accessioned into the SMM permanent collections, with the field notes, site-survey forms, photographs, maps, etc., that are the result of this project.

The sections of this report that follow consist of information relating to the project background (environmental and cultural context, previous investigations of the area, and an erosional and inundation assessment), a section on methodology (field techniques), the survey results (site-by-site summaries and recommendations), a general project summary, and appendices consisting of references, staff resumes, photo plates, and maps. A separate volume (Volume II) containing specific information on site locations will be submitted with this report, for distribution to appropriate agencies, by the Corps of Engineers.

Finally, this report is the result of the work of many individuals. Pre-

liminary efforts towards the realization of this report were made by field crew members Timothy Ready, Clark Dobbs, and Jeanne Schaaf, all of whom contributed much time and effort to the project. Under the direction of the Project Director, Timothy Ready prepared the bulk of the first draft of this report, with assistance from Clark Dobbs. Ready is credited for the map work. Final report revision and editing was a joint effort between the Project Director, Timothy Ready, Carolyn S. Benepe and Martha E. King.

II.
PROJECT BACKGROUND-Environmental

Geology

The bedrock underlying the Big Sandy area consists of patchy cretaceous sandstone and clay. Big Sandy Lake lies at the eastern margin of this formation which extends across the north-central portion of the state to the Minnesota - North Dakota border. Immediately south and east of the Big Sandy area argillite formations are found (Wright, 1972).

Overlying sediments and surface morphology in this region, like the rest of the state, are a product of successive glaciations, especially that of the most recent - the Wisconsin. Specifically, Big Sandy Lake is located about 55 miles due west of the southwestern end of Lake Superior and hence its landforms are mainly a result of the multiple glaciations of the Superior lobe. This ice mass, which repeatedly spread toward the southwest from the Superior basin, created the mosaic of terminal moraines, till plains, proglacial lakes, and outwash deposits which surround Big Sandy. This area also lies at the eastern terminous of the St. Louis sublobe of the Des Moines lobe. This ice mass deposited a thin veneer of calcareous western till (yellow) which is superimposed upon the red Superior lobe till.

Big Sandy Lake itself is an ice-block lake, being formed as a large ice-block, buried within a moraine complex, slowly melted and created the lake basin.

Vegetation

Big Sandy Lake is situated in the Mixed Conifer-Hardwood vegetation zone. This area represents an admixture of forest types due to its transitional location in relation to Boreal forests to the north, and deciduous forests to the south. Dominant species include pine (white, red, and jack), fir, spruce (Boreal types), oak, maple, basswood, elm, and ash (Deciduous types) (see Figure 1).

The vegetation surrounding Big Sandy is discussed in two parts:

1. Paleo environment
2. Present environment

Paleo environment: The chart which follows (Table 1) provides a summary of the paleo environment for this general area (east-central Minnesota). This information is based on pollen evidence presented by three cores from the vicinity: Rossburg Bog, Kotiranta Lake, and Jacobson Lake (Wright, et al., 1969) (see Figure 1).

Present vegetation: The vegetation bordering Big Sandy varies mainly with respect to local topographic conditions. The chief factor is that of elevation in relation to the water table.

Historically, the intensional suppression of fires since white settlement has resulted in a climax vegetation of a maple-basswood association rather than a natural pine-forest climax. Given a normal fire-frequency, pine would eventually dominate many locations, as it is

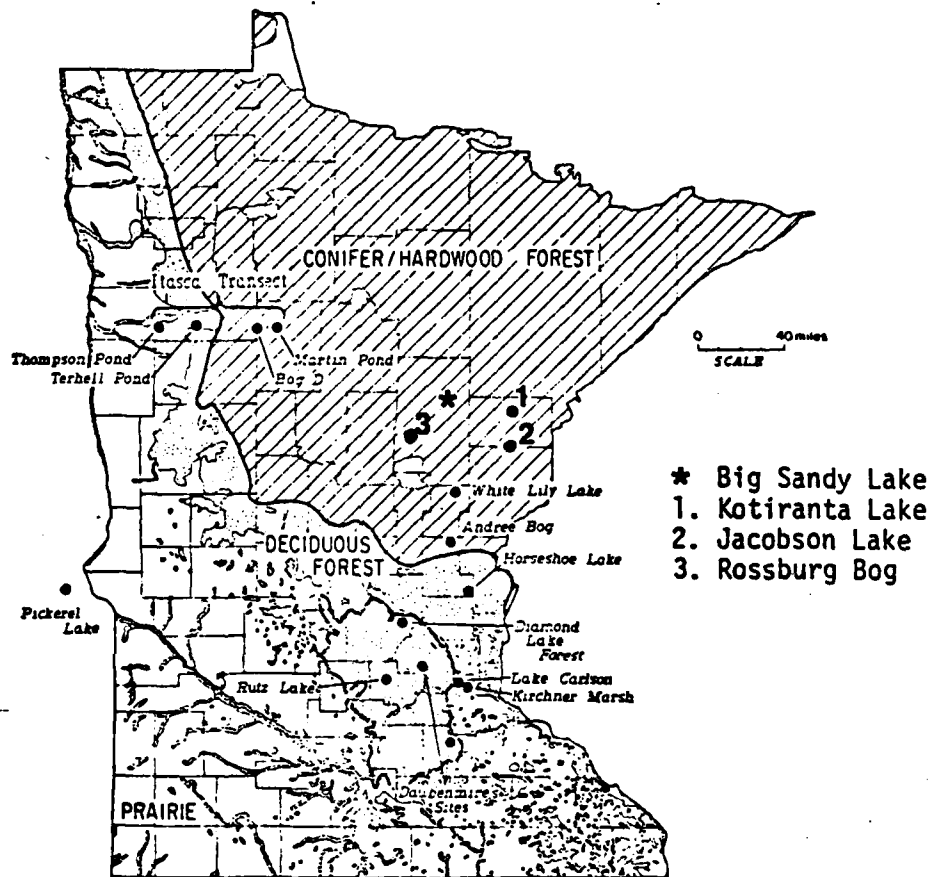


Figure 1. Map of Minnesota showing vegetation regions; location of Big Sandy Lake; and pollen core sites (modified from Waddington, 1969).

Table 1
 Chart Summarizing Paleo-Environmental Sequence
 (as interpreted from pollen core data)

Years B.P.	
1,000	<u>PINE FOREST</u> White Pine dominates; (with Red & Jack Pine, Birch, Alder, Maple, Cedar, Basswood, Fir, Spruce, and Tamarack. Climate is cooler and moister (similar to present climate).
2,000	
3,000	
	<hr/> 3,500 ± 100 <hr/>
4,000	<u>CONIFER-HARDWOOD FOREST</u> Oak dominates with Pine; grasses & sage in Forest openings Patches of Xeric deciduous forest (with Birch, Alder, Elm and Ironwood) present.
5,000	
6,000	
7,000	Climate continues warming trend and also becomes drier. Thermal Maximum occurs at approximately 7,000 B.P.
8,000	<hr/> 7,770 ± 120 <hr/>
9,000	<u>JACK PINE FOREST</u> With Birch, Alder, Elm and Oak. Climate warmer - Extinction of Pleistocene MegaFauna.
10,000	<hr/> 10,100 ± 140 <hr/>
11,000	<u>SPRUCE PARKLAND</u> Dominated by Spruce with Birch, Oak, Elm, Aspen, and sagebrush occurring in park-like openings. Cool-moist Climate, Pleistocene MegaFauna present.
12,000	Probable formation of Big Sandy Lake as remnant ice blocks melt.
13,000	Retreat of Ice mass

adapted to ground fires which periodically eliminate the understory (including shade-tolerant species such as maple, basswood, fir, etc.).

In general the vegetation of Big Sandy has changed little during historic times. It appears that logging around the turn of the century mainly affected only the eastern and southeastern portions of the lake-shore. These locations are presently dominated by birch and aspen, which represent the ongoing succession to a maple-basswood climax forest. Dam construction, and subsequent rise of the water table, has certainly shifted some plant communities, but, in general, has not had a major effect. The most recent, and in some areas the most extensive, alterations of the vegetation have resulted from lake-shore development. This factor has been most intensive in lowlands which have been filled, wooded areas which have been clear-cut and replaced with grassy lawns, and various degrees of landscaping.

The present vegetation of the Big Sandy reservoir was studied as part of an environmental review of all six headwaters reservoirs (Bemidji State, 1973). The following discussion is taken from that report.

Big Sandy Lake Reservoir

The shoreline vegetation around Big Sandy Reservoir is mainly forest and is probably the least complicated of all the Headwater Reservoirs. The forest is primarily deciduous. Two types predominate. Maple-basswood forest is most frequently encountered, but a mixture of aspen and oak is usually intermixed, indicating that succession has not quite been completed to the maple-basswood climax. At low elevations, particularly in bay areas, elm-ash communities were found, usually with some aspen and oak. Pine-mixed hardwoods communities were confined to the east and southeast sides of the lake. Pure pine stands were rare. Marsh communities occupied some of the bays (with elm-ash forest on shore). Several large marshes in the north and south bays appear to be good waterfowl habitat.

Three sampling sites were selected on Big Sandy Lake (Table 2). Site #1 was an elm-ash forest which also contained a mixture of oak, aspen and basswood. The presence of oaks on such low ground is not immediately explainable but basswood could indicate the beginning of succession toward a maple-basswood community. The shrub stratum was well-developed and formed an almost impenetrable barrier of hazelnut and round-leaved dogwood. Most of the herbs are common to wet floodplain forests of the region.

Site #2 was a maple-basswood community which graded to elm-ash on lower ground near the lakeshore. The presence of very old red oaks (some 30 inches D.B.H.) indicates succession from oaks to maple-basswood. The understory was floristically richer than site #1 and included a few species indigenous to maple-basswood forests. Site #3 was a pine-mixed hardwoods community which graded to maple-basswood farther away from the lake. The pines (Norway and jack pine) and the upland hardwoods (birch and oak) were of about equal importance in the forest. The understory reflected the integrading of the pine-mixed hardwoods and maple-basswood communities, having a mixture of species common to both types.

The sites at which observations were made is shown on the accompanying map. The symbols used on the maps are defined as follows:

Legend for field botanical map (figure 2):

Community types are designated by numbers

1 elm-ash; 2 maple-basswood; 3 birch-aspen; 4 pine-mixed hardwood; 5 cedar-balsam-spruce-tamarack; 6 marsh; 7 bog

Pure stands are designated by single letter (unsubscripted)

A aspen; B birch; D cedar-balsam-spruce-tamarack; J jack pine; M maple; N Norway pine; O oak; S willow; W white pine

Associated species are shown by subscripted letter

A aspen; B birch; D cedar-balsam-spruce-tamarack; J jack pine; M maple; N Norway pine; O oak; S willow; W white pine

Sampling site is designated by X

Succession is designated by →

Transition is designated by -or \

Table 2. Vegetation around Big Sandy Lake
 (Trees and shrubs in approx. order of importance; only prominent
 herbs noted), (Bemidji State, 1973).

	Site #1	Site #2	Site #3
Description:	Elm-ash community on low ground	Maple-basswood community with elm-ash between it and the lake	Pine-mixed hardwood stand grading to maple-hardwood
Trees:	American elm Green ash Trembling aspen Northern red oak Bur Oak Basswood	Sugar maple Basswood American elm Green ash Northern red oak Bur oak Ironwood Trembling aspen Balsam poplar	Norway pine Jack pine Paper birch Northern red oak Sugar maple Basswood Trembling aspen American elm Large-toothed aspen Ironwood
Shrubs:	Hazelnut Round-leaved dogwood Downy arrowwood Poison ivy Wild grape	Hazelnut Black currant Juneberry Chokecherry Poison ivy Sandbar Willow Bush honeysuckle Virginia creeper	Poison ivy Hazelnut Round-leaved dogwood Chokecherry Black raspberry Smooth wild rose Bush honeysuckle Juneberry Downy arrowwood
Herbs:	Wild sarsaparilla Early meadow-rue Violet Large-leaved aster Red baneberry Star-flowered Solomon's seal Snakeroot Giant goldenrod Canada anemone Northern bedstraw Carriion flower Hog peanut	Pennsylvania sedge Large-leaved aster Northern bedstraw Bracken-fern Wild pea Bellwort Hairy Solomon's seal Hog peanut False Solomon's seal Snakeroot Br.-leaved goldenrod Small-flowered crowfoot Hepatica Sweet cicely	Columbine Star-flowered Solomon's seal Pennsylvania sedge Northern bedstraw Wild lettuce Hairy Solomon's seal Wild lily-of-the valley Wild sarsaparilla False Solomon's seal Large-leaved aster Giant goldenrod

Erosional and Inundation Assessment

Three major factors contribute to the destruction of archaeological sites on Big Sandy Lake, in addition to modification of the existing landscape by modern developers. These factors are: inundation of sites caused by construction of the dam at the outlet of the lake; shoreline erosion caused by wave action; and erosion aggravated by the current of the Sandy River and Prairie River, which move through the lake. With the varying physiography of the lake-shore and flowage-areas, the effects of these three factors are variable from one area to another.

Following dam construction and the creation of the reservoir, inundation by the impounded water resulted in significant alterations of the original shoreline of Big Sandy Lake (see Map #1, in Volume II of this report). It must be assumed that as a consequence of the creation of the reservoir, many archaeological sites located on or near the original lake-shore, were submerged and thus destroyed.

Sites or remnants of sites which escaped inundation, are in many cases undergoing varying degrees of erosion as a secondary effect of the impounded waters. Areas of high ground in the northern and eastern portion of the lake, exhibit the most dramatic examples of erosion caused by wind-generated wave action. Due to the highly irregular shoreline in the southwestern portion of the lake (intervening series of points, peninsulas and bays), the effects of erosion vary according to the local physiography and orientation of landforms. The various

flowages into the lake (i.e. Aitkin, Sandy, and Flowage lakes, and the Prairie, and Sandy Rivers) are little effected by erosion due to their shallow, heavily vegetated nature. Site specific information on erosion is included elsewhere in this report.

Cultural Context

Because of the relative scarcity of research data on cultures prior to European contact, Big Sandy Lake can best be interpreted as part of a geographical Headwaters network, and part of the larger Western Great Lakes Region.

The following discussion of the Big Sandy Lake cultural context has been modified from portions of Cultural Resources Inventory of Lands Adjacent to Lake Winnibigoshish (Johnson, 1977), with the permission of the author. Where possible, specific information regarding Big Sandy Lake culture history has been included.

In general, the cultural history of the region can be classified into seven major periods, with fair chronological controls. These periods are as follows:

Terminal Glacial - Early Prehistoric: 11,000 B.C. - 200 B.C.

Big game hunters, succeeded by Early Archaic and later "Old Copper" cultures; preceramic, hunting and gathering societies.

Middle Prehistoric: 200 B.C. - 300 A.D.

Earliest ceramic complexes, earliest burial-mounds; net and fabric-impressed ceramics; very low population density.

Late Prehistoric: 300 - 1640 A.D.

Intensive wild rice-bison economic systems; St. Croix, Kathio, Clam River, Balckduck and Sandy Lake complexes.

Initial Historic: 1640 - 1750 A.D.

Initial French contacts; Sisseton Dakota populations.

Fur Trade: 1750 - 1880 A.D.

French, British, American (sequential) fur exploitation in

association with the intrusive Ojibwa Indians, culminating in the establishment of Indian reservation systems.

Intensive Resource Use: 1880 - 1920 A.D.

Logging, mineral extraction to the north, homesteading.

Recent: 1920 to date

Recreational, small farming, small logging.

Early Prehistoric-Terminal Glacial Period: 11,000 - 200 B.C.

Evidence of any human populations in the beginning phases of this period, which is initially characterized by a cool, moist climate and a pioneer spruce-parkland vegetation, has been minimal in the entire northern one-third of Minnesota. Examination of numerous surface collections throughout this northern area has shown no evidence of the fluted projectile points characteristic of a well-documented Llano complex dating from this terminal glacial horizon, at sites to the west and south. Stoltman's description of prismatic blades from the Rainy River (1971) offers a single remote suggestion that human populations were present in this region during this very early period.

The succeeding period of warming and drying climatic conditions that culminated in the postglacial thermal maximum with a conifer-hardwood vegetation offers better evidence for human occupation. The Lake Itasca Bison Site excavated by Shay (1971), at a location near the source of the Mississippi River southwest of Lake Winnibigoshish, documents some aspects of this period at the 7,000 to 9,000 B.P. horizon. Jack Steinbring's and James Whelan's (1971) synthesis of the Llano complexes of the Duluth reservoir-system, and areas to the north, indicates a population culturally distinct to the north, occupying a region beyond the oak-savannah

intrusion, characterized by a mixed coniferous/deciduous vegetation. Following 5,000 B.C. and a shift toward cooler, more moist climatic conditions, human populations moved into the region to take advantage of the new environmental setting. Evidence from several sites on Big Sandy Lake indicate late Archaic occupations, characterized by the presence of copper tools. The White Oak Point Site on the Mississippi River east of Lake Winnibigoshish was excavated by L.A. Wilford (1955), and subsequently re-analyzed by Edward Lugenbeal (1978a). The site shows a definite preceramic component with associated copper. The Petaga Point site at the outlet of Lake Ogechie near Mille Lacs Lake also exhibits a preceramic, Archaic copper component (Bleed, 1969). To the north Steinbring (1974) has described a similar component on Rainy Lake, and Johnson (1964) has described a series of surface finds of copper tools of this age from the basin of glacial Lake Agassiz. Other than the information from these few sites, with typological artifacts, practically nothing is known of subsistence patterns, settlement systems, or modes of cultural adaptation during this early period.

Middle Prehistoric Period: 200 B.C. - 300 A.D.

This is again a poorly-known period in the headwaters region, although the evidence that does exist indicates a distinctive cultural system lying geographically between the well described Laurel Tradition to the north (Stoltman, 1973; Lugenbeal, 1976), and the Malmo culture near Mille Lacs Lake (Wilford, 1955). Laurel is characterized by a ceramic tradition with smooth vessel surfaces, varieties of dentate stamping, and large conoidal vessels; a burial-mound emphasis with large, cumulative or accretional mounds; a riverine adaptation, but with subsistence

patterns utilizing the large fauna (bison) of the adjacent western prairies as well; and an association with a cultural continuum extending north of the Great Lakes to the Point Peninsula cultures of New York, Malmo, on the other hand, is located in a mixed deciduous area, is primarily a lakeshore-oriented culture, and shows affinities (though very dilute) with the Havana-Hopewellian cultures of Illinois, eastern Iowa and southwestern Wisconsin (Johnson, 1977).

These complexes appear to correspond in their distribution to the major biotic divisions of the state: the Malmo phase along the lower boundary of the Carolinian Canadian transition zone in central and eastern Minnesota; and the Laurel culture along the upper boundary of that same zone in the northcentral portion of the state (Gibbon and Caine, 1976).

Components are usually small occupying one to two acres and lack large numbers of artifacts or features.

Associated with these sites are conical earthen mounds which contain bundle burials and usually lack grave goods (Gibbon, 1975). Diagnostic artifact traits include small stemmed and notched projectile points and thick plain-surfaced pottery with rim decorations of incised lines, cord-wrapped-stick impressions, bosses, and dentate stamp impressions (Gibbon and Caine, 1976). Tentative temporal boundaries for this phase are 800 B.C. to 200 A.D. based upon Radiocarbon dates of 690 ± 200 B.C. for the Morrison site in Ottertail County and 200 ± 180 B.C. for the Brower site near Mille Lacs Lake (Johnson, 1964, 1971).

Late Prehistoric Period: 300 - 1640 A.D.

The St. Croix phase which is transitional between the Middle and Late

Woodland is mostly located within the Carolinian-Canadian transition zone but components of this phase extend from the northwestern corner of Wisconsin across eastern and central Minnesota into the Red River Valley (Gibbon and Caine, 1976). Sites of this type are located on streams and near lake outlets that tend to be good wild rice harvesting areas. Projectile points are either ososceles triangular or small side-notched similar to the type Prairie side-notched (Johnson, 1973; Caine, 1974).

St. Croix series pottery is characterized by:

vessels with straight to slightly excurvate rims, unthickened lips, very slight to moderate orifice constriction, moderate flaring in the body, and sub-conoidal bases. The body surface is cord-roughened, but the rim area was usually smoothed over before the application of decoration. Decoration, confined to the rim, consists of bands of horizontal or oblique stamping applied with a dentate stamp, a comb-stamp (which leaves fine triangular impressions) or a stick finely wrapped with cord.

Dates for the St. Croix phase are thought to be A.D. 300 to 800 (Gibbon and Caine, 1976).

The Late Woodland cultural complexes include the Kathio phase, the closely related Clam River focus and the Blackduck phase. These complexes are characterized by groups of conical and linear mounds, grit-tempered cord-marked pottery decorated with twisted cord and/or cord-wrapped-stick impressions, and small triangular or side-notched points. The subsistence pattern of these people is that of hunting deer and smaller mammals and wild rice gathering. The time range for Kathio, Clam River and Blackduck is, to this date, placed at A.D. 800 to 1200 based upon both Minnesota and Wisconsin radiocarbon dates (Wilford *et. al.*, 1969; Bender, Bryson and Baerreis, 1967). Lugenbeal (1978b) has stated that Blackduck may persist to the period of historic contact. The differences

among these complexes are not pronounced and are primarily defined in terms of frequency of decorative modes on the pottery vessels (Gibbon and Caine, 1976).

Succeeding these complexes is a varied tradition characterized by Sandy Lake pottery. This pottery is characteristically cord-marked, globular, with little decoration - a ware easily distinguished from Blackduck (Cooper and Johnson, 1964). Many of the associated artifacts show a continuity with Blackduck - the projectile points, for example, are indistinguishable. Sandy Lake complexes have an association with wild rice as a staple, as does Blackduck; the majority of Sandy Lake habitation and activity sites in the headwaters region occur at the same locations as Blackduck.

It should also be noted that the Sandy Lake distribution coincides with the distribution of sections of the historically-known Dakota Indians. The association has been documented in excavations at Lake Mille Lacs (Lothson, 1972), and seems equally valid for the headwaters area. The Sisseton Dakota group most probably represent the historic representative of this cultural complex.

Initial Historic Period: 1640 - 1750 A.D.

This period marks the movement of the earliest French fur-traders into the region and, with them, the Algonkin-speaking Ojibwa Indians. It also marks the beginning of severe tribal displacement with the Dakota groups, for example, shifting their locations to the west and southwest. It also marks the introduction of a new economic system characterized by Indian groups enmeshed in a French fur-trade system, where the native system is partially replaced by a pattern of increasing dependence

upon manufactured goods obtained from the French in exchange for animal pelts.

The archaeological evidence for this initial European contact period is very slim in the Headwaters region. However, it should be mentioned that Big Sandy Lake is of significant importance during this period and especially during the following era of maximum fur trade activity due to its strategic location at the terminus of the Savanna Portage. This portage consists of a swampy six-mile trail which links the Mississippi headwaters to Lake Superior via the St. Louis River system. This route was of prime importance for the transport of people and material goods throughout these periods.

Fur Trade Period: 1750 - 1880 A.D.

The maximization of the fur trade occurred from the early 1700's to the early 1800's, and was dominated by the British (Hudson Bay, Northwest Company, etc.) who established posts at Big Sandy and employed the Ojibwa, (as had the French), as trappers. Following the war of 1812 the United States established the American Fur Post at Big Sandy Lake, originally at the site of the Northwest Company post and later (1830) about one-half mile west of Big Sandy at the confluence of the Mississippi and Sandy rivers. By 1833 the first mission school in the region had been established by William A. Aitkin, head of the American Fur Company post at Big Sandy. This is also the period of conflict between the Ojibwa and the Dakota, and the ultimate disappearance of the Dakota from the region. Again, little archaeological research has been done on this period, despite its importance for producing data on a significant period of culture-change, and its potential for public interpretation.

Intensive Resource Use Period: 1880 - 1920 A.D.

This was a period of maximum cultural disruption and culture-change. It involved the movement of numbers of Anglo-Americans into the region to first log off the conifers, and to then establish small farming homesteads and construct railways. The impact on the native populations was devastating in that lands were ceded, reservations established, and the economic base destroyed. Finally, lands within the reservation were alienated through issuance of fee titles and the subsequent sale of lands to the intruding Anglo population.

As a result of an increasing population and associated changes, the vegetational patterns of the Headwaters region were completely altered; lake levels were modified with the construction of roller dams and other logging structures, and both village/town and isolated farmstead settlements came into existence. Attempts to save some of the natural habitats of the region were successful with the creation of State Parks and National Forests. The period does represent, however, the first major modification of the natural features of the region through human activities.

Recent Period: 1920 - Present

Logging ceased as a major activity by 1920; reservations had been allotted and lands sold at the beginning of this period; and the peak of economic activity had passed. Homesteaders struggled to clear farmlands with poor soils and short growing seasons, and the economic base of the region deteriorated rapidly. The development of a recreation industry focusing on summer fishing and characterized by the construction of privately owned "resorts" developed rapidly to fill the economic void.

This industry persists today as the major economic force in the region. Many homesteads were abandoned after the first or second generation had worked the lands. As a result, the resident population has diminished except in the larger tourist centers. The region today is fairly stable, although it remains economically depressed.

Previous Investigations

Previous investigations by professional archaeologists for the location of prehistoric and historic sites at Big Sandy Lake have been limited in number. As of June, 1977, six sites were listed in the site files of the State Archaeologist and the State Historic Preservation Officer: 21 AK 4, 21 AK 6, 21 AK 7, 21 AK 8, 21 AK 9 and 21 AK 11. These sites include prehistoric burial mounds, a historic fur-trading post, and a historic Indian village site with probable associated burials. Additional information on possible site locations and private collections in the area was obtained from the general county files in the Archaeology Laboratory at the University of Minnesota. This data was gathered primarily from survey trips to the area made by former State Archaeologist Lloyd A. Wilford.

Cooper and Johnson (1964), in their description of Sandy Lake ceramics, discuss collections from the Miner's Point site (21 AK 18). This publication is descriptive in nature, based on available data that was recovered without benefit of systematic survey or research oriented excavation. Sandy Lake ware, designated as a Late Woodland ceramic type, has subsequently been found at various sites throughout East-Central Minnesota.

In 1973, the Center for Environmental Studies at Bemidji State University, conducted an interdisciplinary study of the headwaters area. Big Sandy Lake was visited by professional archaeologists at that time. Known sites were checked for then-present conditions, and local informants were interviewed for information on private collections and unknown sites. No systematic survey was done at this time, and no research

oriented excavation was conducted. The results of this investigation are found in the report Environmental Review of the Headwaters of the Mississippi Reservoir Projects, submitted to the Corps of Engineers, St. Paul District, in November, 1973.

During the summer of 1975, a crew of University of Minnesota Archaeology Field School members, under the direction of Professor Elden Johnson, conducted an investigation of site 21 AK 11, the Corps of Engineers owned property at the Big Sandy Lake dam site. Only five test excavations were done at this time. However, sufficient cultural material was recovered in these few tests to warrant intensive testing at a future date. This investigation was the first to recover diagnostic artifactual materials, prior to the 1977 reconnaissance survey reported herein.

III.

METHODOLOGY

The cultural resources reconnaissance survey of Big Sandy Lake was conducted during the summer of 1977 under the direction of G. Joseph Hudak of The Science Museum of Minnesota. The remainder of the field crew consisted of Jeanne Schaaf, Clark Dobbs, and Timothy Ready, all of whom are graduate students at the University of Minnesota, Department of Anthropology.

The field survey began with a preliminary inspection of the lake shoreline by boat, involving the entire crew. This was done on the first day of the study and served to familiarize crew members with the general nature of the shoreline, associated areas of erosion, the types and extent of vegetation, and the locations of known sites, thus providing a basic orientation to the area. This data was then used as an aid in projecting an initial time-schedule and course-of-action for the survey.

To most efficiently organize the survey, the crew was divided into two teams of two persons each. One team operated from the lake by boat and concentrated on areas which were difficult or impossible to reach by land. The second team used a van, or when necessary a jeep, to search those areas accessible by land. Both teams maintained periodic contact by radio as a means of coordinating efforts and also as a general safety measure, especially for the team on the lake, considering the unusually stormy weather encountered during much of the fieldwork.

Standard survey procedures involved the following: An attempt was

made to contact each apparent landowner in person as that portion of the study area was examined. If contacted, a brief explanation of the survey was given verbally, and more detailed information was presented in the form of a letter from the Corps to be retained by the landowner (See Appendix # D). Permission to survey, and in some cases, to conduct limited shovel-testing was requested at this time. Landowners were also questioned as to their knowledge of sites on their property, or within the study area in general. When landowners were not available, the Corps' letter was left at the residence. Because the Corps has jurisdiction of the shoreline, the beach, shallows, and in many instances, eroded banks were inspected regardless of whether or not the owner could be reached or permission granted. If permission to survey was obtained, the area within 50 meters of the present shore, or to the 1225' contour, was examined for surface indications of cultural remains, such as artifacts, burial mounds, ricing pits, prehistoric or historic house depressions, etc. In areas of active erosion, the area 50 meters inland from the edge of the bank was surveyed (if permission was granted), regardless of elevation. Site conditions, including disturbances (e.g. construction, landscaping, filling, bank erosion, etc.), and vegetation were noted at this time.

When the above procedures produced evidence of past cultural remains, limited shovel-testing was employed if permission of the landowner was granted. The primary purpose of such subsurface tests was simply to determine whether undisturbed materials were present at a site and to give some indication of their vertical context. For example, when artifacts were located along a section of beach, shovel tests were used to help determine whether this material had originated from a

site now totally submerged or from an eroding upland area. Unfortunately, due to time limitations and the reconnaissance nature of the survey, these tests were in some cases few in number and not systematically executed. Although systematic shovel testing was not routinely employed for discovering sites, in some cases, where no surface exposures were present, tests were conducted at 15 meter intervals. Based upon data produced by these methods and in some cases expanded by informants, site boundaries were established. These boundaries should be considered as tentative site limits until verified by more intensive investigation. Functional labels applied to sites described in this report (e.g. habitation, ricing, etc.) should also be viewed as tentative, with the exception of obvious determinations such as historic sites and burial mounds. Ricing sites were defined by the presence of features believed to be depressions excavated for the purpose of threshing wild rice. Sites which produced typical occupational debris (i.e. pot sherds, lithic artifacts and waste flakes, etc.) but which lacked clues as to their specific function (i.e. village, fishing, etc.) were simply termed "habitation".

More intensive testing was performed within the approximately 120 acres of Corps-owned land surrounding the dam, as requested by survey priority #2 in the project description of the contract agreement. Limited testing of portions of this area in 1975 by University of Minnesota archaeological field school students under the direction of Elden Johnson had established that a prehistoric site was present here. Therefore, the 1977 survey crew conducted tests in additional localities of archaeological potential in this area.

As might be expected, the reconnaissance survey encountered many

problems, which affected its final results. One problem inherent in a survey of this type involved the uncertainties which exist when attempting to estimate the amount of time necessary to complete the field work. Although reasonably accurate estimates can be made concerning the distance which can be surveyed per day (One and one-half miles per team), this figure is dependent upon the number and nature of sites encountered, a variable which cannot be known beforehand. The number of sites and/or collection areas discovered did, in fact, slow progress somewhat more than anticipated. Weather represents another factor that affects the survey schedule, and which cannot be totally accounted for in advance. During the Big Sandy survey, a seemingly high percentage of work days were inhibited, cut short, or cancelled in terms of field work, due to persistent rains. To the extent possible, this time was used to catch up on paper work, repair equipment, or contact landowners in advance. The vegetation at this time of year also contributed problems. Although most species are not at their peak through September, the forest cover remained sufficiently dense to make surface features difficult to detect. In addition, the extensive beds of wild rice made certain areas (e.g. Aitkin Lake and the Sandy and Prairie River flowages) difficult or impossible to reach by boat. No doubt the most significant factor affecting the eventual results of the survey stemmed from the extent of private development of the lakeshore. This home-and-cabin development is extremely dense in all but undesirable topographic locations. This condition complicated the survey in many ways. Most obvious is the sheer number of land-owners which had to be contacted for notification, and to obtain permission to trespass. This, in turn, was made difficult because few landowners

were available, especially after Labor Day when many seasonal residents close their cabins for the year. Due to this, a large percentage of the survey was necessarily restricted to a shoreline (beach and shallows) reconnaissance, as permission to inspect and test areas further inland could not be obtained. Even when an owner was reached, permission for subsurface testing was rarely given because most developed lots involved finely-groomed lawns, and owners were understandably reluctant to allow disturbances from shovel-tests, (even though all test excavations were routinely backfilled as neatly as possible). In essence then, these various problems affected either the speed at which the study progressed, or its intensity and consistency. The major result of this was that the present study concentrated efforts on completing the survey of the two top priorities of the contract: 1. The shoreline of Big Sandy Lake and included islands; 2. The approximate 120 acres of Corps owned land at the dam site. Other, lower priority sections of the designated project area were spot-checked as time allowed. Thus, the total of the lands investigated by the present study represents approximately 60% of the reservoir shoreline.

With one exception the lands not surveyed by this study are restricted to the major flowages into Big Sandy Lake: Aitkin Lake; Prairie River Bay; Sandy River Lake; and Flowage Lake (Map 1). The exception to this is a ½ mile section of shoreline along the west shore of Big Sandy Lake (center section 36, Twp. 50N, R. 24 W). This section of shore was omitted from the survey due to its steep slope and also due to the apparent disturbances resulting from the construction of Highway 65 at this location.

Although the potential for the existence of sites in the flowage areas

mentioned above is good, it seems likely that a high proportion of sites in these areas have been inundated by the creation of the reservoir and are thus no longer accessible. This condition is more severe within these flowage areas due to the broad lowlands adjacent to the original stream channels, which are now inundated. The potential for locating sites which may yet exist in these areas is good, but in most instances would require a more intensive survey methodology. This is due to the absence of surface exposures (e.g. exposed beaches), and the dense inland vegetation, both of which would seem to dictate close interval shovel testing in order to discover sites in these areas.

The necessary exclusion of these flowage areas from the reconnaissance survey of the reservoir then has created a bias towards sites existing within the primary lake basin (i.e. Big Sandy Lake).

Data generated from this survey was analyzed at the Museum archaeology laboratory under the direction of G. Joseph Hudak, assisted by Timothy Ready and Clark Dobbs. Cultural material collected from both the surface and test excavations was analyzed and accessioned into the Museum's permanent collections, under SMM Accession No. A77-24. Site-forms for each of the recorded sites were completed and deposited at the State Archaeologist's office, from which, official state site numbers were assigned.

IV.

SITE DESCRIPTIONS, EVALUATIONS AND
RECOMMENDATIONS, with site photographs.

21 AK 4

Location: See Volume II for legal description and site-map.

Description: 21 AK 4 is a previously-recorded historic trading-post operated between 1794 and 1812 by the Northwest Company (English). The site is located on the north-facing shore of Brown's Point, (the first point projecting into the lake south of Libby), approximately 200 meters west of the eastern tip of this point. The shoreline is heavily developed, and this site is located in a lot owned by Otto Zinck, a local historian and collector. Mr. Zinck's cabin is surrounded by a grassy lawn and scattered pine trees. In addition to the cabin construction, the site has been extensively disturbed by excavations conducted by Mr. Zinck, who apparently is attempting to research the fur post privately. Mr. Zinck could not be reached for an interview, and thus the nature, extent, and quality of his work are not known. The site is not subject to erosion. Ownership: Mr. Otto Zinck, Osceola, Wisconsin.

Cultural Affiliations: British, Historic - Fur Trade

Collections: Mr. Otto Zinck, Libby Museum

SMM Accession No.: None

Cultural Material: No material was recovered from the surface by the SMM survey crew. Mr. Zinck could not be reached, and hence his collection was not recorded. Portions of his collection are displayed at the Libby museum, and include various fur-trade artifacts from the Northwest Company fur post.

Discussion and Recommendations: This site is extremely significant to the study of the Early Historic Period of the region, the fur-trade network and the impact of this economic system on the native population, especially the imposed changes in exploitive subsistence patterns. Much of the site has been disturbed by construction and Mr. Zinck's excavations. How much remains intact is not known. Erosion is not a problem here, and thus no intensive testing or mitigation is recommended.



Plate No. 1. 21AK4, (Northwest Co. Fur Post). View looking N.W., showing Zinck's cabin with Hudak at previous Zinck excavation.



Plate No. 2. 21AK4, (Northwest Co. Fur Post). View looking west, showing Zinck's cabin, with Hudak near a Zinck excavation and pointing to stakes which may indicate location of Fur Post walls.

21 AK 6

Location: See Volume II for legal description and site-map.

Description: 21 AK 6 is a previously-recorded burial-mound group that was re-examined during the SMM 1977 survey. This mound group is composed of 5 large conical mounds located along a low, flat, sandy point of land which projects northward into Big Sandy Lake at the mouth of the Sandy River. All 5 mounds average approximately 15 meters in diameter and 2-4 meters in height. In addition, a possible 6th mound was noted during the 1977 survey. This mound is located between the second and third mounds, south of the apex of the point and is much smaller than the other 5, being about 5 meters in diameter by .5 meters in height. The entire point, including the mounds, is grass-covered and kept mowed by the property owner, Mr. P. A. Johnson. Mr. Johnson is very much aware of their value, and his protection of these mounds indicated he does not allow any disturbance of them. However, all 5 large mounds showed evidence of potting, although not recently or severely. Mild erosion was present at the apex of the point. Ownership: Mr. P. A. Johnson, McGregor, Minnesota.

Cultural Affiliations: Indeterminate; prehistoric.

Collections: SMM survey, 1977

SMM Accession No.: A77:24:1

Cultural Material: One possible lithic flake was recovered from a bank on the east shore of the apex of the point. No material was

located on the ground-surface in the vicinity of the mounds. Permission for subsurface testing was withheld.

Discussion and Recommendations: The condition of this site is, at present, relatively good, although somewhat precarious. To date, these mounds have been respectfully cared for, and protected from extensive human disturbances, for which Mr. Johnson is to be commended. However, the location of these mounds relative to the pool elevation of the reservoir may be critical. When observed by the SMM survey crew (8-25-77), the pool elevation was at its normal summer level of 1216'. At that time, it was noted that a water-level of 1218' could create erosion of the base of the mounds, as this point of land is extremely low and flat. It is assumed, then, that these mounds are potentially threatened by erosion during the spring run-off, when the pool-elevation is allowed to reach 1218.31, and during other instances of high water-levels. With the exception of slight erosion at the base of the northern-most mound, however, no erosional effects were noted. In addition to potential erosion, the normal reservoir fluctuations may produce adverse effects at this site by alternately saturating and drying subsurface burials, and thus contributing to their decomposition.

Recommendations concerning mitigation of this problem are not readily forthcoming. The mounds themselves have not been seriously damaged by erosion, although the potential is there. Because of this,

21 AK 6

salvage excavation is not warranted at this time. One possible solution might be to construct an earthen dike along the shore of this point. This would afford protection from potential erosion, but not from fluctuating water tables which may adversely affect subsurface burials. In lieu of these measures, it is recommended that 21 AK 6 be re-inspected when nearby sites 21 AK 13 and 21 AK 14 are intensively tested. At that time, the mounds should be examined for evidence of further erosion, and a second attempt made to test the vicinity for subsurface habitation-components.



Plate No. 3. 21AK6. View looking west.

21 AK 7

Location: See Volume II for legal description and site-map.

Description: This mound-and-habitation-site is located on a southward projecting point, about 400 meters south of 21. AK 18, and 300 meters northwest of 21 AK 33. A steep, wooded slope leads out onto the apex of the point. Near the base of this slope is a single, large conical burial-mound. This mound is approximately 3.5 meters high and 8 meters in diameter, although exact dimensions are difficult to estimate, as the mound appears to have been constructed upon the toe of the slope. At the crest of the slope, the property-owners have collected prehistoric ceramics and lithic tools from the surface of the garden adjacent to their home. The burial-mound was recorded previously, and the owner reports that Professor Leland Cooper, of Hamline University, was allowed to excavate a test-trench into the mound "many years ago", although no report of this work was discovered during the literature search. The top of the mound exhibits signs of potting, though not extensively. The apex of the point is grass-covered and not affected by erosion. North and south of the apex there is a 25-foot-wide beach with shrubs along the shoreline, and a cattail fringe in the shallows. Inland is a dense growth of oak, maple, birch, and pine. Ownership: Mr. and Mrs. William Russ, McGregor, Minnesota.

Cultural Affiliations: Multicomponent; Early Prehistoric; Late Prehistoric (Blackduck).

21 AK 7

Collections: SMM survey 1977, Mr. and Mrs. William Russ

SMM Accession No.: A77:24:2

Cultural Material: The Russ collection includes stemmed projectile-points, characteristic of the Early Prehistoric Archaic Period, and corner-and side-notched points which represent Late Prehistoric cultures. Their collection also contains much Blackduck pottery, a Late Prehistoric ceramic type. The SMM survey crew recovered 8 lithic waste-flakes from the beach surface. Permission for sub-surface testing was withheld.

Discussion and Recommendations: The multicomponent nature of the habitation-site, and the undisturbed condition of most of the area surrounding the Russ residence provide an excellent potential for future study. The burial-mound, although slightly disturbed at the top, is, in general, in good condition and at present is well-protected by the property-owners. Because erosion is not a problem along the shore adjacent to the mound, and because the habitation-site is situated on high ground, well above any potential impact from the reservoir, no intensive testing or mitigation is recommended.



Plate No. 4. 21AK7. General view of mound location looking northwest.

21 AK 8

Location: See Volume II for legal description and site-map.

Description: 21 AK 8 is a previously-recorded burial-mound group which was re-examined during the 1977 SMM survey. The mound-group is comprised of 3 large conical mounds, and a compound mound consisting of a pair of conical mounds connected by a linear mound, and with a long linear mound trailing off the southern-most conical mound. The mounds are situated along a remnant river-terrace, about 6-8 feet above the water-level, on the southeast shore of Sandy River Lake. The site-area, which lies between two cabins, is only partially cleared and remains mostly undisturbed. Vegetation consists of large red pine, oak, birch, and a dense understory of hazel and dogwood. The shallows support a fringe of wild rice. Erosion is not significant. The 4 northernmost conical mounds exhibit varying degrees of potting at their tops.

Cultural Affiliations: Prehistoric (Woodland); indeterminate affiliation.

Collections: SMM 1977 survey.

SMM Accession No.: A77:24:3

Cultural Materials: 4 cord-wrapped-paddled, grit-tempered bodysherds were recovered from the surface near the northernmost conical mound. Permission for subsurface tests was not obtained (land-owner absent).

Discussion and Recommendations: To date, this burial-mound group remains relatively undisturbed, with the exception of the potting at the top of 4 of the mounds. So far, lakeshore development has not affected the mounds. The recovery of ceramics from the surface near one of the mounds may indicate an associated habitation-site at this location, or in the immediate vicinity. Because erosion is not a threat at this site, no intensive testing or mitigation is recommended.



Plate No. 5. 21AK8. View looking S.W., showing northern-most mound.

21 AK 9

Location: See Volume II for legal description and site-map.

Description: This is a habitation-and burial-site located on an island in the east-central portion of Big Sandy, about ¼ mile north-west of site 21 AK 15. The island is low (1216' - 1225'), and is divided into northern and southern segments by an interior lagoon, or marsh. The entire island is undeveloped and supports an elm, ash, and birch canopy on the interior uplands. The shoreline exhibits no exposed beach, and willow thickets dominate. Bank erosion is severe along most sections of shoreline, especially on the west-facing shore where a 6-foot-high cut-bank is exposed. The interior upland has been disturbed by windfalls and unlicensed amateur digging.

Ownership: State of Minnesota, Savannah Portage State Park.

Cultural Affiliations: Multicomponent; Early Prehistoric through Fur Trade Periods.

Collections: SMM 1977 survey, Mr. Eugene Grolla

SMM Accession No.: A77:24:4

Cultural Material: No material was collected from the surface of this island due to the lack of exposed beaches, and the dense growth of willow and shrubs along the eroded bank-exposures. Two shovel-tests were dug on the southern portion of the island. Shovel-test #1 was located 1 meter inland from the edge of the cut-bank on the southwest shore. This test produced numerous Blackduck and Sandy Lake ware rim and body-sherds, lithic waste-flakes and

bone fragments. This material occurred in a black, sandy soil-deposit which continued from the surface to a depth of 55 cm. Below this, a buff, till subsoil was encountered which was sterile of cultural material. A possible burial-mound, disturbed by unlicensed amateur excavation, was observed immediately to the east of shovel-test #1. Shovel-test #2 was located approximately 6 meters east of test #1. Test #2 produced 2 body-sherds and 2 lithic waste-flakes from a black sandy topsoil which occurred from 0-25 cm, followed by a buff, till subsoil. In addition to material recovered by the SMM survey, Mr. Eugene Grolla, a local collector, reports finding lithic and ceramic artifacts, and has recovered human skeletal remains from the eroded banks of both the east and west shores of the island. Mr. Grolla's collection from this site includes at least one stemmed projectile-point representing the Early Prehistoric Archaic Period, Malmo ceramics representing the Middle Prehistoric Period, Blackduck and Sandy Lake ceramics representing the Late Prehistoric Period, and metal trade artifacts (i.e. an iron knife-blade, a flintlock striking-hammer, etc.), representing the Early Historic and Fur Trade Periods.

Discussion and Recommendations: Available data indicates this may be the most extensive and important site recorded for the Big Sandy Lake area. Shovel-tests indicate a relatively thick soil-development, with cultural material occurring to a depth of 55 cm. in some locations. Given these conditions, the probability of a stratified cultural deposit is likely. The relatively-undisturbed condition of this

island, in combination with its potential as a stratified site representing Early Prehistoric through Fur Trade Periods, makes this an extremely significant site. Two factors are currently contributing to the destruction of the site: severe erosion resulting from wave-action, and illicit excavation of the island interior by private individuals. It is recommended that immediate action be taken to halt further site-destruction by constructing a protective rip-rap wall along areas of shoreline affected by erosion. Public access to the island should be eliminated to protect the site from illicit digging (e.g. fence construction and posted warnings, etc.). It is also recommended that the entire island should receive intensive testing to determine more precisely the nature and extent of the site, and to evaluate more accurately the extent of the site, and the degree of site-disturbance already incurred. If, for some reason, measures required for protection of the site are not possible, then site-mitigation through extensive excavation must be arranged as soon as possible.



Plate No. 6. 21AK9. General view of southwest shore of Battle Island.



Plate No. 7. 21AK9. Close-up of southwest shore, showing erosion at location of burial recovered by Grolla.

21 AK 11

Location: See Volume II for legal description and site-map.

Description: This site is located within the Corps-owned property surrounding the dam at the Sandy River outlet of Big Sandy Lake. This area contains evidence of prehistoric habitation as well as late 19th century - early 20th century historic sites including a small cemetery and the site of a one-room school house. The terrain is low (1220'), level, and is surrounded by wet marsh. Vegetation is mixed deciduous and coniferous which has been selectively cleared throughout the recreation areas. Ownership: U.S. Army Corps of Engineers.

Cultural Affiliations: Late prehistoric (Blackduck, Sandy Lake); historic.

Collections: SMM 1977 survey, University of Minnesota 1975 testing, Otto Zinck.

Accession Nos.: SMM - A77:24:5, University of Minnesota - 777.

Cultural Material: A total of 14 formal and informal test excavations were placed throughout the campground and recreation areas. All excavations were screened through $\frac{1}{4}$ " mesh; formal tests were dug by 10 cm. arbitrary levels; informal tests were not excavated by levels.

Test units 1, 2, 3, 4, 5, and 14 were located in an area south of the dam and maintenance buildings, and bordered by Big Sandy Lake to the east, and by a meander of the Sandy River to the west (a large portion of this area is planned for parking lot construction). With the exception

of test 4 which was sterile, all tests in this area produced prehistoric cultural material including Late prehistoric ceramics (Blackduck), lithic waste-flakes, and bone fragments (some of which were burnt). This material was present to depths of between 30-50 cm. below ground-surface.

Test units 6, 7, 8, and 13 were located along the eastward-projecting peninsula tested by the University of Minnesota in 1975. This narrow strip of land lies directly east of the present comfort station. Test unit 6 (a .5 x 2 meter trench) was excavated into a shallow depression lying west of the depression tested by the University of Minnesota crew in 1975. Unlike the cobble-lined pit exposed in 1975, test-unit 6 revealed a historic trash-pit containing material dating to the late 1800's or early 1900's, although prehistoric artifacts (an end-scraper fragment and lithic flakes) were also recovered. The remaining tests in this area (7, 8, and 13) were sterile of cultural material (either prehistoric or historic) with the exception of very recent campground litter.

Test units 9, 10, 11, and 12 were located in the campground area north of the dam. Units 10 and 12 were sterile of cultural material (either prehistoric or historic). Units 9 and 11 produced only historic remains which date to the late 19th and early 20th centuries.

The following quote from Warren Upham (In Winchell, 1899, pp 53-54) is an account of the archaeological importance of this area, as shown at Map II (page 29):

"In the neighborhood of the outlet of Sandy Lake, which flows deviously about three miles to accomplish its one mile of distance between the lake and the Mississippi river, a few Indians still remain, holding this locality of the old trading posts as their latest place of abode and ownership in Aitkin county. There is little trace of any earthworks to show that this site was occupied by the mound-building people, though its natural beauty and advantages for fishing and hunting must have been as attractive then as now. Numerous arrow and lance points of stone, and several of copper, besides curved bands of copper which probably were worn as ornaments, have been found here on or near the surface by Mr. William L. Wakefield, the merchant and postmaster, who also showed me a copper spear-head, nine inches long, which was found in the mud beneath the river bed during the excavation for the dam. This implement somewhat resembles a bayonet blade, and like that, its base is convolute, as if for fitting it upon a wooden shaft. All these copper implements and ornaments appear to have been worked out by the Indians from native copper of the Lake Superior region, which may have been either mined there by them or found here in the glacial or modified drift."

Near the present operator's house is located a large mound with several historic burials placed at the highest point. This mound was tested with soil-probes and determined to be of natural glacial origin, thus it is a natural mound with historic graves, but is not a prehistoric burial-mound.

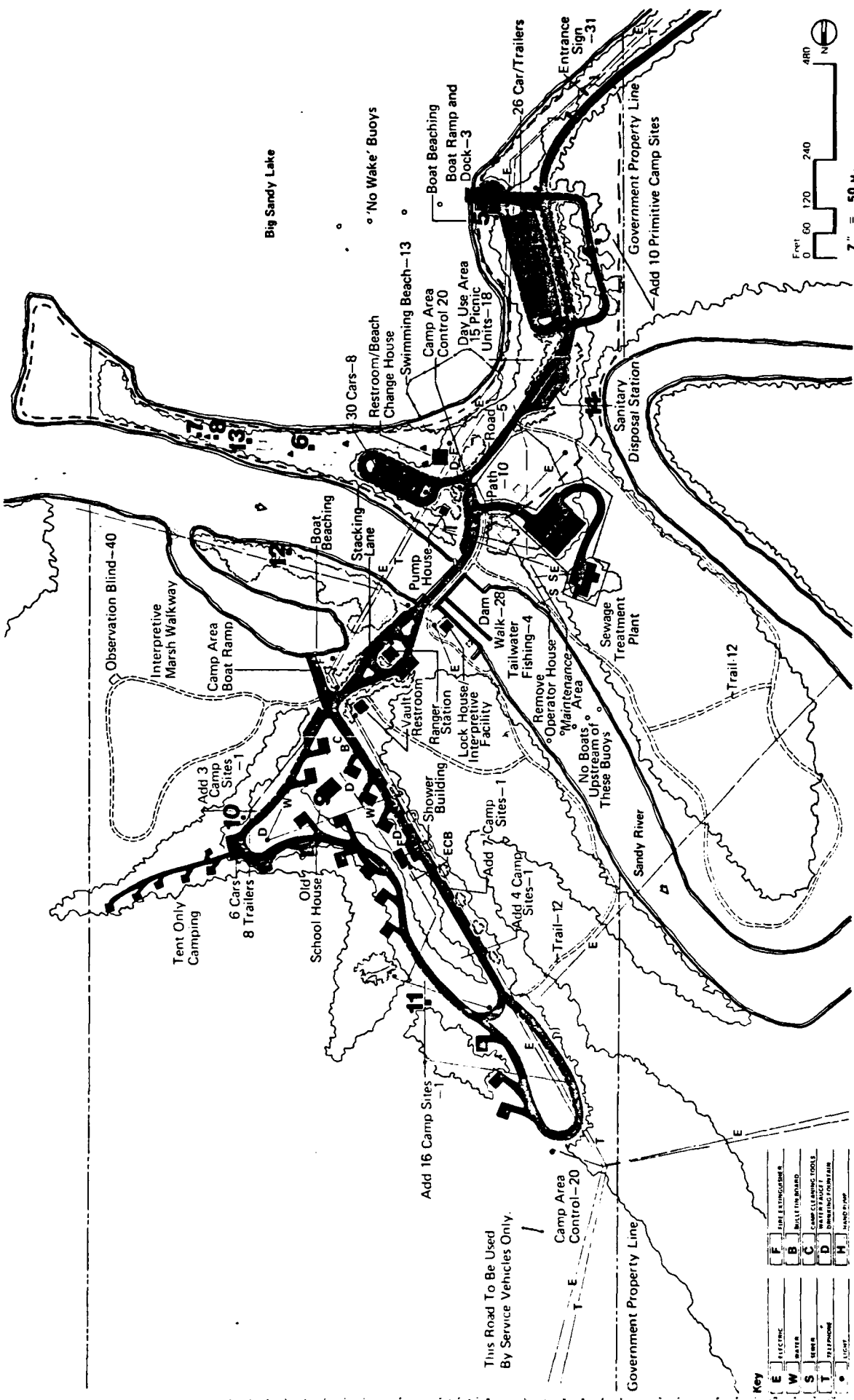
Discussion and Recommendations: It is recommended that all areas south of the Sandy River, and in the general proximity of test units 1, 2, 3, 4, 5, 6, 7, 8, 13, 14 be subjected to a Phase I archaeological testing program in order to determine eligibility for the National Register. This is the next step after the testing conducted during this survey. It is further recommended that all of the surface depressions in this

21 AK 11

area be excavated, as some are prehistoric in origin while others are trash-pits from early dam operations.

The sign which is currently placed near the above-described mound, suggesting that it is a prehistoric burial-mound, must be removed as it is deceiving to the public.

No prehistoric material was located in the present campground area north of the dam, although the remains of an early 20th-century school-house (foundation only) was pointed out by the present Dam Operator, Donald Daly. It is felt that this foundation and several early dam trash-pits located by the survey crew do not represent significant historic data, but these remains should be reviewed by the Minnesota Historical Society.



Key

E	ELECTRIC
F	FIRE EXTINGUISHER
W	WATER
S	SEWER
T	TELEPHONE
H	HANDICAP
○	LOT

Master Plan for Public Use Development and Resource Management
 Mississippi River Headwaters Reservoirs

Legend

---	BOUNDARY
---	TRAIL
---	ROAD
---	PROPERTY LINE

Department of The Army
 St Paul District Corps of Engineers
 St Paul, Minnesota

InterDesign Inc.
 10000 University Ave
 Minneapolis, Minnesota

Planned by: *Wanda N. Johnson, P.E.*
 Checked by: *John A. Johnson*
 Reviewed by: *John A. Johnson*
 Submitted by: *John A. Johnson*
 Approved by: *John A. Johnson*

Date: August 1977

Sandy Lake Recreation Area Site Plan

U of M 1975
 SMM 1977

Scale: 1" = 50 M.
 0 60 120 240 480



Plate No. 8. 21AK11. View looking north, showing excavation of unit #2, with unit #3 in background.



Plate No. 9, 21AK11. View looking N.E., showing excavation unit #6 (trenching shallow depression), with Hudak in depression tested by Johnson (U. of M.).

21 AK 12

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on a low, sandy point at the base of a high ridge which terminates at the south bank of the Prairie River inlet. This area is heavily disturbed by erosion and the construction of the Highway #6 bridge over the Prairie River inlet. Vegetation on the low sandy point is second-growth birch, aspen, and willow. The upland is dominated by a conifer-deciduous admixture. Ownership: Mr. William Hamilton, Glacier Lake, Minnesota.

Cultural Affiliations: Prehistoric; indeterminate affiliation.

Collections: SMM 1977 survey.

SMM Accession No.: A77:24:6

Cultural Material: Inspection of the ground-surface and cut-banks produced negative results. Six informal shovel-tests were dug to a depth of 50 cm; tests #1 and #4 produced positive results:

Shovel test #1: 1 burnt bone-fragment

4 lithic waste-flakes

15 rock fragments (possibly fire-cracked)

Shovel test #4: 10 lithic waste-flakes

1 piece native copper (unworked)

Discussion and Recommendations: This site is heavily disturbed by erosion and bridge construction. It is also likely that this low,

21 AK 12

sandy point is the result of redeposited sediments and, thus, cultural material from this location may have been transported from its original context. Therefore, intensive testing and mitigation are not warranted. However, due to the high site-potential at the inlet of the Prairie River (a major transportation route), further testing should be considered when nearby sites 21 AK 9 and 21 AK 15 are scheduled for intensive testing.



Plate No. 10. 21AK12. View looking west, showing site location on sand point at left of photo on south shore of Prairie River flowage.



Plate No. 11. 21AK12. View looking S.W., showing severe erosion of upland adjacent to site.

21 AK 13

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on a low (1216' - 1220'), northeastward-projecting peninsula on the west bank of the Sandy River inlet. The entire peninsula is undeveloped, and the only disturbance consists of river dredging-spoils which have been deposited along the east-facing shore, excluding the apex of the point. Vegetation is a mature growth of oak, ash, birch, and aspen, with a dense understory of hazel and dogwood. Mild erosion is present along the east-facing shore. Ownership: State of Minnesota.

Cultural Affiliations: Late Prehistoric; indeterminate affiliation (Blackduck?).

Collections: SMM 1977 survey.

SMM Accession No.: A77:24:7

Cultural Material: Dense forest litter and rough water along the shore made surface inspection difficult; no material was recovered from the surface. Surface-examination did, however, reveal a ricing-pit near the northwest-facing shore, and an oval depression near the apex of the peninsula. An informal trench was dug into the edge of this depression which showed humus development over it, indicating it is not of recent origin. Along the southeast shore, 2 shovel-tests revealed a 60 cm. thick deposit of dredge-spoil overlying a black humus mat, below which was a grey, silty sand

21 AK 13

subsoil. No cultural material was recovered from these two shovel-tests. A third shovel-test, located about 15 feet from the apex of the peninsula, yielded cultural material at a depth of 10 cm. (the interface of soil horizons "A" and "B").

Shovel test #3: 1 rim-sherd (bossed, grit-tempered)
1 body-sherd (cwp grit-tempered)
12 lithic waste-flakes
2 bone fragments (burnt)

Discussion and Recommendations: The oval depression near the apex of the peninsula is adjacent to shovel-test #3 which was productive, and may indicate the former location of a prehistoric dwelling. If this is the case, this site has great potential for the study of Late Prehistoric subsistence and settlement patterns of the area. Further testing is needed in order to validate this possibility. Prior to dam-construction and the associated rise of the water-level, the present peninsula was simply high ground along the shore of a larger land-mass. The present island, immediately northeast, was also formerly a portion of the same shoreline (see original shoreline - Map #1, Vol. II). As a result, it should be pointed out that site 21 AK 14 (located on the above-mentioned island) and 21 AK 13, probably represent now-disconnected portions of the same site. Recommendations are for intensive testing with possible mitigation, and that the dumping of dredge-spoils cease along this peninsula.



Plate No. 12. 21AK13. General view of site location at tip of point (looking west).

21 AK 14

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on what is now an island (north-south orientation) at the Sandy River inlet. The island is low (1220'), level, and completely undeveloped. Prior to dam-construction, and the associated rise of the water level, this was not an island but simply high ground along the eastern shore of the land-mass to the west. Interior vegetation is dominated by oak, aspen, and birch, with a hazel and dogwood shrub understory. With the exception of the point at the south end of the island, no bank-erosion was noted; a sedge fringe surrounds this portion of the island. The southern tip of the island exhibits mild-to-moderate erosion. Ownership: State of Minnesota

Cultural Affiliations: Multicomponent; Middle to Late Prehistoric

Collections: SMM 1977 survey

SMM Accession No.: A77:24:8

Cultural Material: Surface collection was not possible at this site due to the thick forest-litter in the interior, and the dense shrub-growth along the shore. Ten shovel-tests were dug at various intervals across the island to an average depth of 40 cm. Typical stratigraphy consists of 0-10 cm. black, sandy humus; 10-50 cm. brown sand with gravel. Except for a single lithic flake (red jasper) recovered from a test at the north tip of the island, all productive shovel-tests were confined to the point at the south end. These

four tests produced cultural material which includes:

1 rim-sherd (net-impressed)

1 triangular projectile-point (chert)

1 end-scraper (quartz)

and numerous body-sherds and lithic flakes

Discussion and Recommendations: This multi-component site exhibits excellent potential for studying cultural adaptation, and, specifically, changes in subsistence patterns which are believed to have occurred during the Middle to Late Prehistoric Periods as a result of an intensified utilization of wild rice as a staple food. The undeveloped nature of this island is also a somewhat-unusual feature at Big Sandy, and adds to the significance of this site. Mild-to-moderate erosion is present at the south end of the island, (the area which also produced the highest density of artifacts). Therefore, it is recommended that this island should receive intensive surveying and testing to define more accurately the nature and extent of the site. Note: This site is separated from site 21 AK 13 by a narrow channel of water only, and thus it is most probable that these areas were originally one site.



Plate No. 13. 21AK14. General view of site-location at south end of island (looking west).

21 AK 15

Location: See Volume II for legal description and site-map.

Description: This is a habitation/ricing site located along the north-facing shore near the apex of the peninsula which lies $\frac{1}{2}$ mile south of site 21 AK 9. Material was found eroding from a 3-4 foot-high cut-bank for a distance of about 200 meters along the north-facing shore. Inland, the terrain rises gently to a high (1260') knoll in the central interior. Vegetation is second-growth oak, maple, birch, aspen, and pine, with a shrub-growth along the unstable shore, and a light fringe of wild rice in the shallows.

Ownership: Uncertain; presently being offered for sale by Ponderosa Reality, Floodwood, Minnesota.

Cultural Affiliations: Late Prehistoric; (Sandy Lake).

Collections: SMM 1977 survey

SMM Accession No.: A77:24:9

Cultural Material: Surface material recovered from the beach and cut-bank includes:

- 1 rim-sherd (shell-tempered, Sandy Lake)
- 18 body-sherds (shell-tempered, cwp)
- 1 biface chopper (quartzite)
- 1 biface tip (jaspilite)
- 7 lithic waste-flakes
- 1 bone fragment (burnt)

In addition to the above material, numerous wild rice threshing-

pits were scattered along this shore, including one which was clearly visible in profile as a result of bank erosion. Subsurface testing was not conducted at this site as landowner-permission could not be obtained.

Discussion and Recommendations: Based upon the material recovered, it appears likely that this site may represent a single-component Sandy Lake habitation/ricing location. If this is the case, then this site could be extremely significant by its ability to provide data concerning this Late Prehistoric culture, uncontaminated by material of earlier, or later, occupations. This site is being actively eroded, and should be tested intensively to determine the extent of the site yet remaining. On the basis of test-results, a determination should be made to either prevent further site-destruction by means of rip-rap, or to recover data from the remaining site-area by means of salvage mitigation.



Plate No. 14. 21AK15. General view of site area looking east along north shore, showing erosion.



Plate No. 15. 21AK15. Close-up of eroded bank, showing Sandy Lake ceramics with Dobbs indicating location of their recovery.

21 AK 16

Location: See Volume II for legal description and site-map.

Description: This is a habitation/burial site located on the south-facing shore of a long peninsula which projects northeastward from the southwest portion of Big Sandy to the center of the lake. The site is situated along low (1220') terrain of an eastward-projecting flange of the main peninsula, and extends for approximately 180 meters east-west. This section of shoreline contains four private residences which certainly have disturbed significant portions of the site. However, yet-undeveloped lots exist between present structures, and appear to remain relatively undisturbed. Vegetation on undeveloped land consists of oak, birch, and aspen, with a hazel and dogwood understory. Willow thickets grow along a narrow, exposed sand beach with cobbles. A sandy cut-bank is undergoing moderate, but steady erosion, although erosion has been halted on some developed lots by the construction of rip-rap. Ownership: Mr. Fred Smith, Route 3, McGregor, Minnesota and Mr. Wallace Schulz, Route 3, Box 118, McGregor, Minnesota (Two additional property-owners were not contacted; names and addresses unknown).

Cultural Affiliations: Multicomponent; Early Prehistoric (Archaic), through Late Prehistoric (Blackduck, Sandy Lake complexes).

Collections: SMM 1977 survey, Mr. Fred Smith, Mr. Wallace Schulz

SMM Accession No.: A77:24:10

Cultural Material: SMM surface collections from the beach and eroded

bank include:

- 1 St. Croix stamped near-rim (dentate, grit-tempered)
- 6 body-sherds (cwp grit-tempered)
- 2 lithic core-fragments (1 quartzite, 1 jaspilite)
- 15 lithic waste-flakes

The Smith collection includes Archaic stemmed points (jaspilite and basalt), side-notched points, Eastern triangular points, large bifaces, drills, and the bowl of a Prehistoric ceramic pipe. The Schulz collection contains Blackduck and Sandy Lake ceramics. In addition to this material, Mr. Smith reports that he exposed a human burial while constructing the boat ramp at his home. He states that he did not fully expose the skeleton, but that he could see only the skull and one scapula; the skull was facing south. The burial was found in the corner of the sand-bank at the southwest end of the boat ramp. He further states that he did not remove it, but simply completed that corner of the fieldstone retaining wall, and replaced the fill over it. No earthen mound had existed at this location to indicate a burial.

Discussion and Recommendations: The multicomponent nature of this site offers excellent potential for studying cultural changes and adaptations to environmental shifts from as early as 5000 B.C. to 1500 A.D. The significance of this site is increased by the fact that its Archaic component represents one of the few Early Prehistoric sites located by the 1977 SMM survey. Portions of the site have

already been disturbed (to an unknown extent) by private home-construction, but much of the site remains intact. Inundation and erosion have also destroyed a substantial portion of it, judging by the location of the pre-dam shoreline. Both private home-construction and bank-erosion are active along this shoreline, and hence, it is recommended that this site receive immediate attention in the form of intensive surveying and testing, together with possible mitigation of effect. It would be regrettable if the remaining portions of this site were completely destroyed, at least before an adequate sample of data could be collected.



Plate No. 16. 21AK16. Fred Smith residence looking north. Note Schaaf standing at location of burial.

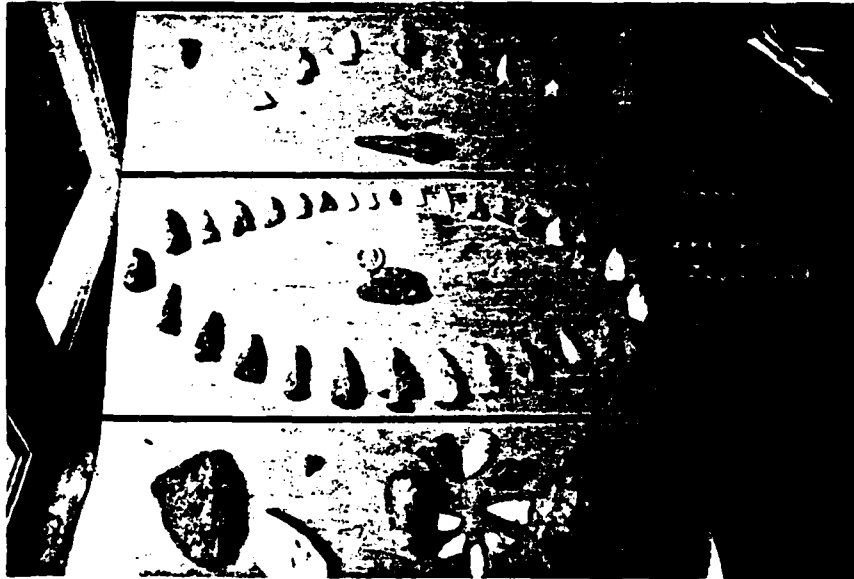


Plate No. 17. 21AK16. Lithic artifacts collected from property by Fred Smith.

21 AK 17

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on the south-facing shore of an eastward-projecting flange of the long peninsula which projects northeastward from the southwestern portion of Big Sandy to the center of the lake. This location is approximately ½ mile east of site 21 AK 16. Home and cabin-development is almost continuous along this shoreline. The interior terrain is low (1219'), and slopes gently to a 30-foot-wide sand beach. Areas not cleared during development support an oak, maple, birch association, with a willow-shrub growth along the beach. Erosion is not significant along this section of shoreline. Ownership: Mr. and Mrs. Curtis Johnson, Route 4, McGregor, Minnesota.

Cultural Affiliations: Late Prehistoric (Sandy Lake complex).

Collections: SMM 1977 survey, Mrs. Curtis Johnson

SMM Accession No.: A77:24:11

Cultural Material: The only artifact collected by Mrs. Johnson is a sandstone shaft-abrader which was found on the surface of the beach in front of her home. The SMM survey recovered Sandy Lake ceramics, an end-scraper (quartz), and 5 lithic flakes from the surface of two garden plots on the west side of the Johnson residence. No material was located on the beach. Time did not permit shovel tests to determine the vertical or horizontal extent of the site.

21 AK 17

Discussion and Recommendations: Although this shoreline is heavily developed, the immediate area of site 21 AK 17 is relatively undisturbed according to Mr. Johnson. He states that, with the exception of footings dug for construction of his house, and minimal tree stump removal, he has not disturbed or landscaped his property. The adjacent lot to the west remains totally undeveloped. Erosion is not significant at this site, and, therefore, mitigation is not warranted. However, much of this site has probably been destroyed by post-dam inundation and subsequent initial erosion. Thus, if intensive surveying and testing is performed at nearby site 21 AK 16, subsurface tests at site 21 AK 17 would, at that time, provide data on the extent and condition of remaining portions of the site.



Plate No. 18. 21AK17. General view of site-area surrounding Johnson residence in center of photo.



Plate No. 19. 21AK17. View of Johnson residence looking east showing garden plots which produced surface artifacts.

21 AK 18

Location: See Volume II for legal description and site-map.

Description: This is a habitation and possible burial-site located on a northwestward projecting point in the southern portion of Big Sandy Lake, approximately ¼ mile north of site 21 AK 7. This point is low (1220'), relatively level, and slopes gently to a 20-foot-wide sand beach. The low (1-2 foot) bank is being actively eroded. The point itself is treeless; the ground surface is loose sand (no soil-development) with a sparse cover of grass and weeds. Home- and cabin-development in this entire area is extensive. Ownership: Mr. Willard Johnson, 10030A County Road 9, Minneapolis, Minnesota.

Cultural Affiliations: Late Prehistoric (Onamia, Sandy Lake complexes).

Collections: SMM 1977 survey, Mr. Eugene Grolla, Dr. Miner

SMM Accession No.: A77:24:12

Cultural Material: The SMM survey recovered material from along the exposed beach and eroded bank for a distance of about 200 meters (from 50 meters west of the point apex to 150 meters east of it).

This collection contains:

- 1 rim-sherd (Onamia, grit-tempered)
- 3 body-sherds (cwp, 2 shell-tempered, 1 grit-tempered)
- 1 biface (grey chert)
- 33 lithic waste-flakes
- 1 bone fragment

Mr. Eugene Grolla, who owns property about ¼ mile to the east, reports

21 AK 18

finding "several pieces of the same Sandy Lake vessel" at site 21 AK 18.

At the time the SMM crew surveyed this location, the property-owner, Mr. Johnson, was not present. However, his daughter, Bev Johnson, reports that "arrowheads" had been found on the beach in past years, and that a burial had been found just east of their cabin. This collection was not made available for inspection. What may be a remnant of a burial-mound was noted immediately northwest of the Johnson residence, but it is badly disturbed by construction activities.

Discussion and Recommendations: A unique aspect of this site is that it produced the only Onamia-type ceramics recovered by the SMM survey. This Late Prehistoric ceramic type commonly occurs at sites in the vicinity of Mille Lacs Lake in central Minnesota, and to a somewhat lesser extent, in the west-central and southwestern portions of the state. The fact that its presence in the SMM collections from Big Sandy is limited to a single site location is surprising, and may be significant.

This site has been heavily disturbed by lakeshore development, but it is also being eroded by wave-action and should receive intensive testing to determine site-limits, and to define the portions of the site which may still remain undisturbed.



Plate No. 20. 21AK18. View of site-area looking S.E.



Plate No. 21. 21AK18. Site-area (tip of point), view looking N.W.

Location: See Volume II for legal description and site-map.

Description: Cultural material was recovered from the shallows along the southeast tip of this site, located on what is now a 23-acre island in the southwestern portion of Big Sandy. Prior to dam-construction, and the resultant rise of the water-level, this island existed as the eastern terminus of a southeastward-projecting peninsula (see pre-dam shoreline Map #1, Volume II). The island is characterized by a high (1260') till-remnant on its northeastern portion which slopes gently towards the southwest. The eastern shore exhibits a steep bank, and is subject to erosion. With the exception of a single cabin at the southeastern tip, the island is totally undeveloped. Vegetation is dominated by a maple-basswood association in the interior, and sedge fringe grows along the western and southern shores. Ownership: As of fall 1977, the island is owned by Mrs. E. Ingemunson, 671 Cherokee Avenue, St. Paul, Minnesota. However, she is in the process of selling it to a Mr. Bill Booker, 420 Ruby Drive, West St. Paul, Minnesota. This sale had not been completed as of 1/10/77 (personal communication with Mrs. Ingemunson).

Cultural Affiliations: Ricing? Prehistoric - indeterminate affiliation.

Collections: SMM survey, 1977, Mrs. E. Ingemunson, 671 Cherokee Avenue, St. Paul, Minnesota

Cultural Materials: SMM survey recovered material from the beach

and shallows of the southeastern tip of the island (the only area of surface-exposure available). Material from this location included: 1 grey slate knife, cord-marked body-sherds, bone fragments, and numerous lithic flakes (some retouched). Subsurface tests were not conducted because the landowner was unavailable, and thus permission could not be obtained. Surface inspection of the interior did, however, reveal at least 3 wild rice threshing-pits on the southeastern portion of the island. Mrs. Ingemunson also has collected material from this portion of the island including pottery and a "spear point", found while digging a trash-pit behind her cabin (these artifacts were not available for inspection).

Discussion and Recommendations: Little information exists, at this time, upon which to base any interpretation of either the exact nature or extent of this site. A Prehistoric site is present, at least on the southeastern portion of the island, and it is this area that is subject to erosion by wave-action, although, in this instance, the erosion does not appear to be rapid. Nevertheless, it is affecting the site by causing periodic bank-slump. Potentially this site is significant, due to the undeveloped and undisturbed condition of the island (a rare occurrence at Big Sandy). Intensive testing and possible mitigation are recommended.



Plate No. 22. 21AK19. South tip of island; view looking east.

21 AK 20

Location: See Volume II for legal description and site-map.

Description: This is a habitation site located on the northernmost tip of the long northeastward-trending peninsula which projects from the southwest portion of Big Sandy into the center of the lake. This is a long, narrow point of land which projects northward from the main peninsula. A narrow (1-2 meters) sand beach rises sharply to a level interior (1220' elevation). Extensive home-and-cabin-development has resulted in selective clearing of the oak, maple, birch canopy, but seems to have had only a minimal effect in regard to land-slippage, filling, etc. Erosion is continuous on all sides of this point, and ranges from mild to severe. Ownership: Multiple property-owners, however, none were present at time of survey, thus no specific names are available.

Cultural Affiliations: Late Prehistoric (Sandy Lake complex?)

Collections: SMM 1977 survey.

SMM Accession No.: A77:24:14

Cultural Material: Because no property-owners were available to grant permission for subsurface tests, collections from this site are limited to material recovered from the shallows, beach and eroding bank; this includes:

- 9 body-sherds (cwp shell-tempered)
- .1 bifacially-worked flake (basalt)
- 13 lithic waste-flakes

21 AK 20

Discussion and Recommendations: Because of the limited collection from this site, little can be said concerning its nature, other than it appears to represent a habitation-site which may, on the basis of the ceramics recovered, contain a single Sandy Lake component. Erosion is mild-to-severe, and intensive testing is recommended to define more precisely the nature and extent of the site.



Plate No. 23. 21AK20. General view of site-area at north end of peninsula, looking east.

21 AK 21

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located in the central portion of Big Sandy, ½ mile west of 21 AK 9. Maps of the pre-dam shoreline indicate that the site-area was not present originally, but may have been filled recently for development. The area is low (1220') and level. A sand-spit projects to the southeast of the area, indicating the dominant current-flowage. The spit is now stabilized by a mature deciduous mix (oak, maple, basswood, birch, etc.), which also is the characteristic vegetation of the general area. The vegetation has been partially cleared from the developed area, which is in lawn-cover. Filling is obvious immediately under the homes, which are set off of the ground on pilings, thereby causing minimal subsurface disturbance. The bank is undergoing moderate erosion; a cobble retaining wall has been constructed along the developed area. There is a 1-to 2m wide sand beach along the shore. Ownership: unknown.

Cultural Affiliation: Late Prehistoric

Collections: SMM 1977 survey

SMM Accession No.: A77:24:15

Cultural Material: The landowners were not available for contact. Therefore, the reconnaissance was limited to surface inspection. The shallows and sand beach yielded a triangular projectile-point (brown chalcedony), the tip of a broken projectile-point (white

quartz), and unmodified lithic flakes. Inland ground-exposures (few and far between) yielded no material.

Discussion and Recommendation: Further work, with the landowner's permission, and shovel-testing are recommended in order to determine the nature of this site. Preliminary evidence suggests that the cultural material may have been imported in the fill used to develop this area. Subsurface testing would reveal the stratigraphic history of the locality. As erosion is active along the undeveloped portion of the site area, speed is urged in conducting the minimal testing needed to evaluate this site.



Plate No. 24. 21AK21. View of shoreline south of site-area, showing recent fill-deposits (site-area out of view to the right).

21 AK 22

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on a low (1220'), Y-shaped island in the east-central portion of Big Sandy, about 400 meters west of site 21 AK 9. Prior to dam-construction, and with the original size of the lake, this area did not exist as an island, but represented high ground on the eastern terminus of the large peninsula which projects into the center of the lake from the south-west shore. At present, the island is completely undeveloped and supports a dense growth of maple, basswood, elm, ash, and aspen, with a thick hazel and dogwood understory. The north-facing shore exhibits a 3-foot cut-bank which is being actively eroded. A narrow cobble beach is present at the base of the eroded bank. The shoreline facing the interior cove is not eroding, and a thick sedge-and-wild rice-growth occupies the cove itself. Ownership: Mr. Fred Smith, McGregor, Minnesota.

Cultural Affiliations: Late Prehistoric: (Sandy Lake complex?)

Collections: SMM 1977 survey

SMM Accession No: A77:24:16

Cultural Material: Surface inspection of the cut-bank, cobble beach, and shallows produced negative results. Ten shovel-tests were dug at arbitrary intervals throughout the interior, of which only one was productive. This test, located on a low terrace on the south-

21 AK 22

facing shore of the north arm of the island, produced 2 body-sherds (cwp shell-tempered), and 2 lithic waste-flakes.

Discussion and Recommendations: The extremely limited amount of cultural material recovered from this location does not permit discussion of the nature or possible extent of the site. The ceramics present seem to represent a Late Prehistoric occupation, but a larger sample, including rim-sherds, would be necessary before a definite cultural affiliation could be assigned. It is probable that the majority of the site has been lost through inundation caused by dam-construction. However, because erosion is taking place, it is recommended that further testing be conducted to determine more precisely the nature and extent of the site.

21 AK 23

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on a low(1220') island in the east-central portion of Big Sandy, about 350 meters southwest of site 21 AK 9, and 150 meters southeast of site 21 AK 22. Prior to dam-construction, this island was part of the same peninsula as described for site 21 AK 22 (see description of 21 AK 22 for details). The island-interior is level and supports an oak, maple, basswood, elm, ash, and aspen canopy, with willow-and-shrub growth along the shore. The center of the island has been cleared around a single structure (a mobile home with an addition), but the area does not appear to have been disturbed by landscaping. Erosion is moderate, but active, along the north, east, and south shores. A 1 to 3-foot-high cut-bank, with a cobble accumulation at the base, descends abruptly to the water's edge (no beach is present, save for a small area cleared around a boat dock). Ownership: Private; unknown (property-owner not available for contact; not shown on 1977 Aitkin County plat).

Cultural Affiliations: Prehistoric; indeterminate affiliation.

Collections: SMM 1977 survey

Cultural Material: The material recovered is limited to surface finds, as the property-owner was not present, and thus permission necessary for sub-surface testing could not be obtained. Surface

AD-A164 331

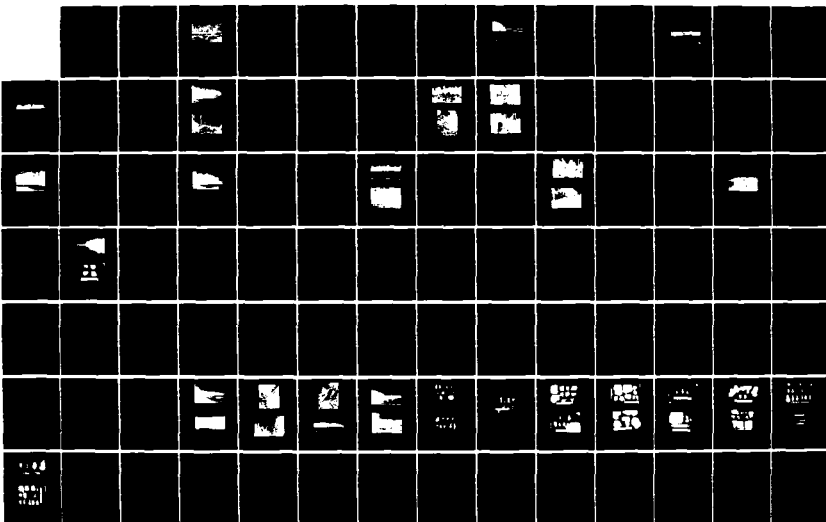
CULTURAL RESOURCES INVENTORY OF LANDS ADJACENT TO BIG
SANDY LAKE VOLUME 1(U) SCIENCE MUSEUM OF MINNESOTA ST
PAUL G J HUDAK ET AL. 18 JAN 79 DACW37-77-C-8897

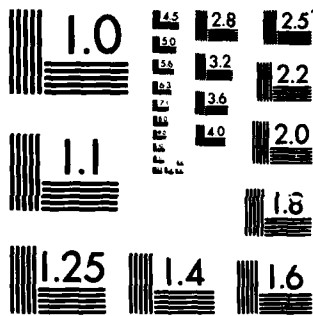
273

UNCLASSIFIED

F/G 5/6

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

21 AK 23

finds include 2 body-sherds (grit-tempered) recovered from the cleared beach-area, a chert end-scraper, and a body-sherd (base) recovered from the exposed ground beneath the mobile home.

Discussion and Recommendations: The present sample of material from this location does not permit determination of the nature or extent of this site. The island is actively eroding along three shores due to wave-action, and should be tested intensively to determine the extent, nature, and significance of the site, and whether any form of mitigation is warranted.



Plate No. 25. 21AK23. General view of site-area looking north (material located near structures at left of photo).

21 AK 24

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on a low (1216'-1220') island in the west-central portion of Big Sandy Lake, ½ mile due north of site 21 AK 38. This island is completely undeveloped. The interior vegetation is dominated by an oak, maple, basswood association, with a moderate-to-thick shrub understory. The entire shoreline is actively eroding, and exhibits a 1-4-foot cut-bank with a cobble accumulation at the base. There is no beach. A light rush growth exists along the shallows. Ownership: Uncertain; this island is not indicated in the 1977 Aitkin County plat book.

Cultural Affiliations: Middle Prehistoric

Collections: SMM 1977 survey

SMM Accession No.: A77:24:18

Cultural Material: Because ownership of this island was unknown, and thus, permission to conduct sub-surface testing could not be obtained, the SMM collections were limited to material located along the eroded banks. Two lithic waste-flakes (quartz) were found on the east shore at approximately the mid-point of the island. The southeast-facing shore of the southern tip of the island produced 3 net-impressed body-sherds.

Discussion and Recommendations: Due to the limited collections from this site, little can be said regarding its nature or extent. The

21 AK 24

island is undergoing severe erosion on all sides, and therefore, it is recommended that intensive testing be performed, subsequent to clarification of ownership and acquisition of permission to conduct sub-surface tests.

21 AK 25

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on the south-facing shore of a peninsula which projects into Big Sandy from the west shore, about 300 meters southwest of site 21 AK 4 (located on the north-facing shore of this same peninsula). This area has been cleared and is presently being mowed for hay. It is likely that this field was cultivated in the past, but no indication of a disturbed plow-zone was noted in the profiles of the test-excavations. The terrain is low (1216'-1220') and level, sloping gently to the shore which faces a shallow bay densely filled with wild rice and cattails. No erosion occurs along this shore. Ownership: Rosealma Tieson, McGregor, Minnesota.

Cultural Affiliations: Middle Prehistoric (Brainerd Net-Imprinted ceramic complex).

Collections: SMM 1977 survey

SMM Accession No.: A77:24:19

Cultural Material: No surface collection of this site was made, due to the absence of exposed ground (i.e. bank-cuts, beach, open shallows). Five informal test-pits (50x50cm) were excavated at approximately 50-meter intervals in an east-west line along this shore. Test #1, the eastern-most test, located near the east edge of the field, was situated in the center of a U-shaped embankment which opened toward the

bay to the south. This embankment is about 30cm high and encompasses an area averaging 20 meters in diameter. This feature may represent the remains of a prehistoric dwelling. Material recovered from test-pit #1 includes Brainerd Net-Imprinted ceramics (including 1 rim-sherd), a split beaver-incisor, and a large quantity of charcoal, (the majority of this material occurred at a depth of 30cm below the surface). The remaining 4 test-pits, located at 50-meter intervals to the west, were sterile of cultural material with the exceptions of 1 body-sherd (cwo, grit-tempered) recovered from test-pit #2, and 1 body-sherd (cwp, grit-tempered) from test-pit #4.

Discussion and Recommendations: This site may represent a single component Middle Prehistoric occupation, possibly associated with a dwelling or fortification structure. If so, this site, potentially, is very significant to the study of settlement and subsistence patterns during this poorly-understood period. Prior to dam-construction, the present bay to the south did not exist, and thus much of the site may now be submerged. Because the site is not affected by shore erosion, no further testing or mitigation is recommended.



Plate No. 26. 21AK25. View of site-area looking S.E.; Hudak standing on north end of U-shaped embankment (note test-pit #1 located in center of enclosure created by embankment).

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located along the west-facing shore of a large bay in the extreme northeast portion of Big Sandy. The site-area extends for approximately 250 meters south of a small stream inlet in the northeast corner of the bay. This area is low (1216'-1220') and level, with a gentle slope descending to a 40-50-foot-wide sand beach. The Christian Missionary Alliance Camp presently occupies this location, and has selectively cut the pine and birch canopy, cleared the underbrush, and constructed numerous buildings. The ground surface does not appear to have been disturbed by landscaping. The site is not affected by erosion. Ownership: The Christian Missionary Alliance.

Cultural Affiliations: Late Prehistoric

Collections: SMM 1977 survey

SMM Accession No.: A77:24:20

Cultural Material: Material recovered is limited to surface collection of the beach and exposed ground areas, as permission to conduct sub-surface tests was not obtained. No material was recovered from the beach. Exposed patches of ground-surface around the trees inland from the beach produced a triangular projectile-point (quartz), a chert blade, 3 body-sherds, and numerous lithic waste-flakes.

Discussion and Recommendations: The material recovered would seem to indicate a Late Prehistoric occupation. However, this may be deceptive, due to the occurrence of such material near or at the ground surface (i.e. earlier cultural components may exist at deeper levels). Sub-surface tests would be necessary to determine whether this is the case. The site is not affected by erosion and, thus, no further testing or mitigation is recommended.



Plate No. 27. 21AK26. General view of site-area looking east (note stream-inlet to left of photo).

21 AK 27

Location: See Volume II for legal description and site-map.

Description: This habitation-site is located on a small island in the northwest portion of Big Sandy, $\frac{1}{4}$ mile due north of 21 AK 4. The island is low (1216'-1220') and level, with a gently-sloping sand beach on the east-central side. The bank on the west-central and south side is roughly 1 meter high, and is undergoing severe erosion. Much of the remaining shoreline is low, and is buffered by a light sedge fringe. The major part of the island has been cleared of natural vegetation and is in lawn-cover. The eastward-projecting point is undisturbed, and supports a deciduous mix (maple, basswood, aspen, etc.), with a dense brush understory. There is a single dwelling with small outbuildings and a log cabin; however, sub-surface disturbance is minimal. Ownership: L. R. Swanson

Cultural Affiliation: Prehistoric; indeterminate affiliation.

Collections: SMM 1977 survey

SMM Accession No.: A77:24:21

Cultural Material: The landowner was unavailable for contact, thereby limiting the reconnaissance to surface inspection of the shallows, beach, eroding bank and island-interior. A crude side-notched projectile-point of quartz was recovered from the shallows off the west shore. Numerous unmodified lithic flakes were recovered from the shallows off both the west-and east-central shores. No material was recovered from the surface of the island's interior.

Discussion and Recommendations: The cultural materials recovered from the shallows are an erosional deposit from the island itself. (There is no possibility of water-transport from a separate land-form.) It is recommended that the landowner be contacted, and permission obtained for sub-surface testing of the island to define the nature and extent of the site. Speed is urged due to the severe erosion acting on the west side.



Plate No. 28. 21AK27. General view of site-area looking east (west shore of Emerald Island).

21 AK 28

Location: See Volume II for legal description and site-map.

SE 1/4, N 27 1/2, W 1/4 Sec. 21 T. 11 N. R. 27 W.
Description: This is a possible burial-mound group located on the north (south-facing) shore of Big Sandy, approximately 3/4 miles southeast of the Corps of Engineers' dam at the Sandy River outlet. The site is located on high ground (1230'), and extends for a distance of about 100 meters east to west, and for about 30 meters inland. Erosion is severe along this section of shore, and has produced a 12-foot-high cut-bank which is steep and being undercut. The exposed bank exhibits glacial till subsoil which produces a cobble accumulation at the base along the water's edge. The shoreline supports a thick shrub growth; interior (upland) vegetation consists of an oak, maple, basswood association with some birch. The area is completely undeveloped. Ownership: Clyde N. Johnson (as shown in 1977 Aitkin County plat book; address unknown).

Cultural Affiliations: Indeterminate

Collections: SMM 1977 survey (field notes and photographs only)

SMM Accession No.: None

Cultural Material: The shoreline and eroded banks were examined with negative results. Sub-surface tests to determine whether a habitation is associated with this mound-group were not conducted, as the property-owner could not be reached to request permission for such tests. A preliminary inventory indicated at least 32 mounds in this

group. All mounds observed were small, dome-shaped, and ranged from 1 to 3 meters in diameter by 20 to 50 cm high. Although no mounds were observed at the edge of the present cut-bank, some are located within 20 feet of the bank, and these are threatened by continued erosion.

Discussion and Recommendations: By comparison, the mounds observed at this site fall below normal dimensions recorded for most previously-documented burial-mounds in the state. However, careful examination of the ground surface in the vicinity of these small mounds did not indicate any obvious alternative explanation for their occurrence (i.e. natural origin such as windfalls, etc.). Therefore, it is recommended that further testing be done to determine the true nature of these mounds, and also to test the surrounding terrain for evidence of a habitation-site. This should be arranged as soon as possible, in order to make plans for construction of protective rip-rap, should a site be confirmed at this location. This site warrants immediate attention.



Plate No. 29. 21AK28. View looking north, showing shoreline erosion.



Plate No. 30. 21AK28. Close-up of 3 small mounds near bank-edge (view looking S.E.).

Location: See Volume II for legal description and site-map.

Description: This is a burial-site located on the north (south-facing) shore of Big Sandy, ½ mile west of the mouth of Van Dusch Creek. Prehistoric burial-mounds, Early Historic bundle-burials and a contemporary Ojibwa cemetery are situated at the apex of a high ridge (1240') which projects southward to the lake shore. The area lying to the immediate east of this location is reported to be the site of an Ojibwa village occupied during the early 1900's. This entire shore is undergoing rapid and severe erosion, especially at the ridge apex, where wave-action is causing the bank to be undercut, resulting in periodic collapse of the upper strata. The exposed bank is composed of a yellow till deposit and has produced a cobble beach along the shore. Vegetation consists of willow-and-shrub thicket along the shore, with a dense upland growth of oak, maple and birch. The area surrounding the burial-ground and the adjacent historic village-site has been cleared. Ownership: Ojibwa Tribe, Onamia Council (Mr. David Aubid is the tribal representative for the Sandy Lake district).

Cultural Affiliations: Multi-component; Prehistoric, Historic (Ojibwa).

Collections: SMM 1977 survey (field notes, maps, photographs only).

SMM Accession No.: None

Cultural Material: No cultural material was recovered from this location, as permission to employ standard reconnaissance survey

techniques was withheld by the Tribal Council. Mr. David Aubid, tribal representative for the Sandy Lake district, did, however, obtain permission to allow a visual inspection of the area for the purpose of documenting the impact of the observed erosion upon the cemetery. A bundle-burial, with birchbark, and possibly blanket-wrapping, was observed at the top of the eroded bank at the ridge-apex. This burial is situated approximately 40cm below the ground-surface in an overhang of the ridge, and is being retained solely by tree roots at present. Inland from the edge of the bank are more recent graves, some still marked by Spirit houses. Farther inland still, is an area of contemporary graves. To the immediate east of this ridge, numerous possible Prehistoric burial-mounds were observed. Wild rice threshing-pits are scattered throughout the area.

Discussion and Recommendations: This site is undergoing rapid and severe erosion, and immediate action is required to prevent further site-destruction. It is recommended that negotiations with the Ojibwa Tribal Council at Onamia be initiated as soon as possible to develop an acceptable course of mitigation. It is recommended that a professional archaeologist be contracted to excavate and remove, for the purpose of reinterment, all burials in jeopardy. Following this, measures should be taken, without delay, to stabilize the shoreline so that further destruction by erosion is prevented. Finally, it is recommended that an intensive survey be conducted at the reported location of the Historic Ojibwa village, in order to

21 AK 29

document this site and insure its protection and preservation (providing permission can be obtained from the Tribal Council for such investigations).



Plate No. 31. 21AK29. View looking north, showing severe erosion at south tip of ridge; (note eroding burial located at apex in center of photo).



Plate No. 32. 21AK29. View looking west; David Aubid pointing to eroding burial beneath overhang.



Plate 33. 21AK29. View looking north, showing Spirit House, with modern graves in background.



Plate No. 34. 21AK29. View looking south: close-up of modern grave-marker.

21 AK 30

Location: See Volume II for legal description and site-map.

Description: This habitation-site is located on two small islands in the southern portion of Big Sandy, roughly $\frac{1}{2}$ mile northeast of 21 AK 14. Prior to dam-construction, these islands were part of a peninsula which projected westward from the mainland. Both islands are low (1220') and level. The microtopography is irregular, with numerous tree-falls and surface irregularities of possible cultural origin. There is no development on the site, save for a single cabin (which appears to be abandoned) on the larger island. The islands support dense vegetation; the canopy is bur oak and aspen, with an understory of young ash, silver maple and willow bordering the shore. Remnants of several large pine stumps were noted. There is a light sedge-and-rice fringe encircling the islands. Erosion is moderate along the south shores. Ownership: unknown.

Cultural Affiliation: Early Prehistoric (Archaic Copper Culture); Late Prehistoric (Blackduck and Sandy Lake).

Collections: SMM 1977 survey

SMM Accession No.: A77:24:22

Cultural Material: No cultural material was recovered from the shallows or from the shoreline (the islands have no beaches). The island's interior yielded lithic flakes, a piece of worked native copper, Blackduck and Sandy Lake ceramics and a triangular projectile-point of white quartz.

Discussion and Recommendations: This is a multicomponent site which spans the Early to Late Prehistoric Periods, encompassing some 6,000 years of cultural history. The presence of the worked piece of native copper is significant because it suggests an Archaic Copper Culture occupation. Local collectors have reported surface finds of copper artifacts from sites on Big Sandy (particularly 21 AK 18), but these are without in situ context, and the sites subsequently have been disturbed by development. 21 AK 30 is presently undeveloped and may well contain stratified components representative of the broad cultural continuum mentioned above. There is no question that a significant portion of the site was inundated by the dam construction. A slight increase in the pool-elevation would inundate that portion of the site which remains. Furthermore, the site is being reduced slowly by the continual process of erosion. Therefore, it is strongly recommended that intensive sub-surface testing be conducted to retrieve and record the cultural information remaining at this site before it, too, is lost.

21 AK 31

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located on the south shore of Big Sandy, near the east side of the Sandy River inlet. The site is 180 m south-southeast of the 21 AK 6 mound group. The area is level and gently slopes from the upland interior (1230') to the shore (1216'). A local resident (Philip Johnson, landowner of 21 AK 6) recalls that formerly there was a ridge on the site-area, which was leveled for landscaping purposes. The area is intensively developed and landscaped. The natural vegetation has been cleared, and presently there are scattered oaks with a lawn-grass ground-cover. The shoreline is an open, flat, sand beach and there is no erosion.

Ownership: Don Peterson, Chicago, Illinois.

Cultural Affiliations: Indeterminate; possibly Late Prehistoric (Sandy Lake).

Collections: SMM 1977 survey, Don Peterson.

SMM Accession No.: A77:24:23

Cultural Material: The present landowner, Don Peterson, reports finding numerous pot-sherds and a projectile-point from the ground surface near his home. (This collection was not available for examination.) When contacted by the SMM survey crew, he donated 2 body-sherds which he had just found in his yard. P. Johnson (mentioned above) said that when the ridge (formerly on the site of the Peterson home) was

leveled, "Many arrowheads and pottery fragments" were found. The whereabouts of these artifacts is unknown. Surface inspection of the area was negative. Peterson is willing to allow shovel-testing on his property in the event that more intensive work is warranted at the site.

Discussion and Recommendations: This habitation site is of particular interest because of its proximity, and possible association with, the mound group at 21 AK 6. However, no further work is recommended at this time, because the site is not threatened by erosion, nor are there plans for additional construction or landscaping in the immediate area. Should these conditions change, subsurface testing would be imperative.

21 AK 32

Location: See Volume II for legal description and site-map.

Description: The site is located approximately 300 meters southeast of site 21 AK 33 and continues along the shore between the beach and the 1220' contour for about 150 meters. This area is relatively low and flat with a gentle slope to the shore. The construction of three cabins has recently disturbed much of the site. Uncleared land supports a forest dominated by oak, maple, birch, and aspen. Mild erosion is present at the base of the slope. Ownership: Mr. Paul Anderson (address unknown) and Edna Grolla, 539 Hiawatha, St. Paul, Minnesota.

Cultural Affiliations: Late Prehistoric (Blackduck, Sandy Lake).

Collections: SMM survey, 1977.

SMM Accession No.: A77:24:24.

Cultural Materials: Surface examination of the beach and exposed ground near the cabins produced a large, white quartz end-scraper, and Blackduck and Sandy Lake ceramics. Shovel-tests were dug, with permission, on Grolla property only. All produced negative results except for one test located 20 meters into the woods nearest the Anderson cabin, which produced 1 Sandy Lake ware body-herd.

Discussion and Recommendations: This site appears to be badly disturbed by recent cabin-development. However, because erosion is present, and because subsurface testing on portions of the site have established the possibility of cultural material existing in a yet undisturbed context, it is recommended that an intensive survey of this area be conducted.



Plate No. 35. 21AK32. View looking east, showing exposed beach (area of surface-collection).

21 AK 33

Location: See Volume II for legal description and site-map.

Description: The site is located on a small sand point which projects westward into Big Sandy Lake. It is situated about 300 meters southeast of site 21 AK 7, and about 300 meters northwest of site 21 AK 32. A gentle slope to the shore is landscaped and grass-covered, and the shore has a well-exposed sand beach. Upland vegetation consists of birch, aspen, and oak. Slight erosion is present at the base of the slope (approximately 1220' contour). Ownership: Mr. Robert Cummings, McGregor, Minnesota.

Cultural Affiliations: Indeterminate - artifacts are undiagnostic.

Collections: SMM survey 1977.

SMM Accession No.: A77:24:25

Cultural Materials: SMM surface finds are limited to 1 chert end-scraper, and 2 quartz waste-flakes. The landowner, Mr. Cummings, reported finding projectile-points and pottery in the past, but no longer has this material. Permission to conduct subsurface tests was not granted.

Discussion and Recommendations: The cultural material recovered from this site is too limited to support even an estimate of the nature or cultural affiliations of the site. This area has been extensively disturbed due to construction, landscaping, and, to some extent, erosion. Because erosion is minimal, and because it is

21 AK 33

doubtful that a significant portion of the site could be yet undisturbed, it is recommended that intensive survey and mitigation is unnecessary. However, if intensive surveying is performed at site 21 AK 32, this site (21 AK 33) should be re-examined and permission to shovel-test requested once more. Due to their proximity to each other, it is possible that these sites are associated, or represent segments of one large site-area, now discontinuous as a result of the post-dam shoreline changes.



Plate No. 36. 21AK33. View looking east, showing point which yielded artifacts.

Location: See Volume II for legal description and site-map.

Description: The site is located at the tip of a southward-projecting peninsula which lies just east of Highway #65 on the Sandy River inlet. This area is presently occupied by a campground operated by D.N.R. A group of burial-mounds is present along the southeast shore of the peninsula, beginning immediately south of the boat launch, and extending approximately 100 meters southwestward to the southern tip. This mound-group is composed of three, large conical mounds (averaging about 30 feet in diameter and 8 feet in height) and one compound mound, consisting of a linear mound (about 75 feet long and 5 feet high) which is attached to a conical mound of similar proportions to those of the other three conical mounds. All three conical mounds have been slightly disturbed by what appears to be amateur excavations into their top-surfaces. The compound mound exhibited no signs of disturbance. Subsurface testing of the peninsula produced negative results. The peninsula itself is low and flat with a dense fringe of wild rice and cattails surrounding the entire shore. There is no erosion. Vegetation is predominantly oak, with birch, aspen, ash and a dense shrub growth.

Cultural Affiliations: Indeterminate.

Collections: SMM survey, 1977 (field notes and maps)

SMM Accession No.: None (no material recovered).

Cultural Materials: No artifacts were found on the surface; all

shovel tests were sterile.

Discussion and Recommendations: The mounds are essentially intact and are not threatened by erosion at this time. Therefore, intensive testing and mitigation are not recommended. However, the peninsula is low, and a rise of the pool-elevation by even three feet could initiate erosion. The disturbances resulting from amateur digging have not significantly affected any of the mounds as yet. But it is suggested that arrangements be made whereby DNR personnel are notified of the existence of this site, in order that its protection and preservation are insured.



Plate No. 37. 21AK34. General view of site-area looking N.W. Note burial-mounds are located to left of boat-launch ramp, (mounds not visible).



Plate No. 38. 21AK34. Close-up of eastern-most mound located immediately S.W. of boat-launch.

Location: See Volume II for legal description and site-map.

Description: The site is situated at the outlet of Flowage Lake along the northeast shore, and continues onto a southwestward projecting peninsula. This area consists of a relatively high till-remnant (reaching an elevation of 1250' at the center of the peninsula) with approximately a 30 degree slope to the shore. The site is completely undeveloped and supports a growth of oak, maple, basswood, elm, aspen, with a thin shrub understory. The entire site area is marked by numerous wild rice threshing-pits. A single linear burial-mound (measuring approximately 10 m. in length, 4 m. in width, and 1 m. in height) is present immediately north of the isthmus which leads south onto the peninsula. Erosion is absent on all but the westward-facing shores and, even there, it is minimal. Ownership: Mr. Paul H. Sather, Route 4, McGregor, Minnesota.

Cultural Affiliations: Indeterminate.

Collections: SMM survey, 1977 (field notes, photographs and maps).

SMM Accession No.: None.

Cultural Materials: No material was located along the shore (poorly exposed) and permission for subsurface testing was denied.

Discussion and Recommendations: The linear burial-mound has been disturbed by three depressions which appear to be the product of amateur digging. Judging from the apparent depth of these excavations,

however, it is doubtful that any burials have been disturbed. The majority of the site as defined by the distribution of wild rice threshing-pits, is situated above the 1225' contour, and is thus beyond the limits of direct reservoir-impact. For this reason, and the fact that erosion is not significant along the shoreline, no intensive testing or mitigation of this site is warranted. However, should the Corps receive permit applications for shoreline development or modification (e.g. boat dock/ramp, boathouse, etc.) of this location, an intensive survey, and testing of the area should be required prior to issuing such permits.



Plate No. 39. 21AK35. View looking S.W., showing 5 rice-threshing pit-depressions.



Plate No. 40. 21AK35. View looking N.E. with Hudak standing on linear burial-mound.

Location: See Volume II for legal description and site-map.

Description: This site is located on a long (½ mile) east-west-oriented island in the extreme northwestern portion of Big Sandy, about ½ mile southeast of the Corps dam. Prehistoric artifacts were recovered from both the surface and from shovel-tests. A portion of the owners' collection from this site was recorded. The island is low and flat, reaching an elevation of only 1225'. Prior to dam-construction and the rise of the water-level, this land existed as high ground at the terminus of a low, westward-projecting peninsula which formed the eastern bank of the Sandy River outlet (see pre-dam shoreline, Map #1, Volume #2). The central portion of the island has been cleared of brush and a few trees in an area surrounding the two structures present. According to the owners, no landscaping has occurred. The remainder of the island supports a dense forest dominated by red and bur oak, with maple and birch, a thick understory of shrubs (including dogwood) and a heavy ground cover of poison ivy. Erosion is severe along the western portion of the south shore. Ownership: Mr. Henry Burger, 6411 Petre Street, Duluth, Minnesota, 55807 and Mr. John Cosgriff, Route 4, Box 194, McGregor, Minensota.

Cultural Affiliation: Late Prehistoric: (Blackduck, Sandy Lake).

Collections: SNM survey, 1977, Mr. Henry Burger, and Mr. John Cosgriff.

SMM Accession No.: A77:24:26

Cultural Material: Surface finds (SMM survey) are limited to Blackduck and Sandy Lake ceramics recovered from the surface of the crawl-space beneath the western-most structure (Burger's). Two series of six shovel-tests each were dug in the wooded areas east and west of the central clearing. Only those tests nearest the central portion of the island were productive. These tests yielded cord-marked body-sherds and lithic flakes of chert, brown chalcedony, and most notably obsidian. Mr. Burger and Mr. Cosgriff showed the survey team a number of Blackduck and Sandy Lake rim-sherds and a brown chalcedony, stemmed projectile-point, all of which had been found beneath Mr. Burger's cabin.

Discussion and Recommendations: Although this site is thin, with material limited to the upper 20 cm. of the strata, it has yielded a concentration of Blackduck and Sandy Lake ceramics, and is significant by its potential for studying the relationship of those Late Prehistoric cultures. Erosion is severe on the southwest shore and thus, intensive testing and possible mitigation is recommended. It should be noted that an adjacent island to the north should also be tested at that time. These two islands were originally part of the same land-mass, and it is conceivable that both may contain portions of the site. In fact, Mr. Cosgriff reported finding stone mauls on the northern island in the past. The SMM crew inspected this island, but the property-owner was not available and permission to test could not be obtained. Surface examination was negative. This island is being eroded along its western shore.



Plate No. 41. 21AK36. View looking north, showing erosion along south shore of west half of island.

21 AK 37

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site located in the northwest portion of Big Sandy, $\frac{1}{4}$ mile due east of 21 AK 39. This area was formerly the northeast corner of a large island inundated by the reservoir. A chain of three "islands" connected by narrow land-strips, and the irregular island 185 m southeast of the site are the remnants of the high-ground areas of the pre-dam island.

The site area is low (1220') and level and is only minimally disturbed by development. (Tree cover has been cleared around a single dwelling). Vegetation is dominated by mature basswood, oak, and birch with a dense brush understory. Erosion is active on the exposed sand-bank of the northeast- and east-facing corner, but is slowed by a fringe of willow and sedge along much of the remaining shoreline. Ice pressure-ridges and flood-spoil deposits are present on the northwest corner of the "island". Ownership: unknown.

Cultural Affiliations: Prehistoric; indeterminate affiliation.

Collections: SMM 1977 survey, Eugene Grolla

SMM Accession No.: A77:24:27

Cultural Material: The landowner is unknown and only surface reconnaissance of the shallows, beach and interior exposures was conducted. Ceramic sherds and lithic flakes were recovered from the eroding sand-bank and beach of the northeast-and east-facing corner of the

area. A rim, near-rim and a body-shoulder of uncertain affiliation were recovered from a redeposited sand beach (now stabilized by vegetation) on the southeast corner. No cultural material was recovered from ground-surface exposures.

This site is well known among local residents as a collecting area for Prehistoric ceramics. (It is called "Pottery Point" and is marked on a popular, historic map of Big Sandy). Eugene Grolla reported finding ceramics, human bone and lithic artifacts on the site. This collection was not available for inspection.

Discussion and Recommendations: The reservoir has had a significant impact on this site. The raised water-level inundated at least a portion, if not a significant portion, of the site, and continues to threaten destruction of the remaining site-area by active erosion. Further work is imperative, as subsurface testing is necessary to delineate the nature and extent of the remaining site-area.

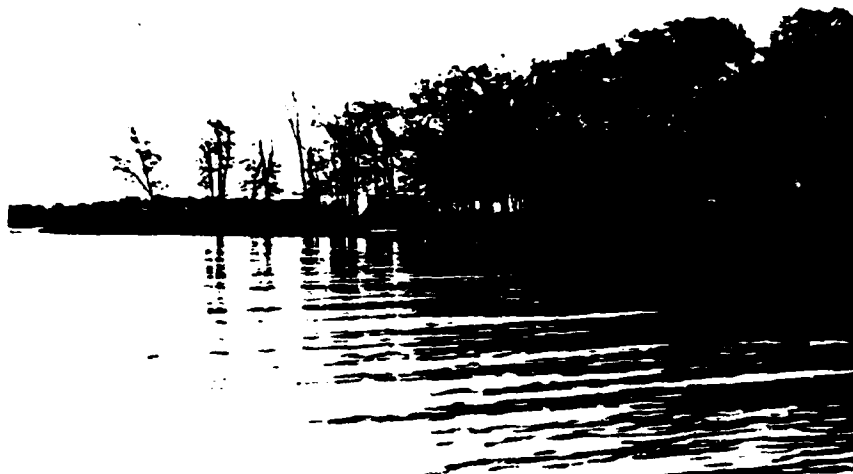


Plate No. 42. 21AK37. View looking east, showing north tip of island.

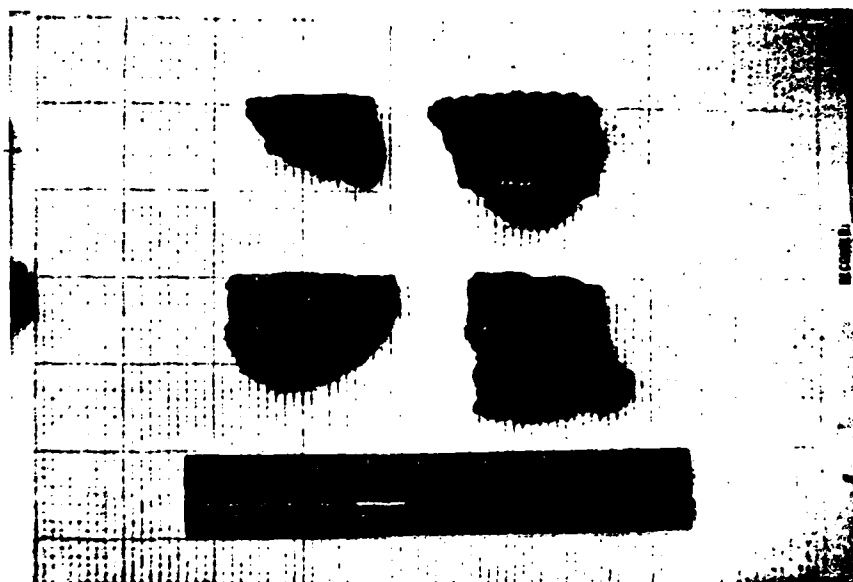


Plate No. 43. 21AK37. Ceramic rim-sherds collected from site by Eugene Grolla.

Location: See Volume II for legal description and site-map.

Description: The site is located on a low, flat island approximately 10 acres in size in the western portion of Big Sandy. This island is totally undeveloped, and supports a dense forest dominated by a maple-basswood association. The elevation generally does not exceed the 1220' contour, and a large, natural depression is present in the northeastern portion of the island. Disturbances are limited to extensive windfalls concentrated inland from the southwest-facing shore and moderate erosion (1 to 6-foot cut-bank) along the western shoreline. Ownership: Unknown - this island is not shown on the 1977 Aitkin County plat map.

Cultural Affiliations: Archaic, Woodland.

Collections: SMM survey, 1977.

SMM Accession No.: A77:24:28.

Cultural Materials: Surface finds were recovered at the base of the narrow point which projects southwestward from the western shore. At this location a water-worn, bifacially-flaked basalt knife was found on the beach. Approximately 15 feet inland from this, at the base of a 1-2-foot eroded bank, a stemmed projectile-point was recovered. A search of the shallows along the western shore of this peninsula produced numerous lithic waste-flakes, some exhibiting signs of re-touching and use. Surface inspection of the remainder of the island revealed at least 5 wild rice threshing-pits. Four of these were

scattered along the northwest shore, and one was located on the eastern shore. Subsurface testing was not conducted because ownership could not be determined and thus, permission could not be obtained.

Discussion and Recommendations: The lithic artifacts recovered at this site suggest an Archaic occupation of this island. This, combined with the presence of wild rice threshing-pits attributable to the Woodland cultures, would seem to indicate that a multicomponent site exists here. If this is so, this site has great potential for studying the nature of the cultural change and adaptations which occurred during the transition from Archaic to Woodland lifestyles. This is a subject which is important to the understanding of Minnesota's prehistory, and one which is best studied in this region, where wild rice may first have been exploited as a major food-staple. The undeveloped and relatively-undisturbed condition of this island also should add to its importance, as locations of this nature within the Big Sandy reservoir are not common! With these factors in mind, and, because the western shore is subject to moderate erosion, it is strongly recommended that an intensive survey and possible mitigation be conducted at this location.

21 AK 39

Location: See Volume II for legal description and site-map.

Description: This is a habitation-site in the northwest portion of Big Sandy, ½ mile east-southeast of 21 AK 37. This is the northwestern "island" of a chain of three "islands" interconnected by narrow land bridges. It lies along what would-have-been the west shore of a large, pre-dam island. This chain of "islands", in addition to the island ½ mile to the southeast of this site, are the high-ground remanats of the original island.

The site area is low (1220') and level, with sand beaches along its west and east shores. There is no construction or development on the site. The only disturbance is erosional, which is moderate-to-severe along the east and west shores. The vegetation is dominated by oak and basswood with patches of dense hazel underbrush. Ownership: unknown.

Cultural Affiliation: Late Prehistoric (Sandy Lake; Fur Trade).

Collections: SMM 1977 survey.

SMM Accession No.: A77:24:29

Cultural Material: Several body-sherds (some identified as Sandy Lake ware), lithic artifacts, and numerous unmodified lithic flakes were recovered from the island interior. No cultural material was found in the eroding bank, beach or shallows. (These areas were not thoroughly examined because of the large volume of material recovered from the interior).

Discussion and Recommendations: The initial and limited reconnaissance has yielded a significant concentration of cultural material, with artifacts representing at least two major periods in the cultural history of the region; the Late Prehistoric and the Fur Trade periods. It is not unlikely that this site, potentially, has other components that link the two periods, and may provide important data toward understanding the nature of the cultural change that occurred at this time.

It is recommended that the landowner of the site be contacted to obtain permission for subsurface testing to further evaluate the nature and extent of the site.

Location: See Volume II for legal description and site-map.

Description: Numerous burial-mounds and wild rice threshing-pits were recorded on a strip of land which lies between Highway 65 and the west shore of Big Sandy, approximately 3/4 mile south of Brown's Point. The site area is about 200 meters long (N-S) by 50 meters wide (E-W), and slopes gently towards the lake (to the east). Vegetation is very dense, being dominated by a oak, maple, basswood association with a thick shrub understory. The shoreline supports a lush fringe of cattails and rushes, and almost the entire bay to the east was choked with wild rice during the 1977 survey. Due to this extensive vegetation in the surrounding shallows and its sheltered location, no erosion is currently taking place. Ownership: Mabel Wotring (as listed in 1977 Aitkin County plat book - not contacted by SMM survey crew). Address unknown.

Cultural Affiliation: Indeterminate; Prehistoric - Woodland

Collections: SMM survey (field notes and maps).

SMM Accession No.: None (no material recovered).

Cultural Materials: No material was located on the ground-surface (no exposures), and the landowner could not be reached for permission to conduct subsurface tests.

Discussion and Recommendations: Due to the lack of data concerning cultural material which may be associated with either the burial-

mounds or ricing-pits, the nature and subsurface horizontal extent of this site are difficult to ascertain. However, prior to dam-construction and the rise of the water-level, the bay or lagoon, which presently borders the site on the east, did not exist (see pre-dam shoreline on map #1, Volume II). Instead, dry land (albeit low) sloped gently for more than a ½ mile further east from the present shore. To what extent this condition has affected site 21 AK 40 is not known. The burial-mounds located by the SMM survey are low, dome-shaped mounds, averaging approximately 5 to 6 meters diameter by .5 meters high. Without associated cultural material, specific temporal and cultural determinations cannot be made regarding this site. Because the site is not subject to erosion, no intensive testing and/or mitigation of effect is recommended. It is strongly urged, however, that if an intensive survey is conducted for nearby site 21 AK 38, that the present site (21 AK 40) be re-inspected should time permit. At that time, a search of the shallow waters of the adjacent lagoon might aid in determining the extent to which inundation has destroyed portions of this site.

V.

CONCLUSIONS

The Big Sandy Lake reservoir shoreline survey presented important results for both prehistoric and historic archaeological research, in spite of the effects of raised water levels and subsequent water erosion or submersion of sites that has, in almost all cases, resulted in distinct problems. The early maps of the lake area in the immediate pre-dam construction period, provided a base from which to plot present shorelines (see Map 1, Volume II.), and from which to estimate site erosion. Many localities of finds, where the material came from shallow water or wet beaches of adjacent pieces of land and islands, required an estimate of the former site extent and location. Several localities of finds, where water-worn materials came only from wet beaches, suggested movement, or transportation, of cultural materials through water action, and only subjective comments can be made as to the original site location.

The very large number of sites on or formerly on Big Sandy Lake, and the very long time span of these sites, is not surprising. The proportion of later Woodland sites as compared to the earlier Archaic sites supports the hypothesis of a significant increase in population during the Late Prehistoric period. The majority of Big Sandy Lake sites belong to this late period; this increase in population can best be correlated with the beginning intensive use of wild rice as a food resource, at the end of the Middle Prehistoric period. Big Sandy Lake does have extensive stands of wild rice at present. Archaeologically, it would be expected that a relationship between population growth and intensive use of wild rice as a food staple, could be demonstrated at many of the sites located through

this survey.

A most important conclusion for this project is that the Big Sandy Lake reservoir has much potential for exhibiting data concerning the pre-history of the region. Every effort must be made to preserve the remaining data, through either site protection or site mitigation. It is obviously impossible to control erosion through rip-rap or other means of bank stabilization for the entire lakeshore, as a result, many of the archaeological sites will continue to be destroyed. Because of this, mitigation is recommended for the sites in immediate danger. Those sites whose significance could not be determined by this survey, are recommended for intensive site survey. The data are summarized in the following table.

Given the rapid rate of continuing erosion at many of the remaining sites, it is hoped that the suggested intensive testing and mitigation be undertaken very quickly. If this is not done, most of these sites will be destroyed, and valuable cultural resources eliminated, with only minimal records remaining.

ARCHAEOLOGICAL RECONNAISSANCE SURVEY - BIG SANDY LAKE

Site #	Site Type				Recommendations For Further Work		Materials Recovered		Methodology			Ownership			Un-known	
	Historic	Prehistoric	Ricing	Burials-Mounds	No	Yes	Immed.	Lithic	Ceramic	Surface	Sub-surface	In-formant	Private	State		Corps
21AK4	X				X								X			
21AK6				X		X				X						
21AK7		X		X						X						
21AK8		X		X						X						
21AK9	X	X		X		X		X								
21AK11	X	X		X		X		X						X		
21AK15		X				X		X		X		X				X
21AK30		X				X		X		X						X
21AK18		X		X		X		X		X		X				
21AK32		X				X		X		X						
21AK33		X				X		X		X						
21AK25		X				X		X		X						
21AK31		X				X		X		X		X				
21AK36		X				X		X		X		X				
21AK29		X		X		X		X		X		X				
21AK23	X	X				X		X		X		X				X
21AK28		X		X		X		X		X						
21AK22		X				X		X		X						
21AK17		X				X		X		X						
21AK16		X		X		X		X		X		X				
21AK21		X				X		X		X						X
21AK20		X				X		X		X						X
21AK26		X				X		X		X						X
21AK12		X				X		X		X		X				X
21AK35		X		X		X		X		X						X

ARCHAEOLOGICAL RECONNAISSANCE SURVEY - BIG SANDY LAKE

Site #	Site Type				Recommendations For Further Work		Materials Recovered		Methodology			Ownership			
	Historic	Prehistoric	Prehistoric	Prehistoric	No	Yes	Lithic	Ceramic	Surface	Sub-surface	In-formant	Private	State	Corps	Un-known
21AK39		X			X		X	X	X			X			X
21AK40			X		X							X			
21AK37		X			X		X	X	X		X				X
21AK13		X			X		X	X						X	
21AK34				X	X									X	
21AK14		X			X		X	X			X			X	
21AK38		X			X		X								X
21AK27		X			X		X	X				X			
21AK19		X			X		X	X				X			
21AK24		X			X		X	X							X

APPENDIX A
References

REFERENCES CITED

- Bemidji State College, Environmental Review of the Headwaters of the Mississippi Reservoir Project, Bemidji State College Center for Environmental Studies.
1973
- Bender, Margaret M., Reid A. Bryson, and David A. Baerreis,
1967 "University of Wisconsin Radiocarbon Dates III,"
in Radiocarbon, 9:530-544.
- Bleed, Peter, "The Archeology of Petaga Point; The Preceramic
1969 Component," Minnesota Prehistoric Archeology Series,
No. 2. St. Paul: Minnesota Historical Society.
- Caine, Christy A. H., "The Archaeology of the Snake River Region,"
1974 in Elden Johnson, ed., "Aspects of Upper Great Lakes
Archaeology," Minnesota Prehistoric Archaeology Series,
No. 11. St. Paul: Minnesota Historical Society.
- Cooper, Leland R., and Elden, Johnson, "Sandy Lake Ware and Its
1964 Distribution," American Antiquity, Vol. 29, No. 4.
- Gibbon, Guy E., "The Brower Site: A Middle Woodland Mound and
1975 Camp Site on Lake Onamia," Minnesota Archaeologist,
34: 1-33.
- Gibbon, Guy E., and Christy A. H. Caine, "A Middle/Late Woodland
1976 Transition in Eastern Minnesota," paper presented at
annual meeting of the Society for American Archaeology,
St. Louis, Missouri.
- Johnson, Elden, "Copper Artifacts from Glacial Lake Agassiz Beaches,"
1964 Minnesota Archeologist, 26:5-22.
- Johnson, Elden, "Excavations at the Gull Lake Dam," Minnesota
1971 Archaeologist, 31:44-69.
- Johnson, Elden, "The Arvilla Complex," Minnesota Prehistoric
1973 Archaeology Series, No. 9. St. Paul: Minnesota His-
torical Society.
- Johnson, Elden, et al, Cultural Resources Inventory of Lands
1977 Adjacent to Lake Winnibigoshish, Archaeology Laboratory,
University of Minnesota.
- Lothson, Gordon A., "Burial Mounds of the Mille Lacs Area," M.A.
1972 Thesis, University of Minnesota.
- Lugenbeal, Edward, "The Archeology of the Smith Site: A Study of
1976 the Cermacis and Culture History of Minnesota Laurel and
Blackduck," Ph.D. dissertation, University of Wisconsin.

- Lugenbeal, Edward, "Brainerd Ware Occurrence and Chronological Relationships," in Alan R. Woolworth and Mark A. Hall, eds., "Some Studies of Minnesota Prehistoric Ceramics: Papers Presented at the First Council for Minnesota Archaeology Symposium - 1976," St. Paul: Minnesota Historical Society.
1978a
- Lugenbeal, Edward, "The Blackduck Ceramics of The Smith Site (21 KC 3) and Their Implications for the History of the Blackduck Ceramics and Culture in Northern Minnesota," Midcontinental Journal of Archaeology, V.3, No. 1.
1978b
- Shay, C. T., "The Itasca Bison Kill Site, An Ecological Analysis," 1971 Minnesota Prehistoric Archeology Series, No. 6. St. Paul: Minnesota Historical Society.
- Steinbring, Jack, and J. P., Whelan, "Test Excavations at the Fish Lake Dam Site," Minnesota Archeologist, 31:3-40.
1971
- Steinbring, Jack, "The Preceramic Archaeology of Northern Minnesota," 1974 in Elden Johnson, ed., "Aspects of Upper Great Lakes Archaeology," Minnesota Prehistoric Archaeology Series, No. 11. St. Paul: Minnesota Historical Society.
- Stoltman, James B., "Prismatic Blades of Northern Minnesota," 1971 Plains Anthropologist, 16:52:105-110.
- Stoltman, James B., "The Laurel Culture in Minnesota," 1973 Minnesota Prehistoric Archeology Series, No. 8. St. Paul: Minnesota Historical Society.
- Upham, Warren, "The Geology of Aitkin County," in Geology of Minnesota, 1899 Vol. IV of the final report by N. H. Winchell, St. Paul, Minn., the Pioneer Press Co.
- Waddington, Jean C. B., "The Stratigraphic Record of the Pollen Influx to a Lake in the Big Woods of Minnesota," in Geological Society of America, United States Contributions to Quaternary Research, 263-282. (Special Paper 123.)
1969
- Wilford, Lloyd A., "A Revised Classification of the Prehistoric Cultures of Minnesota," American Antiquity, 21:130-142.
1955
- Wilford, Lloyd A., Elden Johnson, and Joan Vicinus, "Burial Mounds of Central Minnesota," Minnesota Prehistoric Archaeology Series No. 1. St. Paul: Minnesota Historical Society.
1969
- Wright, H. E. Jr., and W. A., Watts, with contributions by Saskia Jelgersma, Jean C. B. Waddington, T. C. Winter, and Junko Ogawa, "Glacial and Vegetational History of Northeastern Minnesota," (Special Publication, No. 11.) St. Paul: Minnesota Geological Survey.
1969

Wright, H. E. Jr., "Quaternary History of Minnesota," in P.K. Sims
1972 and G.B. Morey, eds., "Geology of Minnesota: A Centennial
Volume," St. Paul: Minnesota Geological Survey.

APPENDIX B

Resumes

Hudak, G. Joseph

Current: Gary Joseph Hudak
Curator of Archaeology
The Science Museum of Minnesota
30 East 10th Street
St. Paul, Minnesota 55101

Education:

- 1971 B.A. Degree
Department of Anthropology
University of Minnesota, Minneapolis
- 1974 M.A. Degree
Anthropology - Archaeology
University of Nebraska
Lincoln, Nebraska

Teaching Assistantships:

- 1970, 1971 University of Minnesota, under Dr. Elden Johnson, as
an undergraduate.
- 1972, 1973 University of Nebraska, under Dr. Warren Caldwell, as
a graduate student.

Teaching Positions:

- 1973 At the Pedersen Site, taught University of Minnesota
Archaeological Field School.
- 1974 At the Pedersen Site, taught students from Macalester
and Hamline Universities' summer field school.
- 1973-75 Taught internship students from Macalester and Hamline
Universities, at the Science Museum of Minnesota.

Archaeological Field Experience:

- 1969 Prairie Island Village Site - University of Minnesota; Dr. Elden Johnson, Field Director; Participant in Field School.
- 1969 Gull Lake Mound and Village Site; Survey Specialist and Field Assistant.
- 1970 Smith and McKinstry Mounds - University of Minnesota; Dr. James Stoltman; University of Wisconsin - Madison; Field Teaching Assistant.
- 1970 Northeastern Minnesota Wild Rice Archaeological Survey Transect - University of Minnesota; Dr. Elden Johnson; Survey Specialist.
- 1971 Southwestern Minnesota Archaeological Survey - University of Minnesota; Dr. Elden Johnson; Survey Specialist.
- 1971 Thompson and Nelson Village Sites - Universities of Minnesota and Nebraska; Dr. Dale Henning; Field Assistant.
- 1971 Blue Mounds Archaeological Site - University of Minnesota; Survey Specialist.
- 1972 Mille Lacs Lake - Kathio and Anderson Village Sites; State Parks Archaeologist; Assistant to Dr. Guy Gibbon.
- 1972 Big Stone State Park Archaeological Survey; Survey Specialist.
- 1973 Pedersen Site - The Science Museum of Minnesota; Field Director.
- 1974 Pedersen Site - The Science Museum of Minnesota - M.A. Thesis; Field Director.
- 1974 Wild River Archaeological Survey - The Science Museum of Minnesota; Survey Specialist.
- 1974 South Zumbro Archaeological Survey - The Science Museum of Minnesota; Survey Specialist.
- 1974 Lake Hanska Archaeological Survey - The Science Museum of Minnesota; Survey Specialist.
- 1975 Southern Minnesota Transect and Archaeological Survey - The Science Museum of Minnesota; Field Director.
- 1975 Archaeological Survey of the proposed Winona Levee Flood Control Project - Stage II - The Science Museum of Minnesota; Field Director.

- 1975 Archaeological Survey of 1975 Season Dredge Spoil Deposit Sites in Mississippi River Pools USAF, 1,2,3,4 and 5; The Science Museum of Minnesota; Field Director.
- 1975 Pike Island Survey - The Science Museum of Minnesota; Field Director.
- 1976 Mountain Lake Site - The Science Museum of Minnesota; Project Director.
- 1976 Wright County Salvage Excavation, Wright County Highway Department - The Science Museum of Minnesota; Project Director.
- 1977 Archaeological Survey of the Isanti County - Rum River Bridge Project No. 30508, Isanti County - The Science Museum of Minnesota; Project Director.
- 1977 Archaeological Survey of the Talcott Lake County Park, Cottonwood County Board of Commissioners - The Science Museum of Minnesota; Project Director.

Excavation and Survey Reports:

- 1970 "Wild Rice Archaeological Survey Transect," The University of Minnesota.
- 1971 "Blue Mounds Archaeological Survey," The University of Minnesota.
- 1971 "Southwestern Minnesota Archaeological Survey," University of Minnesota.
- 1973 "The Pedersen Village Site," The Science Museum of Minnesota.
- 1974 "Wild River Archaeological Survey," The Science Museum of Minnesota.
- 1974 "The South Zumbro Watershed Archaeological Survey," The Science Museum of Minnesota.
- 1974 "The Lake Hanska Archaeological Survey," The Science Museum of Minnesota.
- 1975 "Archaeological Survey of 1975 Season Dredge Spoil Deposit Sites in Mississippi River Pools USAF, 1,2,3,4, and 5." The Science Museum of Minnesota.
- 1975- "Archaeological Survey of the proposed Winona Levee Flood Control Project - Stage I." The Science Museum of Minnesota.

- 1976 "Wright County Salvage Excavation." The Science Museum of Minnesota.
- 1977 "Archaeological Survey of the Isanti County - Rum River Bridge Project No. 30508." The Science Museum of Minnesota.
- 1977 "Archaeological Survey of the Talcott Lake County Park, Cottonwood County, Minnesota." The Science Museum of Minnesota.

Publications:

Preliminary Field Reports:

Blue Mounds Archaeological Survey: 1971
 Wild Rice Archaeological Survey: 1970
 Southwestern Minnesota Archaeological Survey: 1971
 The Pedersen Village Site: 1973

Published Studies:

- 1972 "Boulder Outlines in Southwestern Minnesota," Plains Anthropologist, Volume 17-58; Pt. 1.
- 1975 "The First Pottery Makers of Southwestern Minnesota," The Explorer, Volume 17. No. 2.
- 1975 "An Early Woodland Pottery Vessel From Minnesota," joint publication by G. Joseph Hudak and Elden Johnson, Scientific Publications of The Science Museum of Minnesota, New Series, Volume 2, No. 4.
- 1976 "Woodland Ceramics from the Pedersen Site," Scientific Publications of The Science Museum of Minnesota, New Series, Volume 3, No. 2.

Professional Organizations:

Society for American Archaeology
 Society of Professional Archaeologists
 Plains Anthropological Association
 American Anthropological Association
 Council for Minnesota Archaeology
 Minnesota Archaeological Society

OCCUPATIONAL REFERENCES

Dr. Elden Johnson, Chairman
Department of Anthropology
University of Minnesota
Minneapolis, Minnesota 55455

Timothy Fiske
Field Associate in Anthropology
The Science Museum of Minnesota
30 East 10th Street
St. Paul, Minnesota 55101

Dr. Guy Gibbon
Department of Anthropology
University of Minnesota
Minneapolis, Minnesota 55455

Dr. Warren W. Caldwell, Chairman
Department of Anthropology
University of Nebraska-Lincoln
Lincoln, Nebraska 68508

ACADEMIC REFERENCES

Dr. Elden Johnson, Chairman
Department of Anthropology
University of Minnesota
Minneapolis, Minnesota 55455

Dr. Warren W. Caldwell, Chairman
Department of Anthropology
University of Nebraska-Lincoln
Lincoln, Nebraska 68508

Dr. Guy Gibbon
Department of Anthropology
University of Minnesota
Minneapolis, Minnesota 55455

Dr. Dale Henning
Department of Anthropology
University of Nebraska-Lincoln
Lincoln, Nebraska 68508

Dr. Martin Q. Peterson
Department of Anthropology
University of Nebraska-Lincoln
Lincoln, Nebraska 68508

Ready, Timothy L.

Current: Assistant in Anthropology-Archaeology
The Science Museum of Minnesota
30 East 10th Street
St. Paul, Minnesota 55101

Department of Anthropology
215 Ford Hall
University of Minnesota
Minneapolis, Minnesota 55455

Education:

1974 B.E.S. Degree
Department of Anthropology
University of Minnesota, Minneapolis

M.A. Candidate
Department of Anthropology
University of Minnesota, Minneapolis

Archaeological Field Experience:

- 1973 The Pedersen Site (21LN2) Field School, University of Minnesota - The Science Museum of Minnesota; crew member.
- 1974 Sibley County - NSP Generating Plant Project, University of Minnesota; Field Assistant.
- 1974 L. A. Wilford Site (21NL12) Field School, University of Minnesota; Teaching Assistant.
- 1974 Lake Hanska County Park Survey (21BW1), Brown County - The Science Museum of Minnesota; Field Assistant.
- 1975 E.I.S. Archaeological Surveys (various), Minnesota Historical Society; Staff Archaeologist.
- 1976 Excavation at the Mountain Lake Site (21C01), The Science Museum of Minnesota; Field Assistant.
- 1976 Archaeological Survey of the St. Croix Falls - Dresser, Wisconsin Proposed Wastewater Treatment Sites, for the St. Croix Falls-Dresser Metropolitan Sewage Commission; Field Director.
- 1976 Wright County Salvage Excavation, Wright County Highway Department - The Science Museum of Minnesota; Field Archaeologist.
- 1977 Archaeological Testing of Winter Construction Areas A and B, Minnesota, for Williams Brothers Engineering Company and The Dome Pipeline Corporation, Calgary, Alberta, Canada. Field Archaeologist.

Field Experience (continued)

1977 Archaeological Survey of the Isanti County - Rum River Bridge Project No. 30508, Isanti County - The Science Museum of Minnesota; Field Archaeologist.

Data Analysis & Report Compilation:

Lake Hanska County Park, Brown County, Minnesota, Science Museum of Minnesota, November 31, 1974.

Belle Creek Watershed Project, Goodhue County, Minnesota: Preconstruction Archaeological Survey, Soil Conservation Service - Minnesota Historical Society, 1975.

Chippewa & Long Prairie Headwaters Fish and Wildlife Improvement Project: Preconstruction & Archaeological "Phase 2" Survey, Soil Conservation Service - Minnesota Historical Society, 1975.

Salvage Excavation Along Township Road 258, Wright County, Minnesota, for the Wright County Department of Public Works; Science Museum of Minnesota, January 14, 1977.

Reports Submitted:

Archaeological Survey of the St. Croix Falls - Dresser Sewage Commission's Proposed Sewage Treatment Facilities, to the St. Croix Falls-Dresser Sewage Commission; 1976.

References:

Professor Elden Johnson
Department of Anthropology
University of Minnesota
Minneapolis, Minn. 55455

Dr. Guy Gibbon
Department of Anthropology
University of Minnesota
Minneapolis, Minn. 55455

G. Joseph Hudak, Associate
Curator of Anthropology
The Science Museum of Minnesota
30 East 10th Street
St. Paul, Minnesota 55101

Louis B. Casagrande, Curator
of Anthropology
The Science Museum of Minnesota
30 East 10th Street
St. Paul, Minnesota 55101

Dobbs, Clark A.

Current: Department of Anthropology
215 Ford Hall
University of Minnesota
Minneapolis, Minnesota 55455

Education: B.A. Degree
1973 Department of Anthropology
Indiana University
Bloomington, Indiana

M.A. and Ph.D candidate
Department of Anthropology
University of Minnesota
Minneapolis, Minnesota

Archaeological Field Experience:

- 1975 The Prairie Creek Site Field School, Indiana University; Crew member.
- 1975 Clark Maritime Center Project, Clark County, Indiana; Glenn A. Black Laboratory of Archaeology, Indiana University; Field Assistant.
- 1975 Delaney Creek and Twin-Rush Creek Project, Washington County, Indiana, and the Hall Flint Project Area, Du Bois County, Indiana. USDA Soil Conservation Service, Indiana Historical Society, and Indiana University; Field Assistant.
- 1976 Local Flood Protection Project, Southwest Jefferson County, Kentucky. U.S. Army Corps of Engineers, Louisville District - Environment Consultants, Inc., Dallas. Field Director.
- 1976 Southern Tier Expressway, Western, New York, Preliminary Archaeological Survey. Environment Consultants, Inc., Dallas; Field Director.
- 1977 Archaeological Survey of the Isanti County - Rum River Bridge Project No. 30508, Isanti County - The Science Museum of Minnesota; Field Archaeologist.

Data Analysis and Report Compilation:

Analysis of Materials from the Prairie Creek Site; Glenn A. Black Laboratory of Archaeology, Indiana University, August, 1975.

Analysis of materials from the Delaney Creek and Twin-Rush Project Areas; Glenn A. Black Laboratory of Archaeology, Indiana University, December, 1975.

Data Analysis and Report Compilation (continued)

Prehistoric Cultural Resources of the Southwest Jefferson County, Local Flood Protection Project, Kentucky project; Environment Consultants, Inc., Dallas, U.S. Army Corps of Engineers, Louisville District, June and July, 1976.

A Preliminary Assessment of the Prehistoric Cultural Resources Within the Southern Tier Expressway Projects, Western New York; Environment Consultants, Inc., Dallas, August, 1976.

Professional Societies:

American Anthropological Association
Indiana Historical Society, Archaeological Section
Plains Anthropological Conference
Society for American Archaeology
Society for Field Archaeology
Society for Historical Archaeology
Society for Pennsylvania Archaeology

References:

Dr. Don Drago, Curator, Section of Man, Carnegie Museum of Natural History, Pittsburg, Pennsylvania.

Dr. Wesley R. Hurt, Professor of Anthropology, Indiana University, Bloomington, Indiana.

Dr. Joseph E. Granger, Director, University of Louisville Archaeological Survey, Louisville, Kentucky.

Dr. James H. Kellar, Director, Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington, Indiana.

Ms. Cheryl Munson, Curator, Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington, Indiana.

Dr. Van A. Reidhead, Assistant Professor of Anthropology, University of Missouri at St. Louis, St. Louis, Missouri.

Schaaf, Jeanne M.

Current: Research Assistant
Department of Anthropology
215 Ford Hall
University of Minnesota
Minneapolis, Minnesota 55455

Education:
1974 B.A. Degree, Magna Cum Laude
Department of Anthropology
University of Minnesota, Minneapolis

M.A. and Ph.D candidate
Department of Anthropology
University of Minnesota, Minneapolis

Archaeological Field Experience:
1974 L.A. Wilford Site (21ML12), Field School, University of
Minnesota; Crew member.

1974 Archaeological Survey, North-Central Minnesota, Mille Lacs
County, University of Minnesota; Crew member.

1976 Lake Winnibigoshish Shoreline Survey, University of
Minnesota - U.S. Army Corps of Engineers; Field assistant.

1977 Survey of Proposed Campground at the Confluence of the Snake
and St. Croix Rivers, for the Minnesota Department of
Natural Resources; Field Assistant.

Data Analysis and Report Compilation:
Cultural Resources Literature Search for Duluth, Minnesota,
for the U.S. Army Corps of Engineers, St. Paul District,
January 1976.

Cultural Resources Literature Search for Marshall, Minnesota,
for the U.S. Army Corps of Engineers, St. Paul District,
January, 1976.

Survey of Bassett Creek, Minneapolis, Minnesota, for the
U.S. Army Corps of Engineers, St. Paul District, November
1975.

Preliminary Salvage of a Mound Burial on Lake Ashtabula,
North Dakota for the U.S. Army Corps of Engineers, St.
Paul District. (To be submitted.)

Schaaf, Jeanne M. - page two

Data Analysis and Report Compilation (continued)

Survey of a Proposed Campground at the Conference of the Snake and St. Croix Rivers for the Minnesota Department of Natural Resources, April 1977 (joint compilation with Jan E. Streiff)

Cultural Resources Inventory of Lands Adjacent to Lake Winnibigoshish, for U.S. Army Corps of Engineers, June 1977. (Joint compilation with Elden Johnson.)

Publications (pending):

Techniques for the Recovery and Identification of Paleobotanical Macrofossils from Archaeological Sites.

Fossil Seed Analysis of the Cooper Site (21-ML-9) and the L.A. Wilford Site (21-ML-12) in North Central Minnesota. (Joint research project with Robert C. Bright, curator of Paleontology, Bell Museum of Natural History, University of Minnesota.)

References:

Elden Johnson, Prof. of Anthropology
Department of Anthropology
University of Minnesota
Minneapolis, Minn. 55455

Janet Spector, Associate Prof. of Anthropology
Department of Anthropology
University of Minnesota
Minneapolis, Minn. 55455

Christina Harrison, Archaeologist
Northfield, Minnesota

Jan E. Streiff
Box 38B, R.R. #1
Markville, Minnesota 55043

Kagan, Richard C.

Current: Richard C. Kagan
Assistant Professor of History
Hamline University
St. Paul, Minnesota 55104

Education:

- 1960 B.A. Degree
Department of History
University of California, Berkeley
- 1963 M.A. Degree
Department of History
University of California, Berkeley
- 1969 Ph.D. Degree
Department of Asian History
University of Pennsylvania

Teaching Positions:

- 1958 Reader in Speech Department, University of California, Berkeley
- 1964-65 Teaching fellow in History Department, University of Pennsylvania
- 1969-71 Instructor in History at Boston State College
- 1971-72 Research Associate at the Center for Chinese Studies, University of Michigan (Ann Arbor)
- 1972-73 Assistant Professor of History, Grinnell College, Grinnell, Iowa
- 1973- Assistant Professor of History, Hamline University, St. Paul, Minnesota

Publications:

- 1968 "A Critical Guide to Curriculum Units on China," Intercom X, 5 (Sept. - Oct., 1968).
- 1970 Contributed to The Indochina Story, Committee of Concerned Asian Scholars, Bantam, New York, 1970.
- 1970 "'O Say Can You See' American Cultural Blindness on China," co-authored with Leigh Kagan. America's Asia, edited by Ed Friedman and Mark Selden, Pantheon, New York, 1970.
- 1972 Nixon's Trip to China "Chou Calls the Tune," Far Eastern Economic Review, January 1, 1972.
- 1972 "Chen Tu-hsiu's Unfinished Autobiography," China Quarterly 50, (April - June, 1972).

- 1972 Edited and wrote introduction to Ross Y. Koen's, The China Lobby in American Politics, Harper and Row, New York, 1972.
- 1976 "From Revolutionary Iconoclasm to National Revolution: Ch'en Tu-hsiu and the Chinese Communist Movement," in China In the 1920's, edited by F. Gilbert Chan and Thomas H. Etzold, New Viewpoints, New York, 1976.
- 1978 Book Review of Thomas C. Kuo's, Chen Tu-hsiu (1879-1942) and the Chinese Communist Movement in Journal of Asian Studies XXXVII, 2 (February, 1978).

Membership in Professional Organizations:

Association of Asian Studies - former member Ethics Committee

Institute for Pacific Studies - charter member

National Committee on US-China Relations

Minnesota Liaison Committee of the Asia Society's China Council

On Board of Directors of the Midwest China Studies Center

References:

Professor Scott Johnston
Hamline University
St. Paul, Minnesota 55104

Ms. Karen Wendt
Executive Director of Minnesota SPAN
(Student Project for Amity Among Nations)
315 Pillsbury Drive S.E., Room 103 Nolte-West
University of Minnesota
Minneapolis, Minnesota 55455

The Reverend Don MacInnis
Midwest China Study Resource Center
308 Gullixson Hall
2375 Como Avenue West
St. Paul, Minnesota 55104

APPENDIX C
General Photographic Plates



Plate No. 44. Typical shoreline-development, and exposed sand beach.



Plate No. 45. Shoreline-development showing cleared and semi-cleared lots.



Plate No. 46 & 47. Typical erosion and bank-slump along east shore of Big Sandy Lake.



Plate No. 47. (above)



Plate No. 48. Typical erosion of high ground along north shore of Big Sandy Lake.



Plate No. 49. Severe erosion on west shore of Indian Point.



Plate 50 & 51. Typical vegetational conditions of flowage areas.



Plate 51. (above)



Plate No. 52. Lithic artifacts recovered by SMM 1977 Survey. Top row l. to r. (points): A77:24:28, A77:24:24:9:3, A77:24:22:2, A77:24:15, A77:24:20, A77:24:8:8, A77:24:21:1. Middle row l. & r. (scrapers): A77:24:24:, A77:24:17, A77:24:11, A77:24:8:5, A77:22:2. Bottom row l. to r. (knives): A77:29:2, A77:24:8.



Plate No. 53. Ceramic rim-sherds and native copper recovered by SMM 1977 Survey. Top row l. to r.: A77:24:12, A77:24:22:1, A77:24:7, A77:24:27. Bottom row l. to r.: A77:24:19:1, A77:24:8:2, A77:24:19:1, A77:24:6:2 (copperP), A77:24:22:2 (copper).

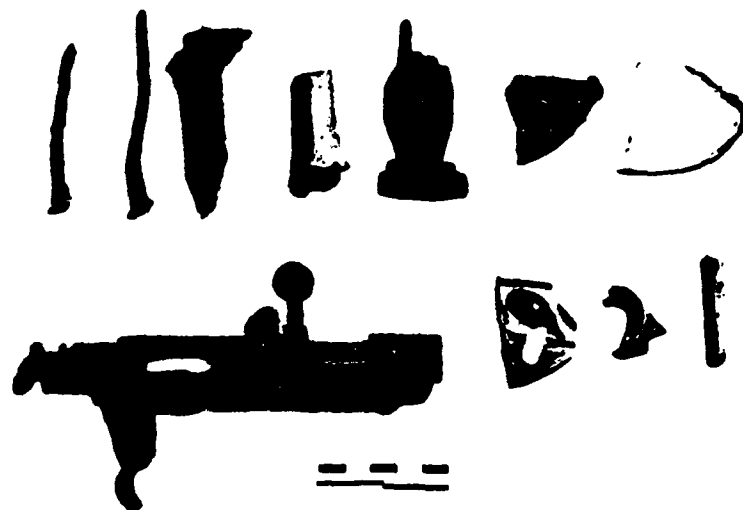


Plate No. 54. Historic artifacts from 21AK11 (except extreme lower right - kaolin pipe-stem fragment from 21AK39). Top row l. to r.: A77:24:5:6:3, A77:24:5:14, A77:24:5:6:2, A77:24:5:5:2, A77:24:5:6:2, A77:35:5:6:1, A77:24:5:6:1. Bottom row l. to r.: A77:24:5:11, A77:24:5:6:1, A77:24:5:6:2, and A77:29:2 (pipe-stem).

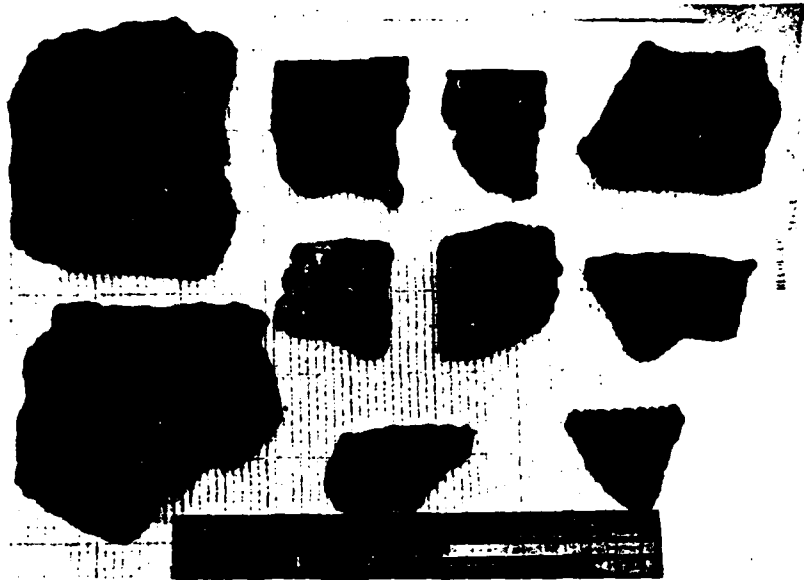


Plate No. 55. Ceramics from 21AK7, Russ Collection.



Plate No. 56. Lithic artifacts from 21AK7, Russ Collection.

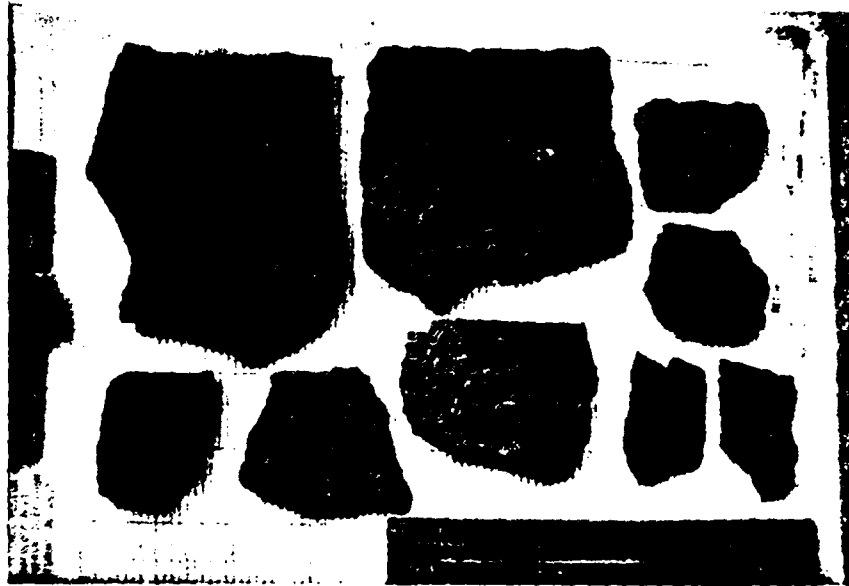


Plate Nos. 57 & 58. Ceramics from 21AK9, Grolla Collection.



Plate No. 58.

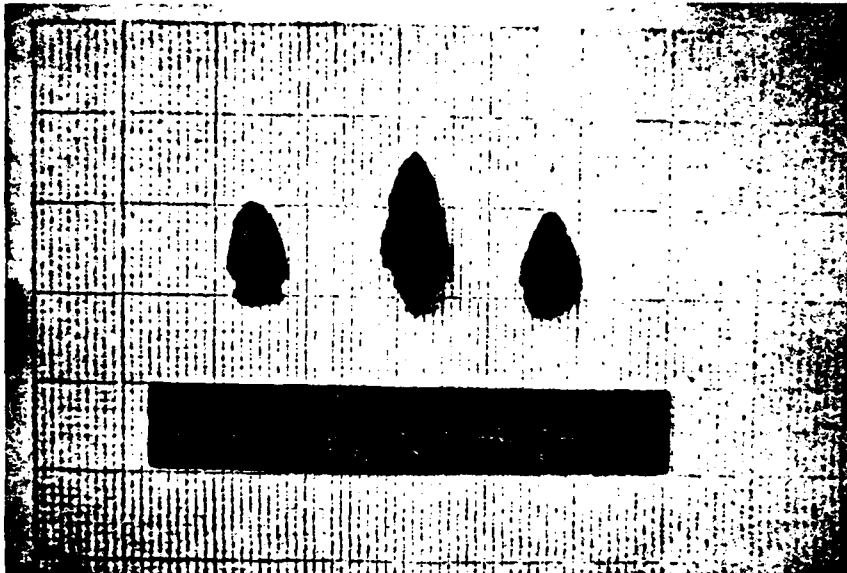


Plate No. 59. Projectile-point from 21AK9, Grolla Collection.



Plate No. 60. Fur-trade artifacts from 21AK9, Grolla Collection.



Plate Nos. 61 & 62. Ceramics from 21AK18, Grolla Collection.

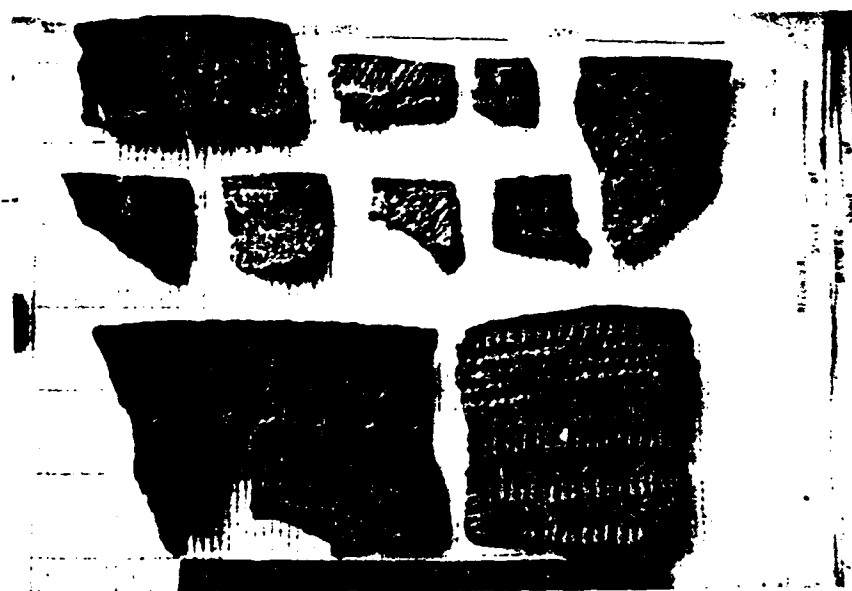


Plate No. 62.



Plate No. 63. Projectile-points from 21AK18, Grolla Collection.



Plate No. 64. Sandstone shaft-abraders from 21AK18, Grolla Collection.



Plates Nos. 65 & 66. Lithic bi-faces from 21AK18, Grolla Collection.



Plate No. 66.

APPENDIX D
Corps of Engineers Letter of Explanation



DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
1135 U. S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101

REPLY TO
ATTENTION OF:

NCSED-ER

12 August 1977

Dear Property Owner:

The St. Paul District Army Corps of Engineers is required by Federal law to preserve and protect public and privately owned sites which have potential historical or archaeological significance and which are affected by Federal undertakings.

The Corps is directed to administer its policies and programs in such a way that these sites are inventoried, protected and maintained for the benefit of the American people. In the normal course of operating Big Sandy Lake Reservoir, a Corps project, presently unknown archaeological and historic sites located along the shoreline may have been or may be affected. Although much of the shoreline property is not federally owned, the Corps believes that an archaeological investigation of the area is warranted in order to comply with Federal law. The project is being carried out to bring the Corps into compliance with existing laws, not in connection with plans for any changes in operation of the reservoir lakes.

This summer, archaeologists from the Science Museum of Minnesota, under contract with the St. Paul District, will be investigating the shorelines of Big Sandy Lake Reservoir. They will be continuing a program, begun last year at Lake Winnibigoshish, to inventory sites at all six Mississippi Headwaters Reservoirs. The work will consist of three activities:

1. Walking along the shoreline, not to exceed 50 meters from the water's edge; and examining beaches, the land surface, and any disturbed areas for artifacts (such as arrowheads, fragments of pottery and square nails) or other indications of past habitation.

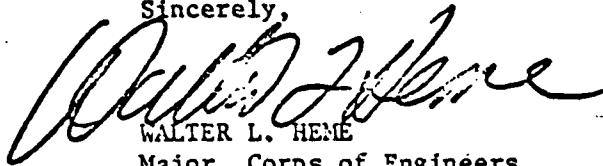
12 August 1977

2. In certain areas the archaeologists will be digging small shovel holes in order to examine below surface soil horizons for artifacts. Wherever this is done, the surface will be carefully returned as nearly as possible to the condition before disturbance.

3. In specific areas where archaeological sites are located, it may be appropriate to excavate formal test pits, 1 meter square (about 3 feet on a side). Again the contractor will replace any dirt and sod and return the surface to the condition before disturbance.

We are writing to inform you of this project and to request your cooperation with the archaeologists. If you have any further questions regarding the nature of the archaeological project, please contact Mr. Daniel Bowman, St. Paul District Archaeologist at (612) 725-7079.

Sincerely,



WALTER L. HEME
Major, Corps of Engineers
Acting District Engineer

APPENDIX E
Historic Outline and Bibliography

Historic Summary of Big Sandy Lake

The following chronological outline of the history of Big Sandy Lake is based upon the historical literature search conducted by Richard C. Kagan, Hamline University, under contract with The Science Museum of Minnesota. Also included is the bibliography of sources covered by Kagan's investigation.

1784-1797. Jean Baptiste Perrault made several trips to Big Sandy, and built a small cabin near the lake in 1785.

1794. The Northwest Company established a trading post on the west shore of the lake. This first factor of the post was Charles Bossquet, 1794-97.

1816. Due to the War of 1812, the British lost all economic control in Minnesota. By 1816 the American Fur Company of John Jacob Astor bought the British controlled Northwest Company's holdings at the Sandy Post, and moved into the old facilities.

1820-1832. The site of the Northwest Company was abandoned and a new site on the Sandy River was established for the American Fur Company (This was probably in 1830 or 1831 when William A. Aitkin established his headquarters as head of the American Fur Company's Fon du Lac's district. His home was constructed near the site of the new post.)

1834. John Jacob Astor sold the American Fur Company post to a group of men including Ramsey Crooks.

1837. The Ojibwa ceded to the United States all lands between the Mississippi and St. Croix Rivers.

1854-1861. William L. Wakefield established trading posts at Big Sandy.

1855. A reservation was established for the Ojibwa at Big Sandy Lake.

1857. Aitkin County was established, being named for the fur trader, William Alexander Aitkin.

1861. The Savanna Portage was supplanted by a military road built from Fond du Lac to Crow Wing.

1864. The reservation at Big Sandy was disbanded; its people were removed to White Oak Point.

1870-1916. Period of intensive commercial logging following the construction of railroads.

1930's. One hundred Ojibwa were given permission by the Federal government to return to Big Sandy.

Bibliography

- Aitkin County Land-use Planning Commission, Report of Land-use Study in 1941, June Aitkin County, Aitkin.
- Berthel, Mary W., "Place Names of the Mille Lacs Region," Minnesota History 1940, Dec 21, 345-352.
- Blegen, Theodore C., Minnesota: Its History and Its People. A Study 1937 Outline with Topics and References, Minneapolis: University of Minnesota Press.
- Blegen, Theodore C., Readings in Early Minnesota History, Minneapolis: 1938 University of Minnesota Press.
- Albert N. Marquis (editor), The Book of Minnesota, Chicago: Maruis. 1907
- Bonga, George, "Letters of George Bonga (to Joel B. Bassett)," Journal 1927, Jan of Negro History, 12, 41-54.
- Brook, Michael, Reference Guide to Minnesota History, Minnesota Historical 1974 Society, St. Paul.
- George A. Ogle, Compendium of History and Biography of Northern Minnesota, 1902 Chicago.
- Boutwell, William, T., "Frederick Ayer, Teacher and Missionary to the Ojibway Indians, 1829 to 1850," Minnesota Historical Collections, Vol. 6, pp. 429-437.
- Boutwell, Trowbridge, Wolcott, Diaries, All on 1820 journey over Savanna Portage.
- Folwell, William W., A History of Minnesota, (4 vols. 1921-1930).
- Fridley, Russel W., Minnesota: A Students' Guide to Localized History, 1966 New York: Columbia University Teachers College Press.
- Hart, Irving, "The Old Savanna Portage," Minnesota History, 8:2, 117-139. 1927, June
- Historical records survey, Minnesota. Guide to Depositories of Manuscript 1941, March Collections in the U.S.: Minnesota., St. Paul, Minnesota.
- History of the Upper Mississippi Valley, containing the Geology of the Upper Mississippi and Saint Louis Valleys . . . Explorers and Pioneers of Minnesota . . . Outlines of the History of Minnesota . . . and State Education. Minneapolis: Minnesota Historical ca 1881. Aitkin County, pp. 655-659.
- Hixson, Platbook of the State of Minnesota. 1916.

An Inventory of Minnesota Lakes, Prepared by the staff of the Waters
1968. Section, Division of Waters, Soils and Minerals, St. Paul,
Minnesota.

Johnston, William, "Letters on the Fur Trade (1835)", Michigan Pioneer
and Historical Collections, 37:170-172.

Larsen, Erling, "The Way to Big Sandy", in Sparks, AAA publication, pp. 2-4.
1955, Oct

Lucile Kane and Kathryn A. Johnson, compilers, Manuscript Collections of
1955 the Minnesota Historical Society, Guide #2, Minnesota
Historical Society, Saint Paul.

Minnesota Atlas.
1874

Minnesota Maps, Atlas general highway county maps.
1936 or 1950

Minnesota Historical Society, Big Sandy Lake.

Minnesota Territorial Census, 1850, Minnesota Historical Society.
1972

Monk, George Henry, The Savanna Portage Trail, description of.
1807

Nute, Grace Lee and Gertrude Ackermann, Guide to the Personal Papers in
1935 the Manuscript Collections of the Minnesota Historical
Society, The Minnesota Historical Society, Saint Paul.

Ostrem, Walter U., A Bibliography of Theses on Minnesota History, Mankato.
1966

Sheeks, Kenneth, "Economic History of Aitkin County, Minnesota," Masters
1966, June of Arts paper, University of Minnesota - Duluth.

United States Geological Survey, Topographic Map--Minnesota.
1966

Upham, Warren, The Geological and Natural History Survey of Minnesota,
1899 1895-1898, Minneapolis: University of Minnesota Press.

Upham, Warren, Minnesota Geographic Names, Minnesota Historical Society,
1969 reprint of 1920 edition.

compiled by Mary Dillon Foster, Who's Whom Among Minnesota Women, N.p.:
1924 privately published.

Works Progress Administration, Martin, Mamie, American Imprints Inventory,
1938 The Historical Records Survey. Division of Women's and
Professional Projects, #2 Checklist of Minnesota Imprints,
1848-1865, Chicago: The Historical Records Survey.

- Work Projects Administration, The Minnesota Arrowhead Country, Writer's
1942 Program, Chicago: Albert Whitman Co.
- Works Projects Administration, Report of the Chippewa Missions.
1941
- Aitkin County, Minnesota Park Commission, The Mighty Mississippi.
- Aitkin Independent Age, Pioneer Supplement, 16 pages.
1951, June 28
- Ayer, Elizabeth T., (probable author), "Frederick Ayer, Teacher and
Missionary to the Ojibway Indians 1829 to 1850," Collections
of the Minnesota Historical Society, VI, 429.
- Greer, Clifford, Twelve Poses West, Published by O.L. Johnson, McGregor,
1967 Minnesota.
- Hart, Evan A., Minnesota's Big Sandy Lake, Milwaukee.
1951
- Hart, Irving H., "An Amateur Archaeologist in Northern Minnesota,"
1956, Apr Minnesota Archaeologist, 20, 1-18.
- Hart, Irving H., "The Site of the Northwest Company Post on Sandy Lake,"
1926 Minnesota History, VII, 311-325.
- Holmquist, June D., A Supplement to the History Along the Highways. An
1973 Official guide to Minnesota Markers and Monuments, 1967-1972.
Minnesota Historical Society, St. Paul. Minnesota Historic
Sites Pamphlet Series #6.
- Hunt, Ron, A Living Past, Minnesota Historical Society, St. Paul.
1973
- Ingersoll, W.P., Minnesota History.
1926, Dec
- Johnson, Elaine, "A Pair of Scales; a Drama of Early Minnesota, the
1935 Reaction of Northern Minnesota Indians to the Missionary
Efforts of Edmund Franklin Ely," Macalester College, at
Minnesota Historical Society.
- Johnson, Kathryn, "Edmund F. Ely," Term thesis, University of Minnesota-
1946 Duluth, at Minnesota Historical Society. Based on original
diaries of the Presbyterian missionary to the Chippewa,
1833-1849.
- Keithan, Rollo C., "The American Fur Company in the Upper Mississippi
1929 Valley," M.A., University of Minnesota.
- Lothson, Gordon Allen, "Burial Mounds of Mille Lacs Lake Area," M.A.,
1972 Anthropology Department, University of Minnesota.
- Minnesota Historic Sites Pamphlet Series, Ed. Russell Fridley, History
1967 along the Highways, Minnesota Historical Society, St. Paul.

Minnesota Historical Society, Big Sandy Lake file, 2 miscellaneous items.

Nelson, Oruis, Historical Highlights of Big Sandy Lake and Savanna Portage 1945
in the Minnesota Arrowhead, Duluth, Minnesota.

Nicollet, Joseph N., Report Intended to Illustrate a Map of the Hydrographical Basin of the Upper Mississippi River. Senate Document, 1237, 26th Congress, 2nd session (serial 380).

Newspapers:

Aitkin Age - founded in 1883.

The Aitkin Independent Age - founded in 1902.

The Aitkin Republican

Hill City News

Aitkin County Reminder, 1947-1950.

Nute, Grace Lee, Ed., "The Diary of Martin McLeod," Minnesota Historical Bulletin, IV, 379 map.
1921-22

Nute, Grace Lee, "The Edmund Franklin Ely Papers," Minnesota History,
1925 VI, 344-348.

Nute, Grace Lee, Posts in the Minnesota Fur-Trading Area, 1660-1855,
1930 Minnesota History, XI, 371.

Perrault, Jean Baptiste, "Narrative of the Travels and Adventures of a Merchant Voyageur," Historical Collections and Researches Made by the Michigan Pioneer and Historical Society, XXXVII, 521-524, 530, 574 and map facing p. 519.

Pike, Zebulon, The Expeditions of Zebulon Montgomery Pike, to Headwaters of the Mississippi River, (Coues ed.) pp. 138, 139, 281; also see Folwell, History of Minnesota, I, 90-100; Upham, Minnesota in Three Centuries, I, 329-348; Blegen, Building Minnesota, pp. 66, 78, 79.

Riggs, Stephen R., "Protestant Missions in the Northwest," Collections of the Minnesota Historical Society, VI, 121.

Rossman, L.A., "Up in This Neck of the Woods," A column in the Herald Review, Grand Rapids.
1940's, 50's

Schiavo, Giovanni, The Italians in America Before the Civil War.

Schoolcraft, Henry R., Summary Narrative of an Exploratory Expedition to the Sources of the Mississippi River in 1820.

Singley, Grover, Tracing Minnesota's Old Government Roads, Minnesota Historical Society, Minnesota Historic Sites Pamphlet Series #10.
1974

Smith, Alice, "The Fur Trade West of Lake Michigan, 1760-1769, A Study of the Trade Over the Fox-Wisconsin Route to the Region West," M.A. University of Minnesota pp. 1926-96, Bib. 81-96.

Spates, (Samuel) Papers, 1841-1910. Contains his diary of a trip to Sandy Lake in 1841, in Manuscript collection of Minnesota Historical Society.

Traders and Explorers on Big Sandy Lake--For general reference see Folwell, History of Minnesota, I, 95,105,111,117,123,125; Blegen, Building Minnesota, pp. 75,76,89,92-96; Upham, Minnesota in Three Centuries, I, 348-352,354-356,358-375,383.

Schoolcraft, Henry R., Summary Narrative of an Exploratory Expedition to the Sources of the Mississippi River in 1820. For Beltrami, see Giovanni Schiavo, The Italians in America Before the Civil War; for Nicollet, see Joseph N. Nicollet, Report Intended to Illustrate a Map of the Hydrographical Basin of the Upper Mississippi River, S. Document 237, 26th Congress, 2nd session (serial 380).

United States Geographical Survey, Topographic Map of Minnesota.

The Papers of Mr. Hart and Mr. Ingersoll:

Mrs. William P. Ingersoll and her son Charles possess a large collection of letters between Mr. Hart and Mr. Ingersoll. Although these communications are personal in places, they contain a rich source of historical materials and documentation on Aitkin County. In addition to the letters there are many unpublished manuscripts and a large collection of published articles and books. In the former category is William P. Ingersoll's; "Old Timers at Libby and Sandy Lake." Some hard to obtain published materials include: The Northwest Company Post, Sandy Lake, 1794. Published by the Minnesota Historical Society Dig. September, 1960. Ingersoll's excellent map of Big Sandy Lake is available from Mrs. Taylor at Taylor's Antiques in Prairie River. The Postal Address however is McGregor. Evan A. Hart's "A Penny for your thoughts," Lore, Vol. 8, #3 (Summer, 1958), 49-56, (Published by the Milwaukee Public Museum) provides some detail about personalities and historical events not available anywhere else. For similar detail see Hart's "The Story of Beenogwa, Daughter of a Chippewa Warrior," Minnesota History Quarterly, Vol. 9, #4 (December, 1928). For further information on the Portage, see Hart's "Savanna Portage Expedition," in The Conservation Volunteer, (Official Bulletin, Minnesota Department of Conservation), Vol. 27, #155 (March-April, 1964), 49-56.

Mrs. William Ingersoll has worked for many years with the Aitkin County Historical Museum. She and her son Charles have prepared a case on Indian artifacts found at Big Sandy. Any further investigation of the area should take advantage of the kindness, hospitality, and knowledge that the Ingersolls offer.

Interviews and Conversations:

Clifford Greer in McGregor
Mrs. Ingersoll, Aitkin

Museums:

Minnesota Historical Society, St. Paul, Minnesota
Aitkin County Historical Society, Aitkin, Minnesota

APPENDIX F
Catalogue of Recovered Material

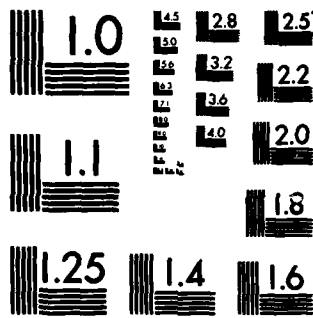
(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

A77:24
Big Sandy Lake
Aitkin Co., Minn.

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21 AK 6 8/25/77	A77:24:1	1 possible flake - jasper		surf.	
21 AK 7 8/22/77	24:2	8 waste flakes - 4 quartz, 2 jaspilite, 1 chert, 1 quartzite		surf.	
21 AK 8 9/20/77	24:3	4 body sherds CWP-grit temper		surf.	
21 AK 9 9/14/77	24:4:1	9 rim sherds Sandy Lk (8 shell tempered, 1 grit tempered) 6 near rims (5 shell tempered bosses, 1 grit tempered, large CWP, dowel impressed) 65 body sherds (31 shell tempered, 34 grit tempered) 18 waste flakes (12 quartz, 4 jasper, 2 chert)		shovel test No. 1 60 cm.	
		14 bone frags (6 burnt, 3 turtle carapace) 4 charcoal frags			
21 AK 9 9/14/77	24:4:2	2 body sherds (1 shell tempered Sandy Lk grit tempered, fabric impressed) 2 waste flakes - jasper		shovel test No. 2 40 cm.	
21 AK 9 9/18/77	24:4:3	6 waste flakes (5 quartz, 1 chert)		eroded bank south end of island surf.	
21 AK 11	24:5:2:1	5 waste flakes (3 quartz, 1 chert, 1 brown chalcedony)	Test pit #2	level 0-10cm	

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEETA77:24
Big Sandy Lake
Aitkin Co., Minn.

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21 AK 11 9/6/77	A77:24:5: 2:2	1 pottery frag (grit tempered, 17 waste flakes (10 quartz, 2 jaspilite, 5 chert) 10 bone frags (1 fish vest, 1 fin, 7 burnt)	Test pit #2	level 2 10-20cm	
21 AK 11 9/6/77	24:5:2:3	16 waste flakes (13 quartz, 1 quartzite, 2 jaspilite)	test pit #2	level 3 20-30cm	
21 AK 11 9/6/77	24:5:2:4	7 waste flakes (1 basalt, 5 quartz, 1 chert) 2 bone frags (burnt)	test pit #2	level 4 30-45cm	
21 AK 11 9/6/77	24:5:2:5	4 waste flakes (3 quartz, 1 jaspilite) 1 bone frag	test pit #2	level 5 45-55cm	
21 AK 11 9/6/77	24:5:3:1	3 body sherds (2 CWP, shell tempered, 1 CWstick impr., grit tempered) 3 waste flakes (2 quartz, 1 jaspilite 7 rock frags (fire-cracked?)	test pit #3	level 1 0-10 cm	
21 AK 11 9/6/77	24:5:3:2	2 body sherds (2CWP grit temp.) 9 waste flakes (3 quartz, 2 gray chalcedony, 1 quartzite, 1 basalt, 2 jaspilite) 7 rock frags (fire-cracked?) 1 round nail	test pit #3	level 2 10-20cm	



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEETA77:24
Big Sandy Lake
Aitkin Co., Minn.

TIME & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21 AK 11 9/6/77	24:5:3:3	1 rim sherd (Black Duck grit temp) 1 body sherd (vertical come, Black Duck, grit-temp) 1 round nail	test pit #3	level 3 20-30cm	
		1 bone frag 4 waste flakes (2 basalt, 2 chert)			
21 AK 11 9/6/77	24:5:3:4	1 body sherd (CWP-grit) 8 waste flakes (5 quartz, 2 quartzite, 1 chert) 4 rock frags (firecracked?)		level 4 30-40cm	
21 AK 11 9/6/77	24:5:3:5	1 burnt turtle carapace frag 5 waste flakes (2 quartzite, 2 quartz, 1 jaspilite) 5 rock frags (firecracked?)	test pit #3	level 5 40-50cm	
21 AK 11 9/6/77	24:5:4	Sterile	test pit #4		
21 AK 11 9/6/77	24:5:5:1	16 rock frags (firecracked?), 1 pot (body) sherd (split - grit - temp) 4 waste flakes (3 quartz, 1 chert)	test pit #5	level 1 0-10 cm	
21 AK 11 9/6/77	24:5:5:2	20 bone frags (some cut-historic) 1 round nail 10 rock frags 1 gray chert flake	test pit #5	level 2 10-20cm	
AK 11 9/6/77	24:5:5:3	3 body sherds - smooth grit tempered 4 rock frags	test pit #5	level 3 20-30cm	

A77:24

Big Sandy Lake

Aitkin County, MN.

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21 AK 11 9/7/77	24:5:6 level 1	5 pieces green bottle glass 21 fragments glass bottle purple tint 7 clear glass fragments 1 rim section white porcelain cup	test pit #6	level 1 5-10cm	
		1 base fragment porcelain dark blue - vessel 11 blue and white porcelain cup 1 rim, 2 base sections 1 crock frag. crown exterior gray interior			
		5 pieces of rectangular cans 1 piece window screen 1 lid "Copenhagen" snuff 1 square iron nail 12 round nails various sizes			
		2 bone frags. - 1 mammal, 1 fish 2 rock fragments			
21 AK 11 9/7/77	24:5:6 level 2	59 frags (bottle) glass (clear) 8 frags amethyst tint glass (bottle) 2 frags thick green glass	test pit #6	level 2 10-20cm	
		(1 rim) 8 frags thin green glass (bottle) 2 frags white modern china (saucer)			
		3 frags blue and white cup (handle frag) 2 frags white glass 2 frags gray crockery 1 suspender hook			
		1 metal shoe eyelet 3 pieces lead tin 5 frags tin stuff can 5" length iron rod 2 iron spikes (1 lge, 1 sm)			
		11 round nails, various sizes 29 bone frags (modern, 3 burnt) 1 frag clam shell hinge 9 waste flakes			

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

A77:24

Big Sandy Lake
Aitkin Co., Minn.

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK11 9/7/77	24:5:6:3	4 frags white saucer 1 piece unknown composition with circular impression 2 frags glass (1 clear, 1 agna)	test pit #6 only re- moved west 1/4 of unit	level 3 20-30cm	
		6 round nails (var. sizes) 10 bone frags (8 ribs) 1 frag of end scraper (chert) 3 flakes (rock)			
21AK11 9/8/77	24:5:9	1 frag window glass 1 metal frag 4 frags mortar (schoolhouse) 1 frag brick	test pit #9	no levels	
		1 frag plaster 6 round nails (var. sizes)			
21AK11	24:5:13	1 jaspilite flake	test pit #13	no level	
21AK11	24:5:14	3 body sherds (CWP grit temp) 6 waste flakes (2 quartz, 1 quartzite, 3 basalt) 8 bone frags (2 tooth frags,	test pit #4	no level	
		1 fish jawfrag) 3 tin can frags 2 sq. nails 1 screw 1 china frag			
21AK12 9/1/77	24:6:1	1 piece burnt bone 4 waste flakes (1 quartz, 2 quartzite, 1 chert) 15 rock frags	shovel test #1	no levels	
AK12 9/4/77	A77:24:6: 2	10 waste flakes (5 quartz, 3 quartzite, 2 basalt) 2 frags quartz 1 piece unworked native copper	shovel test #4	no levels	

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

A77:24
Big Sandy Lake
Aitkin Co., Minn.

TIME & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK13 9/12/77	24:7:1	1 rim sherd (bossed-grit temp CWP) 1 body sherd (CWP-grit temp.) 12 waste flakes (5 quartz, 6 quartzite, 1 chert) 2 bone frags (burnt)	Test pit #1	no levels material found on A-B horizon interface	
21AK14 9/12/77	24:8:1	2 flakes (quartz) 1 rock frag	shovel test #1	no levels (0-30cm)	
21AK14	24:8:2	1 rim sherd (oblique incizing, CWP grit temp) 8 body sherds (grit temp CWP) 1 projectile Pt (triangular, thin concave base, chert)	shovel test #2		
		10 waste flakes (8quartz, 1 jaspilite, 1 quartzite)			
21AK14 9/12/77	24:8:3	1 flake (gray chalcedony)	shovel test #3		
21AK14 9/12/77	24:8:4	1 flake waste (jaspilite)	shovel test #4	no levels	
21AK14 9/12/77	24:8:5	1 body sherd (smooth C impr. grit temp) 1 end scraper (quartz) 4 flakes (1 quartz, 3 chert)	shovel test #8		
		2 rock frags			
AK15	24:9:1	2 body sherds (CWP shell temp) 1 waste flake - quartz 1 crude bi-faced chopper (sedimentary rock quartzite?)	surface		

A77:24

Big Sandy Lake
Aitkin Co., Minn.(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK15 8/18/77	24:9:2	1 rim sherd (Sandy Lk. shell temp CWP) 16 body sherds (CWP shell temp) 5 waste flakes (3 quartz, 1 jaspilite, 1 chert) 1 burnt bone frag	surface bog #2		
21AK15 9/7/77	24:9:3	1 bi-face tip (jaspilite) 1 flake (jaspilite-retouched)	surface (beach)		
21AK16 9/1/77	24:10	1 near rim (St. Croix stamped dentate, combed interior, grit-tempered) 6 body sherds (CWP, grit-temp) 2 core frags (1 quartzite, 1 basalt, 2 jaspilite) 5 rock frags	surface		
21AK17 9/1/77	24:11	8 body sherds (Sandy Lk., CWP grit temp) 1 end scraper (quartz) 5 waste flakes (4 quartz, 1 gray chert)	surface (garden)		
21AK18 8/22/77	24:12	1 rim sherd (Onamia, grit temp) 3 body sherds (CWP, 2 shell grit) 1 bi-face (chert, gray) 33 waste flakes (22 quartz, 5 jaspilite, 3 quartzite, 1 basalt, 1 gr. chert, 1 agate) 5 misc. rock frags 1 bone frag	surface		
21AK19 9/14/77	24:13:1	1 body sherd (CWP, grit temp)	shovel test #1		

A77:24

Big Sandy Lake

Aitkin Co., Minn.

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK19 9/14/77	24:13:5	1 body sherd (CWP, grit temp) 3 rock frags	shovel test #5	no levels	
21AK19 9/14/77	24:13:9	5 wasteflakes (3 quartz, 1 quartzite, 1 chert) 2 rock frags	shovel test #9	no levels 0-40cm	
21AK19 9/14/77	24:13:10	4 waste flakes (3 quartz; 1 chert) 5 bone frags (burnt)	shovel test #10	no levels 0-40cm	
21AK19 9/14/77	24:13:5	1 retouched flake (bi-lateral, gray chert) 10 waste flakes (6 quartz, 1 quartzite, 1 jaspilite, 1 chert)	surface (beach)		
21AK20	24:14	9 body sherds CWP (7 shell temp 2 grit temp) 1 worked flake (basalt) 13 waste flakes (11 quartz, 1 quartzite, 1 chert)	surface		
21AK21 9/1/77	24:15	1 projectile pt. (triangular brown chalcedony) 1 projectile pt. tip (quartz) 7 waste flakes (6 quartz, 1 chert)	surface (beach and shallows)		
21AK22 8/29/77	24:16	2 body sherds (CWP-shell temp) 2 waste flakes (1 chert, 1 jaspilite) 2 rock frags	shovel test #1	no levels	
21AK23 8/29/77	24:17	3 body sherds (1 thick base frag, smooth-grit temp) end scraper worked on all but basal face (gray chert)	surface and shallows	no levels	
		1 possible core (quartzite) 1 waste flake - quartz			

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

A77:24

Big Sandy Lake

Aitkin Co., Minn.

SITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK24 9/5/77	24:18	3 body sherds (smoothed-over net impressed, grit temp) 2 flakes (quartz)	surface		
21AK25 8/23/77	24:19:1	1 rim sherd (Brainerd net- impressed, grit-temp) 35 body sherds (impressed, grit-temp) 7 charcoal frags 1 tooth (deer?) 1 flake (quartzite)	informal test #1	surface 0-1 meter	
21AK25 8/23/77	24:19:2	1 body sherd (split grit temp)	informal test #2		
21AK25 8/23/77	24:19:3	1 body sherd (grit temp) "crum"	informal test #4		
21AK26 9/7/77	24:20	10 body sherds (CWP) grit temp 1 proj. point - triang., quartz 7 flakes - 4 quartz, 2 chert, 1 milky calchedony		surface	
21AK27 9/15/77	24:21:1	1 proj. point - side notched quartz (white) 5 flakes - quartz		surface (shallows West shore)	
21AK27 9/15/77	24:21:2	12 flakes - quartz		surface (shallows East shore)	
AK30 9/23/77	24:22:1	1 rim sherd (split interior, grit temp, Black Duck) 16 body sherds (smooth, grit temp) 3 body sherds (CWP, grit temp)	shovel test #1	0-50cm	

A77:24

Big Sandy Lake

Aitkin Co., Minn.

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

DATE & DAY	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(3) FIELD (2) NEG. FILE
21AK30	24:22:1 continued	18 waste flakes (5 quartz, 8 quartzite, 5 chert) 1 burnt bone frag	shovel test #1	0-50cm	
21AK30 8/23/77	24:22:2	18 body sherds (4 CWP-shell temp, 14 CWP grit temp) 1 proj. pt. (triangular, quartz) 1 end scraper (br. chalcedony) 25 waste flakes (7 quartz, 3 jaspilite, 4 basalt, 8 chert, 3 quartzite) 1 large grey chert flake - possible retouch 2 rock frags (firecracked?) 11 bone frags (9 burnt)	shovel test #2	0-60cm	
		10 charcoal frags 1 native copper - worked (aft 60 cm deep)			
21AK30 8/23/77	24:22:3	1 rim sherd (Sandy Lk., shell temp, CWP) 4 body sherds (CWP, 3 grit, 1 shell tempered)	shovel test #3	0-80cm	
		11 waste flakes (6 quartz, 5 basalt) 2 bone frags burnt, 1 wood frag (burnt)			
21AK31 8/23/77	24:23	2 body sherds (shell temp CWP)	surface		
21AK32 8/23/77	24:24:1	1 body sherd (CWP grit temp)	shovel test #2	0-20cm	
AK32 8/22/77	24:24:2	14 body sherds (CWP, 7 shell, 7 grit temp) 1 end scraper (lge. quartz) 5 waste flakes (3 quartzite,		surface (beach)	

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

A77:24

Big Sandy Lake
Aitkin Co., Minn.

ITE & DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
	24:24:2 continued	1 quartz, 1 basalt: 1 bone frag burnt			
21AK33 8/22/77	24:25:	2 quartzite flakes 1 chert scraper		surface	
21AK36 8/24/77	24:26:1	8 body sherds (smooth, CWP, grit tempered, 5 split) 31 waste flakes (13 quartz, 8 quartzite, 7 chert, 1 agate, 1 brown chalcedony, 1 obsidian) 11 bone frags burnt	shovel test #1	0-80cm	
21AK36 8/24/77	24:26:2	17 waste flakes (10 quartz, 2 slate, 3 jaspilite, 2 chert) 1 quartz rock frag 3 burnt bone frags	shovel test #2	0-40cm	
21AK36 8/24/77	24:26:3	1 jasper flake 1 CWP grit temp body sherd 1 large body sherd (CWP shell temp) 3 waste flakes - quartz	surface		
21AK36 8/24/77	24:26:4	13 body sherds (CWP grit temp) 5 waste flakes (2 quartz, 3 quartzite) 1 split beaver incisor	surface under Burger cabin		
21AK36 8/24/77	24:26:5	1 body sherd (CWP, grit temp) 1 quartz frag	shovel test #6	no level	
21AK37 8/24/77	24:27	1 smooth grit rim sherd 1 smooth finger impressed near rim, grit temp	shovel test #2	0-60cm	

A77:24

Big Sandy Lake

Aitkin Co., Minn.

(1) FIELD SPECIMEN SHEET OR
(2) PHOTOGRAPHIC DATA SHEET

DATE	NO.	(1) DESCRIPTION AND ASSOCIATION (2) SUBJECT AND DESCRIPTION	LOCATION	DEPTH	(1) FIELD (2) NEG. FILE
21AK38 9/13/77	24:28	1 proj. pt. steamed - contracting base, gray chert 1 bifacially flaked (unilateral) knife (basalt, waterworn) 12 waste flakes (9 quartz, 1 chert, 2 quartzite)	surface		
21AK39 9/15/77	24:29:1	1 CWP body sherd (shell temp) 3 waste flakes - 2 quartz, 1 chert (white) 1 gray chert flake	shovel test #1	no depth	
21AK39 9/15/77	24:29:2	1 kaolin pipe frag 1 quartzite knife 1 jasper flake 16 quartz flakes 1 basalt flake large	shovel test #2	no depth	
21AK39 9/15/77	24:29:3	35 CWP grit body sherds 29 jasper frags 2 modern glass frags 3 flakes quartz	shovel test #3 northernmost tip of island	0-80cm	
		3 flakes basalt 3 flakes gray chert 1 bone frag.			

END

FILMED

386

DTIC