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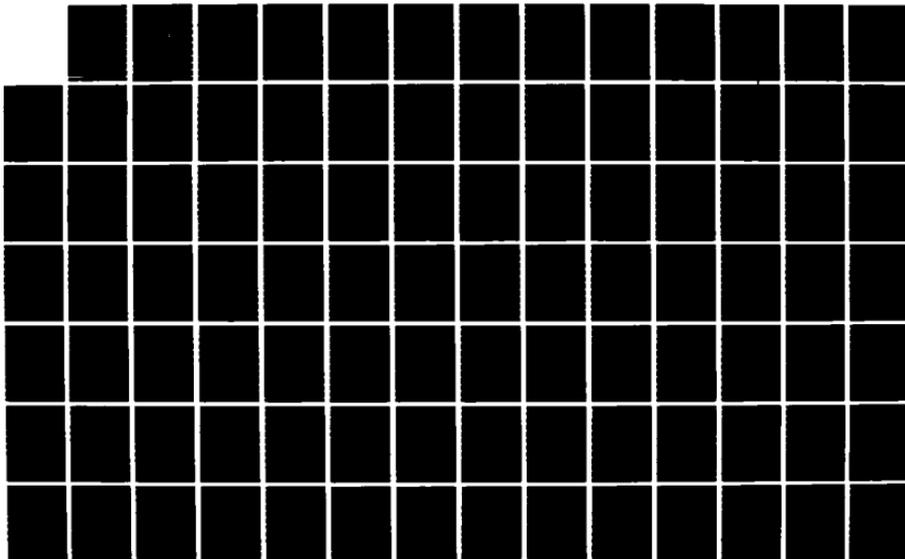
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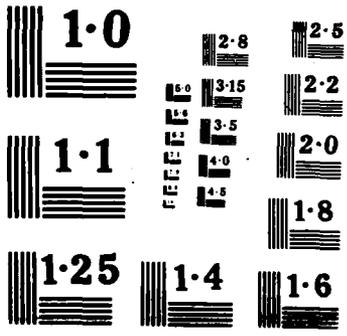
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Archaeological and Historical Reconnaissance and Literature
Search of Cultural Resources Within the Pembina River Project
Pembina and Cavalier Counties,
North Dakota

VOLUME 1

by

Kenneth L. Brown
Marie E. Brown
Karen P. Zimmerman

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Principal Investigator
Kenneth L. Brown

A Cultural Resources Project Conducted for the St. Paul District
U.S. Army Corps of Engineers: Contract No. DACW37-81-C-0040

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<p>- This report describes archaeological and historical investigations in selected portions of the Pembina River project in Cavalier and Pembina counties, North Dakota. Greater than a 25 percent field reconnaissance survey was performed in the proposed floodway control structures. Investigations yielded 12 newly discovered sites in additions to 17 previously recorded sites. Thirteen of the 17 previously recorded sites were reexamined and surface collections made.</p> <p>Research revealed the presence of human occupation in the project domain for at least the past 11,000 years. Prehistoric components represented include a possible Paleo-Indian site and Late Archaic, Woodland and Blackduck occupations. Historic sites include possible Metis campsites, early trading posts, a massacre site, farmsteads, an early grist mill and bridge, a prehistoric and historic fish trap, a brick plant, and locations of early communities. Specific recommendations are presented for each of the project alternatives.</p>			
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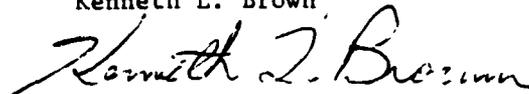
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ABSTRACT

This report describes archaeological and historical investigations conducted in July and August of 1981 in selected portions of the Pembina River project in Cavalier and Pembina Counties, northeastern North Dakota. The University of South Dakota Archaeology Laboratory entered into contractual agreement with the St. Paul District Corps of Engineers in conducting an extensive literature and records search and archaeological and historical field reconnaissance of selected portions of the project domain.

Greater than a 25 percent field reconnaissance survey was performed in the proposed floodway control structures, Alternatives 4 and 5, which yielded prehistoric and historic sites and find spots which contain minimal cultural or paleontological remains. One site, the Gingras House and Trading Post, was previously recorded.

Investigations in the Pembina reservoir domain and adjacent lands yielded 12 newly discovered sites in addition to 17 previously recorded sites. Thirteen of the 17 previously recorded sites were reexamined and surface collections were made.

Three local artifact collectors were contacted and their collections were examined. Local historians were interviewed and historical societies records were researched. The archaeological and historical research revealed the presence of human occupation in the project domain for at least the past 11,000 years. Prehistoric components represented include a possible Paleo-Indian site and Late Archaic, Woodland, and Blackduck occupations. Historic sites include possible Metis campsites, early trading posts, a massacre site, farmsteads, an early grist mill and bridge, a prehistoric and historic fish trap, a brick plant, and locations of early communities within the project domain.

A number of hypotheses are formulated concerning changes in prehistoric and historic settlement and subsistence patterns for the lower Pembina River valley. Descriptions of changes which have occurred, through time, in the economic and technological systems are presented.

Recommendations are presented for management and mitigating construction activities upon known cultural resources. Specific recommendations are presented for each of the five project alternatives.

MANAGEMENT SUMMARY

During the summer of 1981 the University of South Dakota Archaeology Laboratory entered into contractual agreement with the St. Paul District Corps of Engineers to conduct a phase I cultural resources investigation in selected portions of the Pembina River project in Cavalier and Pembina Counties, northeastern North Dakota. Field work was initiated in July and was completed in October, 1981. The project entailed a 25 percent pedestrian reconnaissance of lands within proposed floodway control structures and field checking previously recorded sites within the proposed Pembilier dam and lake project domain. Literature and records searches were extensive, as well as the pedestrian reconnaissance within the 25 percent sample domain. Records were examined at the North Dakota State Historical Society and the Pembina County and Cavalier County courthouses. Libraries used include the North Dakota State Historical Society in Bismarck, the Pembina and Cavalier county public libraries and historical societies, and the I.D. Weeks Library on the campus of the University of South Dakota.

Nineteen local residents were interviewed because of their knowledge of the prehistory and history of the project area. People interviewed include John and JoAnn Erickson, Bill Robbins, Lloyd Danielson, Ken Morden, William Hillier, Denis Martin, W.J. Sturlaugson, Kathryn Grube, Lawson Paton, Paul Crary, Leon Dubourt, Carl and Ivy Kartes, Rita Maissel, Emma Hahn, Willis Peterson, Jay Wessels and Ted Dunnigan.

Field work, consisting of intensive pedestrian reconnaissance with shovel testing and interviews with local artifact collectors resulted in recording 42 new sites and 13 find spots. The five proposed alternatives contain the following number of sites which will be directly and/or indirectly adversely impacted by construction activities:

- 1) Alternative 1, the Pembilier Dam and Reservoir has a total of 28 recorded sites. Four sites will be permanently inundated and 19 sites will be periodically inundated by impounded floodwaters. It is recommended that all 28 sites are potentially eligible for nomination to the National Register and should be further investigated to determine the presence or absence of significant subsurface cultural remains;
- 2) Alternative 2, the Pembilier dry dam has a total of 23 recorded sites which will be adversely impacted by impounded floodwaters. All 23 sites are potentially eligible for nomination to the National Register and are recommended for further investigation to determine the presence or absence of significant subsurface cultural remains;
- 3) Alternative 3, the Pembilier Dam and marsh has a total of 23 recorded sites. All 23 sites are potentially eligible for nomination to the National Register and are recommended

for further investigation to determine the presence or absence of significant subsurface cultural remains;

4) Alternative 4, the small diversion dam and boundary floodway channel east of Walhalla has a total of 17 known sites and find spots. Six sites are recommended for further investigation to determine the presence or absence of significant subsurface cultural remains. One site, 32PB25, is a possible Paleo-Indian site which will be adversely impacted by construction activities. This is the only known Paleo-Indian site recorded in the region and is one of the 6 sites recommended for further investigation;

5) Alternative 5, the Pembilier Dam and Reservoir in conjunction with a diversion dam and boundary floodway channel near Neche, will adversely impact 45 known sites and find spots. Thirty-seven sites are recommended for further investigation to determine the presence or absence of significant subsurface cultural remains.

Nine known sites are considered significant and are recommended for eligibility for nomination to the National Register. Four sites and 5 sites are located within Pembina and Cavalier Counties, respectively. Site 32PB8 appears to contain Late Archaic and Plains Woodland components based upon stylistic attributes of two projectile points. The large quantity of Bison bison remains suggests this may be a kill and/or butchering site. If so, this is one of only a few kill/butchering sites recorded in the region.

Site 32PB19 contains a prehistoric Blackduck occupation based upon recovered pottery and a mid to late 19th century historic occupation based upon ceramics and glass bottle necks.

Site 32PB25 contains a possible Paleo-Indian (Clovis) occupation, based upon a projectile point and chipped stone artifacts collected from the surface by Mr. Jay Wessels, and a historic occupation. The historic occupation appears to be insignificant, but the possible Paleo-Indian occupation is the only one known in the project region and is considered significant.

Site 32PB31 contains a prehistoric occupation of unknown cultural affiliation and a historic, mid to late 19th century occupation. The historic occupation is attributed to Charles Grant's house and trading post, built in 1859 and destroyed by fire in 1880.

Site 32PB101 is the Gingras' House and trading post, which is currently on the National Register as the oldest standing Euro-American structure in the state of North Dakota.

Site 32CV11 is the location of the Mayo Brick factory, associated residences and Fargo bridge. The Mayo Brick factory was established in 1904 and was abandoned by 1910. This site is an important regional landmark and is unusual for North Dakota because it is the only brick factory to use the Cretaceous shales.

Site 32CV12 is the location of a historic fish trap, dam, bridge, grist mill, and store. The site is an important local landmark and is considered significant in the early Euro-American settlement of the region.

Site 32CV204 contains prehistoric Late Archaic and Late Woodland/Blackduck occupations and a historic Euro-American occupation. A dense scatter of artifacts indicate a substantial Blackduck occupation. The historic occupation may be associated with the nearby Mayo Brick factory.

Site 32CV205 contains a prehistoric occupation of Late Woodland/Blackduck affiliation. The fairly dense surface scatter of artifacts suggests a substantial occupation.

Site 32CV217 contains a prehistoric Late Woodland/Blackduck occupation. A large quantity of artifacts has been collected from the surface of the site by Mr. Carl Kartes, a local collector. The prehistoric occupation appears to be substantial and significant.

Predictions for site locations were determined by using soil associations for sites located in Pembina County and topographic features for sites located in Cavalier County. Using all recorded sites and find spots for each county and soil classifications developed by the Soil Conservation Service, the following correlations were delineated:

For Pembina County, prehistoric sites are most frequently associated with soils with none-to-slight campsite impediments. Prehistoric sites are occasionally associated with soils with moderate-to-severe and severe impediments. The latter sites were probably seasonally occupied when high precipitation was least likely. During seasons with high precipitation, these sites would have been uninhabitable. Historic sites are not frequently associated with any particular type of soil association.

In Cavalier County, within the Pembina Mountains, prehistoric sites occur most frequently on colluvial fans while historic sites occur most frequently on bluff and ridge tops. Both prehistoric and historic sites occur at approximately the same frequency on river terraces.

The five structural alternatives for the Pembina River flood control project will have direct impacts upon significant prehistoric and historic cultural resources. Alternative 4 has the least impact upon cultural resources. A total of 17 known sites and find spots will be affected, with 6 sites recommended for further investigation. Alternative 2 would be the second least destructive, with 23 known sites. All 23 sites are recommended for further investigation.

Alternative 3 is the third least destructive, with 23 known sites of which all are recommended for further investigation. Alternative 1 is the second most destructive, with 28 known sites. All 23 sites are recommended for further investigation to determine the presence or absence of significant subsurface cultural remains. Alternative 5 is the most destructive of known cultural resources. The project will

affect 45 known sites of which 37 are recommended for further investigation to determine the presence or absence of significant subsurface cultural remains.

The impacts described above for the construction alternatives are the minimum impacts upon known cultural resources. Additional lands need to be systematically surveyed for the presence or absence of additional cultural resources. The total impacts upon all cultural resources within each alternative is not known, since not all lands have been systematically surveyed.

The present cultural resource investigation indicates the project area has been used extensively by prehistoric and historic peoples. These resources may potentially yield significant information which may help elucidate the culture history of the project area. Therefore, these cultural resources need to be protected for future generations.

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Chapter 1

Project Background

Introduction

This report presents the findings of archaeological and historic investigations within the domain of the Pembina River project, Pembina and Cavalier Counties, North Dakota (Fig. 1). The Pembina River project is being performed by the St. Paul District of the Army Corps of Engineers. During the summer of 1981, The University of South Dakota Archaeology Laboratory entered into contractual agreement, Number DACW37-81-C-0040, in assessing the frequency and significance of archaeological, historical and architectural resources within the project domain.

The sites recorded within Pembina and Cavalier Counties are shown on a series of topographic maps. The index maps (Figs. 2-4) show the position of each of the individual topographic maps (Figs. 5-31).

The work defined herein is called for in the National Historic Preservation Act of 1966 (P.L. 89-665) and is authorized for funding under Public Law 86-523 as amended by Public Law 93-291. The work provides documentation evidencing compliance with Executive Order 11593 "Protection and Enhancement of the Cultural Environment" dated 13 May, 1971, Section 2(a).

The Pembina River Project

The purpose of the proposed Pembilier lake and dam project is to reduce economic damage and social problems associated with floods on the Pembina River. Five alternatives are being considered.

Alternative 1: The construction of the Pembilier dam and reservoir which will be located about two miles upstream from Walhalla. The dam will be constructed of rolled-earth. The reservoir will have a permanent conservation pool extending upstream about 15.3 kilometers (9.5 miles) at an elevation of 308 meters (1010 feet) above mean sea level. The flood pool will extend upstream approximately 34 kilometers (21 miles) at an elevation of 329 meters (1080 feet) above mean sea level. The reservoir will provide for flood control, water supply, and recreation.

Alternative 2: The construction of the Pembilier dam with rolled earth construction. There will be no permanent conservation pool and water will be stored only as needed to prevent or minimize downstream flooding during high flows. The flood pool elevation will be the same as for Alternative 1, 329 meters (1080 feet) above mean sea level.

Alternative 3: The construction of the rolled-earth Pembilier dam and permanent impoundment of enough water to create a marsh. The flood pool elevation will be the same as for Alternative 1, 329 meters (1080 feet) above mean sea level.



Alternative 4: The construction of a boundary floodway located about three miles downstream from Walhalla. The structure will consist of a small diversion dam across the Pembina River and a floodway excavated from the small diversion dam, north to the International Boundary, and then east along the International Boundary for a distance of about 48 kilometers (30 miles) to the junction with the Red River of the North, just downstream from Pembina.

Alternative 5: Construction of a boundary floodway located just upstream from Neche. The structure will consist of a small diversion dam across the Pembina River and a floodway excavated from the small diversion dam, north to the International boundary, then due east for a distance of 35.5 kilometers (22 miles) to the junction with the Red River of the North just downstream from Pembina. This floodway will be used in conjunction with a reduced-size Pembilier dam constructed of rolled-earth. The conservation pool elevation will probably be the same as for Alternative 1, 308 meters (1010 feet) above mean sea level, and the flood pool may drop to 326 meters (1070 feet) above mean sea level.

Level of Effort

Investigations during the project were conducted over a period of nine months. Field work was conducted in August and October, 1981, by a crew of five persons.

The archaeology crew was supervised by Kenneth Brown and Marie Brown. Crew members were Bill Ranney and Bill Nelson. The historian was Karen Zimmerman. Laboratory analyses of cultural remains recovered during field investigations were done from September, 1981, until April, 1982. A modification to the contract was made in January, 1982, to extend the report due date from February to April 30, 1982. A draft of the report of findings was submitted to the Corps of Engineers the first week of May, 1982.

The amount of human effort directed toward the completion of this project amounts to greater than 446 person-days (3,568 person-hours). This level of effort can be divided into the field work, laboratory analysis, and report writing. The figures in Table 1 do not include all of the volunteer hours which went toward the completion of this report.

TABLE 1

Level of Effort Toward the Completion of the Project

<u>Field Work</u>	<u>Person Days</u>	
Archaeological Reconnaissance	88	
Historical Literature & Records Searches	<u>22</u>	
Sub-Total	110	110
<u>Laboratory Work</u>		
Archaeological Analysis	110	
Historical Literature Search	<u>10</u>	
Sub-Total	120	120
<u>Report Preparation</u>		
Archaeological Writing	110	
Historical Writing	40	
Illustrations and Maps	22	
Typing and Editing	<u>44</u>	
Sub-Total	216	<u>216</u>
		Grand Total 446



Environmental Background

Introduction

The lands affected by construction of the Pembilier Dam alternatives are within Cavalier County in an area known as the Pembina Hills. The proposed floodways, in Pembina County, are located on lands known as the Red River Valley and Glacial Lake Agassiz Plain. The following is a brief description of these topographic regions.

Pembina County, Glacial Lake Agassiz Plain

Topographically, the glacial deposits in Pembina County formed five major land areas: 1) the Pembina Escarpment; 2) the Pembina Delta; 3) the sand deposits and gravel beaches; 4) the Edinburg moraine; and 5) the lake plain.

The Pembina Escarpment is a topographically hilly strip separating the glacial uplands to the west from the glacial lake plain. The escarpment is underlain by weathered cretaceous shales overlain by glacial till. There are many small streams dissecting the escarpment. The vegetation cover is indigenous forest.

The Pembina Delta parallels the east edge of the escarpment, particularly in the northwestern part of the county at Walhalla. The delta was formed by the Pembina River as it emptied into Glacial Lake Agassiz during its higher lake levels. The delta is formed by deep deposits of shaly sand and shaly gravel.

Most of the rest of Pembina County is within the bed of Glacial Lake Agassiz. Glacial Lake Agassiz was formed by melting glacial ice waters of the Wisconsin Glacier about 15,000 years ago. With the retreat of glacial ice, Glacial Lake Agassiz diminished in size. During this period, beaches were formed by wave action and the lowering of the lake waters. The soils are sandy and gravelly in the western part of Pembina County, and finer textured in the eastern part of the county.

Cavalier County, the Pembina Hills

Good et al. (1980:7-8) present a brief description of the formation of the Pembina Hills. Topographically, the Pembina Hills are a slightly rolling area dissected by many small streams. The Pembina River gorge was formed during the retreat of the last Wisconsin Glaciation, or ice sheet. Melt water from the retreating glacial ice accumulated in a low lying area in north-central North Dakota and southern Manitoba known as Glacial Lake Souris. Glacial Lake Souris overflowed into the Pembina River, creating the present Pembina River gorge and Little Pembina River gorge. The large quantities of sediments carried by the overflow waters of Glacial Lake Souris were deposited as a delta where the Pembina River

emptied into Glacial Lake Agassiz. The Pembina River delta is located in northwest Pembina County by Walhalla (Arndt 1975; Good et al. 1980:8).

The soils in Cavalier County have not yet all been classified and mapped. The soils of Pembina County have been classified and mapped. The general soil types in Pembina County on which sites occur are shown in Tables 2, 3 and 4 with their associated campsite impediments rating shown in Table 3 (U.S.S.C.S. Survey).

Climate

This part of the United States is classified as a continental climate characterized by cold, dry winters and warm, relatively moist summers. Winters are long and cold. Frontal passages are common throughout the year and rapid fluctuations in temperature can occur over a period of a week. No time of the year can be considered absolutely free of frost or freezing temperatures. "In the 32 year record at Cavalier, freezing temperatures have occurred in every month except July, in which a low of 30 degrees has been recorded" (U.S.S.C.S. 1977:111).

The warmest months are April through October. The average length of the freeze-free period is approximately 120 days. The average annual precipitation is 50.52 cm (19.89 inches) with most precipitation occurring from May through September. Snowfall averages about 94 cm (37 inches), with most occurring from January through March (Table 5).

Thunderstorms occur about 30 days per year. Prevailing winds are northwesterly from November through May and southeasterly from June through October. April is the windiest month, with wind speeds averaging 24 kilometers (15 miles) per hour.

Past Climates

The reconstruction of past environments in a region is complex. One source used by archaeologists is the paleoenvironmental record preserved at sites. This is a reliable method since floral and faunal remains are usually directly related to the prehistoric environment. However, this method is dependent upon the recovery of sensitive environmental indicators, such as pollen or gastropods. Unfortunately, no pollen or gastropods were recovered from any of the prehistoric sites from along the Pembina River. Environmental reconstructions based on macro-faunal and macro-floral remains provide only general characteristics of the past environment.

A second method of environmental reconstruction is based on an analysis of the modern environment of a region. Zawacki and Hausfater's (1969) reconstruction of the vegetation of the Lower Illinois River Valley and Baumler's (1976) reconstruction of the vegetation of the Little Blue River Valley are examples of these types of studies.

TABLE 2

Soils of Sites in Pembina County

<u>Abbreviation</u>	<u>Soil Type</u>
BwB	Binford sandy loam, 3-6% slopes
ByA	Brantford loam, 1-3% slopes
ByB	Brantford loam, 3-6% slopes
ByD	Brantford loam, 9-25% slopes
CaA	Cashel silty clay, 1-3% slopes
CbB	Cashel silty clay, 3-6% slopes
DdA	Divide loam, 1-3% slopes
EmA	Emden fine sandy loam, 1-3% slopes
EmB	Emden fine sandy loam, 3-6% slopes
FaB	Fairdale silty clay loam, 3-6% slopes
Ff	Fargo silty clay
GaA	Gardena very fine sandy loam, 1-3% slopes
GfA	Glyndon silt loam, 1-3% slopes
HfA	Hecla sandy loam, 1-3% slopes
HgE	Hecla and Maddock soils, 9-25% slopes
HmA	Hegne-Fargo silty clays, 1-3% slopes
LrA	La Prairie silty clay loam, 1-3% slopes
LrB	La Prairie silty clay loam, 3-6% slopes
LvD	La Prairie-Fairdale silty clay loams, channeled, 9-25% slopes
MaB	Maddock loamy sand, 3-6% slopes
MbB	Maddock sandy loam, 3-6% slopes
PyA	Poppleton loamy sand, 1-3% slopes
Rp	Rough broken land
Rr	Ryan-Fargo silty clays
SwA	Swenoda fine sandy loam, 1-3% slopes
VwA	Vang-Walsh loams, 1-3% slopes
WaA	Wahpeton silty clay, 1-3% slopes
ZgC	Zell-Gardena very fine sandy loams, 6-9% slopes
ZgD	Zell-Gardena very fine sandy loams, 9-15% slopes

TABLE 3

Soil Types and Camping Impediments

<u>Soil Type</u>	<u>Impediments</u>
Binford	none-to-slight
Brantford	none-to-slight
Cashel	severe
Divide	moderate
Embden	none-to-slight
Fairdale	moderate-to-severe
Fargo	severe
Gardena	none-to-slight
Glyndon	moderate
Hecla	none-to-moderate
Hegne	severe
La Prairie	moderate-to-severe
Maddock	none-to-moderate
Poppleton	moderate
Rough Broken Land	variable
Ryan-Fargo	severe
Swenoda	none-to-slight
Vang-Walsh	none-to-slight
Wahpeton	severe
Zell-Gardena	none-to-moderate

TABLE 4

Soil Associations for Pembina County

Soils on Glacial Lake Plains

Hegne-Fargo
Glyndon
Ryan-Fargo
Bearden-Colvin
Overly-Bearden
Bearden-Glyndon
Bearden-Colvin-Glyndon

Soils on Flood Plains and Low Features

La Prairie-Fairdale
Wahpeton-Cashel

Soils on Outwash, Interbeach, and Delta Areas

Arveson-Hamar-Maddock
Vang-Brantford
Walsh-Waukon-Rolette
Renshaw-Brantford-Claire

Soils on Glacial Till Plains

Lankin-Gilby

TABLE 5

Temperature and Precipitation Averages

<u>Month</u>	<u>TEMPERATURE</u>		<u>PRECIPITATION</u>	
	<u>Average daily max- imum F°</u>	<u>Average daily min- imum F°</u>	<u>One Year in 10 will have less than (inches)</u>	<u>One year in 10 will have more than (inches)</u>
January	12	-7	0.1	1.1
February	19	-3	0.1	0.9
March	32	11	0.1	1.8
April	50	29	0.2	2.9
May	67	40	0.6	4.5
June	76	51	1.3	5.6
July	83	56	0.8	5.5
August	81	54	0.6	5.0
September	70	43	0.4	4.7
October	57	34	0.3	2.6
November	35	18	0.1	1.7
December	21	2	0.1	1.5

Problems are encountered with these types of studies when attempts are made to project modern vegetation patterns into the prehistoric past.

It has been postulated that major environmental events occurred at approximately 7190 B.C., 6500 B.C., 4030 B.C., 2730 B.C., 940 B.C., A.D. 260, A.D. 1190, A.D. 1550, and A.D. 1850 (Bryson, Baerrais, and Wendland 1970:63). The dates of significant environmental change were derived by analysis of radiocarbon dates in ten volumes of Radiocarbon (1959-1968).

Selecting only those dates thought to be significant by the person who wrote the sample description, and which also indicated geologic discontinuities, the number of radiocarbon dates to be analyzed was reduced to 620. The frequency with which the 620 radiocarbon dates fell within each two centuries of the last 10,000 years was counted and subjected to a least-square computer fit of the normal distribution to actual radiocarbon dates. Results showed the radiocarbon dates tended to cluster into the nine major times of discontinuity listed above. These nine major times of discontinuity represent an objective consensus of the times at which major environmental changes occurred (Table 6) (Bryson, Baerris, and Wendland 1970:53-54).

Analysis of the radiocarbon dates was used to construct a postulated "step-like" succession of post-glacial climatic episodes. This climatic model replaced the simpler model of Ernst Antevs which postulated a gradual rise in post-glacial temperatures followed by a gradual fall in temperatures (Antevs 1955).

The climatic model is based partially upon the Blytt-Sernander system widely used in Europe. Climatologists well know that the earth's atmosphere acts as a unit, and a major change in Europe cannot occur without a concurrent change in North America. The results of the changes are usually different. Analysis of radiocarbon dates and bog stratigraphy from Europe correlates with climatic changes in North America, even though the effects of the climatic changes were different. It is assumed that the atmosphere operated in a similar synchronous manner in the past (Bryson and Wendland 1967).

Before describing postulated climatic conditions for the defined climatic episodes, a few terms and concepts need to be explained. The current climate in the Plains is determined by three major air masses: 1) the Maritime Tropical which originates in the American tropics and the Gulf of Mexico; 2) the Mild Pacific which originates in the Pacific Ocean; and 3) the cold Arctic which originates at the Arctic Circle. It is the interaction of these three air masses which determine temperatures and precipitation of regions within the Plains (Bryson and Wendland 1967:274).

The warm Maritime Tropical air carries with it a large quantity of moisture. The cold Arctic air carries little moisture, but when it comes into contact with the warm, moist, Tropical air, precipitation occurs at the juncture of these two opposing air masses. The Mild Pacific air mass can be explained in terms of western topographic features. The western mountains are generally too high to allow the moist, warm Pacific air to cross them. Instead, there are three

TABLE 6

Past Climatic Episodes Postulated by Various Authors

Beginning Dates for Post Glacial Climatic Episodes

Climatic Episode	Baerrets		Bryson		Baerrets		Wendland		Composite
	Bryson 1965	1967	Wendland 1967	1970	Wendland 1970	Bryson 1974	1974		
Recent	A.D. 1880	A.D. 1850						A.D. 1850	
Neo-Boreal	A.D. 1550	A.D. 1550						A.D. 1550	
Pacific	II A.D. 1450	A.D. 1450						A.D. 1450	
	I A.D. 1250	A.D. 1200			A.D. 1190	A.D. 1100		A.D. 1100	
Neo-Atlantic	A.D. 800-900	A.D. 900						A.D. 900	
Scandic	A.D. 300-400	A.D. 400			A.D. 260	A.D. 270		A.D. 270	
Sub-Atlantic	500-600 B.C.	550 B.C.			940 B.C.	810 B.C.		810 B.C.	
Sub-Boreal	III							1620 B.C.	
	II							2290 B.C.	
	I				2730 B.C.	3110 B.C.		3110 B.C.	
Atlantic	IV							4100 B.C.	
	III				4030 B.C.	4100 B.C.		4960 B.C.	
	II				5100 B.C.	5790 B.C.		5790 B.C.	
	I				5780 B.C.	6540 B.C.		6540 B.C.	
Boreal	II				7190 B.C.	7350 B.C.		7190 B.C.	
	I				7700 B.C.			7350 B.C.	
Pre-Boreal					ca. 8550 B.C.	8080 B.C.		8080 B.C.	

dominant routes by which the Pacific air crosses the mountains. These three passages are the least difficult routes to cross through the mountains. The southern route is through what is approximately the border of United States and Mexico. This route carries the greatest flow of Pacific air during the winter when the westerlies are far south. This air crosses southern California and Arizona into the southern Plains, known as the Llano Estacado. This air is seasonally warm and very dry as it descends down the east slope of the mountains.

The central air route follows the Columbia River Valley along the border between Oregon and Washington, the Snake River in southern Idaho, and through the basins in Wyoming. This air is mild and dry and drives a wedge between the Arctic and Tropical air masses as it enters the northern and central Plains. This dry air coincides with the most easterly extension of the grasslands into Ohio and Pennsylvania.

The northern Pacific air route has no broad passes through the Canadian mountains through which to pass. Rather, a vertical movement of the air occurs over the mountains. This air is mild and dry (Bryson 1980). The broad Mississippi Valley system allows unimpeded flow for the Arctic and Tropical air masses. The Pacific air drives a wedge, composed of the three varieties of westerlies, between the Arctic and Tropical air masses. The seasonal dominance and interaction of these five air-flows determines the distribution of plants and animals within the Plains and is the determinant of climatic change (Bryson 1980).

The following are brief descriptions of what the climates may have been like during each of the major climatic episodes postulated by Bryson. Past climates cannot be described in detail; however, using modern mean patterns of airstreams and frontal boundaries to the modern distribution of biota, generalized reconstructions of past climatic patterns can be made.

Late Glacial Climatic Pattern (10,000 B.C. to 8,000 B.C.)

The eastern half of North Dakota was covered by the Laurentide ice sheet of the Wisconsin glaciation at 14,000 B.C. The ice sheet was retreating by 10,000 B.C. to 8,500 B.C. in North Dakota. At this time, as the ice sheet retreated, the boreal forest biota became dominant. The boreal forest extended south into most of Nebraska (Bryson and Wendland 1967:281). The southern edge of the Arctic air mass in winter was tangent to the eastern face of the Rocky Mountains, ran south of the Sand Hills of Nebraska and just north of the Dismal Swamp in Virginia. The northern edge of tropical air in summer would have been tangent to the mountains of eastern Mexico, north to southwestern Kansas and then east through central Pennsylvania. The summer position of the Arctic air mass was probably along the frontal edge of the glacier. The Pacific air mass and westerlies should have been strong in the summer, pushing through northern Illinois, Indiana, Ohio and Pennsylvania.

The winter air entering North Dakota would have been as warm as the present, with air entering from the west and south. Arctic air should have brought less cloud cover and very low relative humidity. The

somewhat warmer, dryer, clear air in winter and strong westerlies in summer should have made droughts more frequent. Within the boreal forest, on well-drained sites and south facing slopes, spruce would have been replaced by plants better adapted to drought.

Pre-Boreal and Boreal Climatic Pattern (8,100 B.C. to 6,500 B.C.)

Pollen diagrams indicate an abrupt transition from Late Glacial to post-glacial pollen assemblages, indicating an abrupt change in the circulation patterns of the major air masses. The collapse of the Late Glacial boreal forest biota occurred about 8,500 B.C. and was replaced by grassland in the central and northern Plains and by jack-pine and red pine forests in northeastern Minnesota and Wisconsin.

This rapid change from boreal forest to grassland could not have been without significant impact on the Big Game hunters of the region. The jack-pine and red pine forests were abruptly replaced by grassland in Minnesota and oak savanna in eastern Wisconsin about 6,500 B.C. Some arctic air must have flowed south during the winter, but strong summer westerlies must have prevailed across North America in the mid-latitudes, extending the drier grassland climate far eastward. The grassland biota existed in close proximity to the glacial ice front.

Atlantic Climatic Pattern (6,500 B.C. to 3,100 B.C.)

Rapid wasting of the glacier ice occurred after 6,000 B.C. The forests extended northward as fast as the ice disappeared. There is no evidence for a tundra or treeless area between the ice and forest (Bryson and Wendland 1967:291). The Pacific air that characterizes the grassland climate expanded northeastward into central Minnesota and towards the Atlantic Ocean. It is postulated that, during the Atlantic Climatic episode, the central and northern Plains were subjected to drought conditions which had a direct impact upon the indigenous human and animal populations. The grasslands probably became dominated by short grasses. Wedel (1964) postulates a virtual abandonment of the short grass Plains by human populations, while Reeves (1973) and Frison (1975) suggest the Plains did support viable human populations. Reeves believes that a focal bison hunting economy prevailed, while Frison postulates a reduction in the human population and adaptation to a more diffuse economy.

Sub-Boreal Climatic Pattern (3,100 B.C. to 800 B.C.)

During the Sub-Boreal climatic episode, there was probably a stronger flow of Arctic air into central Canada which displaced the climate and biota southward. The grassland environment of eastern North Dakota probably became dominated by tall grasses replacing the short grasses. This environment would have been more habitable by indigenous hunters and gatherers.

Sub-Atlantic Climatic Pattern (800 B.C. to A.D. 270)

The winters during the Sub-Atlantic climatic episode would have been stormier and wetter, in addition to wetter and cooler summers. This would have been a partial return to Late Glacial conditions.

Neo-Atlantic Climatic Pattern (A.D. 270 to A.D. 1190)

Conditions similar to the Atlantic Climatic episode started about A.D. 350 to 400. Summer rains extended farther into the southwest and corn-farming became practical across most of the Great Plains. This indicates westerlies were weaker, with an expansion of the boreal forest both north and south. A comparison of summer rainfall with strong westerlies indicates the present-day forest-prairie ecotone between northwestern Minnesota and southern Wisconsin was drier during the Neo-Atlantic climatic episode.

Pacific Climatic Pattern (A.D. 1190 to A.D. 1550)

The westerlies increased at about A.D. 1200. The prairie peninsula extended eastward across Illinois and Indiana. There was reduced Tropical air flow into the northern Plains, reducing summer rainfall. Antelope increased in importance, in relation to bison, in the diet of hunters of western South and North Dakota. Bison became more important in the diet of the Mill Creek people of northwestern Iowa. It is postulated that some of the drought stricken Upper Republican and Nebraska farming people in Nebraska moved northward into South Dakota along the Missouri River. Farming in marginal areas of the western portions of the Plains became impossible.

Neo-Boreal Climatic Pattern (A.D. 1550 to A.D. 1850)

Summers were cool and autumns cold in the eastern United States. Glaciers formed as far south as New Mexico in the Rocky Mountains. There was a general deterioration of climate in the eastern United States during the Neo-Boreal climatic episode.

Recent Climatic Pattern (A.D. 1850 to the Present)

During the past 130 years, the climate in the Plains has been characterized by the return of strong westerlies. There has been less precipitation, with the 51 cm (20 inch) annual precipitation cline shifting from eastern Wyoming and Montana in 1915 to central North Dakota by 1936 (Wedel 1961:84).

The preceding interpretations are an attempt to demonstrate a correlation between past climatic patterns and biota. The literature on past climates and biotic response to climatic change is voluminous and is only highlighted above.

Fauna

Mammals

Data on the early historic fauna of the project domain by early traveler reports indicate that the tall grass prairie sustained a wide variety of animals (Good et al. 1980:9-10). Table 7 lists the most prominent animals found in the project domain. Several mammal species, particularly buffalo (Bison bison), pronghorn (Antilocapra americana), wolverine (Gule luscus), badger (Taxidea taxus), and grizzly bear (Ursus horribilis), were once fairly common in the region but have subsequently been exterminated within the project domain.

Fish

The presence of a fish trap at site 39CV12 indicates the importance of fish to the local diet of the prehistoric and historic peoples inhabiting the region. Table 8 lists the most important fish found in the Pembina River and Table 9 lists the fish families present in the region.

Birds

A large variety of avifauna inhabit the project domain. A large number of these are migratory waterfowl who are seasonal inhabitants. The project domain is within the Mississippi River flyway corridor, which starts on the Manitoba border in central North Dakota and stretches southeastward to the Mississippi River in southeast Iowa and northeast Missouri. From there it extends eastward to the Illinois River and then south to terminate on the gulf coast of Louisiana.

The Mississippi River corridor is used by approximately 2,500,000 dabbling ducks, of which 2,000,000 are mallards, 200,000 are pintails, 125,000 are baldpates, 70,000 are green-winged teals, 50,000 are gadwalls and 20,000 are shovelers. Diving ducks using the corridor start from northwestern Minnesota and Manitoba and Winnipeg Lakes in Manitoba. About 6,000 Canada geese use a corridor from southeastern Manitoba to Silver Lake in Rochester, Minnesota. Approximately 400,000 to 450,000 blue and lesser snow geese migrate through the Mississippi flyway to reach coastal Louisiana (Bellrose 1968). Table 10 lists the birds inhabiting the project domain, some only seasonally.

Flora

Few early explorer and settler accounts mention the flora of the region in detail. Table 11 lists the woody plants found within Pembina and Cavalier Counties. Many of the plants and trees provide substantial quantities of foodstuff which would have been used by the indigenous human populations.

TABLE 7

Mammals Indigenous to the Region

<u>Name</u>	<u>Common Name</u>
<u>Sorex cinereus</u>	Masked shrew
<u>Sorex palustris</u>	Water shrew
<u>Sorex arcticus</u>	Arctic shrew
<u>Microsorex hoyi</u>	Pygmy shrew
<u>Blarina brevicauda</u>	Short-tailed shrew
<u>Condylura cristata</u>	Star-nosed mole
<u>Myotis lucifugus</u>	Little brown myotis
<u>Myotis keenii</u>	Keen's myotis
<u>Lasionycteris noctivagans</u>	Silver-haired bat
<u>Eptesicus fuscus</u>	Big brown bat
<u>Lasiurus borealis</u>	Red bat
<u>Lasiurus cinereus</u>	Hoary bat
<u>Sylvilagus floridanus</u>	Eastern cottontail
<u>Lepus americanus</u>	Snowshoe rabbit
<u>Lepus townsendii</u>	White-tailed jackrabbit
<u>Tamias striatus</u>	Eastern chipmunk
<u>Eutamias minimus</u>	Least chipmunk
<u>Marmota monax</u>	Woodchuck
<u>Spermophilus richardsonii</u>	Richardson's ground squirrel
<u>Spermophilus tridecemlineatus</u>	13-lined ground squirrel
<u>Spermophilus franklinii</u>	Franklin's ground squirrel
<u>Sciurus carolinensis</u>	Gray squirrel
<u>Tamiasciurus hudsonicus</u>	Red squirrel
<u>Glaucomys sabrinus</u>	Northern flying squirrel
<u>Thomomys talpoides</u>	Northern pocket gopher
<u>Geomys bursarius</u>	Plains pocket gopher
<u>Castor canadensis</u>	Beaver
<u>Peromyscus maniculatus</u>	Deer mouse
<u>Onychomys leucogaster</u>	Northern grasshopper mouse
<u>Clethrionomys gapperi</u>	Gapper's red-backed mouse
<u>Microtus pennsylvanicus</u>	Meadow vole
<u>Microtus ochrogaster</u>	Prairie vole
<u>Ondatra zibethicus</u>	Muskrat
<u>Synaptomys cooperi</u>	Southern bog lemming
<u>Synaptomys borealis</u>	Northern bog lemming
<u>Zapus hudsonius</u>	Meadow jumping mouse
<u>Zapus princeps</u>	Western jumping mouse
<u>Erethizon dorsatum</u>	Porcupine
<u>Canis latrans</u>	Coyote
<u>Canis lupus</u>	Gray wolf
<u>Vulpes fulva</u>	Red fox
<u>Vulpes velox</u>	Swift fox
<u>Urocyon cinereoargenteus</u>	Gray fox
<u>Ursus americanus</u>	Black bear
<u>Ursus horribilis</u>	Grizzly bear
<u>Procyon lotor</u>	Raccoon
<u>Martes americana</u>	Marten

Martes pennanti
Mustela erminea
Mustela rixosa
Mustela frenata
Mustela vison
Gulo luscus
Taxidea taxus
Mephitis mephitis
Lutra canadensis
Felis concolor
Lynx canadensis
Lynx rufus
Cervus canadensis
Odocoileus hemionus
Odocoileus virginianus
Alces alces
Rangifer tarandus
Antilocapra americana
Bison bison

Fisher
Ermine
Least weasel
Long-tailed weasel
Mink
Wolverine
Badger
Striped skunk
River otter
Mountain lion
Lynx
Bobcat
Wapiti
Mule deer
White-tailed deer
Moose
Caribou
Pronghorn
Bison

TABLE 8

Most Common Commercial Fish in the Region

<u>Name</u>	<u>Common Name</u>
<u>Esox lucius</u>	Northern pike
<u>Stizostedion canadense</u>	Sauger
<u>Stizostedion vitreum</u>	Walleye
<u>Ictalurus punctatus</u>	Channel catfish
<u>Ictalurus melas</u>	Black bullhead
<u>Ictalurus nebulosus</u>	Brown bullhead
<u>Pomoxis nigromaculatus</u>	Black crappie
<u>Catostomus commersoni</u>	White sucker
<u>Ictiobus cyprinellus</u>	Bigmouth buffalo
<u>Moxostoma macrolepidotum</u>	Shorthead redhorse
<u>Cyprinus carpio</u>	Carp
<u>Carpiodes forbesi</u>	Plains quillback

TABLE 9

Fish Families in the Project Area

<u>Family</u>	<u>Common Name</u>
Petromyzonidae	Lampreys
Acipenseridae	Sturgeons
Lepisosteidae	Gars
Hiodontidae	Mooneyes
Salmonidae	Trouts
Esocidae	Pikes
Cyprinidae	Minnows, carp
Catostomidae	Suckers
Ictaluridae	North American catfishes
Percopsidae	Troutperch
Gadidae	Cods
Cyprinodontidae	Killifishes, topminnows
Gasterosteidae	Sticklebacks
Cottidae	Sculpins
Percichthyidae	Percichthyids
Centrarchidae	Sunfishes, basses
Percidae	Perch, darters
Sciaenidae	Drums, croakers

TABLE 10

Birds in the Project Area

<u>Name</u>	<u>Common Name</u>
<u>Charadrius melodus</u>	Piping Plover
<u>Sterna forsteri</u>	Forster's Tern
<u>Catoptrophorus semipalmatus</u>	Willet
<u>Limosa fedoa</u>	Marbled Godwit
<u>Numenius americanus</u>	Long-billed Curlew
<u>Ixobrychus exilis</u>	Least Bittern
<u>Nycticorax nycticorax</u>	Black-crowned Night Heron
<u>Botaurus lentiginosus</u>	American Bittern
<u>Larus pipixcan</u>	Franklin's Gull
<u>Chlidonias nigra</u>	Black Tern
<u>Anas crecca</u>	Green-winged Teal
<u>Anas americana</u>	American Wigeon
<u>Anas clypeata</u>	Northern Shoveler
<u>Oxyura jamaicensis</u>	Ruddy Duck
<u>Anas acuta</u>	Pintail
<u>Fulica americana</u>	American Coot
<u>Anas discors</u>	Blue-winged Teal
<u>Pelecanus erythrorhynchos</u>	White Pelican
<u>Podilymbus podiceps</u>	Pied-billed Grebe
<u>Phalaropus tricolor</u>	Wilson's Phalarope
<u>Recurvirostra americana</u>	American Avocet
<u>Porzana carolina</u>	Sora
<u>Rallus limicola</u>	Virginia Rail
<u>Capella gallinago</u>	Common Snipe
<u>Asio flammeus</u>	Short-eared Owl
<u>Circus cyaneus</u>	Marsh Hawk
<u>Cistothorus platensis</u>	Short-billed Marsh Wren
<u>Cistothorus palustris</u>	Long-billed Marsh Wren
<u>Xanthocephalus xanthocephalus</u>	Yellow-headed Blackbird
<u>Melospiza georgiana</u>	Swamp Sparrow
<u>Agelaius phoeniceus</u>	Red-winged Blackbird
<u>Ardea herodias</u>	Great Blue Heron
<u>Phalacrocorax auritus</u>	Double-crested Cormorant
<u>Anas platyrhynchos</u>	Mallard
<u>Aythya americana</u>	Redhead
<u>Aythya valisineria</u>	Canvasback
<u>Aix sponsa</u>	Wood Duck
<u>Aythya collaris</u>	Ring-necked Ducks
<u>Aythya affinis</u>	Lesser Scaup
<u>Lophodytes cucullatus</u>	Hooded Merganser
<u>Branta canadensis</u>	Canada Goose
<u>Actitis macularia</u>	Spotted Sandpiper
<u>Haliaeetus leucocephalus</u>	Bald Eagle
<u>Iridoprocne bicolor</u>	Tree Swallow
<u>Stelgidopteryx ruficollis</u>	Rough-winged Swallow
<u>Riparia riparia</u>	Bank Swallow
<u>Megaceryle alcyon</u>	Belted Kingfisher

<u>Bartramia longicauda</u>	Upland Sandpiper
<u>Charadrius vociferus</u>	Killdeer
<u>Pedioecetes phasianellus</u>	Sharp-tailed Grouse
<u>Tympanuchus cupido</u>	Greater Prairie Chicken
<u>Perdix perdix</u>	Gray Partridge
<u>Phasianus colchicus</u>	Ringed-necked Pheasant
<u>Chordeiles minor</u>	Common Nighthawk
<u>Athene cunicularia</u>	Burrowing Owl
<u>Nyctea scandiaca</u>	Snowy Owl
<u>Buteo lagopus</u>	Rough-legged Hawk (winter only)
<u>Buteo swainsoni</u>	Swainson's Hawk
<u>Falco sparverius</u>	Sparrow Hawk
<u>Hirundo rustica</u>	Barn Swallow
<u>Petrochelidon pyrrhonota</u>	Cliff Swallow
<u>Melanerpes erythrocephalus</u>	Red-headed Woodpecker
<u>Carduelis tristis</u>	American Goldfinch
<u>Sturnella neglecta</u>	Western Meadowlark
<u>Lanius excubitor</u>	Northern Shrike (winter only)
<u>Lanius ludovicianus</u>	Loggerhead Shrike
<u>Tyrannus tyrannus</u>	Eastern Kingbird
<u>Sialia sialis</u>	Eastern Bluebird
<u>Sialia currucoides</u>	Mountain Bluebird
<u>Tyrannus verticalis</u>	Western Kingbird
<u>Euphagus cyanocephalus</u>	Brewer's Blackbird
<u>Chondestes grammacus</u>	Lark Sparrow
<u>Spizella pusilla</u>	Field Sparrow
<u>Spizella pallida</u>	Clay-colored Sparrow
<u>Ammodramus savannarum</u>	Grasshopper Sparrow
<u>Spiza americana</u>	Dickcissel
<u>Plectrophenax nivalis</u>	Snow Bunting
<u>Passerculus sandwichensis</u>	Savannah Sparrow
<u>Calamospiza melanocorys</u>	Lark Bunting
<u>Poocetes gramineus</u>	Vesper Sparrow
<u>Calcarius ornatus</u>	Chestnut-collared Longspur
<u>Calcarius mccownii</u>	McCown's Longspur
<u>Dolichonyx oryzivorus</u>	Bobolink
<u>Eremophila alpestris</u>	Horned Lark
<u>Zenaida macroura</u>	Mourning Dove
<u>Columba livia</u>	Rock Dove
<u>Progne subis</u>	Purple Martin
<u>Chaetura pelagica</u>	Chimney Swift
<u>Colaptes auratus</u>	Common Flicker
<u>Icterus galbula</u>	Northern Oriole
<u>Turdus migratorius</u>	American Robin
<u>Dumetella carolinensis</u>	Gray Catbird
<u>Junco hyemalis</u>	Dark-eyed Junco
<u>Cyanocitta cristata</u>	Blue Jay
<u>Sayornis phoebe</u>	Eastern Phoebe
<u>Archilochus colubris</u>	Ruby-throated Hummingbird
<u>Troglodytes aedon</u>	House Wren
<u>Toxostoma rufum</u>	Brown Thrasher
<u>Bombycilla cedrorum</u>	Cedar Waxwing
<u>Molothrus ater</u>	Brown-headed Cowbird
<u>Passer domesticus</u>	House Sparrow

<u>Spizella passerina</u>	Chipping Sparrow
<u>Melospiza melodia</u>	Song Sparrow
<u>Sturnus vulgaris</u>	Starling
<u>Quiscalus quiscula</u>	Common Grackle
<u>Corvus brachyrhynchos</u>	Common Crow
<u>Dendroica petechia</u>	Yellow Warbler
<u>Geothlypis trichas</u>	Common Yellowthroat
<u>Setophaga ruticilla</u>	American Redstart
<u>Pipilo erythrophthalmus</u>	Rufous-sided Towhee
<u>Carduelis flammea</u>	Common Redpoll (winter only)
<u>Passerina amoena</u>	Lazuli Bunting
<u>Passerina cyanea</u>	Indigo Bunting
<u>Empidonax traillii</u>	Willow Flycatcher
<u>Coccyzus erythrophthalmus</u>	Black-billed Cuckoo
<u>Salpinctes obsoletus</u>	Rock Wren
<u>Bonasa umbellus</u>	Ruffed Grouse
<u>Otus asio</u>	Screech Owl
<u>Strix varia</u>	Barred Owl
<u>Aegolius acadicus</u>	Saw-whet Owl
<u>Accipiter cooperii</u>	Cooper's Hawk
<u>Buteo platypterus</u>	Broad-winged Hawk
<u>Buteo jamaicensis</u>	Red-tailed Hawk
<u>Cathartes aura</u>	Turkey Vulture
<u>Picoides pubescens</u>	Downy Woodpecker
<u>Picoides villosus</u>	Hairy Woodpecker
<u>Sphyrapicus varius</u>	Yellow-bellied Sapsucker
<u>Sitta carolinensis</u>	White-breasted Nuthatch
<u>Certhia familiaris</u>	Brown Creeper
<u>Icterus spurius</u>	Orchard Oriole
<u>Pheucticus melanocephalus</u>	Black-headed Grosbeak
<u>Parus atricapillus</u>	Black-capped Chickadee
<u>Vireo olivaceus</u>	Red-eyed Vireo
<u>Vireo gilvus</u>	Warbling Vireo
<u>Empidonax minimus</u>	Least Flycatcher
<u>Contopus virens</u>	Eastern Wood Pewee
<u>Contopus sordidulus</u>	Western Wood Pewee
<u>Myiarchus crinitus</u>	Great Crested Flycatcher
<u>Catharus fuscescens</u>	Veery
<u>Seiurus aurocapillus</u>	Ovenbird
<u>Mniotilta varia</u>	Black-and-white Warbler
<u>Asio otus</u>	Long-eared Owl
<u>Bubo virginianus</u>	Great Horned Owl
<u>Accipiter striatus</u>	Sharp-shinned Hawk
<u>Accipiter gentilis</u>	Goshawk
<u>Sitta canadensis</u>	Red-breasted Nuthatch
<u>Hesperiphona vespertina</u>	Evening Grosbeak
<u>Carpodacus purpureus</u>	Purple Finch
<u>Loxia curvirostra</u>	Red Crossbill
<u>Loxia leucoptera</u>	White-winged Crossbill
<u>Pinicola enucleator</u>	Pine Grosbeak
<u>Regulus satrapa</u>	Golden-crowned Kinglet
<u>Bombycilla garrulus</u>	Bohemian Waxwing
<u>Carduelis pinus</u>	Pine Siskin
<u>Pica pica</u>	Black-billed Magpie

Bucephala clangula
Podiceps auritus
Falco rusticolus
Grus canadensis
Anas strepera
Coturnicops noveboracensis
Ammospiza caudacuta
Larus delawarensis
Sterna hirundo
Podiceps grisegena
Spizella arborea
Ammodramus bairdii
Anthus spragueii
Dendroica pensylvanica
Oporornis philadelphia
Seiurus noveboracensis
Strix nebulosa
Surnia ulula
Aegolius funereus
Falco columbarius
Vireo philadelphicus

Common Goldeneye
Horned Grebe
Gyr Falcon
Sandhill Crane
Gadwall
Yellow Rail
Sharp-tailed Sparrow
Ring-billed Gull
Common Tern
Red-necked Grebe
Tree Sparrow (winter only)
Baird's Sparrow
Sprague's Pipit
Chestnut-sided Warbler
Mourning Warbler
Northern Waterthrush
Great Gray Owl
Hawk-Owl
Boreal Owl
Merlin ("Pigeon Hawk")
Philadelphia Vireo

TABLE 11

Woody Plants in the Project Area

<u>Name</u>	<u>Common Name</u>
<u>Salix amygdaloides</u>	Wright willow
<u>Salix bebbiana</u>	Long-beaked willow
<u>Salix discolor</u>	Pussy willow
<u>Salix eriocephala</u>	Missouri willow
<u>Salix exigua</u>	Sandbar willow
<u>Salix rigida</u>	Yellow willow
<u>Populus deltoides</u>	Cottonwood
<u>Populus tremuloides</u>	Quaking aspen
<u>Corylus americana</u>	Hazelnut
<u>Quercus macrocarpa</u>	Bur oak
<u>Ulmus americana</u>	American elm
<u>Celtis occidentalis</u>	Hackberry
<u>Menispermum canadense</u>	Moonseed
<u>Ribes americanum</u>	Black currant
<u>Ribes missouriense</u>	Wild gooseberry
<u>Amelanchier alnifolia</u>	June berry
<u>Amelanchier sanguinea</u>	Dwarf june berry
<u>Crataegus succulenta</u>	Hawthorn
<u>Rubus idaeus</u>	Red raspberry
<u>Rosa acicularis</u>	Wild rose
<u>Rosa suffulta</u>	Prairie rose
<u>Rosa blanda</u>	Wild Rose
<u>Rosa woodsii</u>	Wild Rose
<u>Prunus americana</u>	Wild plum
<u>Prunus virginiana</u>	Choke cherry
<u>Amorpha canescens</u>	Lead plant
<u>Amorpha fruticosa</u>	False indigo
<u>Rhus glabra</u>	Smooth sumac
<u>Toxicodendron radicans</u>	Poison ivy
<u>Celastrus scandens</u>	Bittersweet
<u>Acer negundo</u>	Box elder
<u>Rhamnus cathartica</u>	Common buckthorn
<u>Parthenocissus vitacea</u>	Woodbine
<u>Vitis riparia</u>	Riverbank grape
<u>Tilia americana</u>	Basswood, linden
<u>Elaeagnus angustifolia</u>	Russian olive
<u>Shepherdia argentea</u>	Buffalo berry
<u>Oenothera serrulata</u>	Evening primrose
<u>Cornus stolonifera</u>	Red dogwood
<u>Fraxinus pennsylvanica</u>	Green ash
<u>Lonicera tatarica</u>	Tartarian honeysuckle
<u>Symphoricarpos occidentalis</u>	Wolfberry
<u>Viburnum lentago</u>	Sheepberry, wild raisin
<u>Sambucus canadensis</u>	Elderberry
<u>Juniperus communis</u>	Dwarf juniper
<u>Juniperus horizontalis</u>	Creeping juniper
<u>Salix candida</u>	Hoary willow
<u>Salix lucida</u>	Shining willow

Salix petiolaris
Salix serissima
Populus balsamifera
Corylus cornuta
Ostrya virginiana
Betula glandulosa
Betula papyrifera
Alnus incana
Atriplex canescens
Ribes hirtellum
Ribes triste
Spiraea alba
Crataegus chrysocarpa
Potentilla tridentata
Rubus pubescens
Prunus pensylvanica
Amorpha nana
Rhamnus alnifolia
Elaeagnus commutata
Shepherdia canadensis
Cornus foemina
Arctostaphylos uva-ursi
Fraxinus nigra
Lonicera dioica
Symphoricarpos albus
Viburnum opulus
Viburnum rafinesquianum
Gutierrezia sarothrae
Artemisia cana

Meadow willow
Autumn willow
Balsam poplar
Beaked hazelnut
Ironwood
Dwarf birch
White birch
Alder
Wingscale
Gooseberry
Red currant
Meadow-sweet
Hawthorn
Three-toothed cinquefoil
Creeping Blackberry
Bird cherry
Fragrant false indigo
Swamp buckthorn
Silverberry
Buffaloberry, soapberry
Gray dogwood
Bearberry
Black ash
Wild honeysuckle
Snow berry
Highbush cranberry
Downy arrowwood
Broom snakeweed
Wild sagebrush

The project domain is within the mixed grass prairie biota community which is the ecotone (Odum 1971:157) between the more easterly tall grass prairie and northern deciduous forest and the more westerly short grass plains. The Pembina River valley has a deciduous hardwood forest community. The grasslands are dominated by herbs. Herbs are composed of two main groups, grasses and forbs, with grasses being dominant.

The grasses are of two or more heights, with tall grasses attaining heights of 50 to 150 cm (20 to 59 inches), and short grasses attaining heights of 5 to 40 cm (2 to 16 inches). The mixed grass prairie contains a mixture of both major grasses. The dominant plants are porcupine grass, prairie dropseed, little bluestem, side-oats grama, Junegrass, western wheatgrass, plains muhly, panic grass, sedge, green needlegrass, needle-and-thread grass, sand dropseed, slender wheatgrass, galleta, and purple three-awn. Forbs include broomweed, scurf-pea, sunflowers, goldenrods, and ragweed.

Effects of drought over a prolonged period of time causes the mixed grass to be overcome or dominated by short grasses. Excessive precipitation causes the mixed grasses or short grasses to become dominated by the tall grasses. These flora changes, due to changing climatic patterns, are also reflected in the fauna associations (Shelford 1978:334-340).

The deciduous forests and grasslands along the Pembina River and its major tributaries in northeastern North Dakota can be divided into four major vegetation zones based upon elevation and physiography: 1) the bottomland hardwood forests; 2) the upland mixed hardwood forest; 3) the upland oak savanna woodland; and 4) the tall and mixed grass prairie. These vegetation zones parallel the Pembina River and its major tributaries. These zones succeed one another in a vegetation continuum as one goes south or north from the Pembina River (Fig. 32). A large number of plant species producing a diverse range of food types are available in varying densities throughout the region. Certain areas become optimal for exploitation at different seasons which is reflected by the seasonal availability of species which occur in each vegetation zone.

The Environment During Field Work

The field work during this project was conducted during the months of August and October. Most of the lands, approximately 98 percent, were cultivated, with wheat, beans, corn, sunflowers and potatoes being the dominant crops. Localized tree clearing was observed; the removal of trees having been done with the aid of large mechanized equipment. The dozing of deciduous forest along the Pembina River has greatly disrupted the ground terrain and has had a definite adverse impact upon buried cultural resources.

Field reconnaissance was performed without any hindrance from summer rainstorms or flooding. The major problem was crop cover, particularly harvested wheat.

Summary

The project domain provided the indigenous inhabitants with a variety of plant and animal foods. Many of the food resources were available seasonally, and should be reflected in the utilization of the region by prehistoric Native Americans. The region, located in the mixed grass prairie, has undergone several major post-glacial climatic episodes which altered the local flora and fauna resources. These past climatic events undoubtedly influenced the peoples utilizing these resources.

Chapter 3

Research Goals

Introduction

Previous cultural resource research in the Pembina River project domain (Ames 1975; Good et al. 1980; Schneider 1976) was used to evaluate the course of action for implementation of this project.

Previous Research

During the early summer of 1975, the Moorhead State College Department of Sociology and Anthropology entered into a contractual agreement, Number DACW37-75-G-0169, with the St. Paul District Corps of Engineers to conduct a preliminary field reconnaissance of the Pembina River valley in the Pembina Mountains to determine whether Native Americans had occupied the area prior to the arrival of Euro-Americans (Ames 1975:7). The goals of the project were to determine the spatial extent of archaeological materials within the Pembina River valley and to determine the temporal extent of archaeological remains (Ames 1975:7). To accomplish these goals, an extensive field reconnaissance was conducted and selected sites were minimally tested by manual excavation of a few test pits. Fieldwork resulted in locating 17 sites within the project domain and the limited testing of two sites.

During 1976 the University of North Dakota Archaeology Laboratory and the St. Paul District Corps of Engineers entered into a contractual agreement authorizing the University of North Dakota to conduct a literature search to provide a list of sites, references, and records pertinent to the understanding of the prehistory and history of the region (Schneider 1976:1).

During the summer of 1980, Historical and Archaeological Surveys, Inc., and the St. Paul District Corps of Engineers entered into a contractual agreement, Number DACW37-80-C-0027, authorizing Historical and Archaeological Surveys, Inc., to conduct a comprehensive review of existing records, published and unpublished literature, which were pertinent to the project domain. The objectives of the literature search and records review were to identify all the known cultural resources of the study area, to identify biases inherent in the data base, and to recommend research goals for further investigation (Good et al. 1980:1).

These previous researches in the project domain resulted in a preliminary field survey of the proposed Pembilier dam and reservoir which yielded 17 prehistoric sites. Ames was apparently not interested in recording historic sites (Good et al. 1980:50). Few surface collections were made, therefore artifact densities on sites were not determinable or errors were made in reporting thin surface scatters from sites which actually contained fairly dense concentrations.

The literature and records search by Schneider (1976) resulted in possible references and sources to be further investigated at a later date. The literature and records review by Good et al. (1980) presents a comprehensive compilation of what is already known about the study area. From these previous studies (Table 12), only one set of recommendations have been developed, and these were developed by Ames (1975) during what was only a three week contract (Table 13).

Research Objectives

The objectives of this project, conducted by The University of South Dakota Archaeology Laboratory, are fourfold:

1. To conduct a reconnaissance level field survey, based on a statistically valid sample, of portions of project Alternatives 4 and 5 in the boundary floodway;
2. To conduct additional reconnaissance level field work in the Pembina River valley with possible relocation and surface collecting of previously recorded sites;
3. To conduct a records review for Pembina County;
4. To conduct a literature search and field reconnaissance of Hyde Park Cemetery, the Gingras House and Trading Post, the Mayo Brick Plant and the community named Brickmine, and the hamlet known as Valmont.

Research Goals

The goals of the project are twofold:

1. Culture History: To affirm the cultural identification of sites found and to refine their chronological and cultural assignment by means of the recovery and analysis of culturally and/or temporally diagnostic evidence.
2. Cultural Ecology and Process: To record site locations and their floral and faunal context in order to determine the local resources which were available to the sites' occupants and to establish criteria for assessing the scientific and historical value of each site within its environmental and historical context.

TABLE 12

Previous Research in Project Area

<u>Ames (1975)</u>	<u>Schneider (1976)</u>	<u>Good et al. (1980)</u>
*32CV201	literature and records sources	literature and records sources
32CV203		
*32CV204		
32CV205		
32CV206		
32CV208		
32CV209		
32CV210		
32CV211		
32CV212		
32CV213		
32CV214		
32CV215		
32CV216		
32CV217		
32CV218		
32CV219		

*= tested sites

TABLE 13

Recommendations by Ames (1975)

A. Survey

1. A program of random sampling of brushy and woody areas through test pits and auguring should be conducted. This will fill in the spatial gap left by the 1975 project, and provide a means of discovering what deeply covered material, if any, there may be.
2. Auguring be extended into other areas already surveyed to aid in locating any possible deeply buried site. Arndt (1975) has suggested anything more than 200 years old near the coulee walls would be deeply buried by colluvium by now. The only practical way of checking these areas would be either augurs or pits. The clay matrix of valley may inhibit or prevent extensive auguring or pitting; its consistency is that of rubber.
3. A program of controlled surface collection of known sites be conducted to retrieve artifacts in a precise fashion. This would provide information about multiple vs. limited use. With the surface collection, each site should be mapped.

B. Excavations

1. Test excavations of known sites should be extended to provide a better sample of the Coulee floor. These should be both plowed and undisturbed localities and be done in conjunction with the surface collection. Both this program and the intensive surface collection will be hampered if the fields are still in crop production.
2. Test excavations should be conducted in localities with no surface indications. These localities should be selected on the basis of several models of possible settlement pattern in the Coulee. The source of these models is not relevant here.

Compatibility of the Research Goals with the Theoretical Orientation in Archaeology in General

Archaeology is currently assessing the merits of the inductive and deductive approaches to data retrieval and analysis. Combining the best of these two theoretical approaches is probably best suited to contract archaeology. The logic of empirical science is in its completeness when inductive and deductive forms and procedures are combined. The creation of hypotheses is necessary to give direction to research and to determine what further data should be collected (Watson et al. 1971:10-12).

In this project, the inductive approach consisted of the collection of data in the field and a search for patterns in site locations. Recovered materials were analyzed and hypotheses generated to explain and describe observed phenomena. It is at this point in the hypothetico-deductive approach (Ruppert 1975:5) that the cultural resource investigations for this project ended.

Hypotheses

The hypotheses generated to help elucidate past cultural systems within the project domain are:

Hypothesis 1: The prehistoric settlement model is one of seasonal transhumance, where the social groups moved annually in search of resources. The elevational changes and regional topography provide a series of ecological systems which have important hydrological variability affecting plant maturation rates and the availability of large mammals.

- Hypothesis 2: The size of the prehistoric social groups varied from season to season, and would have been directly correlated with the level of cultural development and the types of resources being exploited.

Hypothesis 3: The more permanent campsites were situated on terraces of the river floodplain, where a reliable supply of water and greater varieties of wild plant and animal foods were available.

Hypothesis 4: The winter campsites were situated on the river terraces, where the river bluffs in the Pembina Mountains provided protection from the severe winter winds.

Hypothesis 5. The upland sites were used as ancillary hunting and gathering camps for small social groups. Also, the sites along the Pembina River located on the Lake Agassiz plain were short term summer camps, while more permanent camps were located in the Pembina Mountains to take advantage of their protection from the severe winter winds.

The hypotheses can be tested and refined in the next stage of cultural resource investigations within the project domain. Additional hypotheses need to be formulated and previous ones need to be altered or rejected with the collection of new data.

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Field and Laboratory Methods

Introduction

Initial work began during the first week in August with a search of pertinent historical literature at the I.D. Weeks Library and W.H. Over Museum on The University of South Dakota campus in Vermillion, South Dakota. Several published United States Government reports entailing the survey of the International Boundary along the 49th parallel were examined. With the completion of the initial literature search, the historian traveled to the North Dakota State Historical Society to examine records and newspapers pertinent to the project domain. Persons contacted at the North Dakota State Historical Society include Chris Dill, Walter Bailey, Ann Rathke, Jim Davis, Forrest Daniels, and Signe Snortland-Coles.

Site file cards and indexed survey maps were examined at the Archaeological Division for both historic and prehistoric sites. There were 133 cards of possible historic sites in Pembina County and 50 possible historic sites in Cavalier County. These cards were based on earlier surveys especially the REAP survey by Dr. Jerome Tweton in 1978, and cursory literature searches which especially relied on Andreas (1884).

At the Historical Society Library, the historian examined microfilm copies of the Walhalla Mountaineer, the Cavalier County Republican and the Neche Chronotype Express for information about the Mayo Brick Plant and Hyde Park area residents. This library also contained most of the local histories cited in the References Cited as well as the early atlases. Also examined were the manuscript collection of W.P.A. interviews for the townships in the survey area.

The U.S. General Land Office original survey maps were available at the North Dakota Water Commission Office, and were used for locating historic sites, trails, and examining late 19th Century vegetation patterns.

Meanwhile, concurrent with the historian's initial literature searches, the Principal Investigator examined reports concerning previous archaeological investigations in the project domain. An archaeological field crew was selected. The crew was directed by Kenneth Brown and Marie Brown. The crew members were Bill Ranney and Bill Nelson of The University of South Dakota Archaeology Laboratory.

During the second week of August, the archaeology field crew drove to the project domain and met with the historian who was then in Cavalier, North Dakota. The historian provided the archaeology crew with information about historic site locations within the project domain. The historian continued local literature and records searches at Pembina County Museum and Courthouse in Cavalier, the Cavalier Public Library, Pembina Historical Museum, Langdon Public Library, Paton's Isle

of Memories and Cavalier County Courthouse in Langdon. For the most part, these local institutions did not offer materials other than those available at the State Historical Society, with the exception of personal collections held by the Pembina County Auditor and the Pembina County Register of Deeds. The Langdon Public Library was the only source for Maisel's (1978-79) notebooks.

The most important fieldwork at the local survey area by the historian was contact with local informants. Informants interviewed for historical information were John and JoAnn Erickson, Bill Robbins, Ken Morden, William Hillier, Denis Martin, W.J. Sturlaugson, Kathryn Grube, Lawson Paton, Paul Crary, Leon Dubourt, Carl and Ivy Kartes, and the staff at the Soil Conservation Office. The archaeology crew contacted three local artifact collectors in order to examine their collections and gain knowledge of the variety and scope of prehistoric occupation of the region. This was done by examining culturally and temporally diagnostic artifacts such as pottery and projectile points. The three collectors were Carl Kartes, Jay Wessels, and Ted Dunnigan, all of Walhalla.

Field Reconnaissance

Concurrent with interviewing local collectors, the archaeology crew began conducting a 25 percent sample, pedestrian reconnaissance of the proposed floodway structures for Alternatives 4 and 5. The 25 percent sample of the proposed floodways along the International Boundary consisted of intensive surface examination of selected tracts of land along the proposed floodway corridors. Each tract of land chosen within the 25 percent sample measured 1.6 kilometers (1 mile) long and 198 meters (650 feet) wide. The tracts conformed to the established section boundaries on 7½ minute U.S.G.S. quadrangle maps. The tracts initially examined were every fourth mile along the International Boundary, beginning at Section 28, R51W, T164N, and surveying every fourth mile until Section 26, R56W, T164N. This sampling procedure worked very well, since dirt section roads delineated most of the boundaries of the surveyed tracts. In addition to the 25 percent sample, all plowed fields with 100 percent ground visibility were investigated. This constituted an additional 791 hectares (320 acres) in Alternative 4 and 395 hectares (160 acres) in Alternative 5. An additional 371 hectares (150 acres) were investigated along the floodway channels. Within the floodway areas of the diversion structures for Alternatives 4 and 5, the southeast quarter section 65 hectares (160 acres) was investigated within each section which would be impacted. The 25 percent samples were located in the following locations:

Floodway Channels

T164N, R51W: Section 28
T164N, R52W: Sections 26 and 30
T164N, R53W: Section 28
T164N, R54W: Sections 26 and 30
T164N, R55W: Section 28
T164N, R56W: Section 26

Floodpool Areas

Alternative 4

T163N, R56W: SE $\frac{1}{4}$ Section 14
SE $\frac{1}{4}$ Section 15
SE $\frac{1}{4}$ Section 22

Alternative 5

T163N, R54W: SE $\frac{1}{4}$ Section 31
SE $\frac{1}{4}$ Section 6

Additional Areas Surveyed

Floodway Channels

T164N, R52W: Section 28, S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$
T164N, R53W: Section 25, S $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$
Section 26, S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$
S $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$
S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$
Section 27, S $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$
T164N, R56W: Section 35, E $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$

Floodpool Areas

Alternative 4

T163N, R56W: Section 23, N $\frac{1}{2}$ NE $\frac{1}{4}$
Section 14, N $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$
N $\frac{1}{2}$ NW $\frac{1}{4}$
Section 11, SW $\frac{1}{4}$ SW $\frac{1}{4}$
W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$
Section 10, SE $\frac{1}{4}$ SE $\frac{1}{4}$
S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$
Section 15, W $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$
NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$
E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$
S $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$
Section 16, SE $\frac{1}{4}$ SE $\frac{1}{4}$
E $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$

Alternative 5

T164N, R54W: Section 30, S $\frac{1}{2}$ SE $\frac{1}{4}$
Section 31, NE $\frac{1}{4}$ NE $\frac{1}{4}$
N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$
Section 6, NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$
E $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
SE $\frac{1}{4}$ SW $\frac{1}{4}$
S $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

A single crew consisting of four persons conducted the field work. Two techniques were employed to conduct the field survey: 1) crew members were spaced about 50 meters apart, traversing the tracts along transects oriented toward one of the cardinal directions (north, south, east, west); and 2) crew members were spaced 30 to 40 meters apart and

traversed tracts along transects oriented toward one of the cardinal directions and dug small, circular shovel test pits at about 30 meter intervals.

The first technique was used in all cultivated fields. The second technique was only used in pastures and other non-cultivated lands. Nineteen sites and 12 find spots were recorded during field reconnaissance of floodway Alternatives 4 and 5. This phase of the field work was completed on August 15, 1981.

Reconnaissance of sites previously recorded within the proposed Pembilier Dam and Reservoir was conducted from August 16 to August 22, 1981. Reconnaissance was focused upon locating as many previously reported sites as possible. Ames (1975) reported 17 sites during initial reconnaissance in 1975. The 1981 survey was intensive, including the conducting of surface collections at 13 previously reported sites and mapping their locations on 7½ minute U.S.G.S. quadrangle maps. In addition to relocating 13 sites, 12 new sites were recorded within and adjacent to the reservoir project domain. Locations of the new sites were provided by local collectors and historians. Several locally significant historical sites were among the newly recorded sites. Among these were the Mayo Brick Plant and the Fish Trap (Table 14). Survey techniques consisted of examining areas reported to contain cultural remains by local artifact collectors and people interviewed in regards to historic structures and events. Shovel tests were used only in reported site locations where ground visibility was obstructed by vegetation.

In addition to sites recorded within the proposed project domains, an additional 11 sites and one findspot were also recorded. Locations for these sites were provided by local artifact collectors. Therefore, during this project a total of 42 new sites and 13 find spots were recorded (Figs. 104-108).

Procedures followed during all field reconnaissance included plotting all site locations on 7.5 minute U.S.G.S. quadrangle maps, showing the extent of site areas. All sites were recorded on North Dakota site inventory forms and sent to the North Dakota State Historical Society. All sites were photographed and standing structures at historic sites were measured. Seven datums were set into the ground at several sites. The datums, consisting of four-inch diameter, five foot long, white plastic pipe, are excellent site markers. The pipes were buried about two feet in the ground. These datums are non-deteriorating, nonmagnetic for setting a transit over, and are very visible in dense underbrush.

Eight datums were placed for nine sites. One datum is for two sites, 32PB31 and 32PB32. The other sites with datums include 32PB8, 32PB13, 32PB25, 32CV7, 32CV11, 32CV204 and 32CV205.

Interviews with local artifact collectors resulted in the archaeology crew confirming the location of 11 sites and one findspot outside the immediate project areas. Field methods for confirming these

TABLE 14

Sites Located Within the Project Vicinity
Which Were Investigated and Not Investigated in 1981

<u>Pembina County</u>		<u>Cavalier County</u>	
32PB8	32PB34	32CV2	32CV205
32PB9	32PB37	32CV3	32CV206
32PB10	32PB38	32CV4	32CV208
32PB11	32PB101	32CV5	32CV209
32PB12	USD-2	32CV6	32CV210
32PB13	USD-3	32CV7	32CV211
32PB14	USD-9	32CV8	32CV212
32PB15	USD-10	32CV9	32CV213
32PB16	USD-11	32CV10	32CV214*
32PB17	USD-13	32CV11	32CV215a
32PB18	USD-14	23CV12	32CV215b*
32PB19	USD-15	32CV201*	32CV216
32PB20	USD-17	32CV203	32CV217
32PB25	USD-20	32CV204	32CV218*
32PB26	USD-21		32CV219
32PB31	USD-25		
32PB32			

*= Sites Not Investigated

site locations consisted of the crew traversing the site locations and conducting surface grab collections. No shovel tests were conducted.

The sites recorded include 32PB21, 32PB22, 32PB23, 32PB24, 32PB27, 32PB28, 32PB29, 32PB30, 32PB33, 32PB35, 32PB36, and USD-43.

Concurrent with the field reconnaissance by the archaeology crew, the historian continually provided new findings in the local records searches. The archaeology crew, in turn, provided locations of sites with historic remains to the historian for investigation in the courthouse records. This procedure of information "feedback" between the archaeologists and historian proved invaluable in locating the Mayo Brick Plant, the Fish Trap, and Grant's House and Trading Post near Hyde Park Cemetery. The historian completed the local records searches and informant interviews on August 17, 1981. The archaeologists completed this phase of field reconnaissance on August 22, 1981.

Because some of the fields to be surveyed were in crops at the time of the field reconnaissance in August, a team of two archaeologists returned to the project domain during the second week of October to survey those areas which had had crops. Attempts in August to locate Grant's House and Trading Post and the Fish Trap had failed. However, with vegetation cover diminished, the survey team found these two important historic sites. The survey team spent three days examining and recording sites. All field work was completed on October 11, 1981.

Laboratory Methods

Artifacts were transported to The University of South Dakota Archaeology Laboratory in Vermillion, South Dakota. Laboratory work was begun during the last week in August, 1981, and completed during the first week of March, 1982. Artifacts were washed and catalogued. Site numbers were printed on all artifacts. Analysis included detailed examination of all artifacts to determine probable function, temporal placement, and cultural affiliation. Faunal remains were identified to the lowest possible taxon.

In addition to artifacts recovered during 1981, all artifacts collected by Ames (1975) were borrowed from Moorehead State College for examination and cataloguing. Descriptions of these collections are included in this report with the individual site descriptions.

Artifact Typologies

Introduction

The following typologies contain information pertinent to cultural and historical significance. Artifact types are defined relative to their known cultural and historical associations. The typologies are divided into five groups: 1) prehistoric chipped stone artifacts; 2)

prehistoric ground stone artifacts; 3) prehistoric pottery; 4) historic artifacts; and 5) faunal remains.

Prehistoric Chipped Stone Artifacts

The first human inhabitants of North Dakota had a well developed technology to modify stone into usable implements for all aspects of subsistence and survival. Reducing an initial mass of rock (lithic) material to the finished product requires many stages of manufacture, each of which provides waste. Knowledge of the techniques utilized by different cultures in making stone implements is of great importance in the study of past cultures. Certain cultures used specialized techniques in manufacturing some of their stone implements which is helpful in determining the cultural association and temporal placement of the artifacts. Modification of stones by the application of force, known as flintknapping, is one of the earliest industrial arts of humans.

Differences observed between stone implement modification, or chipping, are sometimes related to the type of raw material utilized. The shape and use of the artifact is determined by the quality of the raw material and the skill of the individual flintknapper. Flint, chert, chalcedony, volcanic glass (obsidian), quartzites, and silicified sediments were widely used by the indigenous peoples of North Dakota for making stone implements. All have the necessary homogeneity, cryptocrystalline, macrocrystalline and highly siliceous properties which allow for controlled flintknapping. The raw material must be free of flaws, such as cracks and inclusions, or it will break unpredictably. One test of homogeneity is to strike the piece of raw material with a hammerstone, if it produces a ringing sound, it denotes homogeneity, if it emits a dull thud, it is not homogenous.

Many lithic raw materials can be improved for modification by thermal alteration or heat treating (Crabtree and Butler 1964; Hester 1972, 1973; Hester and Collins 1974; Purdy and Brooks 1971; Purdy 1974; Shippee 1963). Heat treating is performed by burying the raw material in sand or soil and slowly heating it to temperatures between 400 degrees and 700 degrees Fahrenheit. The material is then slowly cooled. Heat treating relieves stresses in the stone and allows more control in flaking. Heat treating often causes color changes in the raw material; for instance, yellow sometimes changes to red. Heating a rock with a high moisture content too rapidly can cause fractures and the removal of small, round flake-like "pot lids."

The following descriptions are for prehistoric chipped stone artifacts collected during this project.

FLAKES

Definition: Any piece of chert, flint or raw material which has been removed from a larger mass by the application of force and which has at least one of several distinguishing characteristics present: 1) a striking platform remnant; 2) compression rings; 3) a bulb of force; and

4) a hinge fracture. Flakes which are less than 3 cm in length along the axis of percussion are sometimes referred to as chips. Chips are often removed by a pressure flaking technique.

Potential errors: Flakes are usually easily recognized.

Cultural-historical position: Flakes are associated with all prehistoric complexes in North Dakota.

Research value: The presence of a large number of flakes at a site would indicate the location of extensive stone tool manufacture.

CHUNKS/SHATTER

Definition: Any piece of chert, flint or raw material which is cubical or irregularly shaped and lacks any well-defined pattern of negative or positive bulbs of force, striking platforms, or systematic alignment of cleavage scars on the various faces (Binford and Quimby 1963).

Potential errors: Chunks/shatter may be confused with cores.

Cultural-historical position: Chunks/shatter are associated with all prehistoric complexes in North Dakota.

Research value: The presence of a large number of chunks/shatter would indicate the testing of raw materials which may be associated with extensive stone tool manufacturing.

TABLOIDS

Definition: A large block of raw material with at least one lateral side consisting of a natural surface rather than an edge; the ventral, lateral and dorsal surfaces tend to be at right angles to each other at their intersection.

Potential errors: Tabloids may be confused with chunks/shatter.

Cultural-historical position: Tabloids are associated with all prehistoric cultural complexes in North Dakota.

Research value: The presence of large numbers of tabloids would indicate the location of extensive stone tool manufacture or the point at which chipped stone raw material entered the community, i.e., a quarry site.

CORES

Definition: Any piece of raw material which has a recognizable striking platform and has well-defined flake scars and systematic alignment of cleavage scars on the various faces. Cores can be further divided into "block cores" and "blade cores." Block cores are used in the production of irregularly shaped flakes while blade cores are used in the production of regularly shaped blades, or flakes.

Potential errors: Cores may be confused with chunks/shatter.

Cultural-historical position: Block cores are associated with all prehistoric complexes in North Dakota while blade cores are most frequently associated with the Plains Woodland and more recent cultural complexes.

Research value: The potential of cores for production of flakes and blades is sometimes not exhausted and therefore the presence of cores may represent the storage of raw material (House 1975:65).

The implements described above can be further modified. Since flintknapping modified the blank from which the tool originated, it is often difficult or impossible to determine the type of blank from which a tool was manufactured. This is especially true of implements modified (retouched) on both faces, such as preforms, projectile points, knives

and drills. The following implement types may be marginally retouched or invasively retouched. Invasive retouch is the by-product of flake removal originating from the lateral edges of a blank and extending more than $\frac{1}{2}$ of the way across the dorsal and/or ventral faces of the blank. When modification occurs on both faces of a blank, it is referred to as a biface or bifacial retouch. Marginal modification is the by-product of flake removal originating from the lateral edges of a blank and extending less than $\frac{1}{2}$ of the way across the dorsal and/or ventral faces of the blank.

RETOUCHED FLAKES

Definition: A flake which has either a combination of marginal or invasive modification along one or more of its lateral edges or ends.

Potential errors: Retouched flakes may be confused with flakes which have been damaged by recent activities at the site, such as modern agricultural practices.

Cultural-historical position: Retouched flakes are associated with all prehistoric cultural complexes in North Dakota.

Research value: The presence of a large number of retouched flakes may indicate the maximum use of available raw materials.

PREFORMS

Definition: A flake, chunk/shatter, tabloid or core which has marginal and/or invasive modification on one or both faces, producing a symmetrically-shaped artifact. Well-defined working edges or areas of utilization are lacking. Preforms are usually manufactured by direct percussion techniques and are one of the first stages in the manufacture of chipped stone implements. Preforms are unfinished tools and require additional modification to achieve finished form.

Potential errors: Preforms may be confused with finished implements.

Cultural-historical position: Preforms are associated with all prehistoric cultural complexes in North Dakota.

Research value: Preforms may represent caches of unfinished implements.

BIFACES

Definition: A flake, chunk/shatter, tabloid or core which has invasive retouch on both faces, producing a symmetrically-shaped artifact. Well defined working edges or areas of utilization are present.

Potential errors: Bifaces may be confused with preforms.

Cultural-historical position: Bifaces are associated with all prehistoric cultural complexes in North Dakota.

Research value: Bifaces were used to perform a wide variety of tasks. Many were probably curated.

PROJECTILE POINTS

Definition: A flake or unidentifiable modified blank which has marginal and/or invasive modification on one or both faces. The form is triangular to lanceolate in shape with a well-defined working edge, sharp tip, or point, and a hafting element. Retouch is produced by percussion and pressure flaking techniques. The hafting element may consist of side notches, corner notches, stems and/or basal notches, flutes, and unnotched, ground bases. Projectile points are usually biconvex in cross section and have a wide variation in form and size.

Potential errors: Projectile points may be confused with knives.

Cultural-historical position: Projectile points are believed to be associated with all prehistoric cultural complexes in North Dakota.

Research value: The varieties of projectile points are good temporal and cultural indicators of a site.

KNIVES

Definition: A preform which has marginal and/or invasive retouch on one or both faces. There is a well-defined working edge and/or areas of utilization. Retouch is produced by percussion and pressure flaking techniques. Knives occur in a variety of geometric forms, the most common being rectangular and sub-triangular. They are usually biconvex in cross-section with two lateral cutting edges. Broken projectile points were often recycled and used as hafted knives.

Potential errors: Triangular, notched knives are often confused with projectile points. One method to distinguish between hafted knives and projectile points is to determine the sharpness of the tip and edge characteristics of the blade. Projectile points, in order to be successfully employed in procurement activities, must have a sharp point or tip. Knives generally have blunted tips. Projectile points are most commonly biconvex in cross-section while knives are more varied, with alternating resharpening along the lateral edges forming a trapezoidal cross section.

Cultural-historical position: Knives are associated with all prehistoric cultural complexes in North Dakota. Particular knife forms have specific names and some have restricted temporal occurrence.

Research value: Knives are indicative of cutting tasks.

CHOPPERS

Definition: A preform which has marginal and/or invasive retouch on one or both faces of the blank. There is usually a restricted working edge and/or areas of utilization. Retouch is usually by percussion flaking techniques. Choppers are large tools which are grasped by one or both hands. They usually have a convex to pointed working edge.

Potential errors: Recognition of choppers is usually easy.

Cultural-historical position: Choppers are associated with all prehistoric cultural complexes in North Dakota.

Research value: Choppers were probably used in the initial butchering of animals and smashing of large bones in marrow extraction.

ENDSCRAPERS

Definition: A flake which has been marginally or invasively retouched on one face to produce a regularly shaped straight-to-convex working edge on one end which is usually transverse to the axis of force.

Potential errors: Endscrapers may be confused with retouched flakes.

Cultural-historical position: Endscrapers are associated with all prehistoric cultural complexes in North Dakota.

Research value: Endscrapers are probably specialized maintenance implements used in hide preparation and the working of wood and bone.

SIDE SCRAPERS

Definition: A flake or other blank type with marginal or invasive retouch on one face to produce a regularly shaped straight-to-convex working edge on either one or both lateral sides of the implement.

Retouch is usually parallel to the axis of percussion of the implement blank.

Potential errors: These may be confused with retouched flakes.

Cultural-historical position: Side scrapers are associated with all prehistoric cultural complexes in North Dakota.

Research value: Side scrapers were probably used in hide preparation and the working of bone and wood.

DISTO-LATERAL SCRAPERS

Definition: A flake or other blank type with marginal and/or invasive retouch on one face to produce a regularly shaped straight to convex working edge on one of the lateral edges and one of the ends. Retouch is usually both parallel and transverse to the axis of percussion of the scraper blank.

Potential errors: Disto-lateral scrapers may be confused with retouched flakes.

Cultural-historical position: These are associated with most prehistoric cultural complexes in North Dakota.

Research value: Disto-lateral scrapers probably represent specialized tools for maintenance tasks such as hide preparation and wood and bone working.

GRAVERS

Definition: A flake or other blank form with marginal or invasive retouch to produce a pronounced, sharp, angular projection on the working edge.

Potential errors: Gravers are usually easy to recognize.

Cultural-historical position: Gravers are associated with all prehistoric cultural complexes in North Dakota.

Research value: Gravers are probably specialized tools used for engraving and incising wood and bone.

NOTCHES (SPOKESHAVES)

Definition: A flake or other blank form with marginal retouch to produce a single, concave notch along the edge of the blank form. The notch usually forms a half-circle on the tool's edge.

Potential errors: Notches may be confused with denticulates.

Cultural-historical position: These are associated with all prehistoric cultural complexes in North Dakota. Tools with wide notches tend to be associated with cultural complexes dating earlier than A.D. 500 while tools with narrow notches tend to be associated with cultural complexes dating later than A.D. 500.

Research value: These are specialized tools probably used in the manufacturing of wooden and bone shafts. The larger notches were probably used in the manufacture of spear and dart shafts and the smaller notches used in the manufacture of arrow shafts.

DENTICULATES

Definition: A flake or other blank form with marginal retouch to produce two or more contiguous notches along any working edge. Retouch may be discontinuous. The notched working edge has the characteristic of a saw blade.

Potential errors: These are usually easily recognized.

Cultural-historical position: Denticulates are associated with all prehistoric cultural complexes in North Dakota.

Research value: These are probably specialized tools used for the procurement and/or processing of plant foods and/or general maintenance tasks such as sawing wood and bone.

Prehistoric Ground Stone Artifacts

GROOVED MAULS

Definition: Any ground and pecked stone implement with wide blunt ends and a groove near either the center or one end to facilitate hafting. Mauls are usually oblong to spheroid in form. Battering is usually present on both ends. The most common raw materials are granite, quartzite and diorite.

Potential errors: Mauls are usually readily recognizable.

Cultural-historical position: It is believed that the earliest occurrence of grooved mauls on the eastern Plains is approximately 3,000 B.C. They were used until Euro-American contact.

Research value: Mauls indicate heavy pounding and hammering activities.

HAMMERSTONES

Definition: Any fist size, or smaller, cobble which has discernible battering on one or more edges. These were used in manufacturing other stone implements and performing general maintenance tasks. Shapes vary considerably, with most being oblong to spherical.

Potential errors: These may be mistaken for river cobbles or glacial till.

Cultural-historical position: Hammerstones were used by all prehistoric complexes in North Dakota.

Research value: Hammerstones at a site suggest the manufacturing of other stone and bone implements. They may also have been used in the butchering of animals, smashing bone for the extraction of marrow.

Prehistoric Pottery

POTTERY

Definition: Any piece of prehistoric clay material which was formed into the shape of a pot or vessel and which was subjected to high temperatures to "fire" the clay into an aplastic form. Pots were used to cook and store food and other materials.

Potential errors: Pottery is easily recognized.

Cultural-historical position: Pottery is most frequently associated with Woodland and Plains Village cultures (A.D. 1 to 1850). The decoration and vessel forms are good temporal and cultural indicators.

Research value: The presence of pottery indicates a relatively late occupation of a site and the presence of food storage and preparation.

Historic Artifacts

PORCELAIN

Definition: An artificial mixture containing kaolin, ground flint, and feldspar which is baked at an extremely high temperature. The addition of powdered glass or bone ash allows a lower temperature for vitrification. It is a steel-hard, vitreous, non-porous, translucent ware.

Potential errors: It is usually easily recognized.

Cultural-historical position: Porcelain, although first produced in 8th century China, was not manufactured in any great quantity in the United States until after 1900. It was not made in Europe until the 18th century.

Research value: Since porcelain was never easy to make and has always been expensive, its presence in a site may indicate the high status and/or wealth of the occupants.

WHITEWARE

Definition: A series of refined earthenwares manufactured from a white-burning clay fired at a high temperature to produce an opaque body with a clear, colorless glaze. It includes white earthenware and ironstone. They range from non-vitreous to vitrified, from more-or-less porous to non-porous. White earthenware occurs in a variety of vessel forms and is decorated using a wide range of methods and motifs (e.g. transfer-print, decal, molded, hand-painted, etc.). Ironstone tends to be undecorated (Lofstrom et al. 1982; Price 1981).

Potential errors: Whiteware is easily recognized.

Cultural-historical position: While a colonial pottery is believed to have utilized white-burning clay in the 1680's, whiteware was not commonly produced until 1825 onward.

Research value: Whitewares were usually printed or impressed with a maker's mark after the Civil War. Identification of these marks (e.g. Gates and Ormerod 1982; Godden 1964; Kovel 1953) can help determine the time of site occupation and commerce patterns. Whenever possible, maker's marks are used for dating historic ceramics in the present study. It has been suggested that decorative techniques and motifs may be useful in dating historic sites of the circa 1810 to 1870 period (Lofstrom et al. 1982; Price 1981), but since the project area was not actively settled until the 1880's this dating technique has not been employed in the present study, with one exception. The use of decals is a post-1900 decorative method.

STONEWARE

Definition: A ware manufactured from a more or less white, fine-grained clay fired at about 2200 degrees Fahrenheit. It is steel-hard and non-porous. The exterior is often salt-glazed. The interiors are frequently covered with a dark-brown coating known as Albany slip. It is typically decorated with cobalt aluminate, a dark-blue pigment. Stoneware is usually in the form of crocks and jugs.

Potential errors: It is usually easily recognized.

Cultural-historical position: Stoneware was manufactured in the 18th century, but was mass produced in the mid-19th century. It suffered a decline in manufacture after 1875, but is still being produced.

Research value: Stoneware often bears a maker's mark. Identification of the mark can help determine the time of site occupation and commerce patterns.

REDWARE

Definition: A ware manufactured from red-burning surface clays. It is relatively soft and porous and is commonly coated with a colorless lead glaze. It is occasionally decorated with a white slip.

Potential errors: It is usually easily recognized.

Cultural-historical position: Redware was a household ware manufactured in the New World as early as 1635, but the vast majority was produced after 1800, declining after 1850. Today, it is still available as flowerpots.

Research value: Since the zenith of redware production was pre-1850, the presence of a large quantity of this ware in a site may suggest a pre-1850 occupation.

BOTTLE GLASS

Definition: Any piece of curvilinear glass which appears to have been from a bottle container.

Potential errors: Bottle glass is usually easily recognized.

Cultural-historical position: The height of mold seams on bottle necks are indicative of the time of manufacture (Adams 1971; Santeford 1981). Identifiable maker's marks are also useful for dating bottles (e.g. Toulouse 1971). Complete bottles with content labels pressed into the glass are also datable (e.g. Baldwin 1973).

Research value: Glass bottles are sometimes good temporal indicators, but it is important to remember that the dates based on the height of mold seams are not necessarily precise when applied to the dating of historic sites. They are only meant to give general time references. Older style molds were not immediately discarded with the introduction of new ones. As much as 10 to 15 years may have occurred between the introduction of new molds and processes and their general acceptance. In addition, bottles are reusable, thereby, extending their period of usefulness. Identification of bottle contents is sometimes possible.

WINDOW GLASS

Definition: Any piece of uniformly flat glass.

Potential errors: Window glass is easily recognized.

Cultural-historical position: Window glass is usually associated with Euro-American occupations.

Research value: Window glass is indicative of the presence of some form of building.

PRESSED GLASS

Definition: Any piece of glass with a surface decoration which has been formed to shape in a press-mold. The edges of the decoration are rounded.

Potential errors: It is easily recognized.

Cultural-historical position: Its presence in sites in North Dakota suggests a probable 19th or 20th century occupation.

Research value: The occurrence of pressed glass in a site is indicative of a historic habitation.

DECORATIVE GLASS

Definition: Any glass object with a decorative, rather than utilitarian function.

Potential errors: Utilitarian glassware may also have a decorative motif.

Cultural-historical position: Its presence in sites in North Dakota suggests a probable 19th or 20th century occupation.

Research value: The occurrence of decorative glass in a site is indicative of a historic occupation.

MELTED GLASS

Defintion: Any piece of glass which has been subjected to intense heat to form a "glob" of glass.

Potential errors: Melted glass is easily recognized.

Cultural-historical position: Glass is indicative of Euro-American occupation.

Research value: Melted glass is indicative of intense heat, and large quantities at a site suggests that a structure has burned at the site.

GUN FLINTS

Definition: A cut blade of flint which has a flat ventral face and one or two ridges on the dorsal face. The ends of the cut blade are beveled to intersect the beveled lateral edges. Small fractures often occur along the lateral edges which, during use, strike the firing pin on a flintlock firearm. Gunflints are usually square to rectangular in shape with square to rounded corners.

Potential errors: Gunflints may be confused with end and side scrapers. Strike-a-lights, used in conjunction with steel for the making of fire, may also be confused with gunflints.

Cultural-historical position: Gunflints are associated with early Euro-American settlements and proto-historic and early historic Native American sites. The presence of gunflints on a site would suggest the occupation of the site to have been earlier than A.D. 1850. Both the French and British traded gunflints to North American Indians in exchange for furs and other supplies.

Research value: Gunflints occur in several distinct sizes, depending upon the type of flintlock gun for which they were used: mini-pistols, pistols, rifles, muskets, or canons. French and English gunflints are sometimes discernible from each other on the basis of the color of the flint. The darker colored flints, black and gray, are usually indicative of English manufacture, while lighter colored gunflints are more likely to have been manufactured in France. However, England imported uncut French blades to be cut into gunflints by the English gunflint manufacturers between 1838 and 1848 (Clarke 1935:51; Knowles and Barnes 1937:207). Therefore, flint color alone is not necessarily indicative of place of manufacture.

CLAY PIPES

Definition: Clay pipes were usually made by Euro-Americans for trade with the indigenous peoples. The pipes are usually small, with mold seams discernible on the bowls. Pipes occur in a variety of forms and were used to smoke tobacco.

Potential errors: Pipe fragments may be confused with prehistoric pottery.

Cultural-historical position: Clay pipes are usually associated with historic Native American sites.

Research value: The occurrence of clay pipes suggests a historic or proto-historic occupation at a site.

METAL

Definition: Any piece of metallic material.

Potential errors: Metal is easily recognized.

Cultural-historical position: Most metal is of historic, Euro-American origin. Some metal, particularly copper, may be of prehistoric origin.

Research value: Metal fragments can oftentimes be identified as to the tool they are from and its function. They are indicative of historic or proto-historic occupations at a site.

CHARCOAL

Definition: Any piece of charred wood.

Potential errors: Charcoal is easily recognized.

Cultural-historical position: Charcoal occurs with all cultural complexes in North Dakota.

Research value: Charcoal, in sufficient quantities, can be radiocarbon dated. Charcoal is indicative of the presence of a fire.

Faunal Remains

FAUNAL REMAINS

Definition: The skeletal remains of any animal.

Potential errors: Faunal remains are easily recognized. Specific identification of animal remains may be difficult.

Cultural-historical position: Animal bones can occur at any prehistoric or historic site in North Dakota.

Research value: Faunal remains can be good, past-climatic indicators, as well as helping to determine subsistence and butchering patterns.

Chapter 5

Evaluation of Research

Introduction

The goals and procedures originally set forth in the research design of the contract proposal were modified during the course of this project. Field procedures were slightly altered because of crop and vegetation cover. Some field procedures were abandoned because of the nature of the sites themselves, particularly surface densities of artifacts. One deficiency exists in the primary data base. This is discussed below.

Data Base

The site data base for the project domain has been greatly enhanced during this project. However, there is a large gap in the prehistoric record during the Paleo-Indian and Archaic periods. Only one possible early Paleo-Indian site is recorded in the region. A single Clovis-like projectile point was observed in the collection of Mr. Jay Wessels. The next earliest component identified within the region is late Archaic, based upon the recovery of a lanceolate-shaped, side notched projectile point. Several components within the region can be assigned to Woodland occupations. Most of the sites appear to be late prehistoric, dating mostly within the last 1,500 years.

This large gap in the archaeological record may be attributed to two causes. First, the region was not a desirable area for habitation by prehistoric Archaic hunters and gatherers. This is not very probable, since adjoining areas in Minnesota and Manitoba have sites with Archaic occupations. Secondly, the ability to find early human occupation sites in the region has been diminished because of alluvial deposition within the Pembina River valley, subsequently burying these early occupations, or conversely, meandering of the Pembina River has scoured away these early remains.

Given the nature of the Pembina River, it is postulated that early human occupation of the area existed with sites located on the Pembina River floodplain being deeply buried by alluvium. Since the project domain did not include large upland areas, there are probably early sites located on the upland prairie. Field reconnaissance during this project focused upon the Pembina River floodplain and adjacent uplands and slopes. It is also postulated that the steep slopes paralleling the Pembina River were not ideally suited for habitation by prehistoric peoples because of the steepness of the terrain.

The results of this cultural resource reconnaissance are probably biased toward the later human occupations of the area. This is in part due to the environment and differential preservation of prehistoric remains. These processes which alter the archaeological record are called transformations. Archaeological remains are not fossilized cultural systems. During the time lapse between when the artifacts

were deposited and when they are unearthed by archaeologists, a series of natural and cultural processes have acted upon the deposits which have altered their original spatial associations. These dynamic systems acting upon the cultural remains are called "transformation processes" by Schiffer (1976:11). There are two major transformation processes: 1) "natural formation processes" (N-transforms) which are noncultural actions upon the cultural remains; and 2) "cultural formation processes" (C-transforms) which are cultural actions upon the depositional character of cultural remains (Schiffer 1976:14-15).

The recognition and understanding of these processes is necessary in order to acquire a more realistic understanding of the relationship between the past cultural system and its archaeological record. The processes recognized to have influenced the spatial distribution of artifacts at the 48 sites recorded within the project domain will be described here.

Natural Transformations

The soils, to which the sites in this volume belong, have developed from two major soil-forming processes: horizonation, where soil materials are differentiated into profile and homogenization (pedoturbation) where horizon formation is impeded by mixing. Both processes are important to archaeologists. There are nine basic pedoturbation processes (Wood and Johnson 1978:318):

Faunalturbation	Animals
Floralturbation	Plants
Cryoturbation	Freezing and Thawing
Gravitturbation	Mass wasting
Argilliturbation	Swelling and shrinking of clays
Aeroturbation	Gas, air, wind
Aquaturbation	Water
Crystallurbation	Growth and Wasting of Salts
Seismiturbation	Earthquakes

Each of the above pedoturbation processes will be examined in reference to the geographical region of the Pembina River valley in North Dakota.

Faunalturbation: Disturbance by Animals

Because the culture-bearing soils within the project area are so shallowly buried, the melanization process is of importance in evaluating the vertical provenience of artifacts. Melanization is the darkening of a soil by the addition of organic matter (Buol et al. 1973:243). It is a process by which the soil is reworked by the burrowing and casting of earthworms, insects, and small animals.

Animal burrows in a soil horizon are commonly filled with soil of a different color and texture from a different horizon. These tubular features are known as krotovina. Many species of animals, insects,

reptiles and amphibians cause pedoturbation. Small ground animals such as squirrels and gophers can be so abundant that, in some places, they turn over 15 to 20 percent of the surface soil in one season. This rate would completely mix the soil in five or six years' time (Thorp 1949:190). Large mammals such as prairie dogs, badgers, skunks, and woodchucks burrow deeply, as much as several meters (Bourliere 1964:72-88). Some large mammals also cause soil disturbances, such as the depressions on the Plains which were created by the wallowing activities of bison (Wood and Johnson 1978:320).

The most widely recognized faunal agent for soil mixing is the earthworm. In neutral to alkaline soils, such as those within the project area, there may be up to 500 earthworms per square meter of surface area (Limbrely 1975:29-30). The burial of objects in such soils is a process of soil being brought to the surface as worm casts and the soil accumulating there, while disused burrows are constantly collapsing, producing local subsidence of the overlying soil (Atkinson 1957:221; Darwin 1911:131-232).

One of the consequences of earthworm burrowing is the blurring of natural and/or cultural boundaries in the soil. Cultural texture outlines are often blurred. Soil horizonation processes in eastern North Dakota are often completely obliterated to as much as one meter deep by the action of earthworms (Buntley and Papendick 1960:128). "Since earthworm activity decreases with depth, objects nearer the surface will sink more rapidly than those at a greater depth" (Wood and Johnson 1978:328).

Floralurbation: Disturbance by Plants

Root growth and decay of plants create krotovina-like features termed "root casts" and tree falls, where large amounts of soil are displaced by uprooted trees. Tree falls, which displace the greatest amount of soil material, often create mounds which, together with the depressions, produce "cradle-knoll," a form of microrelief topography. Since the present study area of northeastern North Dakota contains substantial numbers of trees along the Pembina River valley, tree fall would have been a major process in artifact displacement.

Cryoturbation: Disturbance by Freeze-Thaw Action

Freeze-thaw action upon soils creates untold problems for the archeologist concerned with artifact displacement, particularly in the mid-latitudes such as the present project area, where seasonally frozen ground occurs.

The freezing process in soil is very complex. Soil on flatlands, such as within the project area, usually freezes from the surface downward. The freezing process results in a capillary action on moisture within the ground, with the same effect as surface evaporation of soil water. When the soil begins to freeze, water is drawn up from subsurface soils, increasing the water content of the surface soils.

When water freezes, it expands approximately nine percent. As the soil freezes, it begins to expand in the direction of least resistance, that is upward. There are then two essential actions occurring during soil freezing: 1) capillary movement of water to the surface, and 2) ice crystal formation and soil movement upward. The result is heaved soil.

Frost action is most pronounced in wet soils, especially those with a high water table (Wood and Johnson 1978:334-337). Frost heaving of artifacts can be due to two distinct processes: 1) frost pull is when frost reaches a buried artifact with less thermal conductivity than the surrounding soil (bone or wood), and 2) frost push is when the frost reaches a buried artifact with greater thermal conductivity than the surrounding soil (stone, metal).

The degree of frost heaving on an artifact is also dependent upon physical factors such as its geometry and density. Artifacts oriented at different angles tend to rotate toward the vertical with each freeze-thaw cycle, which allows least resistance to vertical movement. With other things being equal, artifacts oriented in the soil with their long axis at a greater angle from the horizontal will experience greater frost heave than artifacts with equivalent lengths that are lying horizontally. Also, vertically oriented long artifacts experience more frost heaving than vertically oriented short artifacts.

Frost action can sort and stratify unconsolidated, mixed sediment that is water salinated. Frost sorting results in larger, more dense objects to be pushed to the surface and smaller, leaving less dense items below the denser objects. "Patterned ground" is a term for more or less symmetrical rock and sediment forms, such as circles, polygons, nets, steps and stripes. Frost action can have the following effects upon artifacts and sediments: 1) reorienting; 2) vertically translocating; 3) sorting; and 4) patterning (Wood and Johnson 1978:339-346). The study area within this project has been subjected to extreme frost-heaving action, particularly the more wet soils in the Pembina River valley and Lake Agassiz plain. Artifacts in sites located within these areas can be expected to have been greatly affected by frost action to a depth of 229 to 254 cm (90 to 100 inches).

Graviturbation: Mass Wasting

Mass wasting involves the movement of large masses of soil by solifluction, gelifluction and frost creep. Solifluction is the slow downslope movement of water-saturated soil. This process can occur in all environments. Gelifluction is the slow downslope movement of water-saturated soil in perma-frost areas. Frost creep is the "ratchetlike" movement of material as the result of frost heaving of the ground and subsequent settling after thawing (Wood and Johnson 1978:346-347). Since the topography of the Lake Agassiz plain is flat with little relief, these graviturbation processes are unlikely to have greatly affected buried cultural remains. Within the Pembina Mountains, the rolling topography may have been subject to these graviturbation processes and any cultural remains there may have been greatly affected.

Argilliturbation: Disturbance by Expanding and Contracting Clays

Seasonal swelling and shrinking of expansible clays in soils can have a major impact upon artifact displacement. Soils with expansible clays are called vertisols. During dry periods, the soils shrink and crack. Surface soil gradually fills the cracks by wind erosion and in-washing at the occurrence of rainfall. Soil becomes wet from the top downward and sideward from the cracks. The expanding soil creates upward and lateral pressures which can displace artifacts both upward and laterally (Wood and Johnson 1978:354). During dry weather, surface erosion can result in surface artifacts becoming deeply buried by being blown or washed into the soil cracks. Therefore, vertisols which seasonally shrink and swell may cause artifacts found on the surface to have originated from below, and those found at deeper depths to have originated from the surface (Wood and Johnson 1978:357). The present study area in northeastern North Dakota has large areas of clay-bearing soils which are subjected to seasonal expanding and shrinking.

Aeroturbation: Disturbance by Soil, Gas and by Wind

Displacement of soil particles by soil gas is limited to desert pavement, which is not applicable to the present study (Wood and Johnson 1978:358). Deflation, caused by wind, is a common process found within the study area. With present modern cultivation practices wind deflation can greatly alter the vertical association of artifacts. The present study area has undoubtedly been greatly affected by wind deflation and, therefore, has probably affected shallowly buried cultural remains.

Aquaturbation: Disturbance by Water Action

Aquaturbation occurs when water under pressure causes soil disturbances. Artesian water action mixes deposits around springs and bogs. This can cause confusion for the archaeologist concerning the associations between artifacts (Wood and Johnson 1978:361).

Periodic flooding of the major rivers within the study area, particularly the Pembina River, creates the potential of scouring of cultural deposits. Scouring would cause small objects to be washed away with the surrounding matrix while larger objects would be horizontally and vertically displaced. It is believed that prehistoric settlements and artifacts may have been greatly disturbed by erosional or depositional processes within the project area.

Crystallurbation: Growth and Wasting of Crystals in Soil

Salt crystalization within soils occurs most frequently in subhumid climates of the world. Soils within the present study area are low in salt content and therefore are not subjected to mixing by the formation of salt crystals.

Seismiturbation: Soil Disturbance by Earthquakes

Earthquake action can cause soils to move laterally and vertically. Deep cracks, caused by earthquake activity, may fill with surface materials. This action can cause surface objects to become more deeply buried while uplift can cause deeply buried objects to move toward the surface (Wood and Johnson 1978:366). The present study is in a low risk area for seismic activity. Distant seismic activity may cause very minor soil movement. It is believed that seismic activity has not greatly affected cultural deposits within the study area.

Conclusions

Soils are a dynamic system with numerous processes acting upon them to move objects both vertically and horizontally. Before valid interpretations are made concerning artifact associations within a given site, it must be demonstrated that the artifacts have not been moved from their original cultural deposition point by any of the previously discussed processes.

Cultural Transformations

The major forms of artifact deposition are:

1. Discard
2. Loss
3. Abandonment
4. Disposal of the Dead

Discard

Discard is when objects break or wear out and are not recycled, and when useless waste products, created from the manufacturing process of useful objects, are disposed of without intention of further use. This "trash" can be discarded in two ways: 1) discarded at its location of use is "primary refuse" and 2) discarded from its location of use is "secondary refuse." Trash dumps are examples of secondary refuse.

Loss

The loss of artifacts by their users is probably a more common event than most archaeologists realize when performing spatial analyses. Schiffer (1976:32) hypothesizes that the probability of an artifact being lost varies inversely with an artifact's mass and varies directly with the transportability (curation) of the artifacts. Binford (1974) has shown that the given desirability for curating an object greatly enhances the probability that the object will eventually be lost.

Abandonment

When objects and facilities at sites are abandoned, although still usable, this is referred to as "de facto refuse" (Schiffer 1976:33). When objects are too large or are no longer needed for an immediate task and the distance to be traveled to the next site is great, these objects will most likely be left at the locus of their last use or activity. Useful objects left inside house structures at the time of their abandonment is an example of de facto refuse.

Disposal of the Dead

Burial practices allow the valid inference ("Worsaae's Law" [Rowe 1962]) (Schiffer 1976:32) which states that objects placed together in a common grave were in contemporary use. The present project did not recover any human burials and therefore this cultural activity does not directly apply to this project.

Scavenging

Scavenging behavior occurs in several forms. Abandonment and loss of useful objects by one social group may, at a later time, be salvaged for use within a different social and technological system.

Present day pot-hunting and surface collecting by local residents greatly disturbs and alters the configuration of the buried cultural materials. These activities can have serious consequences in archaeological interpretation of the remaining cultural materials.

Land Alteration

Modern agricultural practices and urban and rural construction activities can greatly affect the configuration of buried cultural materials.

Treadage and Scuffage

Controlled experiments have shown human treadage and scuffage have an effect on the vertical and lateral displacement of artifacts (Stockton 1973:112-117). Treadage is the vertical action of the foot, which depresses objects under foot, while scuffage is the horizontal action of the foot "where a large object is more likely to be caught squarely on the toe and forced along and up" (Stockton 1973:117). Constant tremors of footfall may also shake small artifacts, causing them to sink deeper.

These forms of "occupational disturbance" (Hughes and Lampert 1977:135-140), can create a mixing of artifacts within a zone of 20 to 30 cm. Because this zone of disturbance moves upward as the deposit grows, the result is a profile in which depth only grossly reflects age,

with the stratigraphic age of artifacts blurred by the process of mixing. It is this general absence of any sharp stratigraphic division in sites within the present project area which led Ames (1975) to excavate test pits in arbitrary depth units.

Recycling

Cultural objects are subjected to other processes which can effect their depositional placement. One of these processes is recycling which is defined as an activity whereby a material or object is introduced as a raw material into a technological process in which it is transformed into a new object in such a manner that its original identity is lost. Secondary materials include objects which have fulfilled their useful function and cannot be used further in their present form and materials that occur as waste from the manufacturing of other products. A second process is secondary use which does not involve extensive modifications of an object to make it suitable for its new function. The major element in this process is a change in artifact function with little or no change in form or morphology.

A third process is lateral cycling which is the change in ownership of an object without any corresponding change in function. Lateral cycling probably occurred prehistorically most often as mechanisms of trade or exchange, either between members of the same social unit or between members of different social units.

A fourth process is artifact conservation which involves a change in object function and in social unit ownership. Conservation processes usually inhibit the introduction of the object into the archaeological record. However, all objects will eventually enter the archaeological record (Schiffer 1976:39-40).

Summary

Any one, or more likely a combination, of the above cultural processes have affected the depositional character of cultural objects recovered from the project area. The combined effects of these processes can make it difficult for the archaeologist to make an accurate description and interpretation of the archaeological materials.

One method to determine the effects of the above natural and cultural transformation processes on artifacts is by cross-mending broken artifacts and comparing the vertical and lateral position of the fragments. Since all of the sites investigated during this project were shallowly buried, usually on top of glacial till deposits, or river alluvium, vertical displacement of artifacts has been profound. Fortunately, lateral displacement of artifacts has been less severe, allowing valid inferences to be made concerning prehistoric and historic human occupations within the study area.

Changes in the Implimentation of the Research Design

Several of the procedures and goals outlined in the research design were altered because of field conditions and site situations. Changes in stated procedures and goals are outlined below.

Changes in Procedures

Survey of a 25 percent sample of the floodway alternatives was successfully completed. In addition to the systematic 25 percent sample, all plowed fields with 100 percent ground visibility were also investigated. This constituted an additional 791 hectares (320 acres) in the diversion structures for Alternative 4 and 395 hectares (160 acres) in the diversion structure for Alternative 5. An additional 371 hectares (150 acres) were investigated along the floodway channels, yielding a total of 1557 hectares (630 acres) surveyed in addition to the 25 percent sample area of 3336 hectares (1350 acres) (Table 15).

In addition to changes in total areas surveyed, field procedures were altered. Instead of two survey crews with two persons each, as originally planned, only one survey crew of four persons was used. Strip plowing fields was not necessary since most of the fields were cultivated and ground visibility was usually greater than 40 to 50 percent. The use of a gasoline powered auger did not materialize because of mechanical problems. In addition to the above changes, plastic datums were not placed at each site, as was planned, because landowner permission was not obtained. All other field procedures were followed as outlined in the Research Design (Appendix A).

Changes in Objectives

The four objectives of the project, as outlined in the Scope of Work and Research Design, were all fullfilled. A reconnaissance level field survey, based on a 25 percent systematic sample of portions of Alternatives 4 and 5 in the boundary floodway was completed. Additional reconnaissance level field work within the Pembilier Dam and Reservoir was accomplished, resulting in reexamination of 13 previously recorded sites and recording 12 newly discovered sites.

A records and literature search for Pembina County was conducted. Intensive literature searches were performed for the Hyde Park Cemetery and community, the Gingras House and Trading Post, the Mayo Brick Plant and community, the Fish Trap, Grant's House and Trading Post, and the hamlet known as Valmont. Research indicates Valmont is situated outside the project domain (see description of Valmont).

Changes in Research Goals

The two research goals, relating to culture history and cultural ecology and process, were partially fullfilled. The culture history

TABLE 15

Acreage Surveyed in Alternatives 4 and 5

Alternative 4 diversion structure

25 percent sample survey	480 acres
additional surveyed lands	<u>320 acres</u>
Total	800 acres

Alternative 5 diversion structure

25 percent sample survey	240 acres
additional surveyed lands	<u>160 acres</u>
Total	400 acres

Floodway channels

25 percent sample survey	630 acres
additional surveyed lands	<u>150 acres</u>
Total	780 acres

Total acreage for 25 percent sample	1350 acres
Total additional survey lands	<u>630 acres</u>
Total acreage surveyed	1980 acres

Alternatives 4 and 5 acreage, total	4320 acres
Percent surveyed, total	46 percent

goal involved delineating the cultural or temporal identification of sites by means of recovery of diagnostic artifacts. Unfortunately, only seven prehistoric, temporally diagnostic artifacts were collected from three different sites in 1981. Fortunately, examination of the artifact collections of Carl Kartes, Jay Wessels, and Ted Dunnigan, all of Walhalla, indicate temporal placement for several additional sites. The infrequent occurrence of diagnostic artifacts prohibits a more refined prehistoric chronology for the area. Future archaeological research will need to focus on this problem.

The goal of cultural ecology and process was to record site locations and their floral and faunal context in order to determine the local resources which were available to the sites' occupants. This goal was partially attained. The alterations of local vegetation because of modern agricultural practices makes it difficult to project, in detail, the environment at each prehistoric site. This is further complicated by the changing climates of the past 12,000 years.

Sites were recorded as to their topographic situation and vegetation context. Vegetation patterns were researched in the U.S. Government Land Office Survey Records for the region. These records and maps were made from 1867 to 1884. These surveys were conducted prior to major alterations to the environment by Euro-Americans.

Summary

The four objectives outlined in the Scope of Work and Research Design were achieved and additional work accomplished. The two research goals were partially achieved, with results determined primarily by site conditions and the general absence of diagnostic artifacts. Overall, the project was a success and accomplished all of the objectives and most of the research goals outlined in the Research Design.

Chapter 6

Prehistoric and Historic Overviews and Site Data Summaries

Introduction

Archaeological and historical investigations in the northeastern corner of North Dakota have been small in number and poorly reported (Good et al. 1980:24). Because of the absence of more specific prehistoric data from Pembina and Cavalier Counties, North Dakota, a more regional perspective of the Plains Indian cultural region, defined by Wedel (1961) as the Northeastern Periphery Region, will be presented to provide an overview of the archaeological manifestations present in northeastern North Dakota.

Culturally, the Northeastern Plains were occupied by band-level hunters and gatherers who shifted residence in response to available food resources. Areas of greater topographic relief would have been the most favorable for human occupation. Tool assemblages often lack temporally diagnostic tools. Projectile points and pottery (pottery occurs very late, temporally) provide the most information for assigning temporal placement of site occupation.

Research in the Northeastern Plains indicates the earliest occupants of the area were small hunting and gathering groups whose sites are characterized by tools indicating specialized activities of short duration and low visibility. Archaeological investigations in eastern Manitoba and western Minnesota, compared to the small amount of work performed in northeastern North Dakota, provide a better understanding of potential prehistoric human cultural manifestations along the lower Pembina River valley. Several cultural sequences have been provided for the Northeastern Periphery Region (Table 16). These form the basis for the following discussion.

Cultural Sequence

Paleo-Indian Period (10,000 B.C. to 5,000 B.C.)

The Paleo-Indian period in the Northern Plains and Northeastern Periphery is represented by three complexes. The earliest is the Clovis complex (10,000 B.C. to at least 9,000 B.C.). It is characterized by the Clovis fluted projectile point which has been found in association with now extinct Pleistocene megafauna, such as mammoth. The methods employed by the mammoth hunters in killing their prey can only be conjectured. Once a young or old or sick animal was separated from the herd, it could have been dispatched by a group of experienced hunters armed with Clovis-tipped spears. Animals may also have been trapped at water holes, in marshes, in broken terrain, or at slippery stream crossings and successfully attacked. There is no indication of the use of poison, pits, traps, fire, or communal drives in the procurement of mammoth (Wedel 1961:59). Due to climatic change and/or overkill,

Table 16

Cultural Periods Developed by Various Authors
Who Have Done Research in the Project Area

YBP Years before present	Frison 1978	MacNeish 1958 Wedel 1961	Hlady 1970	Syms 1977	Major Projectile Point Types
500		Cree Assiniboin Yankton		Historic	various side, basal, corner notched, unnotched projectile points
1,000	Late Prehistoric	Santee Selkirk focus Manitoba focus Nutimik focus	Selkirk phase Manitoba phase Laurel Phase	Late period	
1,500				Middle period	Besant
2,000		Anderson focus		Early period	
2,500	Late Plains			Middle Woodland	Avonlea
3,000	Archaic	Larter focus	Larter phase	Early Woodland	
3,500	Middle				Pelican Lake
4,000	Plains	Whiteshell focus	Whiteshell phase		Hanna
4,500	Archaic				Duncan
5,000		Oxbow			McKean
5,500	Early Plains		?		Oxbow
6,000	Archaic				
6,500			Augostura complex		Pahaska
7,000			Agate Basin		side notched
7,500			complex		James Allen
8,000					Angostura
8,500	Paleo- Indian				Cody
9,000					

Table 16 (cont.)

YBP Years before present	Frison 1978	MacNeish 1958 Medel 1961	Hlady 1970	Syms 1977	Major Projectile Point Types
9,500					Alberta
10,000					Hell Gap
11,000					Agate Basin
11,500					Midland
12,000					Folsom
					Clovis

mammoth became extinct and were replaced by bison as the main meat source for prehistoric Plains peoples. The meat diet of the mammoth hunters was probably supplemented with nuts, berries and tubers.

Although a Clovis projectile point recovered from site 32PB25 is in the private collection of Jay Wessels, there have not been any systematically investigated Clovis sites within the Pembina River valley. However, the Pembina River valley and its immediate environs may have supported a mammoth herd during the terminal Pleistocene. The Pembina River valley may potentially contain deeply buried Clovis sites.

The second Paleo-Indian complex which is represented in the Pembina River valley is the Folsom complex (9,000 B.C. to 8,000 B.C.). This is based on the temporally diagnostic Folsom and possibly Midland projectile point styles and their association with now extinct forms of bison. Folsom points have been found near the Manitoba communities of Treherne and Boissenan, 60 miles north and 110 miles northwest of the study area, respectively (Good et al. 1980:25). Buried Folsom sites may be present in the Pembina River valley.

The third Paleo-Indian complex which is represented in the Pembina River valley is the Plano complex (8,000 B.C. to 5,000 B.C.). This is based on the temporally diagnostic Alberta, Hell Gap, Agate Basin, Scottsbluff, and Angostura projectile point styles and their association with the presently existing form of bison (Bison bison). Alberta projectile points have been found near the Manitoba towns of Manitou and Ninette, approximately 40 kilometers (25 miles) north and 121 kilometers (75 miles) northwest of the study area, respectively. A Hell Gap projectile point was found approximately 75 kilometers (45 miles) northwest of the study area. All of the above late Paleo-Indian find areas are located on or near the Pembina River (Good et al. 1980:25). In addition to the above sites, site DhLb-1, located in southeastern Manitoba, contains a late Paleo-Indian component which has been radiocarbon dated at 8,000 to 7,500 B.C. (Saylor 1975:241-251).

Bison was the main source of meat for Folsom and Plano peoples. The hunting techniques employed by the bison hunters included communal drives and the stalking of bison by individual hunters. Communal drives were accomplished by stampeding a bison herd over a cliff or into a natural entrapment, such as a deep-sided ravine, where the bison were then dispatched. Fire may have been employed in the drives. The meat diet of the bison hunters was supplemented with wild plant foods such as nuts, berries and tubers.

Plains Archaic Period (5,000 B.C. to 500 B.C.)

During the end of the late Paleo-Indian period a great variety of projectile point styles appear. The most fully reported of the Archaic complexes is the McKean-Duncan-Hanna complex (3,000 B.C. to 600 B.C.). There is a concentration of McKean complex projectile point finds on the shores of Rock Lake at the headwaters of the Pembina River (Good et al. 1980:26). The campsites are small and were briefly occupied by small

groups of nomadic bands of hunters and gatherers relying upon bison hunting as their main subsistence pattern (Joyes 1970).

A second Archaic complex, which followed the McKean-Duncan-Hanna complex, is the Pelican Lake phase (1,000 B.C. to A.D. 1), which occurs over much of the northern Plains. The Pelican Lake phase is represented by large corner notched projectile points. Pelican Lake projectile points have been recovered from the Calf Mountain and Shewfelt sites in Manitoba, both of which are in the Pembina Mountains 30 miles north of the study area (Good et al. 1980:27). Campsites are small, indicative of small nomadic bands of hunters and gatherers who concentrated upon hunting bison and gathering wild plant foods. Large numbers of stone circles appear in the area at this time. These stone circles have been interpreted as having been constructed in conjunction with circular lodges or tipis (Frison 1978:51; Mulloy 1960:1-3). Some of the stone circles may be the remains of corral structures and other forms of animal traps (Malouf 1960:3-5; Moomaw 1960:5-9). Carl Kartes, a local collector, stated that stone circles had formerly been present in the uplands of the project area. They were subsequently removed prior to cultivation. Archaic manifestations were discerned in the project area. A Matanzas point and a Pelican Lake point were recovered from site 32PB8. An Oxbow point was recovered from site 32CV204.

Woodland Period (500 B.C. to A.D. 1000)

Following the Pelican Lake phase is the Besant phase (A.D. 1 to A.D. 800). This phase is characterized by side notched projectile points of varying sizes. There is a marked preference for Knife River Flint in the production of projectile points and associated tools (Reeves 1970). It is during this time that the atlatl was being replaced by the bow-and-arrow on the Northern Plains (Reeves 1970). The association of Besant projectile points with secondary burials in log-covered chambers may indicate mound building in the early Besant phase (Joyes 1970). Pottery first appeared in the study area at this time. The corded pottery and mound building characteristics suggest influence from Woodland cultures to the southeast. The Calf Mountain site, located 32 kilometers (20 miles) northwest of the study area, has a Besant component (Good et al. 1980:28). The Besant phase is well represented at the Avery site, located along the headwaters of the Pembina River, in Manitoba. Besant campsites appear to represent lengthy or repeated occupations by nomadic bands who coalesced during communal bison hunts (Joyes 1970). No data concerning habitation structures for Besant peoples in southwestern Manitoba is available, but tipi rings have been found in association with Besant tools in Alberta (Reeves 1970). A Besant point was recovered from site 32CV205, located in the project area.

The Avonlea phase, dating between A.D. 400 and A.D. 700, is partially contemporaneous with the Besant phase. The Avonlea phase is characterized by small, corner notched and side notched projectile points indicative of the use of the bow-and-arrow (Good et al. 1980:28). A gradual transition from atlatl to bow-and-arrow is not discernible, suggesting that the transition was very rapid or occurred elsewhere

(Reeves 1970). Avonlea ceramics consist of fabric-impressed, bossed or punctated conoidal shaped pottery vessels. The Avonlea phase is represented at the Avery site, located along the headwaters of the Pembina River, in Manitoba. Campsites appear to be small, temporary camps of nomadic hunters and gatherers. Nomadic bands appear to have coalesced during communal bison hunts (Joyes 1970).

During the Woodland period there was widespread construction of linear and circular mounds containing flexed and disarticulated primary and secondary bundle burials. Utilitarian and ornamental goods are associated with the burials. This mound complex has been defined as the Arvilla complex, dating from A.D. 600 to A.D. 900 (Johnson 1973:66). The Lake Bronson site (21KT1), located in northwestern Minnesota near the study area, has an Arvilla complex component (Anfinson et al. 1978) containing Blackduck ceramics. Two Blackduck pottery sherds were recovered from the project area. One is from site 32CV204 and the other is from site 32CV217. In addition, a Late Woodland projectile point was recovered from site 32CV204. Examination of the artifact collection of Carl Kartes indicates a substantial amount of Blackduck pottery from selected sites in the study area.

Late Prehistoric Period (A.D. 1,000 to A.D. 1,600)

The Manitoba phase first appears in Minnesota at approximately A.D. 800 and ends about A.D. 1400. It is characterized by Blackduck ceramic ware and small side notched projectile points. It has been hypothesized that Blackduck ceramic ware and the Manitoba phase represent the prehistoric Assiniboine (Wilford 1945; MacNeish 1954). Lugenbeal (1978:45-68) hypothesized that Blackduck ceramic ware is an Algonkian, not Assiniboine, culture in Minnesota. The Manitoba phase is represented at the United Church site (MacNeish and Capes 1958) and at the Calf Mountain site (Joyes 1970), 80 kilometers (50 miles) and 32 kilometers (20 miles) northwest of the study area, respectively. Sites are usually small and appear to represent small bands of nomadic hunters and gatherers. Subsistence strategy included procurement of bison, deer, fish and mollusks. Mound building, grave goods and secondary burials are associated with the Manitoba phase (Joyes 1970).

Following the Manitoba phase is the Selkirk phase (A.D. 1350 to A.D. 1750) which is characterized by fabric-impressed ceramic ware and small, side notched projectile points (MacNeish 1958). MacNeish (1958) hypothesizes that Selkirk phase is the prehistoric and early historic Cree. Many sites having Selkirk phase components have been reported near the study area. Sites are usually small, representing nomadic hunting and gathering bands which coalesced during communal bison hunts. Selkirk phase sites in southeastern Manitoba contain deer, fish, and shellfish, but few bison (Good et al. 1980:30).

Historic Period (A.D. 1600 to Present)

The previous cultural resource survey conducted by Good, Dahlberg and Sprunk (1980) provided an overview of the history of the Pembina River region including a brief discussion of the historic Indian groups who were associated with the region, the ethnic metis who lived in the study area, and the fur trading activities conducted by various competing companies. This overview of the historical activity in the study area will attempt to augment rather than repeat Good, et al. (1980:31-48), especially concentrating on the lands affected by Alternatives 4 and 5 in Pembina County.

Early Exploration

The first non-Indian to visit the future state of North Dakota and leave a written record was Pierre Gaultier de Varennes, Sieur de La Verendrye. He had heard of a great river flowing westward, and in 1738 explored the lands west of Lake Superior, across the Red River to the Mandan villages on the Missouri River. His exact route is still not known. Although Reid (1965:118-119) disagreed with Dr. O.G. Libby's earlier translation of La Verendrye's locations, both men showed the early French man's crossing of the Pembina River to the north and west of the study area, in present Canada (Reid 1965:124).

Historic Indian Groups

A.J. Ray in Indians in the Fur Trade discusses Indian migration westward and southwestward into northeastern North Dakota. Ray analyzes the causes and timing of tribal migration and resource exploitation both in seasonal and long term periods from 1660 to 1870. There are numerous references to seasonal activities but the nature and season is not always specified.

As reported by Good, et al. (1980:33-36), there were four Indian groups historically associated with the Pembina River area; the Cree, Assiniboine, Sioux and Chippewa.

Much of northeastern North Dakota was inhabited by the Cree in approximately 1750. The Cree are an Algonquin-speaking tribe, closely related to the Chippewa, both linguistically and culturally. They were essentially a forest people, but a portion of the tribe moved onto the Plains in order to exploit the bison. This group eventually became known as the Plains-Cree. Their camps were reported along the Red River in 1800 and 60 miles north of the study area in 1804 (Henry in Coues 1897).

The land to the west and north of the study area is reported to have been inhabited by the Assiniboine from at least the middle of the 18th century (Good, et al. 1980:33). The Assiniboine are not presently considered a part of the Sioux tribe, although they derive from the Yanktonai (Feraca and Howard 1963:83). The split occurred prior to 1640.

They have always been firmly allied with the Cree, and somewhat less with the Chippewa (Good, et al. 1980:34).

Both the Cree and the Assiniboine are likely to have made seasonal camps in the study area.

The literature showed more association with the Sioux and Chippewa in the immediate study area. Hickerson's several studies (1956; 1970; 1971) indicate that the Sioux tribes and the Chippewa were traditionally non-warring neighbors in the Lake Superior region of northern Wisconsin-Minnesota, but that they were forced into warfare by competition for food and furs by the European fur-trading complex. Both groups became dependent upon European trade goods and expanded their territories to supply furs to the traders. Recent challenges have been made to Hickerson's argument. In particular, Michlovic (1980:151-167) has found Hickerson's thesis unsupportable.

The Chippewa were first reported in the Pembina area in the journal kept by Charles Jean Baptiste Chaboillez at the North West Company post at the mouth of the Pembina River in 1797. The Chippewa at that time had no permanent location but were nomadic hunters, some even hunting buffalo on foot (Hickerson 1956:305). Hickerson (1956:317) reported that from 1801 to 1808 many Chippewas lived near Henry's post at the mouth of the Pembina River. This group appeared to be the nucleus of a widely distributed and segmented group, identified in many accounts until 1863 as the Pembina Band of Chippewa. In 1863 the Red Lake and Pembina bands of Chippewa ceded their lands in Minnesota and North Dakota (Schulenberg 1956:141).

In general, the Sioux tribes were south of the study area. When the Sioux did appear in the study area, their arrival was generally associated with warfare against the Chippewa, and occasionally Euro-Americans were caught in the middle of these skirmishes. By 1805 a decline in game available in the Pembina area forced the Chippewa to expand south into Sioux territory to find furs and game. Warfare between the two groups increased, and in July 1808 the Yankton and Wahpeton Sioux attacked Fort Pembina, itself. This attack, along with the decrease in game, forced Henry to abandon his post (Hickerson 1956:319-325).

The Chippewa did not entirely abandon the region. Some stayed on during the time that the Selkirk settlement occupied Pembina, but the Chippewa lost their status as a pivotal population. By 1823 when Stephen Long's survey party visited Pembina, there were ten bands of Chippewa there, but none labelled "Pembina." The Pembina band apparently had scattered over a wide area of the Red River Valley. By the second quarter of the 19th century Chippewas in the Red River Valley were described as depressed, some accompanying metis as camp followers (Hickerson 1956:325-327).

Sioux raids into the Pembina area often harrassed the early Euro-American settlement. Elijah Terry, Mrs. Barnard and Mrs. Spencer in the years 1852-1854 were labelled the "Martyrs of St. Joe." Terry and Mrs. Spencer were killed by the Sioux, and Mrs. Barnard died of

consumption. Their graves are located at the Walhalla State Historic Site (Good, et al. 1980:43; Anonymous 1973:9). A later Sioux foray into Pembina County resulted in the massacre of the Delorme family on July 5, 1874 (Site Report 32PB37).

No permanent village sites have been associated with historic Indian groups within the study area. The historic Indians were nomadic hunters, dependent upon the fur trade. The Pembina band of Chippewa were the closest to being a settled group, and they were only seasonal campers near Henry's post.

Military Frontier

Because the Sioux were threatening Euro-American settlement and trade in the Dakotas, a string of military posts were established. Sioux raids on commercial trade routes and settlements, especially during the 1860's, encouraged the location of a post at Pembina. Sioux renegades from the 1862 massacres in southern Minnesota fled north across the U.S.-Canadian border. Several hundred settled at the mouth of the Assiniboine River near Ft. Garry about 60 miles north of Pembina. Fear of their possible raids into Dakota Territory led to the formation of a mounted battalion to be located at Pembina which would act as a buffer between the Indians and settlers. This battalion was placed under the command of Major Edward A. Hatch and became known as "Hatch's Battalion." It was recruited of Minnesota residents during August and September of 1863 and reached Pembina on November 13, 1863.

The troops immediately began to construct a fort and rough cabins (Thompson 1969:9,11). It was only a few days later that 100 men were sent out from this battalion to quell a possible Indian raid at St. Joseph. These troops followed the Pembina-St. Joseph Road and camped at Grant's House and Trading Post (32PB31). Later in December, 20 troopers forced the surrender of a number of Indian renegades at their camp near St. Joseph. Several Indians were killed and the remainder captured (Thompson 1969:11). Hatch's call for unconditional surrender brought a total of about 400 prisoners to Pembina. In January, 1864, Ft. Garry forces captured two of the Sioux chiefs and brought them to Pembina as well. Although some of the Indians were transported to Fort Snelling in February to alleviate food shortages at Pembina, the remainder stayed until May 1, 1864. Hatch's Battalion was then moved out and the buildings either rotted or were sold to local residents (Thompson 1969:13,15).

In 1868 the Sioux were still felt to be a threat along the border, and customs officials complained of lack of military support in obtaining collection of import duties. The activities of metis rebels in Canada were also felt to be a threat. On March 25, 1870, the Department of War directed the erection of a military post at Pembina. The resulting fort was located south of the present Pembina, with the artillery range located in the present airfield (Section 16 T163N R51W).

Although the location of Fort Pembina is outside the immediate study area, its import to the surrounding region is definite. The

presence of the fort brought law and order, thus encouraging the further growth of transportation to and settlement of the area. The occasional transport of troops from Pembina to St. Joseph might have left some artifacts from the camps, such as possibly at Grant's House and Trading Post (32PB31) or at the Delorme massacre site (32PB37), but otherwise probably little physical evidence of military activity would still exist in the study area.

Metis

Good (1980:336-37) provided an overview of this ethnic group of people who considered themselves separate from both Indians and Europeans.

As soon as Langlois established the North West Company's post in the Pembina hills, a small mixed-blood community seems to have formed on the site at the foot of the Pembina Mountain. By 1856 when Father Belcourt established his mill there, St. Joseph already had a population of 1500 French-Canadian, Cree, Ojibway and Assiniboine metis. When Kittson and Belcourt left, it remained a thriving metis town (Gilman 1979:35,38). St. Joseph was the metis center of the Pembina District of Minnesota Territory from 1851 to 1858. It was also a center of Louis Riel's rebellion against the Canadian government in 1869-70 (Woolworth 1975:17).

By 1873 most of the metis families from St. Joseph lived at Wood Lake, Saskatchewan, in the summers in order to follow the last of the buffalo. This left Gingras' store and a few families in St. Joseph, soon to be renamed "Walhalla" by the influx of Scandinavian and Icelandic settlers (Woolworth 1975:27).

In the Pembina area the metis were especially known for their annual or semiannual buffalo hunts. Parties of several hundred metis elected captains to control the hunt and further agreed upon the rules and regulations governing the hunt. Then virtually the entire metis population, entire families included, departed in their carts for weeks or months of hunting on the open prairies. A full description of such a hunt is in Ross's (1856:241-274) early account.

Site 32PB19 is possibly associated with a seasonal metis camp or trading area. Included among the artifacts found by the survey crew was a clay pipe, similar to the pipes shown in photographs of metis traders. This type of clay pipe was a disposable item used by all social classes and was commonly associated with the voyageurs whose work was regularly broken by rest periods for smoking. The distance covered between rests came to be called a pipe (Gilman 1982:45). Other sites of unknown affiliation might also possibly be related to metis activities in the area.



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Fur Trade

Good, et al. (1980:37-44), provided a summary of fur trading activity conducted by the various companies in the Pembina region. The densely wooded areas in the Pembina Hills and the grass prairies of former Lake Agassiz provided a combination of natural resources used to advantage by the fur trade. The richest furs were from animals of woodlands such as those in the Pembina "mountains," and an extensive food supply was provided by the buffalo herds on the prairie. This combination of excellent fur and abundant food supply created a center of fur trading activity from the late 18th century until supply was diminished in the early 1870's. For about one hundred years Pembina was the heart of the fur trading industry and was the scene of conflict and rivalry between the various fur trading companies.

The location of these combined resources was also strategic to the development of the economic exploitation by the fur traders. The Pembina valley became a natural junction of three transportation routes: the Hudson Bay-Lake Winnipeg route to the north; the St. Lawrence-Ottawa-Great Lakes-Lake of the Woods route to the east; and the Mississippi River route to the south (Robinson 1966:54).

Peter Grant was the first trader known to have a post in the Pembina area. He clerked a North West Company post on the east bank of the Red River near present St. Vincent, Minnesota, sometime before 1797.

In the fall of 1797, Charles Jean Baptiste Chaboillez built another North West Company post on the south bank of the Pembina at its confluence with the Red River. This post was built September 28, 1797, and abandoned May 17 the following year. It is not known if Chaboillez returned the following season. The buildings were deserted in 1801 and were said to have been destroyed in the fur trade conflicts of 1815 (Johnson 1965).

Chaboillez reported in his journal that one and one-half miles north of the Pembina, Hudson's Bay Company erected a post under the charge of a Mr. Richards until October 25, 1797, when Richards joined Chaboillez. The Hudson's Bay post was then taken over by Thomas Miller (Johnson 1965). This post, although north of Pembina, was probably south of the channel route for Alternatives 4 and 5. It is possible that find spot 32PB12 is associated with this location.

Alexander Henry was the first trader known to have had a more permanent post at the mouth of the Pembina. He built a North West Company post on the north bank of the Pembina which he used as his main post from 1801 to 1808. Henry's diary documented the buildings at the site which included a high stockade, a storehouse, stable, blacksmith shop and several whitewashed houses.

To fully exploit the advantages of the woods-prairie environments, most companies apparently favored locations of posts both near the mouth of the Pembina River and in the Pembina hills. Both Chaboillez and Henry established subposts in the wooded Pembina hills, and documented in their journals that rival companies also had posts there. Chaboillez

established a post called "Little House" in the Pembina "mountains." He also indicated the presence of Hudson's Bay Company traders in the hills. On December 17, 1797, Chaboillez recorded in his journal a confrontation between his men and Hudson's Bay traders at the "Montagne" (Johnson 1975).

Good, et al. (1980:38-39), provided a summary of possible other posts in the Pembina Hills. Henry's subpost in the "Hair Hills" was built by Andre Lagasse and Joseph Dubois between October 11 and 13, 1800. It consisted of a 15-foot-square building, or hut, used as a dwelling, storehouse and shop. Although speculation was provided as to the location of this post, it still remains unknown. In 1801 the subpost was built by Mr. Langlois at a location speculated to be in Walhalla State Park (Section 29 T163N R56W) (Good et al. 1980:39). The XY Company built a post near this in October, 1801. Good et al. (1980:39) speculated that Henry's third hills subpost was near the present community of Treherne, Manitoba.

No further documentation was found to offer specific locations for these early fur trade posts along the Pembina River (Schneider 1976) and in the hills. Site 32PB35, with its several trade period artifacts, might be associated with one of these posts.

In 1804 the North West Company had absorbed the XY Company, somewhat abating the rivalries. There was a decline in game in the Pembina area from overhunting, and Henry was forced to establish a subpost on the Sandhill River in Polk County, Minnesota, to augment his dwindling fur supply. In July, 1808, the Yankton and Wahpeton Sioux attacked Pembina, and Henry abandoned the Red River. Traders sporadically located posts on the Red River, but the region entered a new era with the formation of the Hudson's Bay Company's Selkirk colony in 1812 (Hickerson 1956).

The Selkirk colony was established as an attempt by the Hudson's Bay Company to provide its fur trade industry with food supplies, relieving the Company of the expense of importing food from Britain. It was to be the agricultural base for the fur traders. It would also encourage retiring company partners to settle in the region and spend their money at the Company instead of returning back to England (Robinson 1966; Ross 1856:17).

Behind the development of this supportive colony was the Hudson's Bay Company's strike at the competition. The North West Company especially took exception to the Selkirk land grant, believing that fur trade and agricultural settlement were incompatible, and the settlement would be the ruination of their trade. The Nor'Westers bought stock in Hudson's Bay Company in an attempt to block the grant, and sent out agents to thwart the recruitment of settlers.

The colony began with a tenuous hold on the Red River. The lack of tools and farming stock, the environmental difficulties, and the doubtful character and the inexperience of many of the immigrants led to extreme hardship in the early years, all compounded by the raging conflict between the two companies. Both companies faced food

shortages, especially during the long, hard winters and began to raid each other's food supplies, threatening their very survival.

Although the story of the Selkirk colony is largely the story of the beginnings of Manitoba, the early settlers relied heavily on Pembina buffalo herds for survival. The buffalo generally went no farther north than Pembina (Pritchett 1942:83). A trend was set the first winter of 1812 when most of the settlers went to Pembina and built cabins, a storehouse, and a stockade which they named Fort Daer, on the south bank of the Pembina. As they struggled to gain a successful foothold in the northern valley, the settlers had to return each winter to Pembina to survive.

A North West Company post was located just across the Pembina River on the north bank, and there was another Hudson's Bay post not far away. The three were all within the radius of a half mile. Also in the immediate area, further straining the food supply, were considerable numbers of Indians, metis and free Canadians (Pritchett 1942:85).

The conflict reached a climax with the "Massacre at Seven Oaks" in June, 1816, when metis were encouraged by Nor'Westers to attack the colony. The death of 20 settlers during the attack sobered both sides, and the conflict calmed down. In 1821 the two companies merged, bringing an end to their rivalry (Robinson 1966:65).

In the summer of 1818, Roman Catholic missionary Father Severe Dumoulin was sent to Pembina to urge continuation of peace. Father Dumoulin built a chapel, a presbytery and a store. In 1823, when Stephen H. Long located the official boundary between U.S. and Canada at the 49th parallel, it was discovered that the entire town of Pembina, except for a single cabin, was south of the marker. Hudson's Bay Company directed the settlers and metis to abandon Pembina. Some stayed on for a while, but by 1836 no one was living at Pembina (Robinson 1966:65-66).

As with the earlier fur trading posts, the actual buildings of the Selkirkers were located at Pembina, out of the defined study area, but their sphere of influence also affected the whole Pembina valley as they further exploited the natural resources available. They no doubt also left traces in the archaeological record, but none have yet been specifically located or identified in the study area.

Fur trade in the Pembina area did not die with the withdrawal of the Hudson's Bay Company from Fort Daer. American fur traders had not been idle and had gained control of the Upper Mississippi Valley. By 1826 the Columbia Fur Company had six posts in Minnesota and the American Fur Company held ten posts in the region. By 1829 or 1830 the American Fur Company set up William Aitkin at a Pembina post. Pembina was still important enough to the Hudson's Bay Company that they drove Aitkin out, and they then established a lease with the American Fur Company to the area from Pembina to Lake Superior (Robinson 1966:73).

The presence of Americans on the Upper Mississippi gave Red River settlers a chance to compete with the Hudson's Bay Company's monopoly.

Many "retired" Hudson's Bay Company traders became independent traders dealing with the American companies. The 1840's became another period of intense competition in the fur trade. The failure of the American Fur Company freed the traders Henry Hastings Sibley and Joseph Rolette from that company's 1833 lease agreement with the Hudson's Bay Company. Rolette reestablished a post at Pembina in 1840. By 1844 Norman W. Kittson gave up his posts among the Sioux and took over the post at Pembina. Kittson built a collection of straw-thatched cabins around a square: residences, warehouses, a trading house, an icehouse, and a blacksmith shop. Hudson's Bay stepped up their competitive post just north of the border.

After the flood in 1851, Kittson moved his post to St. Joseph (Walhalla) near the Pembina mountain, once again establishing the link with the Pembina hills that Chaboillez, Henry and earlier traders had begun. Another independent trader who established a post near St. Joseph (Walhalla) in the 1840's was the metis Antoine Blanc Gingras (32PB101).

Originally located in Walhalla, Kittson's post was moved to its present location in the Walhalla State Park (T163N, R56W, NE $\frac{1}{4}$ Section 29) to better preserve it (Pembina County Commission and Pembina County Historical Society 1975:160). At various times it has served as a warehouse for the American Fur Company, as a residence for the D.B. Spencer family (before they moved to the Gingras area), and as a stable for the Bellevue Hotel (Anon. 1973:29).

Sibley and Kittson withdrew from the declining fur trade business in 1854, both seeking political office. A few traders kept business alive until the encroachment of agricultural settlement brought an end to the fur trade era. Rolette continued on at Pembina. Charles Cavileer kept the Kittson post at Walhalla active until 1859 when Charles Grant and Charles Bottineau purchased it. They also constructed an outpost known as Grant's House and Trading Post (32PB31) at Point Michael. When the partnership broke up a few years later, Bottineau kept the Kittson post and Grant maintained the other. Bottineau and Grant both became transitional people as agricultural settlement took over the old fur trading grounds. Bottineau became the area's first large-scale farmer and livestock raiser, while Grant modified his trading post into an inn for travellers and early homesteaders (Neché-Bathgate History Book Committee 1976:6).

By the 1870's the fur trade was over in the Pembina area, but its impact had been tremendous. It had changed the ways of life of the Native American groups, even forming the new metis culture; it led to the decimation of furbearing animals and buffalo; and it produced numerous trails and new means of transportation, opening the region to wider markets.

Sites in the study area possibly associated with fur trading activity are the following:

32PB12	possible early trade post site
32PB19	possible seasonal trading site
32PB31	Charles Grant's House and Trading Post
32PB32	possible association with 32PB31
32PB101	Gingras' House and Trading Post

It is also possible that other sites listed in Table 17 of unknown affiliation might be associated with the widespread activities of the fur trade.

Trails and Transportation

Growing out of the fur trade were the network of trails, commonly referred to as Red River trails, and their accompanying form of transportation, the Red River cart.

The union of the Hudson's Bay Company and the North West Company in 1821 opened new opportunities for some of the independent traders. Robert Dickson, Joseph Renville, William Laidlow and Kenneth McKenzie established their own partnership which became known as the Columbia Fur Company. Before it was absorbed by the American Fur Company in 1827, the Columbia left its mark on the history of the region by developing well-marked trails between the Mississippi and Red Rivers.

The Columbia Fur Company was also the first company to adopt the use of what became known as Red River carts. The earliest description of the carts was recorded by Alexander Henry in 1801 when he mentioned that his men fashioned some small wooden carts with solid wheels. In 1802, he wrote that some of the men had devised carts about four feet high and perfectly straight, the spokes being perpendicular and only four to a wheel. The carts were changed in design over the years and were quickly adopted by the metis for use in their buffalo hunts.

The later Red River carts used by the Columbia Fur Company were designed for the wide variety of travel conditions. Their 5-foot diameter wheels were high enough to traverse bogs, they were buoyant at river crossings, strong on hills and difficult to upset. A hide or canvas cover turned one into a tent, and they could be converted into a boat for deep water. Oxen were preferred to pull the carts, but Indian ponies were also used, and later even mules.

Also in 1821, Joseph Rolette successfully sent a herd of cattle up the Red River valley from Prairie du Chien via Lake Traverse. Earlier attempts to open this cattle and supply trail had proved not too successful, having been thwarted by weather, grasshopper plagues and suspicions by both Hudson's Bay Company and the U.S. officials that the would-be merchant traders were trying to undermine their authority.

Travel south through the valley began the same year. A migration of dissatisfied Selkirk colony settlers became the vanguard of a steady

TABLE 17

Summary Chart of Possible Affiliations of Historic Sites
Recorded in 1981

FUR TRADE

32PB12 Possible early trade site
 32PB19 Possible seasonal trading site
 32PB31 Charles Grant's House and Trading Post
 32PB32 Possible association with Grant's House and Trading Post
 32PB101 Gingras' House and Trading Post

HISTORIC INDIAN

32PB37 Delorme site

METIS

32PB19 Possible metis or Native American campsite

AGRICULTURAL

Hyde Park settlement
 32PB14 farmstead
 32PB15 farmstead
 32PB16 possible farmstead
 32PB22 farmstead
 32PB25 farm
 32PB31 Charles Grant's House and Trading Post and livestock farm
 32PB33 possible farm
 32PB34 farm
 32CV2 log cabin
 32CV5 farm residence
 32CV10 house foundation
 USD-3 possible farmstead

INDUSTRIAL-COMMERCIAL

32CV11 Mayo Brick and Tile Company
 32CV12 Fish Trap
 32PB12 possible hotel site
 _____ Smuggler's Point saloon

UNKNOWN

32PB8 ceramics, glass
 32PB9 brick

UNKNOWN (cont.)

32PB10 brick, metal
32PB11 ceramics, brick
32PB13 ceramics, glass
32PB20 ceramics
32PB23 ceramics, glass
32PB26 ceramics, glass
32PB27 ceramics, glass, metal
32PB38 glass, rifle cartridge
32CV4 ceramics, glass
32CV7 ceramics, glass
32CV9 ceramics, glass
USD-11 glass
USD-13 ceramics
USD-14 ceramics, metal
USD-25 glass

population movement from the Red River Settlement to the Mississippi Valley. This migration peaked in 1826, but continued well into the 1830's and 1840's. By 1835 the Indian agent at Ft. Snelling had counted a total of 489 persons migrating from the north.

Altercations with the Sioux at Lake Traverse in 1838 led to a change in the trail, as travellers set out across country at the headwaters of the Red instead of continuing to Lake Traverse. Further Indian troubles in 1844 led to other reroutings in Minnesota. Also by 1844 Kittson had opened up a post at Pembina and a heavy traffic began along the trail. The only improvements in the trail at this time were occasional bridges and a series of bypasses to avoid the worst bogs. Kittson also carried mail, including that for Hudson's Bay Company.

The decade of the 1850's saw transportation and commerce over the Red River trails come into their own. In 1857 a total of 500 carts arrived in St. Paul. Besides furs, the trains brought pemmican, dried buffalo meat, moccasins and skin garments. Carried to the north were staple groceries, tobacco, liquor, dry goods, clothing, tools, hardware, guns and ammunition, farm implements and window glass.

The great cart trails of the 1850's established no new trails. The Middle Trail became the one commonly referred to as the "Red River Trail" and extended north from the Otter Tail River on several routes to Graham's Point (near later Fort Abercrombie) where the trail divided between the lowland trail or the ridge trail.

The Ridge Trail or "back country route" was actually the more important of the two trails in North Dakota. The carts proceeded from Pembina to St. Joseph (Walhalla) following the north side of the Pembina River. Along the route, trails branched off to the north and west. At St. Joseph, carts proceeded to the buffalo hunting grounds near Devils Lake, or they continued south toward St. Paul, angling southeast through the marshes between the Pembina and Tongue Rivers. Then they turned south along the bluffs to join the Ridge Trail which crossed the Tongue River at the site of the present Renwick Dam in Icelandic State Park (Gilman 1979:38).

The other North Dakota Trail was known as the River Trail and followed the lowlands along the west bank of the Red River. Although the River Trail was active both earlier and later than the Ridge Trail, the latter was generally preferred because it was drier and crossed tributaries at their narrower points (Gilman 1979:46).

In 1859 the steamboat "Anson Northrup" forged down the Red River to Lake Winnipeg. In response to steamboat service, little towns grew up along the river, and the River Trail became their only land link. Improvements in the road opened the possibility for a combined steamer-stage route which was developed by the Minnesota Stage Company.

Indian uprisings and droughts hampered the development of the steamer lines in the early 1860's, leading to renewed reliance on the cart trails. Military trains on their way to forts in Dakota Indian territory also followed the crowded cart trails.

By 1871 a further transportation development augmented the north-south trade. The Northern Pacific Railroad reached the Red River from St. Paul. James J. Hill formed the Hill-Griggs company which gained a monopoly in steamboat transportation across the border in the "Selkirk." After a season of competing with Kittson's company, the two united into the Red River Transportation Company. By 1878 Hill's St. Paul, Minneapolis and Manitoba Railroad reached the border and connected with a branch of the Canadian Pacific. This modern era of transportation became predominant, leaving the old cart trails to become plowed into fields by the new surge of agricultural settlement.

The trails through the survey area were shown in maps in Moses K. Armstrong's original land survey of 1867 drawn by the U.S. Northern Boundary survey in 1872-1876 (Fig. 33). Early roads were also shown in Andreas (1884) and Ensign (1893).

Early Hyde Park residents remembered seeing Red River carts pass by on the old trails near their farmsteads after settlement began in the survey area in 1879 (WPA interviews: Watts, Thompson).

It is highly likely that with the volume of transportation routed along the two trails in North Dakota, including the Pembina-St. Joseph branch along the border in the immediate study area, some cultural debris might have been littered along the trails. Several sites in the survey area were located on trails between Pembina and St. Joseph (Walhalla). The most significant of these sites were the Gingras House and Trading Post (32PB101) where several trails converged (U.S. Northern Boundary Survey 1877) and Grant's House and Trading Post (32PB31) which was at a junction with the road north to Winnipeg (Armstrong 1867). Other sites which might be associated with trails were: 32PB15, a farmstead; 32PB16, a possible farm; 32PB25, farm; 32PB26, unknown; 32PB27, unknown association; 32PB34, farmstead; and 32PB38, also unknown.

Agricultural Settlement

Agricultural historians have termed the years 1878-1887 the "Great Dakota Boom," indicating an influx of settlers to Dakota Territory. By 1879 the Red River Valley had become famous for its "bonanza farms," extensive wheat farms mainly in Richland, Cass and Traill counties of North Dakota. Small farmers were anxious to use land in the valley as well, since it had been proven that crops there were productive (Fite 1966:84-86,93).

Agriculture had begun on a small scale in the Pembina area when men at Alexander Henry's post grew vegetables in the post garden. The Selkirk settlement was primarily established as an agricultural venture, but was to the north of the study area. Permanent agricultural settlement began in Pembina area in the 1870's when Charles Bottineau and Charles Grant (site 32PB31) began farming.

By 1879, the railroad was completed to the Red River, providing transportation for homesteaders and access to markets. Coincidentally,

the late 1870's were the years homesteading began in earnest along the northern boundary of Pembina county, as reflected in local histories. The first Hyde Park homesteaders arrived in 1879 (see Hyde Park report). Along the channel route for Alternatives 4 and 5, homesteaders seem to have been from England or Scotland via Canada. Other areas nearby were settled by predominantly by Scandinavian and Icelandic people. In Hyde Park, especially, settlement was from the north rather than following the usual east-west frontier movement in other parts of the United States.

Besides the Hyde Park settlement discussed in a separate section of this report, agricultural settlements are represented by sites 32PB14, 32PB15, 32PB16, 32PB22, 32PB25, 32PB31, 32PB33, 32PB34, 32CV2, 32CV5, 32CV10 and USD-3. Of these sites, seven should be more extensively documented for determination of significance. It is also possible that several of the sites of unknown affiliation are associated with farming activities.

U.S.-Canadian Boundary

The fact that the survey area is contiguous to the boundary between the United States and Canada is of some significance historically. The 49th parallel west of Lake of the Woods was decided upon as the boundary line between the two countries in the Treaty of 1818, but it was not so easily marked on the ground. Major Stephen H. Long of the topographical Engineers led an expedition to determine the 49th parallel at the Red River. His astronomers determined the point, and it was marked by an oak post marked "G.B." on the north side and "U.S." on the south. A prankster later turned the post around and it stayed reversed until it rotted away (Parsons 1963:3,5).

Site 32PB12 might be associated with Long's camp (REAP survey 1977:113). In 1850 Captain John Pope, also of the Topographical Engineers, confirmed Long's marker, but British explorer Capt. John Palliser adopted a point 370 yards farther north. This might have inspired citizens of Pembina to erect in 1860 what became known as the "whiskey post," about a mile north of Long's marker, in an attempt to stop the smuggling of liquor into the U.S. from a house near the line (Parsons 1963:6-7).

Earlier smuggling had occurred at Pembina when independent fur traders smuggled furs out to American Fur Company posts to avoid the Hudson's Bay Company monopoly. The establishment of a custom's office in Pembina in 1851 was an attempt to control smuggling of furs at the border.

When the survey was conducted to establish the location of new Fort Pembina in 1870, Capt. David Porter Heap established the 49th parallel 4600 feet north of Long's position. This included a Hudson's Bay Post which was immediately confiscated for customs duty by U.S. customs officer John C. Stoeber. This led to the formation of a joint boundary survey commission which first met in 1872 at which time it was agreed to start work at Pembina (Parsons 1963:14,24).

The joint commission set up camp in North Pembina, renamed Camp Dufferin in September, 1872 (present-day West Lynne, Manitoba). Several wooden frame buildings were constructed, one of which was a two-story structure with offices and a kitchen below and bedrooms above (Parsons 1963:24).

Over the next four years the survey crews computed the boundary location and erected stone monuments at every mile along the border from the Lake of the Woods west. One of the observation camps was located at Point Michael (see site 32PB31). It is unlikely that any physical remains from this early survey activity are evident in the study area except perhaps at the location of their observation camp.

A new treaty in 1908 between the United States and Canada called for a re-examination of the entire boundary, including remonumenting the border from Lake of the Woods west to the Rockies. From 1909 to 1913, parties from both countries worked east from the Rockies, finding all but one of the 388 original markers. All new points and sites of old cairns and mounds as far west as the North Branch of the Milk River were marked with cast-iron monuments (Parsons 1963:145-146).

As is often the case along the boundary between two countries, smuggling activities were evident. Besides the activities mentioned at Pembina, other locations along the border became famous for supplying illegal liquor. The most obvious was the area named "Smuggler's Point" (see site report, this document). Liquor was legally prohibited in the state of North Dakota from 1890 to 1932. Local informants related several tales of "booze" smuggling during the Prohibition Era.

Other smuggling involved the transport of opium across country borders. In 1893 Frank Hall and James Turner were arrested for smuggling opium on a Great Northern railway sleeper without paying import taxes. At that time North Dakota allowed the import of opium with a duty of \$12 per pound. Opium was commonly used in patent medicines of the time (DauBach 1979a).

Of interest is the fact that the boundary area is still used for smuggling. The survey crew for this report were surprised to find current artifacts of the drug traffic stashed behind a tombstone in Hyde Park cemetery. A report was made to the proper authorities who suspected an across-the-border drop off had been made.

Conclusion

The junction of trade routes from the east, north and south, the contiguity of prairie and woodland ecotones, and the availability of fertile land encouraged the varied historical activity in the Pembina River valley. Indians, metis, fur traders, farmers, and commercial-industrial settlers all took advantage of the natural resources provided in the area.

This region is not unique because of the exploitation by Indians, metis and Euro-Americans, but it is unique in United States history

because of the fur trade conflict which occurred between competitive groups as they each attempted to dominate this valuable resource area. Its location on what became the border between two countries was exploited as a gateway through which trade goods were passed, legally and illegally, by several different transportation systems. The cart trails and Red River carts used on the trails in the Pembina valley were a unique transportation system used only in the Red River Valley. Because the Pembina River flows through lands once known as the heartland of the fur trade, any site with possible fur trade association should be carefully evaluated.

Lacking in the literature for the Pembina region is in-depth historical analysis of these human activities. Gilman's (1979) study of the Red River trails offers an excellent examination of this one aspect of valley history, and includes a chapter on the trails in North Dakota. The fact that little examination has apparently been done by historians in this region is surprising. The local histories available, although well-meaning, should not be considered valid, well-documented sources. Further historical survey of newspapers, manuscripts and census records should be conducted before valid history of this specific study area can be considered completed. The written reports of the historic sites recorded in this survey may, therefore, be considered as important primary sources which provide information about the history of the Pembina region which is not available in any other source. Table 17 summarizes the possible affiliations of historic sites.

Prehistoric Diagnostic Artifacts

Introduction

Pottery sherds and projectile points are oftentimes indicative of the temporal placement of site occupations and cultural affiliation. In the Pembina River project domain, only two pottery sherds and five projectile points were collected from three sites in 1981 and one rimsherd in 1975 (Ames 1975). The following is a discussion of these diagnostic artifacts.

Pottery

Two pottery sherds were collected from two sites, 32PB19 and 32CV204, in 1981. One rimsherd was collected by Ames (1975) from site 32CV217.

Site 32CV204

The pottery sherd from site 32CV204 (S-88) is badly eroded. It contains small to medium size crushed granite temper. It is probably a Blackduck ware, since examination of Carl Kartes' artifact collection from site 32CV204 contains a large quantity of Blackduck pottery ware (Anfinson 1979:23-37).

Site 32CV217

One rimsherd was collected from site 32CV217 by Ames (1975) (Fig. 47e). The specimen has a flat lip which measures 8 mm thick. The top and exterior portions of the lip have parallel, oblique, stamped motifs. Below the exterior motifs are small, oval-shaped punctations. The sherd is blackened on the interior. Temper consists of small to medium size crushed granite. This specimen is like Blackduck ceramics found in the western Great Lakes region. Blackduck ware has been recovered from sites which have been radiocarbon dated at A.D. 800 to A.D. 1400 (Anfinson 1979:23-37). Mr. Carl Kartes has collected a Catlinite pipe from site 32CV217, which also suggests a late occupation of the site.

Site 32PB19

One sherd was collected from site 32PB19 (S-25). The sherd is from near the rim or lip of a vessel. The sherd measures 8.7 mm thick. It is too small to discern the presence of any decoration. Temper consists of small to medium size crushed granite. It is believed this sherd is probably representative of Blackduck ware, however, positive cultural and temporal placement cannot be made on the basis of available data.

Projectile Points

Five projectile points were collected in 1981. Two projectile points were recovered from sites 32PB8 and 32CV204 and one was recovered from site 32CV205.

Site 32PB8

The two incomplete projectile points collected from site 32PB8 are dissimilar. One (S-2) (Fig. 37b) is a long, lanceolate shaped, dart point with very shallow and small-side notches. The shoulders and tangs are rounded and the base has been thinned and is slightly concave. It is biconvex in cross-section and the blade edges are straight. The point is made of a light brown colored quartzite. The tip is missing, with a lateral break approximately two-thirds the length from the base. It measures 17.4 mm wide at the base, 16.0 mm wide at the notches, 20.0 mm wide at the shoulders, and 6.4 mm thick. The point is similar to Matanzas points (Perino 1968:54), which date to the Late Archaic (3,000 B.C. to A.D. 1).

The second projectile point from site 32PB8 (S-1) (Fig. 37a) is a medium size, triangular shaped dart point with either corner or side notches. The base is missing with a lateral break through the notches. The shoulders are slightly rounded. It is biconvex in cross-section. The blade edges are straight. It measures 14.0 mm wide at the notches, 19.6 mm wide at the shoulders, and 5.8 mm thick. It is similar to Pelican Lake points (Perino 1971:72), which date at approximately 300 B.C. The point is made from a white-colored chert.

Site 32CV204

Specimen S-87 (Fig. 44a) is a complete, small, triangular shaped arrow point. The blade edges are convex. It is plano-convex in cross-section and has an expanding stem. The base is straight to

slightly convex and the shoulders are slightly rounded and irregular in shape. The specimen measures 15.0 mm long, 8.6 mm wide at the base, 14.6 mm wide at the shoulders, and 3.7 mm thick. The point is made on a chert flake. The specimen appears to be a Late Woodland point.

The second projectile point (S-86) (Fig. 44b) is an incomplete, small, triangular shaped arrow or dart point. The tip is missing, with a lateral break approximately two-thirds the length from the base. The break appears to be an impact fracture. The blade edges are straight to slightly convex. The point has shallow side notches and rounded shoulders. The base is concave with protruding and rounded tangs. The point is similar to Oxbow points (Perino 1971:68) which date to approximately 3000 B.C. Since this point occurs on a site which has yielded Blackduck pottery ware, it may be a scavenged tool from another site which was recycled and brought to site 32CV204. Site 32CV204 is a multicomponent site with an Oxbow component. The specimen measures 17.0 mm wide at the base, 14.8 mm wide at the notches, 16.4 mm wide at the shoulders, and 3.7 mm thick. It is made of a buff-colored chert.

Site 32CV205

Specimen (S-13) (Fig. 47b) is an incomplete, triangular shaped, small arrow or dart point. One corner of the base is missing. It has shallow side notches with an expanding base. The blade edges are convex and the tip is blunted. The point is biconvex in cross-section. It is similar to Besant points (Perino 1971:8) which date approximately A.D. 400. The point is made of a buff-colored chert. It measures 26.7 mm long, 14.5 mm wide at the notches, 17.5 mm wide at the shoulders, and 4.3 mm thick.

Examination of Mr. Jay Wessels' private artifact collection revealed a Clovis-like projectile point (Fig. 49a). The site from which the projectile point was collected was field checked and designated site 32PB25. This site may have a buried, early Paleo-Indian occupation. Examination of Mr. Carl Kartes' artifact collections indicates most of the prehistoric sites with surface exposure, i.e., artifact scatters, indicates they are of Woodland and Late Prehistoric occupation.

Summary

The cultural and temporal diagnostic artifacts collected and observed from sites within the project domain indicate occupation of the region by early Paleo-Indians to historic Native American tribes. Most diagnostic artifacts indicate intensive occupation and use of the region by hunters and gatherers for the past 4,000 years. Additional investigations need to be performed to determine the cultural and temporal placement of other sites within the project domain.

Site Density Patterns

Introduction

The environmental data acquired and correlated with known site locations can be used to make general statements for predicting site densities, locations, and significance. First, predictions are made concerning site densities and estimates of site numbers in areas not yet surveyed within the Pembina River project domain. Second, general predictions are made concerning site locations within environmental parameters such as soil types and topographic situations. These predictive statements can be used to determine future cultural resource investigations within the project domain. The references and predictions are based upon using data from all recorded sites within Pembina and Cavalier Counties. Twenty-eight sites were used for Cavalier County and 33 sites and 13 find spots were used for Pembina County.

Site Densities

Estimates have been calculated concerning the size of the five structural alternatives and areas already checked for the presence and absence of cultural remains. Site densities are calculated for known areas and projected for the unknown areas, i.e., lands not yet surveyed. Table 18 shows the calculated densities in surveyed lands and predictions of site numbers to be found in unsurveyed lands. The calculations are in relation to each of the five structural alternatives.

Alternative 1: Alternative 1 will impact approximately 1684 hectares (4160 acres). About 648 hectares (1600 acres), or 38.5 percent of the area, have been surveyed by field reconnaissance. Therefore, approximately 61.5 percent, or 1036 hectares (2560 acres) have yet to be surveyed for cultural resources. In the bottomlands and bluff tops which have been surveyed, 27 sites are reported, which is a site density of .007 sites per hectare (.017 site per acre). On the basis of known site densities, it is estimated that at least 44 additional sites should be found within the domain of Alternative 1. This makes a projected total of 71 sites which should be found within the project area.

Currently there are six sites considered significant within the project domain. This is a density of about .009 sites per hectare (.004 site per acre). Using this known density of significant sites, it is postulated that at least 10 additional significant sites will be found, making a total of 16 significant sites within the Alternative 1 project domain.

There are some definite biases in these projections. First, all surveyed lands are on the Pembina River valley floodplain and bluff tops overlooking the gorge. One would not expect to find many sites situated on the steep valley walls. It is expected that bison jump sites are present in the area at the base of some of the steep bluffs. These

TABLE 18

Projected Estimates of Frequency and Significance of Cultural Resources
In Areas not Yet Systematically Investigated

Alternative	1	2	3	4	5
Total Area	4160 hectares	4160 hectares	4160 hectares	3740 hectares	6660 hectares
Total Area	1600 acres	1600 acres	1600 acres	1600 acres	2600 acres
Total Area	648 hectares	648 hectares	648 hectares	648 hectares	1053 hectares
Surveyed	38.5 %	38.5 %	38.5 %	43.0 %	39.0 %
Total Area	2560 acres	2560 acres	2560 acres	2240 acres	4060 acres
To be	1036 hectares	1036 hectares	1036 hectares	907 hectares	1644 hectares
Surveyed	61.5 %	61.5 %	61.5 %	57.0 %	61.0 %
Sites per	.017 acres	.017 acres	.017 acres	.015 acres	.016 acres
Unit Area	.007 hectares	.007 hectares	.007 hectares	.006 hectares	.006 hectares
Number of	27	27	27	24	42
Sites Reported					
Projected Number of Sites	44	44	44	32	65
Significant Sites	6	6	6	6	9
Reported					
Significant Sites	.004 acres	.004 acres	.004 acres	.004 acres	.003 acres
per Unit Area	.009 hectares	.009 hectares	.009 hectares	.009 hectares	.009 hectares
Projected Number of	10	10	10	10	12
Significant Sites					
Projected Total Sites	71	71	71	56	107

bison procurement sites are probably buried below colluvium on the talus slopes. Therefore, given this survey bias of project lands, the projected site densities may be too high. However, there are probably deeply buried sites within the floodplain which have no surface visibility. With all things considered, the projected site densities may approach reality.

Alternative 2: Site densities and predictions for Alternative 2 are the same as for Alternative 1.

Alternative 3: Site densities and predictions for Alternative 3 are the same as for Alternative 1.

Alternative 4: Alternative 4 will impact approximately 1514 hectares (3740 acres). About 648 hectares (1600 acres), or 43 percent, have been surveyed by field reconnaissance. Therefore, approximately 57 percent, or 907 hectares (2240 acres) have yet to be surveyed for cultural resources. Field reconnaissance has yielded 24 sites, which is a density of .006 sites per hectare (.015 per acre). On the basis of known site densities it is estimated that 32 additional sites will be found within the project domain of Alternative 4. This makes a projected total of 56 sites which should be found in the project area.

Currently there are six sites considered significant within this project domain. This is a density of about .009 sites per hectare (.004 sites per acre). Using this known density, it is postulated that 10 additional significant sites will be found, making a total of 16 significant sites within this project domain.

There are fewer biases in these predictions for Alternative 4 than those for Alternatives 1, 2 and 3. The lands for the boundary floodway were systematically sampled at a level of 25 percent. A few plowed fields were surveyed in addition to the 25 percent sample. Given this minimal survey bias, the projected site frequencies should be fairly accurate.

Alternative 5: Alternative 5 will impact about 2696 hectares (6660 acres). Approximately 1053 hectares (2600 acres), or 39 percent, have been surveyed by field reconnaissance. Therefore about 61 percent, or 1644 hectares (4060 acres) have yet to be surveyed for cultural resources. Field reconnaissance has yielded 42 sites, which is a density of about .006 sites per hectare (.016 sites per acre). On the basis of known site densities, it is estimated that about 65 additional sites will be found within the project domain. This makes a projected total of 107 sites which should be within the project domain.

Currently, there are nine sites considered significant within this project domain. This is a density of about .009 sites per hectare (.003 sites per acre). Using this known site density, it is postulated that about 12 additional significant sites will be found within the project domain.

There is a major bias in the data for predicting frequencies of sites for Alternative 5. The boundary floodway was surveyed at a level

of 25 percent with a few cultivated fields also surveyed. This part of the project has minimal bias; however, Alternative 5 includes a Pembilier Dam and Reservoir. No systematic surveying strategy has been applied to the Pembilier Reservoir. Recorded sites are all located on either the Pembina River valley floodplain or on the adjacent bluff tops which overlook the gorge. For this reason, the site predictions for Alternative 5 may not be realistic.

Reliability of the Data

Biases in the data base have been described above for each Alternative. Examination of the site frequencies in Table 18 shows a consistency which one would not necessarily expect, particularly between the biased data for Alternatives 1, 2, 3 and 5 and the less-biased data for Alternative 4. This consistency in site densities suggests they may reflect reality. It is believed the projected site frequencies approach reality and can be used for cultural resource management decisions for the Pembina River project.

Site Location Patterns

Introduction

It is often useful to be able to predict the location of sites according to some observable topographic or physical feature. The following is an attempt to develop a model for the location of prehistoric and historic sites along the lower Pembina River valley. For sites located in Pembina County, soil associations are used to determine the most likely locations of sites. This procedure is useful because the whole area is flat and the U.S. Department of Agriculture, Soil Conservation Service, has completed typing and mapping all of the soils within the county.

Sites in Cavalier County, or the Pembina Mountains, tend to be associated with certain topographic features. Unfortunately, the Soil Conservation Service has not yet completed typing and mapping the soils within the county. In addition to sites located within the five construction alternatives, sites recorded outside the project domains are included in the development of the site locational model.

Pembina County Site Location Patterns

Table 19 shows the sites and their soil associations for Pembina County. Each soil type associated with a site is recorded. Soil associations have been assigned a degree of campsite suitability by the Soil Conservation Service. Campsite suitability is dependent upon a number of factors, among them the steepness of slope, proneness to flooding, and rate of permeability. There are four campsite suitability classifications: 1) none-to-slight impediments; 2) moderate impediments; 3) moderate-to-severe impediments; and 4) severe impediments.

TABLE 19

Pembina County Sites and Associated Soils

<u>Camping Impediments</u>	<u>Site</u>	<u>Soil</u>	<u>Component</u>
S	32PB8	Rr	P,H
S	32PB9	Rr	P,H
S	32PB10	Rr	H
S	32PB11	HmA	H
S	32PB12	HmA, WaA	H
S	32PB13	WaA, CaA	P,H
M-S	32PB14	FaB	H
N	32PB15	HfA	H
M-S	32PB16	FaB	H
M-S	32PB17	FaB	P
M-S	32PB18	FaB	P
M-N	32PB19	EmA, ZgD	P,H
M-N	32PB20	MaB, BwB	P,H
M	32PB21	MaB	P
N	32PB22	VwA	H
N	32PB23	EmB, MbB, MbA	P,H
N	32PB24	EmB, EmA, Rp	P
N	32PB25	SwA, EmB	P,H
N	32PB26	GaA	P,H
N	32PB27	EmA	P,H
N	32PB28	EmA	P
N	32PB29	EmA	P
M	32PB30	ZgD	P
S	32PB31	WaA	P,H
M-S	32PB32	WaA, FaB	P,H
M	32PB33	MaB, HgE	H
N	32PB34	GaA	H
M-S	32PB35	CbB, PyA	H
N	32PB36	EmA	P
M	32PB37	DdA	H
M-S	32PB38	LrB	H
N-M	32PB101	SwA, ByD, LrA	H
N	32PB201	ByB, ByA	P
S	USD-2	Ff	U
S	USD-3	Rr	H
M-S	USD-9	FaB	U
M-S	USD-10	FaB	U
M-S	USD-11	FaB	H
M-S	USD-13	FaB	H
N	USD-14	GaA	H
M	USD-15	GfA	U
M-S	USD-17	LrB	P
S	USD-20	Ff	P
S	USD-21	Ff	P
M-S	USD-25	LrA	H
M	USD-43	HgE	P

S= Severe
P= Prehistoric

M= Moderate
H= Historic

N= None to Slight
U= Unknown

Prehistoric sites are most frequently associated with soils with none-to-slight campsite impediments. Sites also occur on soils with moderate, moderate-to-severe and severe impediments. Sites associated with soils with severe campsite impediments were probably seasonally occupied, and were probably specialized procurement and activity sites. During seasons with high precipitation, these sites would have been uninhabitable.

Historic sites are not found in any particular type of soil association; site frequencies occur uniformly with all types of soils, with the highest frequency associated with soils with severe campsite impediments (Table 20). This phenomena may be explained by several factors. First, early Euro-American settlers were not familiar with the local environment and initially built residences in flood prone areas. These areas were also wooded, similar to the eastern environment from which many of the first Euro-American settlers had come. After having lived in the area for a number of years, settlers became familiar with the environment and began residing in more suitable areas (Roberts 1981:559). Second, some of the historic sites and findspots along the Pembina River banks may be trash dumps and refuse disposal areas and may not represent past residential structures. The occurrence of trash refuse areas would bias the data interpretation.

Examination of the soil associations of sites recorded in Pembina County indicate site locational patterns. Even though the patterns are general, they give an indication as to the most likely soil associations on which sites are most apt to occur. Also, as important, are the soil types which would not have sites associated with them.

Cavalier County Site Location Patterns

Sites along the Pembina River in Cavalier County tend to be associated with one of three topographic features: 1) bluff and ridge tops; 2) gentle sloping colluvial fans; and 3) river terraces. Table 21. shows the topographic associations of the sites in Cavalier County. There are 12 historic components, of which five (42 percent) are associated with bluff and ridge tops, three (25 percent) with colluvial fans and four (33 percent) with terraces. Prehistoric components are frequently associated with all of the topographic features with seven sites (25 percent) on bluff and ridge tops, ten (40 percent) on colluvial fans, and eight (32 percent) on terraces. The following generalizations are made concerning site locations in the Pembina Mountains:

1. Prehistoric sites occur most frequently on colluvial fans while historic sites occur most frequently on bluff and ridge tops.
2. Prehistoric and historic sites occur at approximately the same frequency on river terraces.

TABLE 20
 Site Components and Campsite Impediments for Pembina County

<u>Soil Impediment</u>	<u>Prehistoric Components</u>	<u>%</u>	<u>Historic Components</u>	<u>%</u>	<u>Find Spots</u>	<u>%</u>
None-slight	14	43%	11	28%	-	-
Moderate	6	18%	8	21%	1	25%
Moderate-Severe	4	12%	8	21%	2	50%
Severe	8	24%	12	30%	1	25%
Unknown	1	3%	-	-	-	-

TABLE 21

Cavalier County Sites and Associated Topographic Location

<u>Bluff or Ridge Tops</u>		<u>Colluvial Fans</u>		<u>River Terraces</u>	
32CV2	P,H	32CV8	P	32CV10	H
32CV3	P	32CV203	P	32CV11	H
32CV4	P,H	32CV204	P	32CV12	H
32CV5	P,H	32CV206	P,H	32CV201	P,H
32CV6	P	32CV208	P	32CV205	P
32CV7	P,H	32CV210	P,H	32CV209	P
32CV9	P,H	32CV212	P	32CV211	P
7 Prehistoric - 25%		10 Prehistoric - 40%		8 Prehistoric - 32%	
5 Historic - 42%		3 Historic - 25%		4 Historic - 33%	

P= Prehistoric

H= Historic

Interpretations

Prehistoric sites occur most frequently on colluvial fans because the fans prevented floodwaters from disturbing the sites, yet provided easy access to a reliable water supply and protection from the severe winter winds on the uplands. Sites situated on terraces would be prone to periodic flooding of the Pembina River. Prehistoric sites situated on the bluff and ridge tops were probably warm-season campsites and hunting camps. Severe winter winds would have made bluff top sites uninhabitable without some form of permanent structure, such as an earth lodge.

There seems to be a discernible temporal trend in Euro-American site locations. The earliest Euro-American settlers probably settled the flat upland prairies and oak savannas. The rugged Pembilier Mountain terrain made access to the slopes and floodplain difficult. With the influx of more settlers in the late 19th century and early 20th century, more farmers began to clear the bottomlands and settle in the Pembina River floodplain. These farmers farmed small plots of land. With the introduction of modern agricultural equipment and farming practices, the small farm plot on the floodplains became inaccessible and unprofitable to farm. Therefore, farmers tended to move out of the floodplain and back on the bluff and ridge tops. Today, there is only one residence occupied on the Pembina River floodplain within the Pembilier Dam area, and this residence is near the Fargo Bridge at the confluence of the South Pembina River and Pembina River. Technological advances in farming, among other things, have helped change the Euro-American settlement pattern in the Pembina River gorge.

Site Description Terminology

The following are definitions and criteria used in this report to define a "site," "findspot," and criteria for eligibility for nominating a site to the North Dakota State Historic Sites Registry and National Register of Historic Places. A trinomial number is assigned to all areas recorded and defined as a site while findspots are assigned a University of South Dakota (USD) number.

Site

A "site" is defined as a locus where cultural activities were performed which resulted in deposition of cultural remains related to those activities. Loci excluded from being defined as a site are areas where only faunal remains are recovered and areas where apparent garbage refuse (i.e. historic trash) has been deposited for disposal purposes. Historic garbage disposal areas, during this project, are identified on the basis of such items as sawed bones, and occurrence of broken dishes and bottles located near ditches without evidence of structural remains and/or in the vicinity of historic trails, buildings or events.

Findspot

Findspots are defined as the presence of either cultural remains which are not assigned site designations and faunal remains not in association with cultural (manufactured) remains.

The following are the site descriptions and associated artifacts recorded during this project. Table 22 summarizes the temporal and cultural placement of the sites.

TABLE 22

Temporal and Cultural Placement of Sites
Located in the Vicinity of the Project

Pembina County

32PB8	Late Archaic, Woodland, Historic	32PB34	Historic
32PB9	Prehistoric, Historic	32PB37	Historic
32PB10	Historic	32PB38	Historic
32PB11	Historic	32PB101	Historic
32PB12	Historic	USD-2	Not Known
32PB13	Prehistoric, Historic	USD-3	Historic
32PB14	Historic	USD-9	Not Known
32PB15	Historic	USD-10	Not Known
32PB16	Historic	USD-11	Historic
32PB17	Prehistoric	USD-13	Historic
32PB18	Prehistoric	USD-14	Historic
32PB19	Manitoba phase, Historic	USD-15	Not Known
32PB20	Prehistoric, Historic	USD-17	Prehistoric
32PB25	Paleo-Indian, Historic	USD-20	Prehistoric
32PB26	Prehistoric, Historic	USD-21	Prehistoric
32PB31	Prehistoric, Historic	USD-25	Historic
32PB32	Prehistoric, Historic		

Cavalier County

32CV2	Prehistoric, Historic	32CV205	Late Prehistoric
32CV3	Prehistoric	32CV206	Prehistoric, Historic
32CV4	Prehistoric, Historic	32CV208	Prehistoric
32CV5	Prehistoric, Historic	32CV209	Prehistoric
32CV6	Prehistoric	32CV210	Prehistoric, Historic
32CV7	Prehistoric, Historic	32CV211	Prehistoric
32CV8	Prehistoric	32CV212	Prehistoric
32CV9	Prehistoric, Historic	32CV213	Prehistoric
32CV10	Historic	32CV214	Prehistoric
32CV11	Historic	32CV215	Prehistoric, Historic
32CV12	Historic	32CV216	Prehistoric
32CV201	Prehistoric, Historic	32CV217	Manitoba phase
32CV203	Prehistoric	32CV218	Prehistoric
32CV204	Manitoba phase	32CV219	Prehistoric

32PB8
(USD-1)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	27	164	53
Map Quad		Bathgate	
Local Name		None	
Type of Remains		Bone, chipped stone, projectile points	
Elevation		247 meters, 810 feet	
Vegetation		Plowed	
Estimated Size		5,000 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		Ryan-Fargo silty clays	
Cultural Affiliation		Late Archaic, Plains Woodland, Euro-American	
Topography		Lake Agassiz Plain	
Postulated Past Vegetation		Grassland	
Recommendation		Potentially Eligible for National Register, needs further work	

Site 32PB8 (Figs. 9 and 51a) is located on the flat upland adjacent to the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 2315 meters south.

A surface grab collection recovered two projectile points, some chipped stone tools, and bone fragments of horse, bos/bison, and some historic glass and ceramics.

The site occurs on Ryan-Fargo silty clay which has slow permeability, and poor drainage. This soil association has severe campsite limitations. The site is near a Dovray silty clay association which would have been frequently ponded. The recovery of bison remains from the site, in addition to projectile points, suggests this may be a bison kill site. The nearby ponded area would have attracted gregarious animals such as bison for water and wallowing.

The recovery of a few pieces of historic glass and ceramics is attributed to the excavation of the ditch along this portion of the International Border. The historic component does not appear to be of historic significance.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	2	*
Chopper	1	*
Flake	3	-

TOOL DESCRIPTION

Projectile Points

Specimen S-1 (Fig. 37b) is a triangular, side or corner-notched, chert projectile point. The base has been broken off. The specimen is lenticular in cross-section. It is similar to Pelican Lake points (Perino 1971:72) which date to approximately 300 B.C.

Specimen S-2 (Fig. 37a) is a lanceolate, side-notched, quartzite projectile point. The tip has been broken off. The base is concave. It is lenticular in cross-section and has irregular flake scars. The surface has a light colored patina. The point is similar to Matanzas points (Perino 1968:54) which date to the Late Archaic (3000 B.C. - A.D. 1).

Chopper

Specimen S-3 is a granite chopper. Large, primary flake scars are present on both faces of the working edge. The remainder of the specimen is unmodified. It measures 85.0 mm long, 74.9 mm wide, and 69.0 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	3	2 light blue 1 amethyst	-
Misc. Glass	3	2 dark green 1 light blue	-
Tableware	1 rim	whiteware	plain
Coal	2	coal	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Skunk-size	mandible	1	right	nearly complete	-
<u>Equus</u> <u>caballus</u> (Horse)	3rd mandibular molar	1	right	complete	-
<u>Bison</u> <u>bison</u>	calcaneum	1	right	w/o tuber calcis	-
<u>Bison</u> or <u>Bos</u>	3rd mandibular molar	1	right	anterior	-
<u>Eison/</u> <u>Bos-size</u>	teeth	17	-	fragments	-
	petrous	1	-	fragment	-

	scapula	1	left	glenoid fragment	-
	humerus	1	-	distal	-
	scaphoid	1	right	fragment	-
	trapezoid- magnum	1	-	fragment	-
	calcaneum	1	left	tuber calcis	-
	metapodial	1	-	fragment	-
Artio- dactyl	teeth	13	-	fragments	-
unidenti- fied	bone	49	-	fragments	-

Impacts and Recommendations

Site 32PB8 will be completely destroyed by construction of the floodway channel for Alternatives 4 or 5. The site may represent an upland prehistoric bison kill. Late Archaic and Woodland occupations are indicated by the recovery of a lanceolate side-notched and triangular, notched projectile points. These affiliations are tentative. It is recommended that subsurface investigations be conducted to determine the presence or absence of significant subsurface prehistoric remains. A four-inch diameter plastic pipe was placed into the ground as a datum marker 650 meters east of the site along a section line between cultivated fields.

32PB9
(USD-4)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	25	164	53
N $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	25	164	53

Map Quad	Bathgate
Local Name	None
Type of Remains	Bones, chipped stone, bricks
Elevation	244 meters, 800 feet
Vegetation	Plowed
Estimated Size	20,000 square meters
Surface Visibility	100 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Rr, Ryan-Fargo silty clays
Cultural Affiliation	Euro-American, Prehistoric (unknown)
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Grassland
Recommendation	Potentially eligible for National Register, needs further work

Site 32PB9 (Figs. 8, 9 and 51b) is located on the flat upland adjacent to the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 3395 meters south.

A surface grab collection recovered bones, a brick and two chipped stone artifacts. The site occurs on Ryan-Fargo silty clay which has slow permeability, poor drainage and has severe campsite limitations. No temporally/culturally diagnostic prehistoric artifacts were recovered from the surface collection. The historic artifacts are few and may be attributed to the digging of the ditch along the International Border.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface Preform	1	*
Shatter	1	-

TOOL DESCRIPTION

Biface Preform

Specimen S-1 is a biface preform fragment made of Tongue River silicified sediment. Large, primary flake scars are present on both surfaces. A lateral snap on one end of the specimen suggests that it broke during the manufacture process.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	2	1 clear 1 light blue	- -
Metal	1 frag.	zinc	-
Brick	1 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Ovis</u> aries (sheep)	axis				
	vertebra	1	axial	antero-ventral	-
	humerus	1	left	complete	-
	pelvis	1	right	w/o ilium	-
	femur	1	right	nearly complete	-
Sheep- size	lumbar vertebrae	3	axial	1 complete, 2 w/o dorsal spines	-
	scapula	1	right	proximal	-
	humerus	1	right	distal	-
	radius	1	right	w/o unfused distal epiphysis	-
	ribs	2	-	1 proximal, 1 shaft	-
<u>Bison/ Bos-size</u>	tooth	1	-	fragment	-
	femur	1	right	proximal shaft	-
	2nd phalanx	1	-	anterior	-
	unidenti- fiable bone	3	-	fragments	-
Jackrabbit- size	femur	1	right	distal	-
unidenti- fied	bone	6	-	fragments	-

Impacts and Recommendations

Site 32PB9 will be completely destroyed by construction of the floodway channel for Alternatives 4 or 5. The site probably represents an upland prehistoric habitation site or temporary campsite. It is recommended that subsurface investigations be conducted to determine the presence or absence of significant subsurface remains of the prehistoric component. The historic artifacts, including the sheep bones, are attributed to the digging of the ditch along the International Border and the pasturing of sheep on the land. The historic component does not appear to warrant further investigation.

32PB10
(USD-5)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	25	164	53
S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	30	164	52
N $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	30	164	52

Map Quad	Bathgate
Local Name	None
Type of Remains	Bone, brick, metal
Elevation	244 meters, 800 feet
Vegetation	Plowed
Estimated Size	75,000 square meters
Surface Visibility	100 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Rr, Ryan-Fargo silty clays
Cultural Affiliation	Euro-American
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Grassland
Recommendation	Not eligible

Site 32PB10 (Figs. 8 and 52a) is located on the flat upland adjacent to the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 3939 meters south.

A surface grab collection recovered bone, brick and some metal. The site occurs on the Ryan-Fargo silty clay soil association which has slow permeability, poor drainage and severe campsite limitations.

The historic artifacts collected from the site are attributed to farming activities and the digging of the ditch along this portion of the International Border.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Brick	2 frags.	brick	-
Metal Can	1 frag.	iron	-
Metal	2 frags.	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Artio- dactyl	astragalus	1	right	complete	-
	tooth	1	-	fragment	-
unidenti- fied	bone	7	-	fragments	-

Impacts and Recommendations

Site 32PB10 will be completely destroyed by construction of the floodway channel for Alternatives 4 or 5. This site probably represents the fortuitous occurrence of historic remains due to farming activities (broken metal parts from farm machinery) and the digging of the ditch along the International Border. This site does not contain significant historic or architectural remains and therefore it is recommended that it does not require further investigation.

32PB11
(USD-6)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	28	164	52
Map Quad	Bathgate NE		
Local Name	None		
Type of Remains	Bone, historic ceramics, brick		
Elevation	241 meters, 790 feet		
Vegetation	Plowed		
Estimated Size	20,000 square meters		
Surface Visibility	100 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	HmA, Hegne-Fargo silty clays, 1 to 3 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Lake Agassiz Plain		
Postulated Past Vegetation	Grassland		
Recommendation	Not eligible		

Site 32PB11 (Figs. 7 and 52b) is located on the flat upland adjacent to the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 4462 meters south.

A surface grab collection recovered bone, historic ceramics and brick. The site occurs on the Hegne-Fargo silty clay with 1 to 3 percent slopes. This soil association has slow permeability, poor drainage and severe campsite limitations. The historic component is attributed to farming activities and possibly the digging of the ditch along the International Border.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 body sherd	stoneware	-
Brick	1 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
cf. Tetra- onidae	coracoid	1	right	complete	-
<u>Bison/</u> <u>Bos-size</u>	teeth	2	-	fragments	-
	1st phalanx	1	right	nearly complete	-
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32PB11 will be completely destroyed by construction of the floodway channel for Alternatives 4 or 5. The site probably represents the fortuitous occurrence of artifacts due to farming activities and the digging of the ditch along the International Border. This site does not contain significant historical or architectural remains and therefore it is recommended that it does not warrant further investigation.

32PB12
(USD-7)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	28	164	51
- NW $\frac{1}{4}$ SE $\frac{1}{4}$	28	164	51

Map Quad	Pembina
Local Name	T.H. White's Hotel
Type of Remains	Bone, historic ceramics, metal
Elevation	239 meters, 785 feet
Vegetation	Cut wheat
Estimated Size	50,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	HmA, Hegne-Fargo silty clays, 1 to 3 percent slopes
Cultural Affiliation	Euro-American
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Grassland
Recommendation	Potentially eligible for National Register, needs further work

Site 32PB11 (Figs. 5 and 53a) is located on the flat upland on the left descending side of the Red River of the North and adjacent to the International Border. The site has a 180 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Red River of the North, located 50 meters east.

A surface grab collection recovered bone, historic ceramics and metal. The site occurs on the Hegne-Fargo silty clay soil association with 1 to 3 percent slopes. This soil association has slow permeability, poor drainage and severe campsite limitations.

There are several possible historical associations which might be represented by this site.

The REAP survey (1977:113) listed three sites associated with Section 28 T164N R51W. The first of these was the location of Huron City townsite on the North Dakota side of the 49th parallel (NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 28). The report stated that the town existed circa 1883-1897, and that no evidence of the town remained in the 1977 survey. The only other documentation for Huron City were in early atlases (Ensign 1893; Andreas 1884). Local informants suspected it had just been a "paper town," platted but never built.

The second possibility listed in the REAP survey was a Hudson's Bay Company post, possibly located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28. It existed circa 1849-1851, but the exact location was not considered reliable.

Thirdly, Major Stephen Long's Camp Monroe was termed to be in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 28 in August, 1823, when the survey party camped as close as possible to the 49th parallel for the purpose of establishing the boundary marker.

All three of these sites were evaluated as being nationally significant by the REAP survey.

In addition to the above, Armstrong's land survey (1878) located "T.H. White's Hotel" in the quarter section closest to the Red River and boundary line.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 base	whiteware	plain
	1 body sherd	whiteware	transfer-printed
Riveted Metal Sheet	1	copper	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u>					
<u>Bos-size</u>	humerus	1	-	proximo-medial	-
	femur	2	right	disto-medial	-
unidenti- fied	bone	3	-	fragments	-
Freshwater					
Mussel	shell	2	-	fragments	-

Impacts and Recommendations

Site 32PB12 will be potentially destroyed by construction of the floodway channel for Alternatives 4 or 5. Indirect impacts could occur on the rest of the site, or could be directly impacted if the channel alternative moves south. The site is the location of the T. H. White's Hotel which was constructed in 1878. This site may contain significant historical artifacts. It is recommended that subsurface investigations should be conducted to determine the presence or absence of significant historical remains.

32PB13
(USD-8)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	6	163	54
S $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	6	163	54

Map Quad Cavalier NW
Local Name None
Type of Remains Bone, chipped stone, historic ceramics, glass
Elevation 264 meters, 865 feet
Vegetation Plowed
Estimated Size 50,000 square meters
Surface Visibility 100 percent
Site Condition Partially destroyed by cultivation
Soil Association CaA, Cashel silty clay, 1 to 3 percent slopes WaA, Wahpeton silty clay, 1 to 3 percent slopes
Cultural Affiliation Euro-American, Prehistoric (unknown)
Topography Lake Agassiz Plain
Postulated Past Vegetation Bottomland hardwood forest
Recommendation Potentially eligible for National Register, needs further work

Site 32PB13 (Figs. 12, 13 and 53b) is located on the flat upland. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 650 meters north.

Surface grab collection recovered bone, chipped stone, and historic ceramics and glass. The site occurs on the Cashel and Wahpeton silty clays with 1 to 3 percent slopes. These soil associations have slow permeability, poor drainage and are subject to frequent floodings. These soils have severe campsite limitations.

The historic component is attributed to farming activities and the presence of a county highway adjacent to the site. No temporally/culturally diagnostic artifacts were recovered from the prehistoric component. The prehistoric component appears to be a habitation site.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Retouched Flake	1	-
Flakes	3	-
Shatter	2	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 rim	whiteware	transfer-printed
Canning Jar			
Lid Liner	1 frag.	milk glass	-
Bottle Glass	1	light blue	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bos taurus</u>					
(Cow)	metatarsal	1	right	proximal	-
	1st phalanx	1	left	incomplete	-
<u>Bison/ Bos-size</u>	2nd mandib- ular molar	1	left	crown	-
	mandibular molar	2	1 right 1 -	anterior crown crown fragment	- -
	maxillary molar	1	right	crown	-
	teeth	2	-	fragments	-
	petrous	2	-	1 complete, 1 fragment	-
	scapula	2	-	glenoid fragment	-
	radius	1	left	disto-medial	-
	lunar carpal	2	1 right 1 left	anterior anterior	- -
	unciform trapezoid- magnum	1	right	anterior	-
	metacarpal	1	left	nearly complete	-
	calcaneum	1	left	proximo-anterior	-
	metatarsal	1	left	incomplete	-
	metapodial	2	-	anterior shaft	-
	1st phalanx	2	-	distal	-
	2nd phalanx	1	right	incomplete	-
		2	1 right 1 -	incomplete distal	- -
	1st or 2nd phalanx	1	-	distal	-
Deer-size	molar	1	-	fragment	-
Sheep-size	lumbar vertebra	1	axial	left lateral	sawed
	vertebra	1	axial	lateral	-
unidenti- fied	bone	50	-	fragments	-

Impacts and Recommendations

Site 32PB13 will be adjacent to the diversion floodpool for Alternative 5. The north edge of the site may be subjected to periodic

flooding and bank erosion by diverted floodwaters. The site contains a prehistoric component which may contain significant subsurface remains. It is recommended that subsurface investigations be conducted to determine the presence or absence of significant subsurface remains. The historic component does not contain significant historical or architectural remains. No further investigations are recommended for the historic component.

32PB14
(USD-16)

<u>Legal Locations</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	31	164	54
NE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	6	163	54
Map Quad	Cavalier NW		
Local Name	None		
Type of Remains	Bone, historic ceramics, glass, metal		
Elevation	262 meters, 860 feet		
Vegetation	Beans		
Estimated Size	30,000 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	FaB, Fairdale silty clay loam, 3 to 6 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32PB14 (Figs. 13 and 54a) is located on the top of a terrace on the left descending side of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 25 meters east.

A surface grab collection recovered bone, historic ceramics, glass and metal. The site occurs on the Fairdale silty clay loam soil association with 3 to 6 percent slopes. This soil association is subject to flooding and has severe limitations for camping. The historic component is attributed to the presence of an old farmstead/house located at this location in the late 19th century.

HISTORIC ARTIFACTS
(Fig. 37 c-d)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	8 rims	whiteware	6 plain, 2 molded
	7 bases	whiteware	5 plain, 2 transfer-printed
	26 body sherds	24 whiteware,	18 plain, 5 transfer-printed, 1 molded
		2 porcelain	1 hand-painted, 1 decal and molded
Bottle Glass	3 necks	1 medium green,	1880-1900
		1 amethyst,	1860-1880
		1 amber	-
	1 base	clear	-
	8 bodies	4 light blue, 2 amber, 1 light green, 1 clear	-

Window Glass	5	3 light blue, 2 light green	-
Decorative Glass	1	purple banded	-
Bell	1	pewter (?)	-
Rivet	1	copper	-
Sickle Mower Blade	1	iron	-
Riveted Metal Plates	1	iron	-
Metal	7 frags.	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Rodent	skull	1	-	posterior	-
	pelvis	1	left	nearly complete	-
<u>Sus scrofa</u> (pig)	2nd molar	1	-	crown fragment	-
Deer-size	scapula	1	right	distal	-
	femur	1	right	distal	-
<u>Bison</u> <u>bison</u>	astragalus	1	right	complete	-
	1st phalanx	1	right	complete	-
<u>Bos taurus</u> (cow)	tibia	1	right	distal	-
<u>Bison</u> or <u>Bos</u>	horn core	5	-	fragments	-
	scapula	1	left	glenoid cavity	-
	astragalus	1	left	lateral anterior	-
<u>Bison/</u> <u>Bos-size</u>	humerus	1	-	disto-lateral	-
	ulna(?)	1	-	proximal	-
	lunar carpal	1	left	anterior	-
	metacarpal	1	right	proximo-medial	-
	astragalus	1	left	disto-anterior	-
	lateral malleolus	1	right	fragment	-
	carpal or tarsal	1	-	fragment	-
	metapodial	1	-	distal	-
	2nd phalanx	1	-	lateral	-
	rib	2	-	fragments	-
unidenti- fied	tooth enamel	1	-	fragment	-
	carpal	1	-	fragment	-
	rib	1	-	fragment	-
	bone	54	-	fragments	-

Impacts and Recommendations

Site 32PB14 is located in the floodpool of Alternative 5 and will be periodically inundated by floodwaters. The site contains a historic farmstead which dates, based upon mold seams on bottle necks recovered from the surface, sometime between 1860 and 1900. These dates are well supported. This site may contain significant subsurface historic remains which may help elucidate early Euro-American settlement of the region. It is recommended that subsurface investigations be conducted to determine the presence or absence of significant subsurface historic remains. A records and literature search of the State and county archives did not recover any information indicating significant historic events or persons associated with the site.

32PB15
(USD-19)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW¼ SE¼ SE¼	10	163	56
NE¼ SW¼ SE¼	10	163	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, historic ceramics, glass, brick		
Elevation	282 meters, 925 feet		
Vegetation	Plowed		
Estimated Size	12,500 square meters		
Surface Visibility	100 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	HfA, Hecla sandy loam, 1 to 3 percent slopes ZgD, Sell-Gardena very fine sandy loam, 9 to 15 percent slopes Ff, Fargo silty clay		
Cultural Affiliation	Euro-American		
Topography	Lake Agassiz Plain		
Postulated Past Vegetation	Grassland		
Recommendation	Not eligible		

Site 32PB15 is (Figs. 19 and 54b) located on the top and side of a ridge on the flat uplands. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 900 meters south. A surface grab collection recovered bone, historic ceramics, glass and brick. The site occurs on Hecla sandy loam with 1 to 3 percent slopes, Fargo silty clay and Zell-Gardena very fine sandy loam with 9 to 15 percent slopes. These soil associations have moderate-to-severe camping limitations due to steep slope and sand areas.

The site is an old farmstead with standing outbuildings. The house appears to have burned. The standing structures are not of architectural significance. A records and literature search indicates no significant historical events are associated with the site. Examination of the U.S. Government Land Survey Records (1878) indicate this site is on one of the early trail routes through the region. However, the site is not associated with the trail. The trail is one of several used by travelers between Pembina and St. Joseph (Walhalla).

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 base	stoneware	-
	3 body sherds	stoneware	-
	2 rims	whiteware	1 molded, 1 decal
Tableware	1 base	whiteware	plain
	2 body sherds	whiteware	plain

Bottle Glass	2 necks	1 medium green	post-1903
		1 clear	post-1903
	1 base	light green	-
	7 bodies	4 clear, 2 amethyst	-
		1 amber	-
Window Glass	2	1 light blue,	-
		1 light green	-
Melted Glass	1	light green	-
Canning Jar			
Lid Liner	1	milk glass	-
Bottle Cap	1	metal	-
Brick	3 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Equus</u> <u>caballus</u> (horse)	1st phalanx	1	-	disto-anterior	-
<u>Bison/</u> <u>Bos-size</u>	2nd phalanx	1	left	fragment	-
unidenti- fied	bone	3	-	fragments	-

Impacts and Recommendations

Site 32PB15 is in the immediate vicinity of the proposed Alternative 4, but the site is not in the direct impact zone of the channel or diversion structure, unless the alignments change. There is potential for the site to be indirectly impacted by construction activities, or periodic flooding and erosion if floodwaters overtop the floodway channel.

The site contains a historic occupation consisting of a farmstead dating after 1900 based upon mold seams of bottle necks recovered from the surface. The site does not contain significant architectural or historical remains. A literature and records search of State and County archives indicates no significant historical events or persons are associated with the site. This site is not recommended for further investigation.

32PB16
(USD-22)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, historic ceramics, glass, brick, bullet	
Elevation		277 meters, 910 feet	
Vegetation		Beans	
Estimated Size		5,625 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		FaB, Fairdale silty clay loam, 3 to 6 percent slopes	
Cultural Affiliation		Euro-American	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Not eligible	

Site 32PB16 (Figs. 19 and 55a) is located on the floodplain of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located five meters south.

A surface grab collection recovered bone, historic ceramics, glass, brick, and a bullet. The site occurs on the Fairdale silty clay loam with 3 to 6 percent slope. This soil association is subject to frequent flooding and has severe camping limitations.

The historic site can be attributed to two causes: 1) a historic trash dump or, 2) the location of the Ernest Post Office which an 1884 atlas (Andreas) locates within this area. If the post office really existed it was probably operated in a home for the surrounding area and does not indicate the presence of a town. The trail might be associated with the post office, or the Pembina to St. Joseph (Walhalla) trade route. Also, examination of the U.S. Government Land Survey Records indicate the site is near an early trail through the region. On the basis of mold seams on bottle necks recovered from the surface and ceramics, a post 1900 date is most likely. The site has been plowed to a depth of approximately 20 to 25 centimeters.

HISTORIC ARTIFACTS
(Fig. 39a)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	2 bases 4 body sherds	stoneware	-
Tableware	10 rims	stoneware whiteware	- 7 plain, 2 molded, 1 gilt

	6 bases	whiteware	5 plain, 1 transfer-printed
	10 body sherds	3 porcelain 7 whiteware	2 plain, 1 decal 6 plain, 1 gilt
Bottle Glass	3 necks	amethyst, 1 light blue 1 clear	1880-1900 post-1903 post-1903
	2 bases	1 amethyst, 1 clear	-
	12 bodies	7 amethyst, 4 clear, 1 light blue	-
Pressed Glass			
Tumbler	1 base	amethyst	-
Decorative Glass	1 base	clear	-
	1 body	clear	-
Window Glass	2	1 light blue, 1 light green	-
Brick Fragment	1	brick	-
Spent Bullet	1	lead	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Bison/ Bos-size	lateral malleolus	1	right	complete	-
Small Mammal	femur	1	left	proximal	-
	1st phalanx	1	right	nearly complete	-
unidenti- fied	tooth	1	-	fragment	-
	bone	5	-	fragments	-

Impacts and Recommendations

Site 32PB16 is in the vicinity of the proposed Alternative 4. It will not be directly or indirectly impacted by the construction alignments presently proposed. The site could be directly or indirectly impacted if the floodway alignments move to the east. The site probably represents either 1) a historic trash dump or, 2) the location of the Ernest Post Office. The location of the site in an area subject to frequent flooding suggests this would not have been selected for the location of a Post Office. The site may represent a seasonal campsite for travelers along the nearby trail between Pembina and St. Joseph (Walhalla) (from U.S. Government Land Survey Records). The thin surface scatter and heavy cultivation of the site suggests the lack of significant remains. The bottle necks and ceramics seem to indicate the site most likely dates after 1900 and appears not to be significant. The post office probably would not be deemed significant. It is recommended that this site does not warrant further investigation.

32PB17
(USD-23)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56
SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	14	163	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, chipped stone, charcoal		
Elevation	279 meters, 915 feet		
Vegetation	Beans		
Estimated Size	5,625 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	FaB, Fairdale silty clay loam, 3 to 6 percent slopes		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32PB17 (Figs. 19 and 55a) is located on the floodplain of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, bordering the south edge of the site.

A surface grab collection recovered chipped stone and bone. Examination of a cut river bank on the south edge of the site exposed bison bones buried approximately one meter. Removal of the bison bones and soil matrix and subsequent washing of the bone recovered small flecks of charcoal within the surrounding soil matrix.

The site occurs on the Fairdale silty clay loam soil associations with 3 to 6 percent slopes. This soil association is subject to frequent flooding and imposes severe limitations on camping.

The site probably represents a seasonal prehistoric campsite where bison were prepared for eating, as indicated by the presence of bison remains and charcoal.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	2	-
Charcoal	1 vial	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Blarina brevicanda</u> (shrew)	mandible	1	right	horizontal ramus	-

<u>Bison/</u>	thoracic				
<u>Bos-size</u>	vertebra	21	axial	fragments	-
	lunar				
	carpal	1	right	fragment	-
	carpal or				
	tarsal	4	-	fragments	-
	rib cartilage	1	-	fragment	-
	rib	15	-	fragments	-
unidenti-					
fied	bone	19	-	fragments	-

Impacts and Recommendations

Site 32PB17 will be destroyed or periodically inundated by floodwaters from the diversion structure of Alternative 4. The site probably represents a seasonal prehistoric campsite where generalized tasks were performed as well as processing of bison meat. The well defined buried stratum from which the bones and charcoal were recovered indicates a substantial portion of the site is buried one meter and has not been disturbed by modern cultivation practices. It is recommended that further subsurface investigations be conducted to determine the presence or absence of significant prehistoric remains at the site.

32PB18
(USD-24)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, chipped stone	
Elevation		277 meters, 910 feet	
Vegetation		Beans	
Estimated Size		7,500 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		FaB, Fairdale silty clay loam, 3 to 6 percent slopes	
Cultural Affiliation		Prehistoric (unknown)	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Potentially eligible for National Register, needs further work	

Site 32PB18 (Figs. 19 and 55a) is located on the floodplain of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 10 meters east.

A surface grab collection recovered bone and chipped stone. The site occurs on the Fairdale silty clay loam with 3 to 6 percent slopes. This soil association is subject to frequent flooding and has severe limitations for camping. The site is probably a small, seasonal prehistoric campsite. No temporally/culturally diagnostic artifacts were recovered.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Canis</u>					
<u>familiaris</u>					
or <u>C.</u>	lower				
<u>lupus</u>	canine	1	right	fragment	-
<u>Bison/</u>					
<u>Bos-size</u>	upper molar	1	-	fragment	-
	vertebra	2	axial	fragments	-
	sesamoid	1	-	complete	-

unidenti-
fied bone 12 - fragments -

Impacts and Recommendations

Site 32PB18 is in the vicinity of the proposed alignments for Alternative 4. It is not in the direct or indirect impact zone unless the alignments are moved to the east. The site is a small, seasonal prehistoric campsite. It is recommended that further subsurface investigations be conducted to determine the presence or absence of significant subsurface prehistoric remains.

32PB19
(USD-27)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
- N $\frac{1}{2}$ NE $\frac{1}{4}$	23	163	56
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56

Map Quad	Leroy
Local Name	None
Type of Remains	Bone, prehistoric ceramics, projectile point, chipped stone, historic ceramics, glass, metal, trade pipe
Elevation	282 meters, 925 feet
Vegetation	Cut wheat
Estimated Size	210,000 square meters
Surface Visibility	75 percent
Site Condition	Partially destroyed by cultivation
Soil Association	ZgD, Zell-Gardena very fine sandy loam, 9 to 15 percent slopes EmA, Embden fine sandy loam, 1 to 3 percent slopes
Cultural Affiliation	Prehistoric Blackduck, Euro-American
Topography	Ridge Top
Postulated Past Vegetation	Grassland
Recommendation	Potentially eligible for National Register, needs further work

Site 32PB19 (Figs. 19 and 56a) is located on a ridge top on the right descending side of the Pembina River overlooking the Pembina River valley. The site has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 50 meters to the northwest.

A surface grab collection recovered a small quantity of prehistoric remains, including a pottery sherd, a projectile point fragment, and some chipped stone. The historic component yielded a large quantity of ceramics, glass, metal, and a trade pipe. The historic remains occur only in the eastern-most portion of the site. The prehistoric component occurs over the entire site area.

The site occurs on the Embden fine sandy loam with 1 to 3 percent slopes and the Zell-Gardena very fine sandy loam with 9 to 15 percent slopes. These soil associations, particularly the less sloped, are ideal campsite locations with well-drained soils with high permeability.

The pottery sherd indicative of a Blackduck occupation was recovered from the prehistoric component. The projectile point, a small corner notched style, also confirms a late prehistoric occupation. The historic artifacts indicate an occupation sometime between 1860 to 1900, based upon mold seams on glass bottle necks recovered from the site. No literature relating to this specific site was searched. Examination of the U.S. Government Land Survey Records (1878) indicates an early trail from Pembina to St. Joseph (Walhalla) traversed the Pembina River floodplain below the site. The site may be a campsite of the local

metis, who had ox-cart caravans throughout the region or it may be a historic Native American campsite.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	1	base
Flake	18	1 Knife River Flint
Shatter	8	-
Pottery	1	*

TOOL DESCRIPTION

Pottery

Specimen S-25 is a sherd from near the rim or lip. It contains small-to-medium size crushed granite temper. It is too small to discern the presence of any decoration.

HISTORIC ARTIFACTS

(Fig. 38)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Trade Pipe	1	clay	-
Crock	2 rims	stoneware	-
	1 base	stoneware	-
	7 body sherds	stoneware	-
	1 body sherd	stoneware	-
Ceramic Bottle	1 body sherd	stoneware	-
Doll Head	2	whiteware	-
Doll Leg	1	whiteware	-
Insulator	1	whiteware	-
Tableware	15 rims	whiteware	13 plain, 1 molded, 1 flow-blue transfer-printed
	16 bases	whiteware	14 plain (5 with maker's marks), 1 molded, 1 hand-painted
	37 body sherds	whiteware	32 plain, 3 hand-painted, 2 flow-blue transfer-printed
Utilitarian Ware	1 bottle rim	whiteware	plain
	1 jar lid	whiteware	plain
Decorative Ware	1 bottle rim	whiteware	plain
Bottle Glass	7 necks	4 light blue, 1 light green, 1 dark green, 1 amethyst	one: 1860-1880, one: 1880-1900
	6 bases	5 light blue, 1 light green	-

	77 bodies	27 light blue, 22 amethyst, 17 light green, 4 clear, 4 dark green, 3 amber	-
Window Glass	33	17 light blue, 15 light green, 1 clear	-
Decorative Glass	1 base	amethyst	-
Pressed Glass	1 base	amethyst	-
Melted Glass	7	1 light blue, 1 light green, 1 amethyst, 4 variegated	-
Button	4	milk glass	-
Metal Can	1 base	copper	-
Cartridge	1	metal	-
Gun Plate	1	brass	-
Stove	9 frags.	iron	-
Scythe Blade	1	iron	-
Pipe	1	iron	-
Metal	12 frags.	1 zinc, 11 iron	-
Boot	2 frags.	1 rubber, 1 leather	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Sus</u> <u>scrofa</u> (pig)	premolar	1	-	fragment	-
	tooth	2	-	fragments	-
<u>Odocoileus</u> sp. (deer)	scaphoid	1	right	complete	-
	metacarpal	1	right	proximal	-
<u>Equus</u> <u>caballus</u> (horse)	calcaneum	1	right	complete	-
<u>Bison/</u> <u>Bos-size</u>	vertebra	1	axial	fragment	-
	teeth	5	-	fragments	-
	humerus	1	right	disto-medial	-
	ulna	1	right	proximal	-
	lunar carpal	1	left	anterior	-
	trapezoid- magnum	1	right	anterior	-
	astragalus	1	right	fragment	-
	metatarsal	1	left	distal	-
	2nd phalanx	1	right	proximo-medial	-
	rib	1	-	fragment	-
unidenti- fied	bone	8	-	fragments	-

Impacts and Recommendations

Site 32PB19 is in the vicinity of the proposed alignments for Alternative 4. It is not in the direct or indirect impact zone, unless the alignments are moved to the east. The site probably contains a prehistoric Blackduck component based upon prehistoric pottery and a historic component dating sometime between 1860 to 1900. The large quantity of historic remains, including a clay trade pipe, indicates a significant historic component is present. This type of clay pipe was a disposable item used by all social classes and was commonly associated with the voyageurs whose work was regularly broken by rest periods for smoking. The distance covered between rests came to be called a pipe (Gilman 1982:45). It is recommended that subsurface investigations be conducted in both the prehistoric and historic components to determine the presence or absence of significant subsurface remains.

32PB20
(USD-28)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	30	163	56
- NE $\frac{1}{4}$ SE $\frac{1}{4}$	30	163	56
- NE $\frac{1}{4}$ SE $\frac{1}{4}$	30	163	56

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics
Elevation	357 meters, 1170 feet
Vegetation	Cut wheat
Estimated Size	60,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	ByB, Brantford loam, 3 to 6 percent slopes BwB, Binford sandy loam, 3 to 6 percent slopes MaB, Maddock loamy sand, 3 to 6 percent slopes
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Ridge Top
Postulated Past Vegetation	Grassland
Recommendation	Potentially eligible for National Register, needs further work

Site 32PB20 (Figs. 23 and 56b) is located on the top of a high ridge on the left descending side of the Pembina River overlooking the river valley. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 300 meters south.

A surface grab collection recovered a thin scatter of bone, chipped stone and historic ceramics. The site occurs on the Brantford loam with 3 to 6 percent slopes, Binford sandy loam with 3 to 6 percent slopes and Maddock loamy sand with 3 to 6 percent slopes. These soil associations have moderate-to-no camping impediments.

The historic artifacts may be attributed to a trash dumping area by local citizens from nearby Walhalla. There is no discernible evidence of past structures. The prehistoric component is probably a seasonal campsite. No temporally/culturally diagnostic artifacts were recovered from the prehistoric component. The view of the Pembina River valley makes this site ideal for observing game animals in the river valley below.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Preform	1	-
Flake	20	-
Shatter	7	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 body sherd	whiteware	plain

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	7	-	fragments	-
Freshwater Mussels	shell	1	-	fragment	-

Impacts and Recommendations

Site 32PB20 is outside the proposed Pembilier flood control project. However, its excellent view of the Pembina Valley below the proposed Pembilier Dam makes this site a likely area for future land development and subsequent destruction of the site. The prehistoric component represents a seasonal campsite probably used to observe game animals in the Pembina River valley. The historic component is probably the result of recent trash dumping by residents of nearby Walhalla. It is recommended that further subsurface investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric component.

32PB25
(USD-40)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	15	163	56
NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	15	163	56
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	15	163	56
E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	15	163	56

Map Quad Leroy
Local Name None
Type of Remains Bone, chipped stone, projectile point, historic ceramics, glass
Elevation 282 meters, 925 feet
Vegetation Potatoes, Cut wheat
Estimated Size 78,750 square meters
Surface Visibility 50 percent
Site Condition Partially destroyed by cultivation
Soil Association ZgD, Zell-Gardena very fine sandy loam, 9 to 15 percent slopes
SwA, Swenoda fine sandy loam, 1 to 3 percent slopes
EmB, Embden fine sandy loam, 3 to 6 percent slopes
Cultural Affiliation Prehistoric (Paleo-Indian, Clovis), Euro-American
Topography Ridge Top
Postulated Past Vegetation Grassland
Recommendation Potentially eligible for National Register, needs more work

Site 32PB25 (Figs. 19 and 57a) is located on a ridge top and slope on the left descending side of the Pembina River. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 400 meters south.

A surface grab collection recovered bone, chipped stone, and historic ceramics and glass. A local collector, Mr. Jay Wessels, recovered a Clovis projectile point from the surface of the site.

The site occurs on the Zell-Gardena very fine sandy loam with 9 to 15 percent slopes, Swenoda fine sandy loam with 1 to 3 percent slopes, and Embden fine sandy loam with 3 to 6 percent slopes. These soil associations have moderate-to-no camping impediments.

The historic artifacts were recovered from the southern-most portion of the site, near a grain storage bin. This may have been the location of a farmstead at one time. The prehistoric artifacts were recovered from the northern portion of the site. It appears that the prehistoric component is buried near the edge of the ridge, where wind deflation has not scoured the soil. The recovery of a Clovis projectile point by Mr. Jay Wessels indicates this site may have an early Paleo-Indian component. If so, this is the only recorded Paleo-Indian site in Pembina County, North Dakota.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	*
Preform	1	-
Flake	5	-
Shatter	4	-

TOOL DESCRIPTION

Biface

Specimen S-1 (Fig. 39b) is an asymmetrical, quartzite biface. The base and one lateral edge are convex. The other lateral edge is straight and exhibits steep retouch. The tip is blunt. This was probably used as a knife. The specimen measures 54.3 mm long, 36.8 mm wide, and 10.8 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 rim	whiteware	plain
	2 bases	whiteware	plain
	1 body sherd	whiteware	plain
Canning Jar			
Lid Liner	1	milk glass	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Equus</u> <u>caballus</u> (horse)	tibia	1	left	distal	-
	astragalus	1	right	nearly complete	-
	metapodial	1	right	distal	-
unidenti- fied	bone	4	-	fragments	-

Impacts and Recommendations

Site 32PB25 is at the west end of the proposed dam for the floodwater diversion structure for Alternative 4. The site will not be inundated but will be destroyed by the movement and storage of heavy earth-moving equipment during construction of the diversion dam. The site contains a historic component which is probably a farmstead. The historic component is not believed to contain significant historical data and therefore does not warrant further investigation. The prehistoric component may represent an early Paleo-Indian occupation. It is strongly recommended that further investigations be conducted to

determine the presence or absence of significant subsurface prehistoric remains. A plastic pipe was placed in the ground at the northeast corner of the site at the end of a tree windbreak.

32PB26
(USD-41)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	56
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	56
NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	56
SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, chipped stone, historic ceramics, glass		
Elevation	283 meters, 930 feet		
Vegetation	Beans, cut wheat		
Estimated Size	52,500 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	GaA, Gardena very fine sandy loam, 1 to 3 percent slopes ZgC, Zell-Gardena very fine sandy loam, 6 to 9 percent slopes		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Ridge Top		
Postulated Past Vegetation	Grassland		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32PB26 (Figs. 19 and 57b) is located on a ridge top on the left descending side of the Pembina River. The site has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 300 meters south.

A surface grab collection recovered bone, chipped stone, and historic ceramics and glass. The site occurs on the Gardena very fine sandy loam with 1 to 3 percent slopes and Zell-Gardena very fine sandy loam with 6 to 9 percent slopes. These soil associations have few or no campsite impediments.

The historic component is attributed to the presence of a gravel road which traverses the site in an east-west direction. People in passing cars have disposed of their garbage along this road which has subsequently become associated with the site. The prehistoric component is probably a seasonal campsite where general tasks were performed. No temporally/culturally diagnostic artifacts were recovered.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Flake	21	1 Knife River Flint
Shatter	3	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	2 rims	whiteware	plain
Bottle Glass	1 body	light green	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> <u>Bos-size</u>	carpal	1	-	fragment	-
	femur	1	-	proximal	-
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32PB26 will not be inundated by floodwaters impounded by the dam for Alternative 4. However, the site will be subjected to embankment erosion from wave action of floodwaters impounded and diverted by the diversion structure. Erosion of the embankment and ridge upon which the site is located will eventually destroy the entire site.

The prehistoric component probably represents a seasonal campsite where general tasks were performed. It is recommended that investigations be conducted to determine the presence or absence of significant prehistoric subsurface remains at the site.

32PB31
(USD-47)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	30	164	54
N $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	30	164	54
SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	30	164	54
SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	30	164	54
NE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	30	164	54

Map Quad	Cavalier NW
Local Name	Charles Grant's House, Point Michael
Type of Remains	Chipped stone, historic ceramics, glass, metal
Elevation	261 meters, 855 feet
Vegetation	Plowed
Estimated Size	Not Known
Surface Visibility	100 percent
Site Condition	Partially destroyed by cultivation
Soil Association	WaA, Wahpeton silty clay, 1 to 3 percent slopes
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Grassland
Recommendation	Eligible for National Register

Site 32PB31 (Figs. 13 and 58a) is located on the flat upland near the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 550 meters south.

A surface grab collection recovered chipped stone, historic ceramics, glass, metal and a gunflint. The site occurs on the Wahpeton silty clay soil association with 1 to 3 percent slopes. This soil association is subject to frequent floodings and has severe campsite limitations.

The site is the location of the Charles Grant's house, a rooming house and trading post. In 1859 Charles Grant and Charles Bottineau built a log building in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 30, Felson township (T164N R54W). This building was to serve as a residence outpost in their Indian fur trading business, which also included the former Kittson Trading Post in St. Joseph (Walhalla) purchased from Charles Cavileer. This site was chosen for a post because of its strategic location at a crossroads on the main supply trail between Pembina and St. Joseph. From this point, one trail forked to the northeast to the Red River Settlement (Winnipeg), and another Indian trail branched off to the northwest.

The Grant-Bottineau partnership disbanded within a few years. Grant kept the Point Michael location, and Bottineau remained at the old Kittson post. As the buffalo herds and fur trade diminished, Grant adapted his operation to serve the needs of the early settlers trickling

into the Hyde Park area. He built more and larger buildings and acquired a large trading stock of ponies, cattle, hogs and chickens, thus beginning one of the first livestock farms in the area. He provided living quarters for many early settlers of the Hyde Park-Neche area until their homes were built.

As area settlement increased, Grant's House and Trading Post served as a social and religious gathering place. The first religious services in the vicinity were conducted by a missionary, Rev. Goldie. A two-day feast and dance was held there on the occasion of Mr. Grant's daughter's marriage to Pete StAmour. This event drew several well-known people from Pembina. (Neche-Bathgate History Book Committee 1976:6.)

Many travellers on the Pembina-St. Joseph road boarded at Grant's House and Trading Post. In the winter of 1863, 100 men from Hatch's Battalion stationed in Pembina camped there. One of the men recorded in his diary that on November 20, 1863, the troops arrived at Grant's House and Trading Post at 2:00 in the morning with the temperature about -40° F. They had left Pembina at sundown to try to prevent a suspected Sioux uprising in St. Joseph. When they reached Grant's place, the men, except for a few, refused to go farther and spent the remainder of the night sleeping around Grant's haystacks. In the morning Charles Grant built a huge fire and supplied the men with a fresh beef to roast for their use before their return to Pembina.

The U.S. boundary survey crew who established the official boundary markers along the U.S.-Canadian border in 1872-1876 had a camp at Point Michael, near the Pembina River. From this point, which they termed "Station 2, West," astronomical readings were made for calculations of latitude and longitude. Although they must have been at or near Grant's House and Trading Post, no mention was made of it in their textual report. In a table of their list of boundary monuments, mound number 91, located 108 miles west of Lake of the Woods, included the remark "Grant's, or Pointe Michel." It is possible that debris from this survey activity might be discovered in further field testing (U.S. Northern Boundary Commission 1877:36, 105-07).

In 1878 Grant's land was sold at a foreclosure sale. Later the land was acquired by James Hyde. The large rooming house was destroyed by fire in 1880 (Neche-Bathgate History Book Committee 1976:5-7).

Charles Grant had been a fur trader, rooming-house proprietor and extensive livestock farmer before he left Pembina County for Winnipeg. Before his years at Grant's House and Trading Post, he was a postmaster in St. Joseph (Walhalla) in 1855, a member of the Minnesota Territorial Legislature from 1855-57 and helped organize Pembina County in 1867 (Neche-Bathgate History Book Committee 1976:5).

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	*
Uniface	1	*
Flake	2	2 Knife River Flint

TOOL DESCRIPTION

Biface

Specimen S-139 (Fig. 40a) is a biface fragment made of Knife River Flint. The base and intact lateral edge are straight. One surface is invasively modified and the other surface is marginally modified. It was probably used as a knife.

Uniface

Specimen S-140 (Fig. 40b) is a chert uniface fragment. It is plano-convex in cross-section. Invasive modification is confined to the dorsal surface. It exhibits three lateral breaks.

HISTORIC ARTIFACTS (Fig. 40c-e)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Gunflint	1	flint	*
Trade Pipe	1	clay	-
Ceramic Jar	2 rims	stoneware	-
Ceramic Bottle	2 body sherds	stoneware	-
	3 bases	stoneware	-
Utilitarian	1 rim	whiteware	-
	1 base	redware	-
	4 body sherds	redware	-
Tableware	14 rims	whiteware,	6 molded, 5 plain, 2 banded, 1 transfer- printed
	5 bases	whiteware	4 plain, 1 transfer- printed
	32 bodies sherds	31 whiteware,	16 plain, 6 transfer- printed, 5 flow-blue transfer-printed, 2 banded, 1 molded, 1 glazed plain
Bottle Glass	1 handle	1 porcelain amber	-
	2 bases	light blue	-
	20 bodies	11 light blue, 4 light green, 3 amethyst, 1 amber, 1 medium blue	-
Window Glass	17	16 light blue, 1 clear	-
Melted Glass	20	17 light blue, 2 clear, 1 amethyst	-
Button	1	milk glass	-
Brick	10 frags.	brick	-

Slate	3 frags.	slate	-
Key	1	iron	-
Rivet	1	copper	-
Square Nail	2	iron	1:10d
Metal	5	iron	-

TOOL DESCRIPTION

Gunflint

Specimen S-1 (Fig. 40c) is a gunflint of dark gray flint. It is made from a blade with two ridges forming the bed. Demi-cones are present on each lateral edge near the bed. The heel is square with heavy wear on the bevels, causing them to have concave edges. The specimen measures 24.9 mm long, 22.3 mm wide, and 8.6 mm thick. The measurements suggest it was used in a flintlock rifle. The square heel, dark flint color, and two ridges forming the bed indicate English manufacture. Gunflints were mass produced until the middle of the 19th century (Brown 1978).

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Rabbit-size	femur	1	left	proximal	-
<u>Sus scrofa</u> (pig)	molar	1	-	fragment	-
<u>Bison/</u> <u>Bos-size</u>	3rd mandibular molar	1	right	fragment	-
	tibia	1	-	posterior shaft	-
	rib	1	-	fragment	-
unidentified	bone	41	-	fragments	-
	tooth	1	-	roots	-
Freshwater Mussel	shell	2	-	fragments	-

Impacts and Recommendations

Site 32PB31 will be partially destroyed by construction of the floodway channel for Alternative 5. The site represents the remains of the Charles Grant's House and Trading Post, which is dated to 1860-1880. The site is located at the junction of several major trails from Winnipeg, Canada, and Pembina to St. Joseph (Walhalla). This was an important stop for travelers in the region. The fragments of melted

glass recovered from the surface of the site confirm the burning of a structure on the site. This site is considered to be an important local and regional landmark and should be further investigated to determine the presence or absence of significant subsurface remains of the Grant's residence. Further field survey may be able to locate other features associated with the main building which burned in 1880. The U.S. Government Land Survey records indicate the presence of the Albert Grant residence located slightly southwest of Charles Grant's House and Trading Post (Armstrong et al. 1867-83). This residence should be located by further field survey.

The REAP survey (1977:114) gave Grant's House and Trading Post state significance for historic preservation status.

The prehistoric component should also be further investigated to determine cultural affiliation and presence or absence of significant subsurface cultural remains. The prehistoric component appears to be located within the same area as the historic occupation.

32PB32
(USD-48)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	31	164	54
N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	31	164	54

Map Quad	Cavalier NW
Local Name	None
Type of Remains	Bone, chipped stone, bullets
Elevation	261 meters, 855 feet
Vegetation	Cut wheat
Estimated Size	50,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	LvD, La Prairie-Fairdale silty clay loam, 9 to 25 percent slopes FaB, Fairdale silty clay loam, 3 to 6 percent slopes
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32PB32 (Figs. 12, 13 and 58b) is located on the flat upland in an area dissected by old river channels of the Pembina River. The site has 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 5 meters south.

A surface grab collection recovered bone and chipped stone. A local farmer has collected old bullets from the site. The site occurs on the Fairdale silty clay loam with 3 to 6 percent slopes and the La Prairie-Fairdale silty clay loam with 9 to 25 percent slopes which are channeled. These soil association are subject to frequent floodings and have severe campsite limitations.

This location corresponds to the location of a school "No. 37" in Ensigns (1893:92-3) atlas and is also on land formerly owned by J.C. Johnson which contained the first schoolhouse in the Hyde Park area. This building was a log structure one-half mile south of the Grant House (32PB31), which would be in this area.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Flake	1	-
Shatter	3	-
Worked Bone	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Deer-size	patella	1	left	complete	-
<u>Equus</u> <u>caballus</u> (horse)	humerus	1	right	shaft	-
<u>Bison</u> <u>bison</u>	axis				
	vertebra	1	axial	anterior	-
	scapula	1	left	glenoid cavity	-
	astragalus	3	right	complete	-
	calcaneum	2	1 right	almost complete	-
			1 left	disto-medial	-
	metatarsal	1	left	proximal	-
	1st phalanx	1	left	proximal	-
	3rd phalanx	1	right	plantar	-
<u>Bison</u> or <u>Bos</u>	2nd mandib- ular molar	1	right	almost complete	-
	3rd mandib- ular molar	1	right	posterior	-
	mandible	2	1 right, 1 ?	dorsal hori- zontal ramus	-
	cervical vertebra	1	axial	fragment	-
	ulna	1	right	proximal	-
	patella	1	right	complete	-
	1st phalanx	1	left	proximal	-
<u>Bison/</u> <u>Bos-size</u>	teeth	4	-	fragments	-
	mandible	1	-	dorsal hori- zontal ramus	-
	scapula	1	left	anterior	-
	humerus	2	left	1 disto-medial, 1 disto-posterior shaft	-
	radius	2	1 left	disto-lateral shaft	-
			1 ?		-
	tibia	1	right	posterior shaft	-
	naviculo- cuboid	1	right	lateral	-
	lateral malleolus	1	right	complete	-
	metapodial	1	-	anterior shaft	-
	rib	6	-	fragments	1:cut marks
unidenti- fied	bone	31	-	fragments	-
	tooth	1	-	fragment	-

Impacts and Recommendations

Site 32PB32 will be partially destroyed by construction of the floodway channel and the rest of the site may be indirectly impacted by the construction activities for Alternative 5. The site contains an unidentified prehistoric component and a historic component, probably dating the occupation of the Charles Grant's House and Trading Post north of this site from 1860 to 1880. This area near Grant's House and Trading Post was an important stopping place for U.S. government troops traveling between Fort Pembina and St. Joseph (Walhalla). It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains at this site.

32PB34
(USD-51)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	11	163	56
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, historic ceramics, glass, brick	
Elevation		282 meters, 925 feet	
Vegetation		Plowed	
Estimated Size		18,750 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		GaA, Gardena very fine sandy loam, 1 to 3 percent slopes	
Cultural Affiliation		Euro-American	
Topography		Ridge Top	
Postulated Past Vegetation		Grassland	
Recommendation		Not eligible	

Site 32PB34 (Figs. 19 and 54b) is located on a ridge top on the left descending side of the Pembina River. The site has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 1150 meters south.

A surface grab collection recovered bone, historic ceramics, glass, and brick. The site occurs on the Gardena very fine sandy loam with 1 to 3 percent slopes. This soil association has few or no campsite limitations.

This site is the location of a farmstead which was recently razed. A records and literature search indicates no significant historical events are associated with this site. The site is situated near or on the old road from Pembina to St. Joseph (Walhalla).

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	2 rims	whiteware	1 plain, 1 flow-blue transfer-printed
	1 base	whiteware	plain
	1 body sherd	whiteware	plain
Bottle Glass	1 neck	light green	post-1903
	2 bodies	1 amethyst, 1 clear	-
Window Glass	4	light blue	-
Brick	2 frags.	brick	-
Metal Can	1	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bos-size</u>	metacarpal	1	right	proximo-medial	-
unidenti- fied	bone	1	-	fragment	-

Impacts and Recommendations

Site 32PB34 is directly adjacent to the proposed floodway channel for Alternative 4 and may be adversely impacted by construction activities. If the alignment of the channel is altered to the north then the site will be directly in the path of the channel. The site 32PB34 will be subject to erosion when floodwaters are diverted in the Alternative 4 floodway diversion structure. The site will eventually be destroyed. The site is a historic farmstead dating to the early and mid 20th century. A records and literature search did not find any significant historic events associated with this site. It is recommended that no further investigations be conducted at this site.

32PB37
(USD-60)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	28	163	56
Map Quad		Walhalla	
Local Name		Massacre site of the Delorme Family	
Type of Remains		Unknown	
Elevation		290 meters, 950 feet	
Vegetation		Grass, timber	
Estimated Size		Unknown	
Surface Visibility		None	
Site Condition		Partially destroyed by modern house and garage	
Soil Association		DdA, Divide loam, 1 to 3 percent slopes HgE, Hecla and Maddock soils, 9 to 25 percent slopes	
Cultural Affiliation		Euro-American	
Topography		Ridge Top	
Postulated Past Vegetation		Grassland	
Recommendation		Potentially eligible for National Register, needs further work	

Site 32PB37 (Figs. 22 and 59a) is located on the top of a ridge on the right descending side of the Pembina River. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 650 meters north. The site location was provided by Mr. Jay Wessels, a local artifact collector and informant.

No surface grab collection was conducted. A modern house and garage are located on the site. The original log house and out-buildings are not discernible. The site occurs on Divide loam with 1 to 3 percent slopes and the Heckla and Maddock soils with 9 to 25 percent slopes. These soil associations have moderate camping limitations, mostly due to drainage and steepness of slope.

This site, according to local informants, is the location where Sioux Indians murdered three metis men. Good, et al. (1980:45) summarized a contemporary account of the event by early settler Ernestine Mager. She located the site on top of a plateau and left of "Old Baldy." 32PB37 is located about 7 miles east of an "Old Baldy" represented on the 1972 Vang Quadrant U.S. Geological Survey map.

The event occurred July 5, 1874. A messenger from St. Joseph arrived that day at Fort Pembina with three women seeking refuge from the Indians. One of the women reported that two families had been killed within a mile and a half of St. Joseph during the night (Thompson 1969:30).

Company "F," with Capt. John S. McNaught in command, was sent out immediately in pursuit of those responsible for the murder. When they arrived at St. Joseph they found that three men had been killed and two

women wounded. A man and boy had escaped injury although their tipi was set on fire. The dead were identified as O.W. Delorme, Baptiste Delorme and Baptiste Lorim, all metis. It was estimated that there had been about 100 Sioux involved in the attack. Company "F" returned to Pembina on July 9 without capturing the attackers (Thompson 1969:30-31).

Later investigations proved that the raiders were Yanktonai who had failed in an attempt to break up an alliance between the Sisseton and Pembina Band Chippewa at Fort Totten. They killed the three metis, attempting to put the blame on the Sisseton.

For two weeks after the murders, settlers and Chippewa in the area gathered at the fort seeking protection. Seven men and two boys kept guard at St. Joseph until ten men from Fort Pembina were sent to establish a military outpost at St. Joseph. This was the final act against Indian raids carried on by the troops at Fort Pembina. Their last twenty years recorded no further Indian problems (Thompson 1969:31).

Impacts and Recommendations

Site 32PB37 will not be directly affected by construction and use of the floodway diversion structure for Alternative 4. The site is located extremely close to the floodpool boundary and near the maximum water elevation for the diversion structure for Alternative 4, but should not be affected unless floodwaters overtop and cause erosional problems. Therefore, the site is not recommended for further investigation at this time. However, investigations should be initiated if erosional impacts occur.

32PB38
(USD-26)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	14	163	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, glass, gun cartridge		
Elevation	279 meters, 915 feet		
Vegetation	Beans		
Estimated Size	11,250 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	LrB, La Prairie silty clay loam, 3 to 6 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Not eligible		

Site 32PB38 (Figs. 19 and 59b) is located on the floodplain on the left descending side of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 25 meters south.

A surface grab collection recovered bone, glass and a gun cartridge. The site occurs on La Prairie silty clay loam with 3 to 6 percent slopes. This soil association is subject to frequent flooding and moderate to severe camping limitations.

The site is believed to be a historic trash dump. There are no discernible structures and a records and literature search did not find any records relating to this site.

HISTORIC ARTIFACTS (Fig. 39c)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	2 rims 1 base	whiteware whiteware	1 plain, 1 molded plain
Bottle Glass .44 caliber	1 body	amethyst	-
Henry Cartridge	1	metal	1860 to 1934

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	8	-	fragments	-

Impacts and Recommendations

Site 32PB38 is in the vicinity of the proposed floodway diversion structure for Alternative 4. The site should not be affected unless the alignments are moved to the east. The site is believed to be a historic trash dump. No further investigations are warranted for this site.

32PB101
(USD-18)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	16	163	56
Map Quad	Walhalla		
Local Name	Gingras' House and Trading Post		
Type of Remains	Restored house, outbuilding, historic ceramics, glass, metal		
Elevation	288 meters, 945 feet		
Vegetation	Cut wheat		
Estimated Size	15,000 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	LrA, La Prairie silty clay loam, 1 to 3 percent slopes ByD, Brantford loam, 9 to 25 percent slopes SwA, Swenoda fine sandy loam, 1 to 3 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Ridge top and talus slope		
Postulated Past Vegetation	Grassland		
Recommendation	Currently on National Register		

Site 32PB101 (Figs. 20 and 60) is located on the flat upland and side of a ridge. The site has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 1000 meters east.

A surface grab collection in the wheat fields surrounding the restored structures recovered historic ceramics, glass and metal. The site occurs on La Prairie silty clay loam with 1 to 3 percent slopes, Brantford loam with 9 to 25 percent slopes, and Swenoda fine sandy loam with 1 to 3 percent slopes. These soil associations have moderate-to-severe camping limitations. The low-lying soils are subject to frequent flooding and the higher, sloping soils are steep.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	1	-

HISTORIC ARTIFACTS (Fig. 39d-e)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	2 bases 10 body sherds	stoneware	-
Utilitarian Ware	1 base	stoneware	pressed design

Tableware	13 rims	whiteware	10 plain, 3 molded
	4 bases	whiteware	plain
	1 handle	whiteware	plain
	14 body sherds	whiteware	10 plain, 2 flow-blue transfer-printed, 1 molded, 1 banded
Decorative Bird	1	whiteware	-
Bottle Glass	3 necks	1 dark blue, 1 light green, 1 amber	post-1903
	13 bodies	4 amethyst, 3 amber, 2 light blue, 1 dark blue, 1 light green, 1 dark green, 1 clear	-
Pressed Glass	2	amethyst	-
Window Glass	3	light green	-
Galvanized Sheet Metal	1	metal	-
Strap Metal	1	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Equus</u> <u>caballus</u> (horse)	3rd mandibular molar	1	right	complete	-
Horse-size	tibia	1	-	shaft	-
Pig-size	2nd phalanx	1	left	complete	-
<u>Bison/</u> <u>Bos-size</u>	scapula	1	-	glenoid fragment	-
	tibia	1	left	distal	-
	vertebra	1	axial	fragment	-
	rib	1	-	fragment	-
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32PB101 will not be affected by floodwaters or construction of the floodway diversion structure for Alternative 4. The Gingras' House and Trading Post and outbuildings have been extensively renovated by the North Dakota State Historical Society. There is a dense surface scatter of historic materials on the north side of the gravel road and on the slopes surrounding the south and east edge of the structures. In the event of any future construction or adverse impacts to the immediate

environs of the Gingras' House and Trading Post, it is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains in the areas described above. This site is currently on the National Register of Historic Places and North Dakota State Historic Site Registry.

HYDE PARK COMMUNITY AND CEMETERY

Introduction

Although Hyde Park contained a store, post office, church, school and cemetery, it was never specifically a platted town, but consisted of a widespread rural community (Fig. 34). Alternatives 4 and 5 would pass through this area. Alternative 5 would pass very close to the cemetery, the location of the first school and several residences. Permanent settlement began in the Hyde Park region in the late 1870's. Many of the early settlers first stayed at Charles Grant's House and Trading Post (32PB31) while building their dwellings. Grant's House and Trading Post would also be affected by Alternative 5.

Biographical information for the early Hyde Park residents indicate that many of them migrated to Pembina County through Canada, instead of following the east-to-west migrations generally associated with trans-Mississippi West settlement patterns. In this regard, the pioneering background of settlers along this border area might differ from that of settlers in the rest of the U.S. prairie-plains region.

Hyde Park Church

The first church services for the area residents, conducted by Rev. Goldie, were held at Grant's House and Trading Post (32PB31). After the Grant House was destroyed by fire in the spring of 1880, Rev. Goldie continued his services in the home of James Hyde, and later in the Bay Centre school house. Still later, services were held in the log schoolhouse on the northwest corner of the Donald McLarty, Sr., farm (NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 6, 163N, 54W).

On November 6, 1882, a meeting was held at the home of James Hyde to discuss building a church. In 1883, the congregation's name was changed from the Hyde Park Station of the Boundary Congregation to the Park Presbyterian Church. The building committee appointed to have charge of erecting the church were John McLarty, James Hyde and John C. Johnson.

In the summer of 1883 the church was erected by James Johnson on the southeast corner of the Neilson farm. The building was a frame structure 22 feet wide and 30 feet long with a porch 6 feet square. It was completed by the late fall 1883. Rev. A.K. Caswell was the first pastor, serving from fall 1883 until spring 1884. Rev. John Scott followed until 1889.

In 1921 the Hyde Park and Bay Centre congregations were united, and the Hyde Park church building was sold to the Lutheran congregation who moved it across the border to Gretna, Manitoba. The Lutherans later sold the building to the Masons who used it as their temple until 1970. At that time the original Hyde Park church building was donated to Wilbur Paton who moved it to his Isle of Memories Museum (SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 1 T163N, R55W) where the church now remains under the care of the Paton

family, one and one-half miles from its original location. (Pembina County Commission and Pembina County Historical Society 1975:174-177; Neche-Bathgate History Book Committee 1976:88; Paton 1981.)

Hyde Park School

The first schoolhouse in the Hyde Park area was built of logs and located on the J.C. Johnson farm one-half mile south of the Grant House (32PB31) ("Proudly We Speak: A History of Neche, Bathgate, Bruce and Hyde Park [Neche-Bathgate History Book Committee 1976:95] includes a photograph of the building and students). This location corresponds to a school "No. 37." in Ensign's (1893:92-3) atlas in the NW $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 31 T164N, R54W. This location also corresponds to find spot 32PB32 where survey crews discovered gun pieces and bullets, probably associated with the fur trading activity of Grant's House and Trading Post (32PB31).

The log school was used until a new building was built about one mile south on the northwest corner of the Donald McLarty, Sr., farm (NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 6 T163N R54W). This building was 14 feet by 24 feet with log walls plastered with mud. It had a board floor and shingled roof. It was used until about 1890. This site was listed in the REAP survey (1977:109) with no further information.

The third Hyde Park school building was built about 1890 on the Robert Noice farm just east of the post office and store (NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 1 T163N R55W) (Neche-Bathgate History Book Committee 1976:95). This building is also shown in Ensign's (1893:92-3) atlas. It was a frame building with windows on both long sides. Operation of this school ceased in 1961. In 1962 Wilbur Paton purchased the building and moved it to the Isle of Memories Museum (SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 1 T163N R55W) where it remains under the care of the Paton family (Neche-Bathgate History Book Committee 1976:95; Pembina County Commission and Pembina County Historical Society 1975:174-77).

Hyde Park Post Office and Store

The mail for Hyde Park area residents originally arrived to the post office located in the home of James Hyde (WPA interview n.d.: Watts; WPA interview n.d.:Hyde). Hyde's residence is shown in Ensign's (1893:92-3) atlas as being located about one half mile south of the Hyde Park cemetery in the SE $\frac{1}{4}$, SW $\frac{1}{4}$ fractional section 30 T164N R54W.

Ensign (1893:92-3) also located a Hyde Park post office on the Noice farm (NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 1 T163N R55W) just west of the school. The post office was apparently in a store located there (Neche-Bathgate History Book Committee 1976:95).

Two locations for the Hyde Park post office were given in the REAP survey (1977:114). Dated 1853 was the NE $\frac{1}{4}$, NW $\frac{1}{4}$ of Section 1 T163N R55W, similar to the second location above. Dated 1884 was the NE $\frac{1}{4}$, SW $\frac{1}{4}$ Section 30 T164N R54W, close to the first listed location.

Hyde Park Residences

The literature search uncovered several residences of early Hyde Park settlers which were not located by the field survey crew, but which appear to have been located on land which would be affected directly by Alternative 5.

Ensign's (1893:92-3) atlas (Fig. 34) locates the residence of George Sheard directly north of the present Hyde Park cemetery. The James Kyle residence was directly south of the cemetery. James Hyde's residence, used as the first post office, was approximately one-half mile south of the cemetery in the SE $\frac{1}{4}$, SW $\frac{1}{4}$ fractional Section 30, T164N R54W.

In section 31 T164N R54W, the residence of John C. Johnson (NW $\frac{1}{4}$) and Andrew Brown (SE $\frac{1}{4}$) are shown. The residence of Donald McLarty is shown in the NW $\frac{1}{4}$ of section 6 T163N R54W (Ensign 1893:92-3).

Hyde Park Cemetery

The Hyde Park cemetery, (Fig. 80a) located in the fractional section 30 T164N R54W, contains stones marking the burials of at least 119 individuals (Fig. 35) (Appendix C for transcriptions of stones). Not discovered until the literature search and field survey was completed were the official Hyde Park cemetery records in Neche under the care of Rex Karel (Paton 1981). The lists included in this report, therefore, are not based on the official records, but on field survey data.

Where possible, the biographical list includes any relationship to other individuals in the cemetery. It becomes clear that the Hyde Park settlers were of similar backgrounds, and, as in most rural communities, families intermarried, resulting in a fairly homogeneous group of people. Many residents currently living in the Hyde Park locale are descendants of one or more families buried in the Hyde Park cemetery.

Impacts and Recommendations

Several sites which would be affected by Alternatives 4 and 5 were discovered in historical sources but were not confirmed by the field survey crew. Further field survey and literature searches should be conducted to locate sites to determine their significance.

1. The original location of the Hyde Park church building which is now located at Paton's Isle of Memories Museum.
2. Log school house on J.C. Johnson farm NW $\frac{1}{4}$, NE $\frac{1}{4}$ Sec. 31 T164N R54W. (Same location as findspot 32PB32).
3. Log school house on Donald McLarty farm NW $\frac{1}{4}$, NW $\frac{1}{4}$ Sec. 6 T163N R54W.

4. Residences of George Sheard, James Kyle, James Hyde, John C. Johnson, Andrew Brown, and Donald McLarty. (Fig. 34, Ensign map).

Further literature search should include an examination of the official Hyde Park cemetery records in Neche under the care of Rex Karel (Paton 1981) to verify the information gathered by the survey crew from the markers in the cemetery. Obituaries and other biographical sources should be further searched for data on individuals buried in the cemetery for whom no information has yet been found. Because descendants of many of these individuals still reside in the area, more contact should be made with the local informants concerning the Hyde Park settlement and sites.

SMUGGLER'S POINT AND OTTENTON

History

Smuggler's Point was a site often referred to in the literature, but not specifically located by the field crew. Sources are unclear as to the location of the site and to the people associated with it.

Andreas (1884:200) stated that in 1864 William H. Moorhead moved from Walhalla to erect a building on Section 11 of T163N R54W, known as Smuggler's Point. This building was used as a residence, tavern, saloon and store. Moorhead's tavern and store were apparently a popular establishment. He stored his "liquid delicacies" on the Canadian side of the border to evade the prohibition laws of the U.S. territories (Anonymous 1882:20).

Andreas (1884:200) further stated that Moorhead's was one of only three houses between Pembina and Walhalla and was also located on the main road between Walhalla and Winnipeg which provided him with a heavy business. He added that a custom house was established there, which indicates a location close to the current customs building.

The Neche-Bathgate History Book Committee (1976:7) gave Smuggler's Point a "boundary location" and stated that it was the "only spot where a heavily wooded area straddled the border west of St. Paul to [the] Winnipeg main trail at Pembina, until the Pembina Hills were reached."

According to the Neche-Bathgate History Book Committee (1976:7) James S. Wheeler had the first claim to the land and buildings at Smuggler's Point. He and Charles Walker were the first Customs Inspectors at the Point, followed by John Otten in 1869. Otten became the first postmaster in 1873 followed by Joe Daniels, who operated the post office in his saloon. Daniels later moved his saloon to Neche.

According to a WPA interview with early settler William J. Watts, the first saloonkeeper at Smuggler's Point was Joe LaPorte in 1877. His store was located 1½ miles north and ½ mile west of Neche on land owned by John Otten (WPA Interview n.d.:Watts). Settler John Lee, in another WPA interview (WPA Interview n.d.:Lee) stated that Smuggler's Point was a custom office between Neche and Gretna on a point of timber. He said that Joe Walker was perhaps the first postmaster of Smuggler's Point.

In July, 1882, John Otten hired civil engineers H.S. Donaldson and S.O. McGivin to plat the townsite of Ottenton just east of Smuggler's Point, along the boundary where the railroad was expected to cross the border. A copy of Donaldson and McGivin's plat of Ottenton is reproduced in the Neche-Bathgate History Book Committee (1976:9) and shows the Pembina River skirting the southwest edge of the town blocks.

In October, 1882, James Hill of the railroad contracted with Dan Shay and platted the town of Neche on the south side of the river. According to Lee (WPA Interview n.d.:Lee), this may have been due to Otten's refusal to cooperate with Hill's financial arrangements. In

1883 the Port of Entry, custom house, store and post office were relocated in the new town of Neche, leaving Ottenton to the fate of a paper town. The original log custom house later was destroyed by fire (Neche-Bathgate History Book Committee 1976:7).

Andreas (1884:71) placed Ottenton (spelled Ottention in Andreas's citation) in the NE $\frac{1}{4}$ of the fractional section 25, T164N R54W on the railroad line a mile north and a mile west of Neche, on the border (Fig. 36). On Andreas's map, the Pembina River jogs north near the border a half mile west of the Ottenton townsite, and this may be the site of Smuggler's Point.

Ensign's atlas (1893:92-3) placed Ottenton on the N $\frac{1}{2}$ of section 36 of T164N R54W. Drawn out were 32 squared-off sections of the town directly on the meandering Pembina River. The REAP survey (1977:114) listed the location of Ottenton townsite with a post office in the SE $\frac{1}{4}$ Section 25 T164N R54W. The Smuggler's Point custom house was located in the W $\frac{1}{2}$ of the same section. Ottenton was judged locally significant, while the custom house was of state significance.

Impacts and Recommendations

Further field survey and literature search might pinpoint the exact location of buildings at Smuggler's Point and clarify the discrepancy of information. Andreas's location in Section 11 T163N R54W would not be on the boundary, but one mile south and two miles west of Neche. Because all sources indicate a boundary location, the area near the boundary in fractional section 25, T164N R54W west of the railroad line should be further examined to determine if remains of buildings used as saloon and post office still exist. The literature search should include title searches of land in that vicinity to clarify ownership. If its location is near the International Boundary, then it may be destroyed by construction of the boundary floodway channel for Alternatives 4 and 5.

USD-2

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	26	164	53
Map Quad		Bathgate	
Local Name		None	
Type of Remains		Bone	
Elevation		245 meters, 805 feet	
Vegetation		Wheat	
Estimated Size		100 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		Rr, Ryan-Fargo silty clays	
Cultural Affiliation		Unknown	
Topography		Lake Agassiz Plain	
Postulated Past Vegetation		Grassland	
Recommendation		Not eligible	

Find spot 2 (Figs. 9 and 61a) is located on the flat uplands adjacent to the International Border. The location has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 2778 meters south.

A surface grab collection recovered bone fragments of bison/bos size. This find spot occurs on the Ryan-Fargo silty clay soil association, which has very slow permeability resulting in severe camping limitations. This find spot probably represents the recent death of a bos (cow).

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Sus scrofa</u> (pig)	ulna	1	right	complete	-
<u>Bison/</u> <u>Bos-size</u>	maxillary premolar	1	-	complete	-
	2nd phalanx	1	right	nearly complete	-
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Find spot 2 will be destroyed during construction of the floodway channel for Alternatives 4 or 5. The probability that this represents the remains of a recently deceased domesticated cow does not warrant further investigations at this location.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	28	164	53
Map Quad		Bathgate	
Local Name		None	
Type of Remains		Bone, historic ceramics	
Elevation		248 meters, 815 feet	
Vegetation		Wheat	
Estimated Size		100 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		Rr, Ryan-Fargo silty clays	
Cultural Affiliation		Euro-American	
Topography		Lake Agassiz Plain	
Postulated Past Vegetation		Grassland	
Recommendation		Not eligible	

Find spot 3 (Figs. 9 and 61b) is located on the flat upland adjacent to the International Border. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 2160 meters south.

A surface grab collection recovered bone and historic ceramics. The find spot is located on Ryan-Fargo silty clays, which have very slow permeability and severe camping limitations. The artifacts recovered are attributed to local farming activities. No evidence of structural remains were discerned, and the only cultural remains observed were two pieces of broken pottery.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 base	whiteware	plain
	1 body sherd	whiteware	molded

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Avian	coracoid	1	right	complete	-

Impacts and Recommendations

Find spot 3 will be destroyed by construction of the floodway channel for Alternatives 4 or 5. This find spot does not appear to represent a locus of cultural activity but rather the fortuitous occurrence of two pieces of historic pottery. No further investigations are recommended for this location.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	6	163	54
Map Quad		Cavalier NW	
Local Name		None	
Type of Remains		Bone, glass	
Elevation		264 meters, 865 feet	
Vegetation		Cut Wheat	
Estimated Size		15,000 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		FaB, Fairdale silty clay loam, 3 to 6 percent slopes	
Cultural Affiliation		Euro-American	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Not eligible	

Find spot 9 (Figs. 13 and 62a) is located on the right descending bank of the Pembina River. The area is dissected by river channel scars and remnants. The site has a 90 degree view of the surrounding terrain for a distance of less than 1 to 5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 100 meters west.

A surface grab collection recovered a scatter of bone and one piece of glass. The bone probably represents a recently deceased farm animal of bison/bos size. The find spot is located on Fairdale silty clay loam with 3 to 6 percent slopes. This soil association is subject to periodic flooding and has severe camping limitations.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	1 body	amethyst	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison</u>					
<u>bison</u>	humerus	1	left	nearly complete	-
	metatarsal	1	left	proximal	-
	1st phalanx	1	left	complete	-
	3rd phalanx	1	left	complete	-
<u>Bison or Bos</u>					
	horn core	1	-	fragment	-
	scaphoid	1	left	complete	-
	calcaneum	1	right	tuber calcis	-
	1st phalanx	3	1 left	w/o unfused proximal epiphysis,	-
			2 right	1 distal, 1 lateral	-

	2nd phalanx	1	right	proximal	-
<u>Bison/ Bos-size</u>	mandible	2	1 right, 1 ?	horizontal ramus	-
	cervical vertebra	2	axial	fragments	-
	thoracic vertebra	2	axial	fragments	-
	vertebra	7	axial	fragments	-
	humerus	1	right	anterior shaft	-
	tibia	1	left	proximo-medial shaft	-
	metapodial	2	-	distal	-
	rib	3	-	fragments	-
unidenti- fied	bone	3	-	fragments	-

Impacts and Recommendations

Find spot 9 probably represents a recently deceased cow (bos) with some Bison bison remains eroding out of the old river channel banks. This find spot is located within the floodpool of Alternative 5 and will be periodically inundated by floodwaters. This location of bone and one fragment of glass does not warrant further investigation.

USD-10

<u>Legal Locations</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	6	163	54
NE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	6	163	54
SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	6	163	54

Map Quad	Cavalier NW
Local Name	None
Type of Remains	Bone
Elevation	264 meters, 865 feet
Vegetation	Cut wheat
Estimated Size	30,000
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	FaB, Fairdale silty clay loam, 3 to 6 percent slopes
Cultural Affiliation	Unknown
Topography	Terrace
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Not eligible

Find spot 10 (Figs. 13 and 62a) is located on the right descending bank of the Pembina River. The find spot has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 50 meters north.

A surface grab collection recovered bone. The bone scatter is probably the remains of a recently deceased cow. The find spot is located on Fairdale silty clay loam with 3 to 6 percent slopes. This soil association is subject to frequent floodings and has severe campsite limitations.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Odocoileus</u>					
sp. (deer)	femur	1	left	shaft	-
<u>Bison</u> or	thoracic				
<u>Bos</u>	vertebra	1	axial	nearly complete	-
	lumbar				
	vertebra	1	axial	centrum	-
<u>Bison/</u>	thoracic				
<u>Bos</u> -size	vertebra	1	axial	left lateral	-
	vertebra	1	axial	centrum	-
	pelvis	7	2 right	1 ilium, 1 ischium	-
			2 left	1 ilium,	
				1 acetabulum	-
			3 ?	fragments	-
	sternum	1	axial	fragment	-

unidenti-
fied bone 1 - fragment -

Impacts and Recommendations

Find spot 10 is probably the remains of a recently deceased cow. This find spot will be periodically inundated by floodwaters in Alternative 5 floodway diversion structure. This scatter of bones does not warrant further investigations.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	6	163	54
SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	6	163	54
Map Quad	Cavalier NW		
Local Name	None		
Type of Remains	Bone, historic glass		
Elevation	267 meters, 875 feet		
Vegetation	Cut wheat		
Estimated Size	20,000 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	FaB, Fairdale silty clay loam, 3 to 6 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Not eligible		

Find spot 11 (Figs. 13 and 62b) is located on the right descending bank of the Pembina River. The find spot has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 125 meters northwest. A surface grab collection recovered bones which have been sawed in a butcher store and fragments of broken glass. The obvious sawed bone and incomplete broken glassware suggest this is a recent trash and garbage dump. A few remains of bison occur on the site and are probably the result of river channel erosion and deposition. No structural remains were discerned. Therefore, the authors did not believe this area warranted an official North Dakota, trinomial, site number. The find spot occurs on Fairdale silty clay loam with 3 to 6 percent slopes. This soil association is subject to frequent flooding and has severe camping limitations.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	1 rim	milk glass	-
	1 base	clear	-
	1 body	blue	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Thomomys talpoides</u> (pocket gopher)	skull	1	-	anterior	-
<u>Bos-size</u>	metacarpal	1	-	distal	sawed

<u>Bison</u>					
<u>bison</u>	1st phalanx	1	left	nearly complete	-
	3rd phalanx	1	right	distal	-
<u>Bison/</u>					
<u>Bos-size</u>	tibia	1	left	proximo-posterior	-
	1st phalanx	1	left	w/o unfused proximal epiphysis	-
unidenti-					
fied	bone	1	-	fragment	-

Impacts and Recommendations

Find spot 11 is interpreted as being the remains of a trash dump with occasional bison remains which have eroded from the river banks. The find spot is located within the floodpool of Alternative 5 and will be periodically inundated. This scatter of bone and historic glass does not warrant further investigation.

USD-13

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	31	164	54
Map Quad		Cavalier NW	
Local Name		None	
Type of Remains		Bone, historic ceramics	
Elevation		259 meters, 850 feet	
Vegetation		Plowed	
Estimated Size		20,000	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		FaB, Fairdale silty clay loam, 3 to 6 percent slopes	
Cultural Affiliation		Euro-American	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Not eligible	

Find spot 13 (Figs. 12, 13 and 63a) is located on the right descending bank of the Pembina River. The find spot has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located five meters north and east.

A surface grab collection recovered bone and historic glass. Several large areas with burned earth and charcoal were observed. This small corner of a field appears to have recently had the timber dozed off and subsequently burned. The find spot is attributed to recent timber clearing and farming activities.

The find spot occurs on Fairdale silty clay loam with 3 to 6 percent slopes. This soil association is subject to frequent flooding and has severe camping limitations.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 base	whiteware	plain

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	1	-	fragment	-

Impacts and Recommendations

Find spot 13 is a recent deposit of historic remains. The find spot will be periodically inundated by floodwaters within the floodwater

diversion structure for Alternative 5. The scatter of bone and ceramics does not warrant further investigation.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	35	164	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, historic ceramics, metal		
Elevation	279 meters, 915 feet		
Vegetation	Cut wheat		
Estimated Size	22,500		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	GaA, Garden very fine sandy loam, 1 to 3 percent slopes		
Cultural Affiliation	Euro-American		
Topography	Lake Agassiz Plain		
Postulated Past Vegetation	Grassland		
Recommendation	Not eligible		

Find spot 14 (Fig. 16) is located on the flat uplands. The find spot has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 4985 meters south.

A surface grab collection recovered historic ceramics, metal and bone. The surface scatter of artifacts is attributed to farming activities. The find spot occurs on Gardena very fine sandy loam with 1 to 3 percent slopes. This soil association has moderate permeability and few or no campsite limitations.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 body sherd	whiteware	plain
Metal Fragment	1	zinc	-

FAUNAL REMAINS

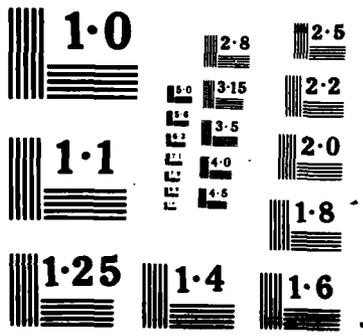
<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	1	-	fragment	-

Impacts and Recommendations

Find spot 14 is a thin surface scatter of historic artifacts. Their occurrence is attributed to farming activities. The land owner, Mr. Jack Huffman, informed the archaeological field crew that he has recovered projectile points from this location. The archaeological survey crew did not observe any signs of a prehistoric component.

Therefore, this location should be reexamined in the event that the area is disturbed by construction activities.

Construction of the floodway channel for Alternative 4 will destroy this find spot. The area should be monitored if the floodway channel is constructed.



USD-15

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	28	164	55
S $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	28	164	55

Map Quad	Leroy
Local Name	None
Type of Remains	Bone
Elevation	268 meters, 880 feet
Vegetation	Beans
Estimated Size	7,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	DdA, Divide loam, 1 to 3 percent slopes GfA, Glyndon silt loam, 1 to 3 percent slopes
Cultural Affiliation	Unknown
Topography	Lake Agassiz Plain
Postulated Past Vegetation	Grassland
Recommendation	Not eligible

Find spot 15 (Fig. 15) is located on the flat upland adjacent to the International Border. The find spot has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 7077 meters south.

A surface grab collection recovered bone fragments. This find spot is probably the remains of a recently deceased cow. The find spot occurs on Divide loam and Glyndon silt loam with 1 to 3 percent slopes. These soil associations are poorly drained with high seasonal water tables. These soils have low to moderate campsite limitations.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Sus scrofa</u> (pig)	skull	4	-	fragments	-
	mandible	1	left	horizontal ramus	-
	ulna	1	left	proximal	-

Impacts and Recommendations

Find spot 5 is probably the remains of a recently deceased cow. The find spot will be destroyed by construction of the floodway channel for Alternative 4. This surface scatter of bone does not warrant further investigation.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{2}$ SW $\frac{1}{2}$	15	163	56
Map Quad		Walhalla	
Local Name		None	
Type of Remains		Chipped stone	
Elevation		282 meters, 925 feet	
Vegetation		Cut wheat	
Estimated Size		2,500 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		LrA, La Prairie silty clay loam, 1 to 3 percent slopes	
		LrB, La Prairie silty clay loam, 3 to 6 percent slopes	
Cultural Affiliation		Prehistoric (unknown)	
Topography		Lake Agassiz Plain	
Postulated Past Vegetation		Grassland	
Recommendation		Not eligible	

Find spot 17 (Figs. 20 and 63b) is located on a small rise on the uplands. The find spot has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 1000 meters east.

A surface grab collection recovered two pieces of shatter. The heavy cultivation of the area and isolated recovery of two pieces of chipped stone which may be of fortuitous occurrence makes this a find spot rather than a designated site.

The find spot occurs on La Prairie silty clay loam with 1 to 6 percent slopes. This soil association is subject to frequent floodings and has severe campsite limitations.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Shatter	2	-

Impacts and Recommendations

Find spot 17 is located within the floodpool of Alternative 4, and will be periodically inundated. The thin surface scatter of lithics does not warrant further investigation.

USD-20

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	10	163	56
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, chipped stone	
Elevation		280 meters, 920 feet	
Vegetation		Plowed	
Estimated Size		11,250 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		Ff, Fargo silty clay	
Cultural Affiliation		Prehistoric (unknown)	
Topography		Lake Agassiz Plain	
Postulated Past Vegetation		Grassland	
Recommendation		Not eligible	

Find spot 20 (Figs. 19 and 54b) is located at the base of a ridge. The find spot has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 800 meters south.

A surface grab collection recovered two small flakes, one piece of shatter and one bone fragment. This very thin scatter of surface material is considered a find spot.

The find spot occurs on Fargo silty clay soil association which has slow permeability and severe campsite limitations.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	3	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	1	-	fragment	-

Impacts and Recommendations

Find spot 20 is located adjacent to the floodway channel alignment for Alternative 4. The find spot could be affected by construction activities or directly affected if the channel alignment was moved to the west. The thin surface scatter of artifacts does not warrant further investigation.

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	56
Map Quad	Leroy		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	280 meters, 920 feet		
Vegetation	Plowed		
Estimated Size	10,000 square meters		
Surface Visibility	100 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Ff, Fargo silty clay		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Lake Agassiz Plain		
Postulated Past Vegetation	Grassland		
Recommendation	Not eligible		

Find spot 21 (Figs. 19 and 54b) is located at the base of a ridge. The find spot has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 500 meters south.

A surface grab collection recovered bone and one piece of shatter. The find spot occurs on Fargo silty clay soil association which has slow permeability and severe campsite limitations.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
shatter	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> <u>Bos-size</u>	tooth	1	-	fragment	-
unidenti- fied	tooth	1	-	fragment	-

Impacts and Recommendations

Find spot 21 is located adjacent to the floodway channel alignment for Alternative 4. The find spot could be affected by construction activities or if the alignment was moved to the east. The thin scatter of remains does not warrant further investigation.

USD-25

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56
NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	14	163	56
SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	14	163	56

Map Quad	Leroy
Local Name	None
Type of Remains	Bone, historic glass
Elevation	277 meters, 910 feet
Vegetation	Beans
Estimated Size	7,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	LrA, La Prairie clay loam, 1 to 3 percent slopes LrB, La Prairie clay loam, 3 to 6 percent slopes
Cultural Affiliation	Euro-American
Topography	Terrace
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Not eligible

Find spot 25 (Figs. 19 and 55b) is located on the left descending bank of the Pembina River. The find spot has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 15 meters south.

A surface grab collection recovered bone and glass. The thin scatter of bone and glass probably represents a recent trash dump. The find spot occurs on La Prairie clay loam with 1 to 6 percent slopes. This soil association is subject to frequent floodings and has severe campsite limitations.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	2 bodies	1 amber, 1 light green	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> <u>Bos-size</u>	mandibular molar	1	left	anterior	-
	scaphoid	1	left	anterior	-
	2nd phalanx	1	-	disto-posterior	-
	rib	1	-	fragment	-
unidenti- fied	bone	1	-	fragment	-

Impacts and Recommendations

Find spot 25 is in the vicinity of the proposed Alternative 4; however, it will not be directly or indirectly impacted by the construction alignments presently proposed. The find spot could be directly or indirectly impacted if the floodway alignments are moved to the east. The thin scatter of historic remains does not warrant further investigation.

32CV2
(USD-29)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	36	163	57
N $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	36	163	57
S $\frac{1}{2}$ N $\frac{1}{2}$ NE $\frac{1}{4}$	36	163	57

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone, glass, log cabin
Elevation	366 meters, 1200 feet
Vegetation	Cut wheat
Estimated Size	150,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Bluff top
Postulated past vegetation	Grassland
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV2 (Figs. 23, 64 and 65) is located on a ridge top overlooking the Pembina River valley. The site has a 360 degree view of the surrounding terrain for a distance of 3 to 8 kilometers (2 to 5 miles). The nearest permanent water is the Pembina River, located 200 meters south.

A surface grab collection recovered a large quantity of chipped stone debris and a few pieces of historic glass. A standing, horizontally constructed log cabin assembled with wooden pegs is at the south edge of a grove of trees located on the north edge of the site. A search of the North Dakota Water Commission records indicates this cabin belonged to a T.R. McLaughlin from 1867 to at least 1884 (Fig. 103).

No temporally/culturally diagnostic artifacts were recovered from the prehistoric component. The cultural-temporal affiliation is unknown. The site was examined in 1975 by Ames (1975) of Moorhead State College. He did not record it as a site but rather simply mentioned a lithic scatter was present.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Bifaces	3	*
Graver	1	-
Retouched Flake	1	-
Flakes	99	-
Shatter	53	-

TOOL DESCRIPTION

Bifaces

Specimen S-4 (Fig. 41a) is a basalt biface. The base is convex. The lateral edges converge toward the blunt point. Large, primary flake scars are present on both surfaces. It is lenticular in cross-section. The specimen measures 35.7 mm long, 21.0 mm wide, and 9.8 mm thick.

Specimen S-5 (Fig. 41b) is a chert biface fragment. The broken edge has been reworked. The lateral edges are convex and the tip is rounded. It is lenticular in cross-section. Both faces exhibit invasive modification.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	1 body	amethyst	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Bos-size unidenti- fied	pelvis	1	right	acetabulum	-
	bone	1	-	fragment	-

Impacts and Recommendations

Site 32CV2 contains prehistoric and historic components. The prehistoric component is indeterminate as to temporal/cultural affiliation. The historic component, with a standing log cabin, is dated to 1867 to 1884. The site is located on the north axis of the proposed Pembilier Dam. The site's proximity to the dam axis would suggest imminent destruction by movement and storage of heavy earthmoving equipment. The site will be impacted by construction of Alternatives 1, 2, 3 and 5. It is recommended that both the prehistoric and historic components at the site be further investigated to determine the presence or absence of significant subsurface remains.

32CV3
(USD-30)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	36	163	57
NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$	36	163	57
NE $\frac{1}{4}$ SW $\frac{1}{4}$	36	163	57

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	347 to 360 meters, 1140 to 1180 feet
Vegetation	Plowed, beans
Estimated Size	60,000 square meters
Surface Visibility	100 percent and 50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown)
Topography	Talus slope
Postulated Past Vegetation	Mixed hardwood forest
Recommendations	Potentially eligible for National Register, needs further work

Site 32CV3 (Figs. 23, 24 and 66a) is located on the side of a hill overlooking the Pembina River valley. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 225 meters south.

A surface grab collection recovered bone and chipped stone. No culturally/temporally diagnostic artifacts were recovered. Ames (1975) visited the site in 1975 but did not report it as a site. He recorded only the presence of a lithic scatter.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	2	*
Chopper	2	-
Core	2	-
Flake	25	-
Shatter	37	-

TOOL DESCRIPTION

Biface

Specimen S-68 (Fig. 41c) is a chert biface midsection. The lateral edges are convex. It has a lateral break at each end. It is lenticular in cross-section. Both surfaces are invasively modified.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Odocoileus</u>					
sp. (deer)	antler	1	-	basal fragment	-
	scapula	1	left	distal	-
Deer-size	thoracic				
	vertebra	1	-	fragment	-
	scapula	1	-	fragment	-
Bison-size	tooth	1	-	fragment	-
	humerus	2	right	disto-posterior shaft	-
	femur	1	left	lateral shaft	-
	tibia	2	right	posterior shaft	-
	astragalus	2	1 right 1 ?	posterior fragment	-
	naviculo- cuboid	1	right	medial	-
	metapodial	1	-	proximal	-
unidenti- fied	bone	31	-	fragments	-

Impacts and Recommendations

Site 32CV3, located upstream from the proposed Pembilier Dam, will not be inundated but will be subject to potential erosion from wave action. The site, a prime building location, may also be indirectly impacted by the construction of the Pembilier Dam. The site will be affected by construction of Alternatives 1, 2, 3 and 5.

Site 32CV3 contains a prehistoric component consisting of a surface lithic scatter. No culturally/temporally diagnostic artifacts were recovered from the site. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV4
(USD-31)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	29	163	57
S $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	29	163	57
SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	30	163	57
E $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	30	163	57
NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	30	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics, glass
Elevation	351 meters, 1150 feet
Vegetation	Cut wheat
Estimated Size	75,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Talus slope
Postulated Past Vegetation	Mixed hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV4 (Figs. 26 and 66b) is located on a ridge top overlooking the Pembina River valley. The site has a 270 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 150 meters east.

A surface grab collection recovered bone, chipped stone, and historic ceramics and glass. No culturally/temporally diagnostic artifacts were recovered from the prehistoric component. The historic component is located parallel to the gravel road which borders the west edge of the site. The historic artifacts may be attributed to the disposing of refuse along the roadway by passing automobiles. A literature and records search did not locate any significant historical events associated with the site.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Chopper	2	*
Side Scraper	1	-
Graver	1	-
Uniface	1	-
Retouched Flake	2	-
Flake	13	-
Shatter	6	-

TOOL DESCRIPTION

Chopper

Specimen S-6 (Fig. 41d) is a complete chert chopper. It is oval in outline and lenticular in cross-section. The working edge exhibits large, primary flake scars on both surfaces. The opposite edge is blunt and probably served as the handhold. The specimen measures 100.8 mm long, 88.3 mm wide, and 59.6 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 rim	whiteware	plain
	2 body sherds	whiteware	plain
Canning Jar			
Lid Liner	1	milk glass	-
Brick	1 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Deer-size</u>	1st sacral				
	vertebra	1	axial	fragment	-
	pelvis	1	left	ilium	-
<u>Bison</u>					
<u>bison</u>	astragalus	1	right	nearly complete	-
<u>Bison/</u>					
<u>Bos-size</u>	femur	1	right	posterior shaft	-
	1st phalanx	1	-	distal	-
<u>unidenti-</u>					
<u>fied</u>	bone	5	-	fragments	-

Impacts and Recommendations

Site 32CV4 will not be inundated by the Pembilier Reservoir, but will be indirectly impacted by erosion caused by wave action. The site is also a prime building location and may also be destroyed by future development if the Pembilier Reservoir is constructed. The site will be indirectly impacted by construction Alternatives 1, 2, 3 and 5.

The site contains prehistoric and historic components. The historic component may be the result of the disposing of refuse by passing automobiles. No temporally/culturally diagnostic artifacts were recovered from the prehistoric component. It is recommended that the prehistoric component be further investigated to determine the presence or absence of significant subsurface remains.

32CV5
(USD-33)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{2}$ SE $\frac{1}{2}$ NW $\frac{1}{2}$	2	162	57
N $\frac{1}{2}$ SW $\frac{1}{2}$ NW $\frac{1}{2}$	2	162	57
NE $\frac{1}{2}$ SE $\frac{1}{2}$ NE $\frac{1}{2}$	3	162	57
S $\frac{1}{2}$ NE $\frac{1}{2}$ NE $\frac{1}{2}$	3	162	57

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics, glass, metal, brick
Elevation	369 meters, 1210 feet
Vegetation	Cut wheat
Estimated Size	112,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Bluff top
Postulated Past Vegetation	Mixed hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV5 (Figs. 24 and 67) is located on a ridge top overlooking the Pembina River valley. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 300 meters north.

A surface grab collection recovered bone, chipped stone, historic ceramics, glass, metal and brick. A standing, four room, single story, clapboard house is on the site. The historic component, dating sometime between 1860 to after 1900, based upon seam molds on bottle necks, is concentrated around the perimeter of the house. The house has four rooms arranged from end-to-end in a long row.

No culturally/temporally diagnostic artifacts were recovered from the prehistoric component. Examination of Mr. Carl Kartes' private collection of artifacts recovered from the site indicate a Late Prehistoric component on the basis of projectile points and ceramics.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Core	2	-
Flake	17	-
Shatter	26	-

HISTORIC ARTIFACTS
(Fig. 42a)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 rim	stoneware	-
	2 bases	stoneware	-
	9 body sherds	stoneware	-
Bowl	1 base	stoneware	-
Tableware	12 rims	whiteware	8 plain, 2 gilt, 1 molded and gilt, 1 decal
	13 bases	whiteware	12 plain (3 maker's marks: one: 1883-1913) 1 decal
	2 handles	whiteware	plain
	13 body sherds	12 whiteware, 1 porcelain	plain plain
	Decorative Ware	2 rims	milk glass
	1 body sherd	whiteware	-
Doorknob	1	whiteware	-
Bottle Glass	1 complete	clear	1860-1880
	1 neck	clear	post-1903
	6 bases	3 amethyst, 2 clear, 1 peach	-
	6 bodies	2 light blue, 2 amethyst 1 clear, 1 milk glass	-
Tumbler	1 rim	amethyst	-
Window Glass	1	clear	-
Canning Jar			
Lid Liner	5	milk glass	-
Canning Jar Lid	3	zinc	-
Boot Heel	1	rubber	-
Brick	1 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Castor</u> <u>canadensis</u> (beaver)	skull	1	-	fragment	-
Beaver- size	lumbar vertebra	1	axial	complete	-
<u>Sus</u> <u>scrofa</u> (pig)	mandible	1	right	anterior horizontal ramus	-
<u>Equus</u> <u>caballus</u> (horse)	patella	1	left	complete	-

<u>Bison</u>						
<u>bison</u>	astragalus	1	left	complete		-
	2nd phalanx	1	left	complete		-
<u>Bos</u>						
<u>taurus</u>						
(cow)	1st phalanx	2	right	complete		-
<u>Bos-size</u>	ulna	1	left	shaft		sawed
	rib	2	-	fragments		sawed
<u>Bison/</u>	2nd maxillary					
<u>Bos-size</u>	molar	1	left	complete		-
	tooth	1	-	fragment		-
	cervical					
	vertebra	1	axial	centrum		-
	vertebra	4	axial	fragments		1:cut marks
	mandible	1	right	ascending ramus		-
	femur	1	right	disto-posterior		-
				shaft		-
	astragalus	1	left	posterior		-
	metapodial	1	-	distal		-
	1st phalanx	1	right	very weathered		-
unidenti-						
fied	bone	8	-	fragments		-

Impacts and Recommendations

Site 32CV5 will not be inundated by the Pemblier Reservoir but will be subjected to erosion by wave action. Therefore, site 32CV5 will be indirectly impacted by construction of Alternatives 1, 2, 3 and 5.

Site 32CV5 contains a Late Prehistoric component and a historic component. The historic component is associated with the habitation of a clapboard house sometime between 1860 to after 1904. Both the historic and prehistoric components should be further investigated to determine the presence or absence of significant subsurface remains. The historic component may yield information which may help elucidate the early Euro-American settlement of the area.

32CV6
(USD-34)

<u>Legal Location</u> NW $\frac{1}{4}$ SW $\frac{1}{4}$	<u>Section</u> 33	<u>Township</u> 163	<u>Range</u> 57
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Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	354 meters, 1160 feet
Vegetation	Cut wheat
Estimated Size	25,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown)
Topography	Talus slope
Postulated Past Vegetation	Mixed hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV6 (Figs. 25 and 68a) is located on a ridge top overlooking the Pembina River valley. The site has a 180 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 300 meters north.

A surface grab collection recovered bone and chipped stone. No culturally/temporally diagnostic artifacts were recovered. Mr. Carl Kartes, a local collector, informed the archaeological field crew about the site. Examination of artifacts collected by Mr. Kartes indicates a Late Prehistoric occupation, based upon projectile point styles.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Notch	1	-
Flake	9	-
Shatter	10	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> <u>Bos-size</u>	tooth	1	-	fragment	-

Impacts and Recommendations

Site 32CV6 will not be inundated by the Pembilier Reservoir but will be indirectly impacted by shoreline erosion due to wave action.

The site will eventually be eroded and destroyed. Construction of Alternatives 1, 2, 3 and 5 will indirectly impact the site.

Site 32CV6 contains a Late Prehistoric component. No culturally/temporally diagnostic artifacts were recovered. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV7
(USD-35)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	33	163	57
E $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	33	163	57
SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	33	163	57
SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	4	162	57
NE $\frac{1}{4}$ NW $\frac{1}{4}$	4	162	57
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	4	162	57
SW $\frac{1}{4}$ NW $\frac{1}{4}$	4	162	57
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	5	162	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics, glass
Elevation	357 meters, 1170 feet
Vegetation	Plowed, cut wheat
Estimated Size	146,000 square meters
Surface Visibility	100 percent and 50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Talus slope
Postulated Past Vegetation	Mixed hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV7 (Figs. 25, 68b and 69a) is located on a ridge overlooking the South Fork of the Pembina River valley. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the South Pembina River, located 175 meters east.

A surface grab collection recovered some historic ceramics and glass, and a large quantity of chipped stone. The historic artifacts are attributed to the presence of a road traversing through the site and a nearby farm residence. People in passing automobiles have probably littered the area with historic materials. The prehistoric component contains a dense scatter of chipped stone. No culturally/temporally diagnostic artifacts were recovered. However, examination of a collection from the site by Mr. Carl Kartes, a local collector, indicates a Late Prehistoric component on the basis of projectile point styles. Mr. Carl Kartes, who also farms the land upon which the site is located, informed the archaeological field crew that the artifacts had just begun showing on the surface within the past year. This suggests that the site was buried and subsequent cultivation and erosion has denuded the surface soils, resulting in the exposure of the buried component.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	7	-
Biface Preform	5	-
Chopper	8	-
Endscraper	2	*
Graver	1	-
Unifacial Knife	1	-
Unifacial Knife/Scraper	1	-
Retouched Flake	3	-
Core	2	-
Tabular	2	Knife River Flint
Flake	98	1 obsidian
Shatter	97	-

TOOL DESCRIPTION

Endscrapers

Specimen S-1 (Fig. 42c) is a complete endscraper made of Knife River Flint. The working edge exhibits steep marginal retouch on the dorsal surface. The remainder of the specimen is unmodified. The lateral edges are straight and parallel. It is plano-convex in cross-section. The specimen measures 27.5 mm long, 17.4 mm wide, and 5.9 mm thick.

Specimen S-10 (Fig. 42b) is a complete quartzite endscraper. The dorsal surface exhibits invasive retouch. The working edge is obtuse. The lateral edges are straight and converge toward the proximal end. It is plano-convex in cross-section. The specimen measures 70.3 mm long, 57.0 mm wide, and 24.6 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 base	stoneware	-
	3 body sherds	stoneware	-
Bottle Glass	1 base	clear	-
	1 body	light blue	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison</u> bison	astragalus	1	left	proximal	-
<u>Bos</u> taurus (cow)	axis vertebra	1	axial	ventral anterior	sawed

unidenti-
fied bone 8 - fragments -

Impacts and Recommendations

Site 32CV7 will not be inundated by the Pembilier Reservoir but will be indirectly impacted by shoreline erosion due to wave action. The site is also a prime building location for development. Therefore the site will be indirectly impacted by construction of Alternatives 1, 2, 3 and 5.

Site 32CV7 contains prehistoric and historic components. The historic component is probably attributed to disposal of refuse by residents of a nearby farm house and automobiles going on the road which traverses the site. The prehistoric component contains a dense scatter of lithic debris. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric component.

32CV8
(USD-36)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{2}$ NE $\frac{1}{2}$ NW $\frac{1}{2}$	33	163	57
N $\frac{1}{2}$ NW $\frac{1}{2}$ NW $\frac{1}{2}$	33	163	57
SW $\frac{1}{2}$ NE $\frac{1}{2}$ NW $\frac{1}{2}$	33	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	312 meters, 1025 feet		
Vegetation	Plowed, cut wheat		
Estimated Size	93,750 square meters		
Surface Visibility	100 percent and 50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Talus slope, slough		
Postulated Past Vegetation	Mixed hardwood and bottomland hardwood forests		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV8 (Figs. 25 and 69b) is located on the south facing side of a hill on the left descending side of the Pembina River. The site has a 180 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 200 meters south.

A surface grab collection recovered bone, chipped stone and one piece of historic ceramic. Mr. Carl Kartes, a local collector, informed the archaeological field crew about the site location. Examination of his collection of artifacts collected from the site indicates a Late Prehistoric component on the basis of projectile point styles. No culturally/temporally diagnostic artifacts were collected from the prehistoric component.

The site occurs in two topographic situations, with a scatter of chipped stone occurring on the side of a hill and most animal bones occurring around the perimeter of a slough located at the base of the hill slope.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flakes	2	-
Shatter	2	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 body sherd	whiteware	plain

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Sylvilagus</u> sp. (rabbit)	pelvis	1	right	nearly complete	-
<u>Odocoileus</u> sp. (deer)	2nd phalanx	1	left	complete	-
<u>Bison</u> or <u>Bos</u>	2nd maxillary premolar	1	left	nearly complete	-
<u>Bison/</u> <u>Bos-size</u>	mandibular molar	1	-	fragment	-
	teeth	3	-	fragments	-
	cuneiform	1	left	fragment	-
	pelvis	1	right	acetabulum	-
	femur	3	1 right	proximo-posterior shaft	-
			2?	1 anterior shaft, 1 femoral head	-
	tibia	2	right	shaft	-
	metapodial	1	-	shaft	-
	2nd phalanx	1	left	proximal	-
	rib	3	-	fragments	-
unidenti- fied	tooth	1	-	fragment	-
	bone	28	-	fragments	-

Impacts and Recommendations

The slough portion of site 32CV8 will be permanently inundated by the Pembilier Reservoir. The portion of the site on the hill slope will be periodically inundated by floodwaters impounded by the Pembilier Dam. The site will therefore be directly impacted by construction of Alternatives 1, 2, 3, and 5.

Site 32CV8 contains a Late Prehistoric component and a historic component. Portions of the site will be permanently inundated by the Pembilier Reservoir while other portions will be periodically inundated by floodwaters impounded behind the dam. The historic component may be attributed to farming activities. It is recommended that further investigations be conducted on the prehistoric component to determine the presence or absence of significant subsurface remains.

32CV9
(USD-50)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{2}$ NE $\frac{1}{2}$	28	163	57
W $\frac{1}{2}$ NW $\frac{1}{2}$ SE $\frac{1}{2}$	28	163	57
NW $\frac{1}{2}$ SW $\frac{1}{2}$ SE $\frac{1}{2}$	28	163	57
NE $\frac{1}{2}$ SW $\frac{1}{2}$	28	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone, historic ceramics, glass		
Elevation	405 meters, 1330 feet		
Vegetation	Cut wheat		
Estimated Size	135,000 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Bluff top		
Postulated Past Vegetation	Mixed hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV9 (Figs. 25 and 70a) is located on the top and side of a ridge. The site has a 360 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 800 meters south.

A surface grab collection recovered bone, chipped stone, and historic ceramics and glass. The historic component occurs at two locations on the site. The prehistoric component occurs as a very sparse lithic scatter. The historic component, based upon mold seams on bottle necks, indicates occupation sometime between 1860 and 1900. No evidence of structural remains was discerned. No explanation for the occurrence of a surface scatter of historic artifacts at the south end of the site on the high ridge top and a second surface scatter of historic cultural remains 500 meters north, at the north end of the site, can be provided with the available data. Examination of a 1910 Cavalier County plat map indicates a residence at the northern-most concentration of historic materials. No culturally/temporally diagnostic artifacts were recovered from the prehistoric component. Mr. Carl Kartes, a local collector, informed the archaeological field crew about the site location.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flakes	3	-
Shatter	2	-

HISTORIC ARTIFACTS
(Fig. 43)

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	3 rims	stoneware	-
	2 bases	stoneware	-
	12 body sherds	stoneware	-
Tableware	19 rims	whiteware	15 plain, 2 molded, 1 transfer-printed and molded, 1 gilt
	19 bases	whiteware	plain (4 maker's marks: one:1883-1913)
	2 handles	whiteware	1 plain, 1 molded
	20 body sherds	19 whiteware 1 porcelain	18 plain, 1 molded decal
Decorative Ware	2	1 whiteware 1 porcelain	molded and painted decal
Bottle Glass	7 necks	5 amethyst, 2 clear	2:1860-1880, 5:1880-1900
	2 bases	amethyst	-
	18 bodies	10 amethyst, 6 clear, 1 light blue, 1 green	-
Window Glass	1	light blue	-
Melted Glass	1	milk glass	-
Brick	1 frag.	brick	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bos taurus</u> (Cow)	scapula	1	left	glenoid cavity	sawed
	radius	1	right	proximal	-
<u>Bos-size</u>	femur	1	-	femoral head	-
	rib	1	-	fragment	-
unidenti- fied	bone	6	-	fragments	1 sawed

Impacts and Recommendations

Site 32CV9 is located on prime development property and will probably be destroyed if the Pembilier Dam is constructed. The site will be indirectly impacted by construction of Alternatives 1, 2, 3 and 5.

Site 32CV9 contains a historic component dating sometime between 1860 to 1900 and a prehistoric component. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric and historic components at site 32CV9.

32CV10
(USD-52)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	14	163	58
Map Quad		Vang	
Local Name		None	
Type of Remains		Rock foundations, wooden wagon parts	
Elevation		320 meters, 1050 feet	
Vegetation		Brush, weeds	
Estimated Size		9,375 square meters	
Surface Visibility		5 percent	
Site Condition		Partially destroyed by erosion	
Soil Association		Not Known	
Cultural Affiliation		Euro-American	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Potentially eligible for National Register	

Site 32CV10 (Figs. 28, 70b and 71a) is located on the right descending bank of the Pembina River. The site has no view of the surrounding terrain. The nearest permanent water is the Pembina River, located 5 meters east. No surface collections were made on the site. A half-buried wooden wagon wheel was observed in addition to the remains of a rock-walled house cellar or basement. Examination of a 1910 Cavalier County plat map indicates the residence of the Dahlvany family was located at this site. This historic farmstead appears to date to the early 20th century. The site may yield information which may help elucidate the early Euro-American settlement of the area.

Impacts and Recommendations

Site 32CV10 will be periodically inundated by floodwaters impounded by the Pembilier dam for construction Alternatives 1, 2, 3 and 5. The site may contain significant historical artifacts. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains at site 32CV10.

32CV11
(USD-54)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
SW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57

Map Quad	Vang
Local Name	Mayo Brick Plant
Type of Remains	Foundations, metal, brick, cars
Elevation	309 meters, 1015 feet
Vegetation	Brush, weeds, timber
Estimated Size	20,000 square meters
Surface Visibility	5 percent
Site Condition	Partially destroyed by vandalism, salvaging
Soil Association	Not Known
Cultural Affiliation	Euro-American
Topography	Talus slope, terrace
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Eligible for National Register

Site 32CV11 (Figs. 25 and 71b) consists of foundations of the brick factory and the Fargo Bridge. No foundations or remains were discerned which were indicative of a community. It is believed, based upon interviews with informants and records searches in the state and county archives, that the community never existed. The site has a 180 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 50 meters south.

A surface grab collection recovered bricks, glass, ceramics, and metal. The foundation of the kiln was observed and photographed.

Introduction

The Mayo Brick and Tile Company was an example of an attempt to economically exploit the natural resources of the Pembina area. It was not unusual in the late 19th and early 20th centuries for local areas to produce their own brick.

Clapp (1906:245-312) provided an overview of the development and status of the North Dakota brick industry. Production of common brick began at Fargo as early as the 1870's. By the 1880's, Grand Forks was the leader in brick production, with plants also located at Fargo and Minot. The growing industry spread through the Red River Valley. Plants were established in the 1800's at Drayton, Hillsboro, Abercrombie, Dickinson, Kenmare, Donnybrook, Burlington and Velva.

One of the reasons for early state geological surveys in North Dakota was to determine quality of soils for exploitation for bricks and tiles, gravels, cement and water supply. Geologist E.J. Babcock was the

first to examine the properties of clay in the Pembina mountains near Olga. He suggested in 1892 that the fine white clay from his sampling could probably be considered a medium-grade fire clay, and that with careful washing the clay might be useable for stoneware and other purposes (Babcock 1892:153-57).

By 1906 there were 18 brick plants, including Mayo, in operation in North Dakota, with Grand Forks still in the lead. All of the plants produced what was called "common" brick (Clapp 1906:298-299). "Common" brick was the term used to describe bricks of less attractive appearance than "stock" or "face" brick. Common bricks were generally used for those parts of a wall which would not show (McKee 1973:44).

In the State Geological Survey 4th Biennial Report published in 1906, E.J. Babcock and C.H. Clapp further examined the clay content and the manufacture of bricks at the Mayo Brick and Tile Co. A table of physical tests of pressed brick clays in North Dakota compared the clay at Mayo with that at Wilton, Hebron, and Dickinson (Babcock 1906:201). The Mayo clay was taken from the Benton formation, was of moderate plasticity and fired to orange-red, red-brown and dark brown. Data about water requirements for processing, air shrinkage and tensile strength were included.

The Mayo Brick and Tile Company was unique in North Dakota brick production because it was the only plant in the state to utilize the Cretaceous shales. The Pembina River exposed both the Niobrara and the Benton formation shales, and the latter was used in the manufacture of brick (Clapp 1906:302-303).

Brickmaking involved several essential steps, each of which might be carried out in a number of different ways. They included weathering, tempering, molding, drying and burning. Weathering involved spreading the clay mass out in a thin layer for several months. Sometimes, after weathering, the dry clay was crushed in a machine and then screened. The clay was then tempered by adding sand and water. Tempering methods included the use of a soak-pit, a ring-pit or a pug-mill. In a soak-pit clay, sand and water were simply dumped into a pit and allowed to soak overnight. A ring-pit used horses or oxen to power a wheel in a pit to mix the three ingredients. Pug-mills were introduced in the 19th century. Clay, sand and water were put into the top of a vertical cylinder and churned by a series of blades before being removed at the bottom. The cylinder was powered by steam or horsepower (McKee 1973:42-43).

Early bricks were molded by the soft-mud process. The wet clay was put into wooden or metal molds by hand, and the excess clay was scraped from the top. Introduction of molding machinery allowed the stiff-mud process which made a pressed brick. The moist bricks taken from the molds were set out to dry for a time and were turned during the process. Sometimes the drying process was speeded up by building fires in the drying sheds.

Burning was the term used for the final process of firing or baking. The bricks were heated to a temperature of about 1800 degrees Fahrenheit in several types of kiln. Temporary clamps, sometimes called

scove kilns, were the least expensive. They were constructed with dry raw bricks. Several walls or necks were built, parallel to each other, each about three bricks in thickness. At a height of about two feet, the necks were joined by gradual expansion into a single mass that was built up to a height of eight or ten feet (Fig. 39f). Throughout the interior, open spaces were left between bricks, but the outer layers were laid as closely together as possible. The tunnels near the bottom served as fireplaces. Brush, straw, wood or coal was used as fuel. After the fires were started, the ends were blocked off and sometimes the exterior was daubed with mud to reduce the escape of heat. At first the fires were built up gradually, then the heat was maintained for several days.

In down-draft kilns, gases from the fire were brought into the firing chamber at the top and withdrawn from the bottom through a flue, a process which produced relatively even temperatures. After the burning process, it took several days for the bricks to cool. They were then taken out and sorted for quality. (McKee 1973:43-44).

The Mayo plant manufactured stiff-mud, end-cut, hollow and dry press brick in the following manner:

The clay is dried in sheds--weathered shale is used for the stiff-mud process--crushed in a dry pan, and after being screened goes to the molding machinery. All the brick produced to date have been dried in open yards and burned in scove kilns with wood. A ten-tunnel steam drier is being built and round down-draft kilns are to be erected. As yet, although the plant has been established for two years, the production has been small, as the owners have been waiting for the advent of a railroad which has been promised. The brick is of a very good red color and an otherwise good product can be obtained (Clapp 1906:303).

A photograph of the Mayo Brick and Tile Company is included in Clapp's report (Clapp 1906:Plate XXXV). It shows a building (perhaps containing the machinery), drying sheds and a stack of firewood. The firewood suggests the use of at least partial wood fuel.

History

By 1904 Henry A. Mayo had established the Mayo Brick and Tile Company in the Pembina valley west of Walhalla. A local informant suggests that some of the funding to develop the brick mine was from the Bull family, associated with Cream of Wheat (Maisel 1981). A newspaper article dated December 19, 1904, (Cavalier County Republican 1904:2) stated that after two years' experimentation with the clays six miles north of Olga, the Mayo Brick and Tile Company would begin extensive manufacture of bricks and tiles by the following summer. Bricks manufactured at the plant up to that time had been used in construction of buildings at the site. Projections were that bricks would be

available for sale by the summer of 1905, and that a railroad spur of the Great Northern from Walhalla would provide ready access to markets. The reporter optimistically stated that a great number of men would be employed and another town added to Cavalier County.

This town might be the one referred to by Williams (1966:75) as "Brickmine." Williams stated that Brickmine was a community associated with a brick factory in the Pembina Valley west of Walhalla. The author stated that "there is little trace left of this ghost town that was established on the NW $\frac{1}{4}$ Sec. 34, Olga Township, where about 80 people lived and operated a brick yard from 1905-1912. It [the town] was founded, promoted and named by Charles Major." No other reference to Charles Major was found, nor reference to any actual town. It was perhaps a "paper town," projected but never built. Williams' dates of operation were also unconfirmed.

In the spring of 1905, bids were let for the construction of a steel bridge across the Pembina River Section 34, Township 163, Range 57 at the Mayo Brick and Tile Works. The bridge was to be a 100-foot span with a 20-foot roadway, to be 16 feet high with tubular steel foundation, and to have pile approaches 15 feet wide at each end of the bridge (Cavalier County Republican 1905a, 1905b). The Fargo Bridge Company at \$4220 was the successful bidder of 13 bidders (Cavalier County Republican 1905c, 1905d). The resulting bridge still stands and is in use. Blueprints for this bridge might be available in old company records.

Although the projections for brick production in the summer of 1905 were not met, optimism had not faded by August, 1905, when articles were published describing the certainty of a Great Northern railroad spur to the brick plant (Cavalier County Republican 1905e; Walhalla Mountaineer 1905a, 1905b). The surveyors were laying out the route and the road was expected to be completed later that fall or by early the following spring. The brick company was to provide the right-of-way and pay for grading, with costs to be repaid in the future by deductions from freight expenses. The newspaper articles also reported that two kilns of bricks had been manufactured during the season, but again all were used in construction of buildings on the site, and none were available for market.

In November, 1905, H.A. Mayo exhibited in Neche a sample of bricks from his plant. The bricks, described as being as smooth as a piece of paper, with two square holes running through them, were advertised as being on sale at the yards. Each brick weighed only 3 $\frac{1}{2}$ pounds, two pounds lighter than common brick (Walhalla Mountaineer 1905d). The purpose of the holes might have been to make them lighter weight, thereby reducing transportation costs, especially if Mayo were dependent upon horse-drawn wagons.

Great Northern officials spent a busy winter in 1905-06 examining the feasibility of extending their railroad west of Walhalla even farther than the brick plant to Vang, Stillwell, Mt. Carmel and, possibly, Wales. The route would include a 500-foot rise in the five miles from the clay beds to Vang. Hopes were high for completion in the summer of 1906 (Walhalla Mountaineer 1905e, 1905f, 1906a).

In November, 1906, the Mayo Brick and Tile Company donated 1000 of their face brick to the Walhalla Roman Catholic Church for the erection of the church chimney (Walhalla Mountaineer 1906d). In the spring of 1908, several businessmen at Bathgate ordered a carload of building bricks from the Mayo plant to be used in reconstruction of buildings which had been lost in a fire the previous fall (Walhalla Mountaineer 1908a).

Further newspaper articles report the apparent success of the brick factory between 1907 and 1909. In 1907 H.A. Mayo travelled east to raise financial backing for the railroad expansion from Eastern investors. This trip was described as successful, with railroad construction to begin at once (Walhalla Mountaineer 1907b).

Mayo hired an "expert brick man" in May, 1908, and plans were being made to turn out a kiln of brick and tile within a short time (Walhalla Mountaineer 1908a). In November the same year, the kiln was advertised as burning at full blast for three days, and visitors were invited to tour the facilities. Also that month, H.A. Mayo brought a "considerable amount" of his brick to Walhalla to sell in small quantities (Walhalla Mountaineer 1908b).

The stockholders of the Mayo Brick and Tile Company met in Grafton in January, 1909. Those who attended the meeting were H.A. Mayo, Walhalla; Judge W.J. Kneeshaw, Pembina; W.L. Johnson, Cavalier; and John L. Cashel and W.W. Reyleck of Grafton. Their report stated that during the previous season the company built a new down-draft kiln and manufactured a good sample of brick from the first firing. Their plans for the upcoming year included "an aggressive campaign for business." (Walhalla Mountaineer 1909a).

A new brickmaker by the name of Harcourt was hired in August, 1909, in the hopes of expanding brick production (Walhalla Mountaineer 1909c). The board of directors of the plant also toured the site that month in order to perfect operating procedures (Walhalla Mountaineer 1909d). In November, brickmaker Harcourt left "for the season." The brick plant intended to produce one more kiln of brick before the season's closing (Walhalla Mountaineer 1909e).

All of a sudden, in January, 1910, an advertisement appeared in the newspaper which denied all the earlier optimistic reports. All bricks ("choice pressed face brick, hollow building blocks and semi-vitrified brick") were being sold off at reasonable prices as the plant would not be in operation the following season (Walhalla Mountaineer 1910a,b,c). The Mayo Brick and Tile Company apparently closed at this time.

Summary

It appears that behind the optimistic reports, the company was floundering, perhaps, as suggested by Williams (1966:75), because of poor quality clay, lack of capital investment, and its inaccessibility to markets. The 1908 Geological Survey and a newspaper article in 1939 blamed the failure on excess sulphur in the clay which caused it to

bloat in the burning process (Cavalier County Republican 1939). It is also possible that competition from outside manufacturers helped cause the demise of the Mayo Brick and Tile Company.

The survey crew found bricks imprinted "Holman" at the Mayo site. It was discovered that these bricks were manufactured by the Holman Brick Company in operation in Sergeant's Bluff, Iowa, in the early 20th century. Holman bricks were purchased by the railroad lines and often used for building depots. This company was also partially responsible for the demise of several small brick plants in South Dakota (Ruple 1982).

If high quality competitive brick, such as Holman's was available to Mayo, it might have also been available via the railroad line to the general public and in fact preferred over the lesser quality brick produced by Mayo. At any rate, the Mayo Brick and Tile Company is documented in sources as having existed from at least 1904 to 1910. It is possible that business records from the company are still extant, but they were not discovered in this literature search. Analysis of the different varieties of bricks may be possible by petrographic analysis in order to differentiate place of manufacture. Other, more complex, analytic techniques are undoubtedly available in well equipped physics laboratories which would help discern the different brick varieties. However, all of these procedures would require a large expense account.

Also not found was any explanation for the Great Northern's change in plans. The brick plant was not the only party to benefit from an extension of the railroad line through the Pembina valley. Farmers in the townships bordering the valley held several meetings to discuss the impact of such a railroad connection (Walhalla Mountaineer 1905f; Cavalier County Republican 1907). A railroad line would have provided a much easier access to markets. Realtor C.W. Andrews advertised the advantages of one tract of land situated on the survey of the railroad from Walhalla to Mayo (Andrews 1909?:8). Perhaps there was not enough financial backing in spite of H.A. Mayo's efforts to gain support from Eastern investors (Walhalla Mountaineer 1907b) or perhaps the 500-foot rise from the valley floor to Vang provided too steep a grade for construction (Walhalla Mountaineer 1905f). Research in Great Northern company files would no doubt shed light on this question, but is outside the scope of this report.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 body sherd	stoneware	-
Tableware	4 rims	whiteware	2 plain, 1 molded, 1 tinted
	2 bases	whiteware	1 transfer-printed, 1 tinted
	3 body sherds	whiteware	plain
Bottle Glass	1 neck	light blue	-
	2 bodies	1 light green, 1 amber	-

Window Glass	1	light blue	-
Decorative Glass	1	red	-
Button	2	1 milk glass, 1 plastic	-
Winchester Rifle cartridge	1	30-30 caliber	-
Belt Buckle	1	brown plastic coated wire	-
Tile	4 frags.	tile	-
Brick	12 frags.	brick	3 impressed with "HOLMAN"

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Small					
Mammal	vertebra	1	axial	nearly complete	-
<u>Odocoileus</u>					
sp. (deer)	ulna	1	left	proximal	-
unidenti- fied	bone	3	-	fragments	2 sawed
Freshwater					
Mussel	shell	1	-	fragment	-

Impacts and Recommendations

Site 32CV11 will be partially inundated by the Pembilier Reservoir and will periodically be totally inundated by floodwaters impounded by the Pembilier dam. Therefore the Mayo Brickmine will be directly impacted by construction Alternatives 1, 2, 3 and 5.

Based on the information recovered in this literature search and in the field survey, it is suggested that the Mayo Brick and Tile Company and Fargo Bridge is a significant site eligible for nomination to the National Register of Historic Places as an example of a historic local industry.

This site should be thoroughly mapped and at least partially excavated to determine which kinds of kilns were used. If there were indeed scove kilns as described by Clapp (1906:303), they may have been rather unusual types of kilns for the region.

Along with further field survey, a more detailed search for information about the Mayo Brick and Tile Company in historical sources should be conducted to answer remaining questions.

Further comparative study should be done to determine this brick plant's relationship to the other brick plants in North Dakota. It is possible that the Mayo Brick and Tile Company could be eligible for nomination to the National Register as a multiple resources component with other brick factories in the state.

The question of whether or not bricks from the factory were actually used in the construction of buildings in Bathgate, Walhalla or

elsewhere, and whether such buildings are still extant, should be further examined. An unsuccessful attempt was made to determine whether the chimney of the Roman Catholic Church in Walhalla is still extant or whether it has been replaced (Walhalla Mountaineer 1906d). The newspaper projection of the use of Mayo bricks in Bathgate remains unconfirmed and should be further researched (Walhalla Mountaineer 1907b).

A further survey of bricks used in the local area for construction of buildings might clarify the extent of competition faced by the Mayo Company. If high quality bricks, such as those from the Holman company, were available to Mayo, they were also probably available to the public and might have been preferred to the local product.

A search should be made for the company's official records. Members of the Mayo family still reside in Cavalier (Maisel 1981) and should be contacted for any information they might be willing to impart.

An attempt should be made to locate the Fargo Bridge Company's blueprints and records for the bridge at the Mayo site. The bridge should have detailed drawings made of its design.

A lead given by a local informant concerning the financial backing of the brick mine should be researched to determine if the Bull family associated with the Cream of Wheat firm helped finance the operation of the mine (Maisel 1981). This site, consisting of the remains of a brick factory and the Fargo Bridge, were instrumental in the early industrial development of North Dakota. The site is recommended for eligibility for nomination to the National Register.

32CV12
(USD-57)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	19	163	57
Map Quad		Vang	
Local Name		Fish Trap	
Type of Remains		Rock dam, wooden bridge footings, water canal for grist mill, road cut in embankment	
Elevation		317 meters, 1040 feet	
Vegetation		Brush, timber, cut wheat	
Estimated Size		20,000 square meters	
Surface Visibility		5 percent and 100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		Not Known	
Cultural Affiliation		Euro-American	
Topography		Terrace, river bed	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Eligible for National Register	

Site 32CV12 (Figs. 27, 72 and 73) is located along the left descending bank and floodplain of the Pembina River. The site has no view of the surrounding terrain. The nearest permanent water is the Pembina River which flows through portions of the site. No surface grab collections were conducted at the site.

Sources and some local informants indicate that the rock dam feature on the Pembina River known locally as the "Fish Trap" was originally made and used by Indians or metis in the area. Lee (1898:57) described the original Indian fish trap as racks made of poles secured together in auger holes which formed a series of crates across the river.

The name Fish Trap also became associated with a community at the site. An informant for WPA surveys in the 1930's described it as a "ghost town in Fremont township" (WPA Interview n.d.:Kjenstad). Miscellaneous reports in area newspapers before 1910 refer to events at Fish Trap. The Walhalla Mountaineer (1906b) reported a brawl among settlers there. A later issue reported windows broken in a building used as a school and owned by S. Bjornson [Bjornstad?] (Walhalla Mountaineer 1907a).

Correspondence with a local informant suggests that few people really considered Fish Trap a town. In any case, it does appear to be the location of at least a mill and two other buildings. The mill was built by Mr. Gatchell and Mostad and run by Mr. Boesl. A store was built by Mr. Bakke and run by Bjornstad. A hotel was built and operated by Christian Anderson. Apparently, there never was a post office there (Maisel 1981).

Ernestine Mager reported that the dam and flour mill were built at this site by Mr. Gatchell and his two sons in 1887, and that, while the

mill was in operation, there was a store nearby owned by Jens G. Bjornstad. The store was burned and never rebuilt, while the mill was sold in 1892 and moved to Bathgate. Ms. Mager also reported that an Indian named Carcojoe once lived in a cabin at this spot (Good, et al. 1980). This was also reported by a local informant. No structural remains were discerned within the cultivated field. The site, including probable buried structural remains, covers an area of approximately 20,000 square meters.

Historic Fish Traps

There is no written record of the form of construction of the fish trap at site 32CV12. Research in the lower Holston River in east Tennessee has resulted in delineating two structural types of fish traps used from the early 1800's to ca. 1940. The fish traps along the lower Holston River consisted of two components: 1) a V-shaped rock formation that served as a dam for constricting the natural flow of the river; and 2) a wooden device connected to the apex of the V-shaped dam. The rock dams were usually constructed of locally available river rock and the wooden devices constructed of logs and a framework of poles or slats.

The spacing between the slats allowed water to flow through while retaining fish too large for the slat spacing (Cobb 1978). It has been previously documented that the early Euro-American settlers often utilized proto-historic Native American fish traps (Shields 1967).

The Fish trap site (32CV12) was a multi-functional operation with remnants of at least three components discernible. First, there is a rock dam built from locally available rock from the river bed. The dam is not V-shaped, but rather perpendicular to the flow of the Pembina River. Second, there is a substantial diversion canal from the dam, parallel to the river for a distance of about 50 meters. The diversion canal is rock-lined to prevent erosion. Mr. Lloyd Danielson, a local resident, informed the survey team that the canal diverted river water to power a grist mill in the late 19th century. Third, there are discernible wooden footings for a bridge across the Pembina River about 50 meters below the rock dam. A discernible road-cut occurs on the north bank of the Pembina River, across the diversion canal.

Local tradition is that the fish trap is very old, with Native Americans having utilized the site prior to Euro-American settlement. The fish trap site undoubtedly contains buried cultural remains because of the discernible structural remains. This site is well known locally, and has become a local, significant landmark. Written records of fish traps are not abundant. They represent a unique means of cultural adaptation and exploitation of local resources.

Valmont

Although some have felt that the town of Valmont was located near the old fish trap (Maisel 1979:115), it appears to have been located out of the study area closer to the Canadian border. Some informants and

sources favor the location at the northernmost crossing of the Pembina River about two miles west and a little north of Numedahl. Williams (1966:81-82) indicated the location "near the Canadian border, Fremont twp., 164-57." A map drawn by one informant from a 1908 source places Valmont in section 31, 164N 57W (Maisel 1981).

The town contained a flour mill and about 30 dwellings. The post office existed from February 23, 1892, to October 8, 1892, with Jens G. Bjornstad, whose name is also associated with Fish Trap, as postmaster. Also in 1892, the mill closed, and the town faded away. Valmont news appeared in newspapers prior to 1892, but not after that date (Maisel 1979:115). Severe storms in 1892 and 1893 caused many of the communities to die out. Valmont residents then became identified with the towns of Homen, Numedahl or Vang (Maisel 1981).

Impacts and Recommendations

Site 32CV12 will be periodically inundated by floodwaters impounded by the Pembilier Dam. The site will eventually be destroyed by seasonal, periodic inundations which will enhance erosion in the area. Therefore, the site will be adversely impacted by construction of Alternatives 1, 2, 3 and 5.

Because some sources have located Valmont at the Fish Trap site, further research to determine the exact location of Valmont should be conducted. Land records in the Cavalier County Courthouse should be examined. Bjornstad reportedly owned the land on which Valmont was located, and official records should document the exact location. Mr. Delorme Braget, Walhalla, North Dakota, is a descendant of the men who purchased the land from Bjornstad and should be contacted for further information. Members of the Bjornstad family also still reside in the Walhalla area (Maisel 1981).

The references to Fish Trap located in area newspapers were found in a "shovel testing" approach to newspaper sources. A more detailed, systematic search, although very time consuming due to lack of newspaper indexes, might reveal more information buried within the volumes of newsprint.

Descendants of one of the residents of Fish Trap should be contacted. Mrs. Delorme (Ione) Braget, Walhalla, North Dakota, is the granddaughter of one of the men who helped build the mill and store at Fish Trap (Maisel 1981).

It is recommended that subsurface investigations be conducted to determine the location of the mill, hotel and store. A detailed map of the site should be made as well as subsurface investigations at the dam to determine the presence or absence of an earlier fish trap structure used by metis or Native Americans. This site contains structural remains significant in the history of the Euro-American settlement of the region and should be recorded and preserved. This site is recommended for eligibility for nomination to the National Register.

32CV201

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ NE $\frac{1}{4}$	32	163	57
Map Quad		Vang	
Local Name		Woodtick	
Type of Remains		Chipped stone	
Elevation		326 meters, 1070 feet	
Vegetation		Plowed	
Estimated Size		20,000 square meters	
Surface Visibility		Not Known	
Site Condition		Partially destroyed by cultivation	
Soil Association		Walsh Formation	
Cultural Affiliation		Prehistoric (unknown), Euro-American	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Potentially eligible for National Register, needs further work	

Site 32CV201 (Figs. 25 and 26) was recorded by Ames in 1975. The site is located on the first terrace of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 200 meters north. The site was not visited in 1981. No temporally/culturally diagnostic artifacts have been recovered from the site. Ames conducted a surface grab sample in 1975.

1975 COLLECTION
PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Graver	1	-
Flake	9	-
Shatter	4	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	3 bodies	clear	-
Drainage Tile	1	tile	-
Can	19 frags.	metal	-
Round Nail	1	metal	-
Wire	1	metal	-
Bolt	2	metal	-
Nut	1	metal	-
Washer	1	metal	-
Spring	1	metal	-
Nipple	1	metal	-
Metal	2 frags.	metal	-
Spark Plug	1	metal	-

1975 COLLECTION
FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Shark	tooth (petrified)	1	-	complete	-
Rabbit- size unidenti- fied	ulna	1	-	proximal	-
	vertebra	1	axial	fragment	-
	femur	1	-	distal	-
	rib	1	-	fragment	-
	bone	2	-	fragments	-

Impacts and Recommendations

Site 32CV201 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface prehistoric and historic remains. No data are available for assigning a probable date of historic occupation.

32CV203

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	32	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone, historic ceramics		
Elevation	308 to 320 meters, 1010 to 1050 feet		
Vegetation	Cut wheat		
Estimated Size	15,625 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Walsh Formation		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register		

Site 32CV203 (Figs 25, 26 and 74a) was recorded by Ames in 1975. The site is located on a south facing hill slope on the left descending side of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 125 meters south.

A surface grab collection was made in 1981. Artifacts recovered include bone, chipped stone and one historic ceramic sherd. The historic ceramic sherd is attributed to recent farming activities. No temporally/culturally diagnostic artifacts were recovered. Ames (1975) did not conduct a surface collection.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	*
Scraper	1	-
Flake	2	-
Shatter	2	-

TOOL DESCRIPTION

Biface

Specimen S-1 (Fig. 47a) is a complete chert biface. Both surfaces exhibit invasive modification. The base is convex. The lateral edges are convex and converge toward a blunt tip. It is lenticular in cross-section. It was probably used as a knife. The specimen measures 56.8 mm long, 35.5 mm wide, and 15.9 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1	whiteware	plain

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	3	-	fragments	-

Impacts and Recommendations

Site 32CV203 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site, located on a hill slope, is on the edge of the conservation pool and will be impacted from wave action and possible recreation activities.

The site contains a prehistoric component from which no temporally/culturally diagnostic artifacts were recovered. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains. The historic component does not appear to warrant further investigation.

32CV204

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
E $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone, projectile points, ceramics, ground stone, historic ceramics, glass		
Elevation	308 to 329 meters, 1010 to 1080 feet		
Vegetation	Weeds		
Estimated Size	89,375 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Walsh Formation		
Cultural Affiliation	Prehistoric Late Archaic, Late Woodland/Blackduck, Euro-American		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV204 (Figs. 25, 74b and 75a) was recorded by Ames in 1975. The site is on a south facing hill slope on the left descending side of the Pembina River. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 150 meters south.

A surface grab collection was made in 1975 by Ames and again in 1981. Ames (1975) placed four test pits in the site. Artifacts recovered include chipped stone, ceramics, bone, groundstone, projectile points, historic ceramics and glass. Mr. Carl Kartes, a local collector has an extensive collection from the site (Fig. 48b). Projectile point styles and ceramics indicate prehistoric Late Archaic and Late Woodland/Blackduck occupations. The historic component is attributed to the presence of the Mayo Brick Plant located across the roadway from this site. The artifacts occur as a dense surface scatter.

1975 COLLECTION
PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	1	*
Bifaces	4	*
Biface Preform	1	-
Choppers	2	*
Cores	2	-
Hammerstone	1	-

Flakes	70	-
Shatter	11	-

TOOL DESCRIPTION

Projectile Point

Specimen 4 (Fig. 44c) is a projectile point base made of Knife River Flint. It has two side notches. A lateral break is present toward the top of the notches. The base is straight. The notches and base are ground. Both surfaces exhibit invasive modification.

Biface

Specimen 9 (Fig. 44d) is a complete chert biface. It is ovate in outline. The base and lateral edges are convex. The tip is rounded. Both faces exhibit invasive modification. It is lenticular in cross-section. It was probably used as a knife. The specimen measures 90.15 mm long, 65.4 mm wide, and 18.9 mm thick.

Chopper

Specimen 47 (Fig. 45b) is a complete quartzite chopper. It is ovate in outline and lenticular in cross-section. Large, primary flake scars are present on both surfaces. All edges are modified. The specimen measures 123.35 mm long, 92.5 mm wide, and 40.1 mm thick.

Specimen 48 (Fig. 46b) is a complete chert chopper. It is oval in outline and lenticular in cross-section. Both surfaces exhibit large, primary flake scars. The specimen measures 76.2 mm long, 66.2 mm wide, and 31.4 mm thick.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti-	1st phalanx	1	-	fragment	-
fied	bone	3	-	fragments	-

1981 COLLECTION PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	2	*
Projectile Point Preform	1	-
Chopper	1	-
Biface	4	*

Biface Preform	3	*
Endscraper	2	*
Endscraper Preform	1	-
Notch	1	-
Mano	1	-
Grooved Maul	1	-
Grooved Maul Preform	1	*
Retouched Shatter	5	-
Core	3	-
Flake	377	5 Knife River Flint
Shatter	154	-
Pottery	1	*

TOOL DESCRIPTION

Pottery

Specimen S-88 is a badly eroded body sherd. It contains small-to-medium size crushed granite temper. Examination of Mr. Carl Kartes' private collection from the site suggests that the specimen is a Blackduck ware.

Projectile Points

Specimen S-87 (Fig. 44a) is a complete small, triangular projectile point made on a chert flake. The blade edges are convex. The base is straight to slightly convex. It has an expanding stem and it is plano-convex in cross-section. It appears to be a Late Woodland point. The specimen measures 15.0 mm long, 14.6 mm wide, and 3.7 mm thick.

Specimen S-86 (Fig. 44 b) is an incomplete small, triangular projectile point made of chert. The tip is missing. The break appears to be an impact fracture. The blade edges are straight to slightly convex. The base is concave with protruding and rounded tangs. The point is similar to Oxbow points (Perino 1971:68) which date to approximately 3000 B.C.

Biface

Specimen S-625 (Fig. 44e) is a complete quartzite biface. It is pointed at both ends and is plano-convex in cross-section. The lateral edges are convex. Both surfaces exhibit invasive modification. The specimen measures 60.9 mm long, 37.4 mm wide, and 16.5 mm thick.

Biface Preform

Specimen S-138 (Fig. 44g) is a chert biface preform. The base is convex. The lateral edges are straight to slightly convex and converge

toward the blunt tip. It is plano-convex in cross-section. The specimen measures 44.8 mm long, 31.3 mm wide, and 11.5 mm thick.

Endscraper

Specimen S-546 (Fig. 44f) is a complete endscraper made of Knife River Flint. The dorsal surface is invasively modified. The ventral surface is unmodified. The working edge is steep. The lateral edges are straight to slightly convex and converge toward the proximal end. The specimen measures 28.3 mm long, 28.1 mm wide, and 5.8 mm thick.

Grooved Maul

Specimen S-539 (Fig. 46a) is a fully-grooved maul fragment made of quartzite. It probably broke during use. The poll exhibits use-wear.

Grooved Maul Preform

Specimen S-540 (Fig. 45a) is a grooved maul preform made of a quartzite river cobble. It is partially grooved.

1981 COLLECTION
HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 rim	whiteware	plain
	2 bases	whiteware	plain
	2 body sherds	whiteware	plain
Bottle Glass	2 bases	1 clear, 1 amber	-
	1 handle	clear	-
	7 bodies	3 clear, 2 light green, 1 amethyst, 1 amber	-
Decorative Glass	2	light green	-
Bullet	1	lead	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Sus</u> <u>scrofa</u> (pig)	mandible	1	right	horizontal ramus	-
Pig-size	2nd phalanx	1	right	complete	-
<u>Odocoileus</u> sp. (deer)	frontal	1	right	fragment	-

<u>Bison</u>					
<u>bison</u>	calcaneum	1	left	distal	-
	naviculo-				
	cuboid	1	left	complete	-
	2nd phalanx	1	left	complete	-
<u>Bos taurus</u>					
(cow)	maxilla	2	left	fragments	-
	1st phalanx	1	right	complete	-
<u>Bison or</u>					
<u>Bos</u>	frontal	1	left	fragment	-
<u>Bison/</u>	2nd maxillary				
<u>Bos-size</u>	premolar	1	left	complete	-
	tooth	1	-	fragment	-
	temporal	1	left	fragment	-
	vertebra	2	-	fragments	1 sawed
	scapula	1	right	glenoid cavity	-
	humerus	1	-	disto-medial	-
	metacarpal	2	1 right,	w/o unfused distal	
			1 left	epiphyses	-
	metapodial	1	-	distal epiphysis	-
	2nd phalanx	1	right	nearly complete	-
	sesamoid	1	-	complete	-
unidenti-					
fied	tooth	1	-	fragment	-
	bone	30	-	fragments	-

Impacts and Recommendation

The edge of 32CV204 will be within the conservation pool (permanent inundation) and the rest of the site is within the proposed floodpool. Adverse impacts to the site may occur from permanent and periodic inundation, and extensive erosion caused by wave action, water level fluctuations, and recreation activities.

Site 32CV204 contains a dense surface scatter of prehistoric Late Archaic and Late Woodland/Blackduck occupations and a historic Euro-American presence. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains of both the prehistoric and historic components.

32CV205

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	57
NW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	33	163	57
SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	34	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Chipped stone, projectile points
Elevation	305 meters, 1000 feet
Vegetation	Wheat
Estimated Size	71,250 square meters
Surface Visibility	25 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Walsh Formation
Cultural Affiliation	Late prehistoric (unknown)
Topography	Terrace
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV205 (Figs. 25 and 75b) was recorded by Ames in 1975. The site is located on the right descending bank of the Pembina River. The site has a 180 degree view of the surrounding terrain for a distance of 1.5 to 3 kilometers (1 to 2 miles). The nearest permanent water is the Pembina River, located 100 meters north.

A surface grab collection was made in 1981. Ames (1975) did not conduct a surface collection. The style of projectile points collected from the site indicates a Late Prehistoric occupation.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	1	*
Biface	2	*
Notch	1	-
Flake	43	-
Shatter	29	-

TOOL DESCRIPTION

Projectile Point

Specimen S-13 (Fig. 47b) is an incomplete small, triangular projectile point made of chert. It has shallow side notches and an expanding base. One corner of the base is missing. The blade edges are convex and the tip is blunted. It is biconvex in cross-section. The point is similar to Besant points (Perino 1971:8) which date at approximately A.D. 400.

Biface

Specimen S-12 (Fig. 47c) is a chert biface. A portion of the base is missing and it has been reworked. One lateral edge is straight to slightly convex and the other lateral edge is convex. The lateral edges converge toward a blunt tip. It is lenticular in cross-section. Both surfaces exhibit invasive retouch. It was probably used as a knife. The specimen measures 60.9 mm long, 26.7 mm wide, and 12.2 mm thick.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32CV205 will be permanently inundated by the Pembilier Dam Alternatives 1 and 5 and will be periodically inundated by floodwaters impounded by Alternatives 2 and 3. The site will be subject to extensive erosion and subsequent destruction by wave action.

The site contains a Late Prehistoric component. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV206

<u>Legal Location</u> NE $\frac{1}{4}$ SE $\frac{1}{4}$	<u>Section</u> 33	<u>Township</u> 163	<u>Range</u> 57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	305 meters, 1000 feet		
Vegetation	Cut wheat		
Estimated Size	35,000 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV206 (Figs. 25 and 76a) was recorded by Ames in 1975. The site is located on a north and east facing hill slope on the right descending side of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Little South Pembina River located 100 meters east.

A surface grab collection was conducted in 1981. A large quantity of domestic animal bones were recovered. Many have saw and butcher marks. No temporally/culturally diagnostic artifacts were recovered from the prehistoric component. A small quantity of chipped stone and probable prehistoric bone refuse was collected.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Biface Preform	1	-
Retouched Flake	1	-
Cores	5	-
Flakes	18	-
Shatter	7	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Bottle Glass	1 neck	clear	post-1903
Teaspoon	1	metal	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>	
<u>Sus scrofa</u> (pig)	premaxilla	1	right	fragment	-	
	mandible	1	right	posterior horizontal ramus	-	
	1st pre-maxillary incisor	1	right	complete	-	
	radius	1	right	distal epiphysis	-	
	4th metacarpal	2	left	w/o distal epiphysis	-	
	femur	1	right	distal	-	
	tibia	1	left	distal	sawed	
	2nd metatarsal	1	left	complete	-	
	3rd metatarsal	1	right	w/o distal epiphysis	-	
	4th metatarsal	2	1 left, 1 right	w/o distal epiphysis	-	
	1st phalanx	2	right	complete	-	
	2nd phalanx	2	left	w/o proximal epiphysis	-	
	3rd phalanx	1	right	complete	-	
	Pig-size	cuboid	1	right	nearly complete	-
	<u>Castor canadensis</u> (beaver)	femur	1	right	distal shaft	-
		Sheep-size	scapula	1	left	glenoid cavity
		metapodial	1	-	distal	-
		2nd phalanx	1	right	complete	-
Deer-size	occipital cervical vertebra	1	-	fragment	-	
	scapula	1	right	nearly complete	-	
	femur	1	right	disto-medial	-	
	tibia	2	left	1 distal, 1 proximal shaft	sawed	
	metatarsal	1	left	proximo-anterior	-	
	metapodial	1	-	distal	-	
	<u>Bison</u> <u>bison</u>	calcaneum	1	left	nearly complete	-
naviculo-cuboid		1	left	complete	-	
1st phalanx		1	right	complete	-	
2nd phalanx		1	right	complete	-	

<u>Bos taurus</u>	atlas				
(cow)	vertebra	1	axial	anterior	sawed
	astragalus	2	right	complete	-
	metatarsal	1	left	w/o distal epiphysis	-
	1st phalanx	2	1 left, 1 right	complete	-
<u>Bos-size</u>	scaphoid	1	right	complete	-
	tibia	1	left	distal shaft	sawed
	lateral malleolus	1	left	complete	-
	rib	4	-	fragments	sawed
<u>Bison or Bos</u>	2nd mandibular molar	1	right	complete	-
	1st phalanx	1	left	w/o proximal epiphysis	-
<u>Bison/Bos-size</u>	temporal	1	-	fragment	-
	skull	2	-	fragments	-
	tooth	1	-	fragment	-
	sternum	1	-	fragment	-
	lunar carpal	2	left	1 complete, 1 anterior	-
	rib	3	-	fragments	-
unidenti- fied	bone	38	-	fragments	9 sawed

Impacts and Recommendations

Site 32CV206 is completely within the proposed conservation pool for the reservoir and will be permanently inundated with Alternative 1. The site, located on a hill slope, will be subject to erosion and destruction due to wave action.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. The historic component consists of a large bone refuse of domesticated animals and a few artifacts. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric component.

32CV208

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	29	163	57
N $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	32	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	320 to 329 meters, 1050 to 1080 feet
Vegetation	Sunflowers, cut wheat
Estimated Size	50,000 square meters
Surface Visibility	10 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown)
Topography	Talus slope
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV208 (Figs. 26 and 76b) was recorded by Ames in 1975. The site is located on an east facing hill slope. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 200 meters north and east.

A surface grab collection was conducted in 1981. A few bones and one flake were recovered. No temporally/culturally diagnostic artifacts were recovered.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> Bos-size	tibia	1	right	anterior shaft	-
Artio- dactyl	tooth	1	-	fragment	-
unidenti- fied	bone	3	-	fragments	-

Impacts and Recommendations

Site 32CV208 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site,

located on a hill slope, will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of an undetermined temporal/cultural affiliation. It is recommended that further investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV209

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	29	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, (chipped stone in 1975)		
Elevation	311 meters, 1020 feet		
Vegetation	Cut wheat		
Estimated Size	11,250 square meters		
Surface Visibility	10 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV209 (Figs. 26 and 77a) was recorded by Ames in 1975. The site is located on top of a terrace on the right descending side of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 75 meters east and south.

A surface grab collection was conducted in 1981. No chipped stone was observed and only bone was collected. No temporally/culturally diagnostic artifacts were collected.

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Rabbit-size	tibia	1	left	proximal	-
<u>Bison/</u> Bos-size	humerus	1	-	distal	-
	astragalus	1	right	fragment	-
	metapodial	2	-	1 distal shaft, 1 distal	-
unidenti- fied	bone	3	-	fragments	-

Impacts and Recommendations

Site 32CV209 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be eroded and destroyed by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV210

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	29	163	57
NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	29	163	57
SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	29	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone, glass, water well, small clapboard house
Elevation	314 to 326 meters, 1030 to 1070 feet
Vegetation	Cut wheat
Estimated Size	37,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Talus slope
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV210 (Figs. 26 and 77b) was recorded by Ames in 1975. The site is located on a west facing hill slope on the left descending side of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 150 meters west.

A surface grab collection was conducted in 1981. A very thin scatter of chipped stone, bone and glass was observed and collected. No temporally/culturally diagnostic artifacts were collected from the prehistoric component. The historic component contains a clapboard house and a well with a hand pump.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	4	-
Shatter	3	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 body sherd	milk glass	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Pisces	bone	1	-	fragment	-

Cervus canadensis (elk)	antler	1	-	base	-
<u>Bos-size</u>	vertebra	1	axial	fragment	sawed
<u>Bison/ Bos-size</u>	thoracic vertebra	1	axial	fragment	-
	ulna	1	right	proximal shaft	-
	femur	2	1 left	proximal posterior shaft	-
			1?	distal	-
unidenti- fied	bone	18	-	fragments	-

Impacts and Recommendations

Site 32CV210 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site, located on a hill slope, will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation and a historic component which is not dated. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric and historic components.

32CV211

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	19	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	311 meters, 1020 feet		
Vegetation	Cut wheat		
Estimated Size	17,500 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Terrace		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV211 (Figs. 27 and 78a) was recorded by Ames in 1975. The site is located on top of a terrace on the right descending side of the Pembina River. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 75 meters east.

A surface grab collection was conducted in 1981. A very thin scatter of bone and chipped stone was observed and collected. No temporally/culturally diagnostic artifacts were collected.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
Artio-dactyl	teeth	3	-	fragments	-
unidenti-fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32CV211 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of a fluctuating shoreline.

Site 32CV211 contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV212

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	19	163	57
E $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	19	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics
Elevation	323 to 344 meters, 1060 to 1130 feet
Vegetation	Cut wheat
Estimated Size	70,000 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Talus slope
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV212 (Figs. 27 and 78b) was recorded by Ames in 1975. The site is located on a south facing hill slope on the left descending side of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 275 meters south.

A surface grab collection was conducted in 1981. Artifacts recovered include chipped stone, bone and historic ceramics. No temporally/culturally diagnostic artifacts were recovered. The historic component is attributed to farming activities.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Biface Preform	1	-
Core	1	-
Flake	8	-
Shatter	11	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	2 rims	whiteware	1 plain, 1 transfer -printed
	3 bases	whiteware	plain

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> <u>Bos-size</u>	2nd maxil- lary molar	1	left	complete	-
	3rd mandi- bular molar	1	left	complete	-
	tooth	1	-	fragment	-
	femur	1	-	proximo- medial	-
unidenti- fied	bone	8	-	fragments	-

Impacts and Recommendations

Site 32CV212 will be periodically inundated by floodwaters impounded by the Pemblier Dam Alternatives 1, 2, 3 and 5. The site, located on a hill slope, will be subject to erosion and destruction by wave action of a fluctuating shoreline.

Site 32CV212 contains a prehistoric component of undetermined temporal/cultural affiliation. The historic component is attributed to farming activities. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains in the prehistoric component.

32CV213

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
E $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	19	163	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	332 to 344 meters, 1090 to 1130 feet		
Vegetation	Wheat		
Estimated Size	15,000 square meters		
Surface Visibility	10 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV213 (Fig. 27) was recorded by Ames in 1975. The site is located on a south facing hill slope. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 375 meters south.

A surface grab collection was made in 1981. A thin scatter of chipped stone and bone was collected. No temporally/culturally diagnostic artifacts were recovered.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Shatter	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison</u>					
bison	2nd phalanx	1	right	complete	-
<u>Bison/Bos-size</u>	maxillary molar	1	right	complete	-
artio-dactyl	tooth	1	-	fragment	-
unidenti-fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32CV213 will not be directly impacted by construction of the Pembilier Dam. However, the site is located on a fairly steep hill slope and will be subject to embankment erosion by wave action of a fluctuating shoreline during impoundment of floodwaters.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV214

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$	24	163	58
Map Quad		Vang	
Local Name		None	
Type of Remains		(1975) Bone, chipped stone	
Elevation		320 meters, 1050 feet	
Vegetation		Wheat	
Estimated Size		7,500 square meters	
Surface Visibility		Not Known	
Site Condition		Partially destroyed by cultivation	
Soil Association		Not Known	
Cultural Affiliation		Prehistoric (unknown)	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Potentially eligible for National Register, needs further work	

Site 32CV214 (Figs. 27 and 28) was recorded by Ames in 1975. The site is located on a terrace top on the left descending side of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 50 meters west.

The site was not visited in 1981. No temporally/culturally diagnostic artifacts have been recovered from the site.

Impacts and Recommendations

Site 32CV214 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV215

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SW $\frac{1}{4}$	13	163	58
E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	24	163	58
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone, historic ceramics, glass		
Elevation	320 to 335 meters, 1050 to 1100 feet		
Vegetation	Cut wheat		
Estimated Size	56,875 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown), Euro-American		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV215 (Figs. 28 and 79a) was recorded by Ames in 1975. The site is located on a south facing hill slope. The site has a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 250 meters south. Ames assigned two localities to the site, locality 1 (Section 13) and locality 2 (Section 24). Investigations in 1981 were conducted at locality 1. The 1981 designations for Ames' localities are 32CV215a for locality 1 and 32CV215b for locality 2. These two localities should probably be designated as two separate sites, but the current designation originated with the 1975 survey (Ames 1975).

A surface grab collection was made in 1981. A surface scatter of chipped stone, bone, historic ceramics and glass was observed and collected. No temporally/culturally diagnostic artifacts were collected from the prehistoric component. The historic component is an old farm residence which dates sometime between 1910 and 1975.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	*
Flake	5	-
Shatter	1	-

TOOL DESCRIPTION

Biface

Specimen S-7 (Fig. 47d) is a complete quartzite biface. It is ovate in outline and lenticular in

cross-section. Both surfaces exhibit invasive modification. The specimen 53.7 mm long, 42.4 mm wide, and 23.1 mm thick.

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	8 rims	whiteware	4 plain, 2 molded, 2 transfer-printed
	2 bases	whiteware	plain
	6 body sherds	whiteware	5 plain, 1 transfer-printed
Decorative Ware	1	porcelain	molded and hand-painted
Crock	1	stoneware	-
Bottle Glass	1 neck	amber	-
	3 bases	1 clear, 1 amethyst	-
		1 amber	-
	18 bodies	7 amber, 5 clear, 2 light blue, 2 light green, 2 amethyst	-
Window Glass	8	4 light blue, 3 clear, 1 light green	-
Pressed Glass	1 rim	amethyst	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Ovis</u> <u>aries</u> (sheep)	humerus	1	right	distal anterior	-
	calcaneum	1	right	complete	-
	astragalus	1	right	complete	-
Goat-size	1st phalanx	1	right	complete	-
<u>Odocoileus</u> sp. (deer)	radius	1	right	distal epiphysis	-
	tibia	1	right	distal epiphysis	-
	astragalus	1	left	complete	-
	2nd phalanx	1	left	complete	-
Deer-size	1st sacral vertebra	1	axial	right lateral	-
	vertebra	1	axial	anterior centrum	-
<u>Equus</u> <u>caballus</u> (horse)	radius	1	left	proximal	-
	tibia	1	right	proximal	-
	astragalus	1	right	complete	-

<u>Bos taurus</u>					
(cow)	temporal	1	left	fragment	-
	3rd mandibular molar	1	left	complete	-
	maxillary molar	1	-	well worn	-
	1st phalanx	1	right	complete	-
<u>Bison/</u>	maxillary				
<u>Bos-size</u>	molar	1	right	complete	-
	mandible	1	right	ascending ramus	-
	cervical vertebra	1	axial	fragment	-
unidenti-					
fied	bone	11	-	fragments	-
Freshwater					
Mussel	shell	5	-	fragments	-

Impacts and Recommendations

Site 32CV215 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. The historic component is a farm residence located at locality 1 and occupied sometime between 1910 and 1975. The present land owner, Loyd Danielson, informed the field crew that his father lived at this location during the early 1900's. More precise dates are not available. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV216

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	4	162	57
Map Quad	Vang		
Local Name	None		
Type of Remains	Bone, chipped stone		
Elevation	323 meters, 1060 feet		
Vegetation	Cut wheat		
Estimated Size	22,500 square meters		
Surface Visibility	50 percent		
Site Condition	Partially destroyed by cultivation		
Soil Association	Not Known		
Cultural Affiliation	Prehistoric (unknown)		
Topography	Talus slope		
Postulated Past Vegetation	Bottomland hardwood forest		
Recommendation	Potentially eligible for National Register, needs further work		

Site 32CV216 (Figs. 25 and 79b) was recorded by Ames in 1975. The site is located on a ridge top and slope on the left side of the Little South Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Little South Pembina River, located 100 meters east.

A surface grab collection was made in 1981. A surface scatter of chipped stone and bone was observed and collected. No temporally/culturally diagnostic artifacts were collected.

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Endscraper	1	-
Graver	1	-
Flake	15	-
Shatter	7	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	2	-	fragments	-

Impacts and Recommendations

Site 32CV216 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV217

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ NE $\frac{1}{4}$	4	162	57
S $\frac{1}{2}$ SW $\frac{1}{2}$ SE $\frac{1}{4}$	33	163	57

Map Quad	Vang
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	311 meters, 1020 feet
Vegetation	Cut Wheat
Estimated Size	43,750 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Black duck, Late Prehistoric
Topography	Terrace
Postulated Past Vegetation	Bottomland hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV217 (Figs. 25 and 79b) was recorded by Ames in 1975. The site is located on top of a terrace on the right descending side of the Little South Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Little South Pembina River, located 100 meters west.

A surface grab collection was made in 1981. A surface scatter of chipped stone and bone was observed and collected. A Blackduck rim sherd was collected from the site in 1975 and Mr. Carl Kartes has a collection from the site (Fig. 48a).

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	-
Disto-lateral Scraper	1	*
Core	2	-
Flake	28	-
Shatter	11	-
Pottery	1	* (1975 Collection)

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	8	-	fragments	-

TOOL DESCRIPTION

Disto-lateral Scraper

Specimen S-24 (Fig. 47f) is a complete chert disto-lateral scraper. The distal edge and left lateral edge of the dorsal surface exhibit marginal retouch. The ventral surface is unmodified. The lateral edges are straight and parallel. It is plano-convex in cross-section. The specimen measures 29.3 mm long, 16.5 mm wide, and 5.4 mm thick.

Pottery

The specimen is a rimsherd (Fig. 47e). It has a flat lip. The top and exterior portions of the lip have parallel oblique, stamped motifs. Below the exterior motifs are small, oval-shaped punctations. The interior surface is blackened. Temper consists of small-to-medium size crushed granite. This specimen is like Blackduck ceramics found in the western Great Lakes region. Blackduck ware has been recovered from sites which have been radiocarbon dated at A.D. 800-1400 (Anfinson 1979:23-37). The specimen is 8 mm thick.

Impacts and Recommendations

Site 32CV217 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of a fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV218

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	10	162	57
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$	3	162	57

Map Quad	Vang
Local Name	None
Type of Remains	(1975) Chipped stone, bone
Elevation	323 meters, 1060 feet
Vegetation	Plowed
Estimated Size	25,000 square meters
Surface Visibility	Not Known
Site Condition	Partially destroyed by cultivation
Soil Association	Not Known
Cultural Affiliation	Prehistoric (unknown)
Topography	Terrace
Postulated Past Vegetation	Bottomland Hardwood forest
Recommendation	Potentially eligible for National Register, needs further work

Site 32CV218 (Fig. 25) was recorded by Ames in 1975. The site is located on the second terrace of the Little South Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest water is the Little South Pembina River, located 125 meters east. The site was not visited in 1981.

Impacts and Recommendations

Site 32CV218 will be periodically inundated by floodwaters impounded by the Pembilier Dam Alternatives 1, 2, 3 and 5. The site will be subject to erosion and destruction by wave action of the fluctuating shoreline.

The site contains a prehistoric component of undetermined temporal/cultural affiliation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

32CV219

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ SW $\frac{1}{4}$	34	163	57
Map Quad		Vang	
Local Name		None	
Type of Remains		(1975) Chipped stone	
Elevation		302 meters, 990 feet	
Vegetation		Plowed	
Estimated Size		5, 625 square meters	
Surface Visibility		Not Known	
Site Condition		Partially destroyed by cultivation	
Soil Association		Not Known	
Cultural Affiliation		Prehistoric (unknown)	
Topography		Terrace	
Postulated Past Vegetation		Bottomland hardwood forest	
Recommendation		Potentially eligible for National Register, needs further work	

Site 32CV219 (Fig. 25) was recorded by Ames in 1975. The site is located on the second terrace of the Pembina River. The site has less than a 90 degree view of the surrounding terrain for a distance of less than 1.5 kilometers (1 mile). The nearest permanent water is the Pembina River, located 50 meters north.

The site was visited in 1981 but the field lay in fallow with a dense growth of vegetation. No temporally/culturally diagnostic artifacts have been collected from the site.

Impacts and Recommendations

Site 32CV219 will be permanently inundated by the Pembilier Dam Alternative 1 and periodically inundated by floodwater impounded by Alternatives 2, 3 and 5. The site will be eroded and destroyed by wave action, particularly by the fluctuating floodpool shoreline.

The site contains a prehistoric component which has an undetermined temporal/cultural occupation. It is recommended that investigations be conducted to determine the presence or absence of significant subsurface remains.

Descriptions of Sites and Find Spots Located Outside
the Vicinity of the Proposed Project

Interviews with local informants and artifact collectors provided information about several prehistoric and historic site locations outside the vicinity of the proposed project. The archaeology crew visited 12 of the reported site locations to confirm their existence and locations. The following site descriptions are of 11 sites and one find spot confirmed by the archaeology crew. Survey methods consisted of spacing crew members about 20 meters apart and traversing the fields where site locations were reported to exist by the local informants. Surface grab collections were conducted. No subsurface testing was performed. It is emphasized that none of the following sites will be directly or indirectly impacted by the proposed project. However, the site location and soil association data was used in developing predictive models for site locations in Pembina County.

32PB21
(USD-32)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	33	163	56
SE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	33	163	56

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	363 meters, 190 feet
Vegetation	Beans
Estimated Size	28,125 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	MaB, Maddock loam sand, 3 to 6 percent slopes MbB, Maddock sandy loam, 3 to 6 percent slopes MbA, Maddock sandy loam, 1 to 3 percent slopes
Cultural Affiliation	Prehistoric (unknown)
Topography	Ridge top
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface Preform	1	Knife River Flint
Flake	16	1 Knife River Flint
Shatter	4	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u> Bos-size unidenti- fied	metapodial bone	1 2	- -	proximal shaft fragments	- 1: sawed

32PB22
(USD-37)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$	34	163	56
SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$	33	163	56

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, historic ceramics, glass, metal
Elevation	357 meters, 1170 feet
Vegetation	Cut wheat
Estimated Size	12,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	VwA, Vang-Walsh loams, 1 to 3 percent slopes
Cultural Affiliation	Euro-American
Topography	Upland
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	8 rims	stoneware	-
	4 bases	stoneware	-
	2 lids	stoneware	-
	13 body sherds	stoneware	-
	Jug	1 body sherd	stoneware
Drainage Tile	2 frags.	stoneware	-
Tableware	37 rims	35 whiteware	16 plain, 7 molded, 2 molded and transfer-printed, 3 gilt, 2 decal, 2 banded, 1 transfer-printed, 1 molded and decal, 1 molded and gilt
		1 porcelain	molded and transfer-printed
		1 milk glass	plain
	16 bases	13 whiteware	11 plain (4 with maker's marks: one 1900-1960, one ca. 1905-1929, one ca. 1910-1930), 1 decal (with maker's mark: ca. 1960), 1 decal and molded

		3 porcelain	1 plain, 1 decal, 1 hand-painted
	1 lid	whiteware	transfer-printed
	2 handles	whiteware	molded
	1 shaker top	whiteware	plain
	28 body sherds	27 whiteware	19 plain, 4 molded, 2 transfer-printed, 1 molded and gilt, 1 decal
		1 porcelain	underglazed
Utilitarian Ware	1 rim	whiteware	plain, possible milk bottle
	1 lid	whiteware	plain, possible chamber pot
	7 body sherds	1 whiteware 6 stoneware	plain -
Decorative Ware	1 body sherd	porcelain	molded and tinted
Child's Tea Set	1 base	porcelain	hand-painted
Insulator	3	whiteware	-
Bottle Glass	1 complete	milk glass	-
	24 necks	10 clear, 5 amber, 3 milk glass, 3 light green, 2 light blue, 1 dark green, 1 yellow	two: 1880-1900, 17: post-1903
	31 bases	8 clear, 6 milk glass, 6 amber, 4 amethyst, 3 light green, 2 light blue, 1 dark green, 1 yellow	-
	4 lids	2 amethyst, 1 light blue, 1 yellow	-
	1 handle	clear	-
	31 bodies	11 clear, 8 amber, 5 light green, 2 light blue, 2 yellow, 2 amethyst 1 peach	-
Window Glass	10	5 light blue, 5 yellow	-
Pressed Glass Decorative Glass	2 frags.	clear	-
	2 rims	milk glass	-
	4 bodies	3 milk glass, 1 yellow	-

Misc. Glass	8 frags.	milk glass	-
Canning Jar			
Lid Liner	2	milk glass	-
Chicken Waterer	1 frag.	clear	-
Melted Glass	3	2 light blue, 1 yellow	-
Coal	2	coal	-
Horse Hame	1	brass	chrome plated
License Plate	1	metal	1936, North Dakota
Bottle Cap	1	iron	-
Farm Machinery	3 frags.	iron	-
Misc. Metal	2 frags.	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Equus</u> <u>caballus</u> (horse)	femur	2	1 left 1 right	proximo-medial third trochanter	- -
	tibia	1	left	distal	-
<u>Bos taurus</u> (cow)	mandible	1	right	horizontal ramus	-
	atlas				
	vertebra	1	axial	left lateral	sawed
	cervical				
	vertebra	1	axial	right lateral	sawed
	tibia	1	right	distal	-
	astragalus	1	right	complete	-
	1st phalanx	1	left	complete	-
	2nd phalanx	1	right	complete	-
<u>Bos-size</u>	cervical				
	vertebra	1	axial	left antero- lateral	- -
	radius	1	left	proximo-medial	-
	femur	2	1 right -	disto-lateral distal	- -
	tibia	1	-	proximal	-
<u>Deer-size</u>	cervical				
	vertebra	1	axial	right lateral	-
	atlas				
	vertebra	1	axial	left lateral	-
	humerus	1	left	distal	sawed
	pelvis	1	right	ilium fragment	-
<u>Canis sp.</u> <u>unidenti-</u> <u>fied</u>	mandible	1	left	ascending ramus	-
	bone	17	-	fragments	10: sawed

32PB23
(USD-38)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	34	163	56
SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	33	163	56

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics, glass
Elevation	360 meters, 1180 feet
Vegetation	Cut wheat
Estimated Size	31,250 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	EmB, Embden fine sandy loam, 3 to 6 percent slopes
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Ridge top
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	1	fragment
Endscraper	2	-
Retouched Flake	1	-
Flake	34	-
Shatter	11	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Tableware	1 rim	whiteware	decal, gilt and molded
Bottle Glass	1 base	clear	maker's mark: 1932-1943

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u>					
<u>Bos-size</u>	astragalus	1	right	very weathered	-
	3rd phalanx	1	left	very weathered	-
unidenti- fied	bone	4	-	fragments	-

32PB24
(USD-39)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{2}$ SW $\frac{1}{2}$	28	163	56
NW $\frac{1}{2}$ SW $\frac{1}{2}$ SW $\frac{1}{2}$	28	163	56
E $\frac{1}{2}$ NE $\frac{1}{2}$ NE $\frac{1}{2}$	32	163	56
NW $\frac{1}{2}$ NW $\frac{1}{2}$	33	163	56
SE $\frac{1}{2}$ SE $\frac{1}{2}$ SE $\frac{1}{2}$	29	163	56

Map Quad	Walhalla
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	351 meters, 1150 feet
Vegetation	Plowed
Estimated Size	200,000 square meters
Surface Visibility	100 percent
Site Condition	Partially destroyed by cultivation
Soil Association	EmB, Embden fine sandy loam, 3 to 6 percent slopes EmA, Embden fine sandy loam, 1 to 3 percent slopes Rp, Rough broken land
Cultural Affiliation	Late prehistoric
Topography	Ridge top
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	2	-
Biface	4	fragments
Biface Preform	1	-
Chopper	2	-
Endscraper	1	Knife River Flint
Uniface	2	Knife River Flint
Retouched Flake	3	-
Retouched Shatter	1	-
Core	1	-
Flakes	207	5 Knife River Flint, 2 moss agate
Shatter	136	1 Knife River Flint

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison</u>					
bison	radius	1	right	disto-lateral	-

	astragalus	2	1 left 1 right	distal complete	- -
<u>Bos</u> <u>taurus</u> (cow)	calcaneum	1	right	proximal	-
<u>Bison</u> or <u>Bos</u>	horn core	1	-	fragment	-
	1st or 2nd mandibular molar	1	left	complete	-
	3rd mandibular molar	1	right	nearly complete	-
	humerus	1	left	disto-medial	-
<u>Bison/</u> <u>Bos-size</u>	skull	1	-	fragment	-
	mandible	1	-	horizontal ramus	-
	tooth	3	-	fragments	-
	humerus	5	1 right 2 left	posterior shaft 1 disto-lateral, 1 disto-medial 2 distal frags.	- - -
	radius	2	2 left	distal, proximo- medial	- -
	unciform	1	right	nearly complete	-
	femur	2	-	femoral heads	-
	patella	2	-	fragments	-
	tibia	2	1 right, 1 left	anterior shafts	-
	calcaneum	1	right	anterior	-
	astragalus	2	right	1 distal, 1 frag.	-
	naviculo- cuboid	1	left	anterior	-
	metapodial	2	-	distal	-
	2nd phalanx	1	-	fragment	-
<u>Equus</u> <u>caballus</u> (horse)	radius	1	-	shaft	-
	pelvis	1	right	ilium frag.	-
	calcaneum	1	right	proximal	-
	metatarsal	2	1 right 1 left	proximal distal shaft	- -
Deer- size	scapula	1	-	distal	-
	unciform	1	right	weathered	-
	calcaneum	1	right	anterior	-
	astragalus	1	-	fragment	-
	1st phalanx	1	left	weathered	-
Artio- dactyl	tooth	1	-	fragment	-
Pig-size	2nd phalanx	1	left	very weathered	-
Goose- size	coracoid	1	left	distal	-

unidenti-					
fied	tooth	1	-	root	-
	bone	63	-	fragments	-

32PB27
(USD-42)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	18	163	55
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, chipped stone, historic ceramics, glass, metal	
Elevation		280 meters, 920 feet	
Vegetation		Plowed	
Estimated Size		10,000 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		EmA, Embden fine sandy loam, 1 to 3 percent slopes	
Cultural Affiliation		Prehistoric (unknown), Euro-American	
Topography		Ridge top	
Postulated Past Vegetation		Grass	
Recommendation		Potentially eligible for National Register, needs further work	

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	2	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	7 rims	stoneware	-
	6 bases	stoneware	-
	12 body sherds	stoneware	-
Jug	3 body sherds	stoneware	-
Tableware	42 rims	39 whiteware	17 plain, 8 molded, 6 banded, 3 decal, 2 flow-blue transfer-printed, 1 transfer-printed, 1 gilt, 1 mclded and gilt
		3 porcelain	2 transfer-printed, 1 decal
	23 bases	22 whiteware	20 plain (3 with partial maker's marks: one: 1900-1960), 1 transfer-printed, 1 molded
		1 porcelain	plain

	19 body sherds	whiteware	14 plain, 3 flow-blue transfer-printed, 1 transfer-printed, 1 molded
	3 handles	whiteware	2 plain, 1 molded
Decorative Ware	1 rim	porcelain	molded and painted
	2 bases	porcelain	plain
	1 body sherd	porcelain	molded and underglazed
Utilitarian Ware	2 rims	1 whiteware 1 redware	sponged plain
	2 bases	1 whiteware 1 stoneware	sponged plain
	2 body sherds	whiteware	sponged
Doll	1 foot	porcelain	plain
Electrode	1	whiteware	-
Bottle Glass	20 necks	9 amethyst, 7 clear,	two: 1860-1880, four: 1880-1900
		2 amber, 1 light blue, 1 light green	three: post-1903, one: 1935
	32 bases	12 clear, 8 amethyst, 7 light blue, 3 dark blue, 1 dark green, 1 milk glass	-
	41 bodies	12 light blue, 11 clear, 6 amethyst, 4 amber, 3 light green, 3 dark green, 1 milk glass	-
Window Glass	2	1 clear, 1 light green	-
Pressed Glass	2 rims	1 clear, 1 amethyst	decorative
	2 bodies	amethyst	decorative
Glass Stopper	2	1 clear, 1 dark blue	-
Canning Jar Lid Liner	4 frags.	milk glass	-
Misc. Glass	8 frags.	5 milk glass, 3 clear	-
Melted Glass	1	light blue	-
Bottle Cap	1	zinc	-
Canning Jar Lid	3 frags.	zinc	-
Button	1	copper	-
Latch	1	galvanized steel	-
Pulley	1	iron	-

Metal Step	1	iron	for machinery or buggy
Wagon Wheel			
Hub	1	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bison/</u>					
<u>Bos-size</u>	tooth	1	-	fragment	-
	scapula	1	right	distal	-
	astragalus	1	left	proximal	-
Deer-size	vertebra	1	axial	fragment	-
	scapula	1	-	anterior	-
Sheep-size					
size	humerus	1	right	proximal	sawed
unidenti-					
fied	bone	1	-	fragment	-
Freshwater					
Mussel	shell	1	-	fragment	-

32PB28
(USD-44)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	16	163	55
SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$	16	163	55
NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	21	163	55
NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	21	163	55

Map Quad	Leroy
Local Name	None
Type of Remains	Bone, chipped stone
Elevation	274 meters, 900 feet
Vegetation	Beans
Estimated Size	22,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	EmA, Embden fine sandy loam, 1 to 3 percent slopes
Cultural Affiliation	Prehistoric (unknown)
Topography	Ridge top
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Endscraper	1	-
Flake	2	-
Shatter	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	5	-	fragments	-

32PB29
(USD-45)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	17	163	55
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone, chipped stone	
Elevation		276 meters, 905 feet	
Vegetation		Beans and corn	
Estimated Size		15,000 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		EmA, Embden fine sandy loam, 1 to 3 percent slopes	
Cultural Affiliation		Late prehistoric	
Topography		Ridge top	
Postulated Past Vegetation		Grass	
Recommendation		Potentially eligible for National Register, needs further work	

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Projectile Point	1	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	3	-	fragments	-

32PB30
(USD-46)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	19	163	55
Map Quad		Leroy	
Local Name		Indian Mound	
Type of Remains		Mound, no cultural material	
Elevation		279 meters, 915 feet	
Vegetation		Plowed	
Estimated Size		5625 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		ZgD, Zell-Gardena very fine sandy loams, 9 to 15 percent slopes	
Cultural Affiliation		Unknown	
Topography		Natural conical mound	
Postulated Past Vegetation		Grass	
Recommendation		Not eligible	

32PB33
(USD-49)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
W $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$	2	162	56
NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	2	162	56
SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	2	162	56
SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	2	162	56

Map Quad	Leroy
Local Name	None
Type of Remains	Bone, chipped stone, historic ceramics, glass, metal
Elevation	311 meters, 1020 feet
Vegetation	Cut wheat
Estimated Size	37,500 square meters
Surface Visibility	50 percent
Site Condition	Partially destroyed by cultivation
Soil Association	MaB, Maddock loamy sand, 3 to 6 percent slopes HgE, Hecla and Maddock soils, 9 to 25 percent slopes
Cultural Affiliation	Prehistoric (unknown), Euro-American
Topography	Side of ridge
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	2	-
Shatter	1	-

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>
Crock	1 base	stoneware	-
	3 body sherds	stoneware	-
Tableware	4 rims	whiteware	3 plain, 1 flow-blue transfer-printed
	3 bases	whiteware	2 plain (1 with partial maker's mark: ca. 1890-1907), 1 decal
Insulator	9 body sherds	whiteware	plain
	1	whiteware	-

Bottle Glass	7 necks	4 amethyst,	four: 1880-1900
		1 clear, 1 light green	
	2 bases	amethyst	-
	19 bodies	10 amethyst,	
		4 light green,	
Window Glass	9	3 amber, 2 clear	-
		7 light green,	
		2 light blue	-
Decorative Glass	2	1 amethyst, 1 black	-
Misc. Metal	1 frag.	iron	-

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bos</u> <u>taurus</u> (cow)	2nd phalanx	1	left	nearly complete	-
<u>Bison/</u> <u>Bos-size</u>	humerus	1	left	shaft	-
	ulna	1	left	shaft	-
	astragalus	1	left	distal	-
Chicken- size (Avian)	scapula	1	-	shaft	-
unidenti- fied	bone	6	-	fragments	-

32PB35
(USD-53)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
SW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	19	163	56
Map Quad		Walhalla	
Local Name		None	
Type of Remains		Bone, chipped stone, historic ceramics, glass, metal	
Elevation		300 meters, 985 feet	
Vegetation		Plowed	
Estimated Size		26,250 square meters	
Surface Visibility		100 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		CbB, Claire loamy coarse sand, 1 to 6 percent slopes PyA, Poppleton loamy sand, 1 to 3 percent slopes	
Cultural Affiliation		Prehistoric (unknown), Euro-American	
Topography		Bottom of ridge	
Postulated Past Vegetation		Grass	
Recommendation		Potentially eligible for National Register, needs further work	

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Biface	4	fragments
Endscraper	1	fragment
Core	3	-
Flake	38	1 Knife River Flint
Shatter	17	1 Knife River Flint

HISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Material Type</u>	<u>Additional Information</u>	
Trade Pipe	1	clay	bowl fragment	
Tableware	5 rims	whiteware	plain	
	2 bases	whiteware	plain	
	8 body sherds	whiteware	plain	
Bottle Glass	1 neck	light blue	-	
	1 base	clear	-	
	7 bodies	3 amber,		
		3 light blue,		
Wagon Hub Box	1 frag.	1 clear	-	
		iron	-	

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
<u>Bos</u> <u>taurus</u> (cow)	1st phalanx	1	left	nearly complete	-
<u>Bison/</u> <u>Bos-size</u>	petrous	1	-	fragment	-
	lower incisor	2	1 left -	complete nearly complete	- -
	1st or 2nd mandibular molar	1	-	complete	-
	3rd mandibular molar	1	left	nearly complete	-
	1st or 2nd maxillary molar	1	right	nearly complete	-
	teeth	13	right	fragments	-
	carpal	1	-	fragment	-
	trapezoid- magnum	1	right	weathered	-
	femur	1	right	disto-posterior shaft	-
	astragalus	1	right	proximo-medial	-
	metapodial	1	-	proximal shaft	-
	phalanx	1	-	distal	-
	sesamoid	1	-	complete	-
<u>Lepus sp.</u> (jack rabbit)	scapula	1	left	distal	-
Rodent	upper incisor	1	right	fragment	-
unidenti- fied	bone	12	-	fragments	2 burned

32PB36
(USD-55)

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$	18	163	55
NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$	18	163	55

Map Quad	Leroy
Local Name	None
Type of Remains	Chipped stone
Elevation	280 meters, 920 feet
Vegetation	Plowed
Estimated Size	20,000 square meters
Surface Visibility	100 percent
Site Condition	Partially destroyed by cultivation
Soil Association	EmA, Embden fine sandy loam, 1 to 3 percent slopes
Cultural Affiliation	Prehistoric (unknown)
Topography	Ridge top
Postulated Past Vegetation	Grass
Recommendation	Potentially eligible for National Register, needs further work

PREHISTORIC ARTIFACTS

<u>Artifact Type</u>	<u>Quantity</u>	<u>Additional Information</u>
Flake	2	-

USD-43

<u>Legal Location</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$	20	163	55
Map Quad		Leroy	
Local Name		None	
Type of Remains		Bone	
Elevation		277 meters, 910 feet	
Vegetation		Cut wheat	
Estimated Size		3750 square meters	
Surface Visibility		50 percent	
Site Condition		Partially destroyed by cultivation	
Soil Association		HgE, Hecla and Maddock soils, 9 to 25 percent slopes	
Cultural Affiliation		Unknown	
Topography		Natural mound	
Postulated Past Vegetation		Grass	
Recommendation		Not eligible	

FAUNAL REMAINS

<u>Taxon</u>	<u>Element</u>	<u>Quantity</u>	<u>Side</u>	<u>Condition</u>	<u>Butcher Marks</u>
unidenti- fied	bone	3	-	fragments	-

11 888 118 118 128 128 138 138 148 148 158 158 168 168 178 178 188 188 198 198 208 208 218 218 228 228 238 238 248 248 258 258 268 268 278 278 288 288 298 298 308 308 318 318 328 328 338 338 348 348 358 358 368 368 378 378 388 388 398 398 408 408 418 418 428 428 438 438 448 448 458 458 468 468 478 478 488 488 498 498 508 508 518 518 528 528 538 538 548 548 558 558 568 568 578 578 588 588 598 598 608 608 618 618 628 628 638 638 648 648 658 658 668 668 678 678 688 688 698 698 708 708 718 718 728 728 738 738 748 748 758 758 768 768 778 778 788 788 798 798 808 808 818 818 828 828 838 838 848 848 858 858 868 868 878 878 888 888 898 898 908 908 918 918 928 928 938 938 948 948 958 958 968 968 978 978 988 988 998 998

Chapter 7

Cultural Resource Evaluations

Introduction

The Pembilier Dam and boundary floodway alternatives will have adverse impacts upon prehistoric and historic cultural resources. Some historic sites contain significant local history and are considered local landmarks. Other historic and prehistoric sites have apparent potential for inclusion on the National Register and North Dakota Historic Sites Registry. These few selected sites are believed to contain significant regional historic value and scientific data for delineating the culture history of the region.

North Dakota State Historic Sites Registry

The North Dakota State Historical Board will consider historic and prehistoric sites, structures, buildings, objects, neighborhoods, networks, and cultural landscapes for inclusion in the State Historic Sites Registry if the sites meet one of three criteria: 1) they have been associated with and now illustrate, recall, or characterize individuals, groups, events, processes, institutions, movements, lifeways, folkways, ideals, beliefs, or other patterns or phenomena that had a significant influence on or are important reflections of the prehistoric or historic development or identity of the state, region, community or cultural group within the State; or 2) they are distinctive or they distinctively illustrate architectural styles, building types, types or methods of construction, vernacular, popular, or traditional building design, landscape architecture, urban design or planning, works or significant architects, designers, builders, or planners, monumental sculpture, industrial, technological, or engineering design, or other architectural, aesthetic, or engineering expressions that characterize, are unique to, possess special artistic or aesthetic values for, or had an important influence on the prehistoric or historic community, or cultural group for which they were created; or 3) they contain information about or evidence of historic or prehistoric events, processes, institutions, design, construction, settlement, migration, ideals, beliefs, lifeways, folkways, or other facets of development and cultural systems that are known and established likely to be important to professional or public knowledge or understanding of earlier cultures or cultural systems or of the development of the State or of regions or communities within the State.

The sites must possess integrity of form, material, and setting, generally retaining those historic characteristics such as physical features, evidence of workmanship, fabric, location, and surroundings that convey, support, represent, or contain values and qualities for which they are judged significant.



National Register of Historic Places

The Antiquities Act of 1906 (Public Law 59-209) was the first legislation enacted by Congress for the protection of historic and prehistoric archaeological sites situated on lands owned or controlled by the United States Government. The Historic Sites Act of 1935 (Public Law 74-292) was enacted "to preserve for public use historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States." The National Historic Preservation Act of 1966 (Public Law 89-665) created the National Register of Historic Places as a list of properties "significant in American history, architecture, archaeology, and culture" (Sec. 101 (a)(1)). Criteria for evaluation and determination of eligibility for nomination to the National Register of Historic Places are set forth in 36 CFR 800.10(a):

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

b) That are associated with the lives of persons significant in our past; or

c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d) That have yielded, or may be likely to yield, information important in prehistory or history.

The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) requires federal agencies to consider the environmental impacts of planned projects. As a result, since cultural resources are parts of the environment, federal agencies are required to identify and plan for the protection of cultural resources, both prehistoric and historic, during their project-planning and land management programs. Executive Order 11593 requires federal agencies to identify historic properties under their control or jurisdiction that might qualify for the National Register. The Archaeological and Historic Preservation Act of 1974 (Public Law 93-291) specifically provides for the preservation of archaeological and historical data "which might otherwise be irreparably lost or destroyed" as the result of federally constructed dams or as the result of any federally funded or assisted construction project, activity, or program. In compliance with the above regulations, four

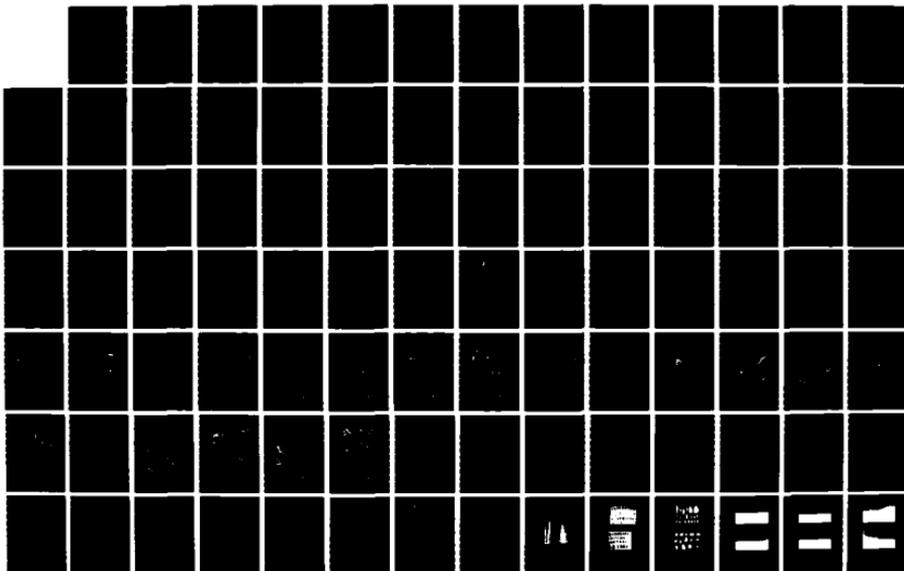
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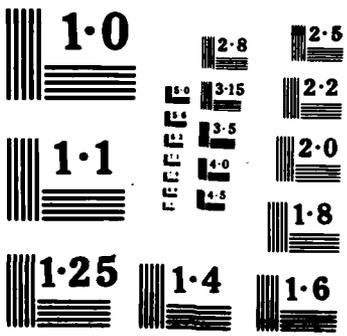
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prehistoric archaeological sites under the jurisdiction of the Bureau of Reclamation were examined for eligibility for nomination to the National Register of Historic Places.

Archaeological Research and Determination of Site Significance

In accordance with the aforementioned cultural resource management regulations, federal agencies are required to determine the National Register eligibility of archaeological resources under their control. This is accomplished by assessing information and recommendations provided by archaeologists. Raab and Klinger (1977:632) suggest that "the best approach to assessing archaeological significance is in relation to explicit, problem-oriented research designs." Sharrock and Grayson (1979:327) agree that although significance determined in this way is "an excellent reason to ascribe significance in the National Register sense," the converse may not necessarily be true. In other words, just because an archaeological resource is found to be insignificant in terms of a current problem-oriented research design, it does not necessarily follow that the site is, in fact, insignificant. "The 'significance' of a site is clearly subject to change through time, increasing or decreasing as both knowledge and research orientation change (Sharrock and Grayson 1979:327). This potential problem is anticipated in the National Register criteria. Archaeological resources are significant when they "have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR 800.10). As a result, federal agencies bear the burden of proving that sites within their domain are neither significant nor potentially significant. As stated earlier, this is accomplished by acting upon information and recommendations provided by the contracting archaeologist. "The importance of the contracting archaeologist's assessments of significance cannot be overemphasized" (Klinger and Raab 1980:556).

Once a site has been determined not to be significant, it is excluded from further federally funded research and does not receive protective management consideration. Therefore, it is important that the potential significance of an archaeological resource be carefully considered. The full archaeological potential of a site may be difficult to realize if its significance is poorly documented.

The following descriptions are brief justifications for nominating selected sites, which are believed eligible, to either the National Register or the North Dakota Historic Sites Registry (Tables 23 and 24).

Justification for Nominating Historic Sites to a Register

Site 32PB31, Grant's House and Trading Post

Grant's House and Trading Post (32PB31) was the first outpost in the region to begin farming activities. The site was originally a fur trading post which was then developed into a lucrative hotel and farm. The site is located on the major road between Pembina and St. Joseph

TABLE 23

Prehistoric Site Components Which Have Potential and
No Potential for Historic Site Register Value

<u>Potentially Significant Sites, Need Further Work</u>		<u>Non-Significant Sites, No Further Work</u>
32CV2	32PB8	32PB30
32CV3	32PB9	USD-2
32CV4	32PB13	USD-10
32CV5	32PB17	USD-15
32CV6	32PB18	USD-17
32CV7	32PB19	USD-20
32CV9	32PB20	USD-21
32CV201	32PB21	USD-43
32CV203	32PB23	
32CV204	32PB24	
32CV205	32PB25	
32CV206	32PB26	
32CV208	32PB27	
32CV209	32PB28	
32CV210	32PB29	
32CV211	32PB31	
32CV212	32PB32	
32CV213	32PB33	
32CV214	32PB35	
32CV215	32PB36	
32CV216		
32CV217		
32CV218		
32CV219		

TABLE 24

Historic Site Components Which Have Potential and
No Potential for Historic Site Register Value

<u>Potentially Significant Sites, Need Further Work</u>		<u>Non-Significant Sites, No Further Work</u>	
32CV2	32PB19	32CV4	32PB20
32CV5	32PB22	32CV7	32PB25
32CV9	32PB23	32CV8	32PB26
32CV10	32PB27	32CV203	32PB34
32CV201	32PB32	32CV206	32PB38
32CV204	32PB33	32CV212	USD-3
32CV210	32PB35	32CV215	USD-9
32PB12	32PB37	32PB10	USD-11
32PB14		32PB11	USD-13
		32PB13	USD-14
		32PB15	USD-25
		32PB16	

Sites Recommended for Nomination to the National Register

32CV11
32CV12
32PB31

Sites Currently on National Register

32PB101

(Walhalla) and was used by travelers on their journeys between these two communities. The U.S. Army often camped near Grant's establishment when traveling between Fort Pembina and St. Joseph (Walhalla). Grant's establishment was founded in 1860 and burned in 1881. Melted glass collected from the site confirms the burning. This site, and its owner, Charles Grant, were important regional influences on the Euro-American settlement of the region. The authors believe the site should be considered for nomination to the North Dakota State Historic Sites Registry and National Register (see 32PB31 site description).

Site 32PB32, Hyde Park School, U.S. Army Campsite

Site 32PB32 is believed to be the location of the Hyde Park School and an occasional campsite of the U.S. Army troops stationed at Fort Pembina. The site is associated with Grant's House and Trading Post, site 32PB31, which is located just north of the road from this site. This area, in proximity to the present-day Hyde Park Cemetery, is important in the early history and Euro-American settlement of the region. A community named Hyde Park was located in this area. Interviews with local farmers yielded information pertaining to the finding of lead rifle bullets on the site, which suggests this is the campsite area used by U.S. Army troops who traveled between Fort Pembina and St. Joseph (Walhalla). The authors believe this site warrants consideration for nomination to the North Dakota State Historic Sites Registry (see 32PB32 site description and Hyde Park Community).

Site 32PB37, Delorme Family Murder

Site 32PB37 is the location of the murder of the Delorme family on July 5, 1874. The attack was originally attributed to the Sioux. Later investigations proved the raiders were Yanktonians who had failed in an attempt to break up a friendship between Sissetons and a Pembina band of Chippewa at Fort Totten. They killed three metis, the Delorme family, and attempted to put the blame on the Sissetons. This site has an important historical event associated with it. This was an important regional historic event which characterizes the early Euro-American settlement of the region. The authors believe the site should be given consideration for nomination to the North Dakota State Historic Sites Registry (see 32PB37 site description).

Site 32PB101, Gingras' House and Trading Post

The Gingras' House and Trading Post are on the National Register and North Dakota State Historic Sites Registry and are properties of the North Dakota State Historical Society. The buildings are the oldest standing Euro-American structures in North Dakota. The structures have recently been extensively renovated by the North Dakota State Historical Society.

Site 32CV2

Site 32CV2 contains a dilapidated log cabin which was originally constructed with wooden pegs rather than nails. Examination of the U.S. Government Land Office Survey records and maps indicate the cabin was present by at least 1864 to 1884. Records indicate a Mr. T.R. McLaughlin resided at the cabin. Although no additional records were found which contained information about the structure and its inhabitants, the authors believe the log structure, with its wooden peg construction, represents an important architectural style of the earliest Euro-American settlement of the region. The authors believe the site should be considered for nomination to the North Dakota Historic Sites Registry (see 32CV2 site description).

Site 32CV11, Mayo Brick Plant, Community and Fargo Bridge

The Mayo Brick Plant was founded in 1904 by Henry A. Mayo. The Mayo Brick Plant is unique in North Dakota brick production because it was the only plant in the state to utilize the Cretaceous shales for manufacturing brick and tile. The plant had financial problems and was abandoned in 1910.

The Fargo Bridge was built across the Pembina River in 1905. The bridge is a 100 foot span with a 20 foot roadway, and was one of the earliest steel bridges built in the region. The bridge was built to facilitate the transportation of brick from the adjacent Mayo Brick Plant. The Mayo Brick Plant was one of the most important commercial manufacturing plants in the area. Even though the plant only operated for about five years, it and the Fargo Bridge are important local landmarks and deserve consideration for nomination to the North Dakota Historic Sites Registry and National Register (see 32CV11 site description).

Site 32CV12, Fish Trap

The Fish Trap, site 32CV12, contains structural remains of a rock dam, a diversion canal to divert river water to power a grist mill, a road cut, and wooden pilings for a bridge across the Pembina River. The site is associated with a community which contained a store and hotel. It is believed that the Fish Trap was also used by Native Americans for the procurement of fish from the Pembina River. This site is an important local landmark and represents a unique subsistence adaptation to the local environment by both prehistoric and historic peoples. The authors believe the Fish Trap should be considered for nomination to the North Dakota Historic Sites Registry and National Register (see 32PB12 site description).

Justifications for Nominating Prehistoric Sites to a Register

Site 32PB8, Late Archaic, Woodland

Site 32PB8 contains Late Archaic and Woodland remains. The large quantity of bison remains and a high frequency of projectile points (landowner, personal communication), suggests the site may be a bison procurement station and butchering area. This site probably represents a specialized activity area, i.e., bison procurement and processing. The authors believe this site potentially contains significant scientific information pertaining to prehistoric subsistence and settlement of the region and should be considered potentially eligible for nomination to the North Dakota Historic Sites Registry and National Register (see 32PB8 site description).

Sites 32PB19, 32CV204, 32CV205, and 32CV217, Manitoba phase (Blackduck ceramic ware)

Sites 32PB19, 32CV204, 32CV205, and 32CV217 are treated as a group because they all represent potential Manitoba phase cultural remains, based upon the recovery of the diagnostic Blackduck ceramic ware. Blackduck pottery is most commonly found further east in Minnesota. The project area is on the western periphery of the distribution of Blackduck ware. The seemingly dense occupation of the area by peoples manufacturing Blackduck pottery provides an opportunity to study this prehistoric complex in a regional context, i.e., the lower Pembina River valley. The authors believe these four sites potentially contain significant scientific information concerning the Late Prehistoric occupation of the region and that these sites should be given consideration for nomination to the North Dakota Historic Sites Registry and National Register (see 32PB19, 32CV204, 32CV205, and 32CV217 site descriptions).

Site 32PB25, Paleo-Indian

Site 32PB25 was reported to the authors by Mr. Jay Wessels, a local artifact collector. Mr. Wessels has collected a Clovis fluted point from the site. This is the only confirmed potentially early Paleo-Indian site in the region. The early Paleo-Indian occupation of the region is virtually unknown because so few sites have been recorded. It is believed that site 32PB25 potentially contains significant scientific data which will help delineate the earliest human occupation of the area. The authors believe this site should be given consideration for nomination to the North Dakota Historic Sites Registry and National Register (see 32PB25 site description).

Summary

The Pembina River project domain contains a large number of prehistoric and historic sites. Some of the historic sites are

associated with structures, persons and events which were important to the Euro-American settlement of the region. It is recommended that six historic sites and six prehistoric sites be given consideration for nomination to either the National Register or the North Dakota State Historic Sites Registry. One site, the Gingras House and Trading Post, is on the North Dakota State Historic Sites Registry and National Register.

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Chapter 8

Impacts Upon Cultural Resources

Introduction

The Pembina River flood control project, located in Pembina and Cavalier Counties, northeastern North Dakota, has five structural alternatives which will adversely impact cultural resources:

Alternative 1: The Pembilier Dam and Reservoir will be located approximately two miles upstream from Walhalla. The reservoir will provide for flood control, water supply, and recreation. The permanent conservation pool will extend upstream approximately 16 kilometers (10 miles), at an elevation of 309 to 311 meters (1014 to 1019 feet) above mean sea level, and the flood pool will extend upstream approximately 33.6 kilometers (21 miles), at an elevation of 329 meters (1080 feet) above mean sea level.

Alternative 2: The Pembilier dry dam alternative will be located at the same physical site as Alternative 1. There will be no permanent conservation pool, and water will be stored only as needed to prevent or minimize downstream flooding during high flows. The flood pool elevation will be 329 meters (1080 feet) above mean sea level.

Alternative 3: The Pembilier Dam with marsh alternative will be at the same physical site as Alternative 1, but reduced in size to provide water depths suitable for development of a marsh. The flood pool elevation will be 329 meters (1080 feet) above mean sea level.

Alternative 4: The boundary floodway alternative, located 4.8 kilometers (3 miles) downstream from Walhalla, will consist of a small diversion dam, with flood flows diverted into a floodway. The floodway will proceed north to the International Boundary and then directly east for a distance of approximately 48 kilometers (30 miles) to the junction with the Red River of the North, just downstream from Pembina.

Alternative 5: This boundary floodway alternative will be located just upstream from Neche, and will consist of a small diversion dam, with flood flows diverted into a floodway. The floodway will proceed north from the diversion structure to the International Boundary and then directly east for a distance of approximately 35 kilometers (22 miles) to the junction with the Red River of the North just downstream from Pembina. This floodway will be used in conjunction with a reduced size Pembilier Dam. The permanent conservation pool elevation will probably be 309 to 311 meters (1014 to 1019 feet), and the flood pool elevation will probably be 326 meters (1070 feet) above mean sea level.

Discussion of Site Impacts

In the following discussions and tables, sites considered potentially significant are all recommended for further work in the form of minimum test excavations to determine the presence or absence of subsurface cultural remains.

Alternative 1 (Table 25) Permanently Inundated Sites

Three prehistoric and one historic site, as well as two bridges (not assigned numbers), will be partially or completely inundated by the conservtion pool of the Pembilier Dam. One prehistoric site, 32CV205, has been tentatively assigned to a Late Prehistoric occupation on the basis of one corner notched projectile point recovered in 1981 and two corner notched projectile points observed on the site in 1975 (Ames 1975). Examination of artifacts collected from the site by Mr. Carl Kartes, a local collector, confirms a Late Prehistoric occupation. The historic site, 32CV11, is known locally as the Mayo Brick Plant and Fargo Bridge, which was in commercial operation from 1905 to 1910.

The three prehistoric sites are all considered potentially eligible for nomination to the National Register. The Mayo Brick Plant and Fargo Bridge is believed to be eligible for nomination to the National Register. The two bridges should be photographed for permanent records and the Fargo Bridge, nearest the Mayo Brick Plant, should be drawn in detail for permanent records because it represents one of the earliest steel bridges in the region. If test excavations at any of the above sites indicate substantial amounts of buried remains, then larger scale excavations would be warranted to retrieve as much information from the sites as possible prior to their permanent inundation and eventual destruction.

Periodically Inundated Sites

A total of 19 sites will be periodically inundated by floodwaters of the Pembilier Reservoir. These sites will only be inundated during times of floods during which floodwaters will be impounded by the Pembilier Reservoir. Many of the 19 sites are multicomponent, containing both prehistoric and historic remains. There are 16 prehistoric and 11 historic components present at the 19 sites. It is recommended, based upon surface inspection of the sites, that 16 prehistoric components and 6 historic components are potentially eligible for nomination to the National Register.

Sites 32CV204, 32CV205 and 32CV217 are the only prehistoric components which have been assigned temporal placement. Site 32CV205 has been assigned a Late Prehistoric occupation on the basis of recovered and observed corner notched projectile points (Ames 1975). Sites 32CV204 and 32CV217 have been assigned to a Manitoba phase

TABLE 25

Project Alternative 1 and Site Impacts

Permanent Inundation		Periodic Inundation		Probable Erosion		Probable Indirect Impacts	
32CV8	Ph	32CV8	Ph	32CV11	H*	32CV2	PH
32CV11	H*	32CV10	H	32CV201	PH	32CV3	P
32CV205	P	32CV11	H*	32CV203	Ph	32CV4	Ph
32CV219	P	32CV12	H*	32CV204	PH	32CV5	PH
		32CV201	PH	32CV206	Ph	32CV6	P
		32CV203	Ph	32CV212	Ph	32CV7	Ph
		32CV204	PH	32CV213	P	32CV9	PH
		32CV205	P	32CV215	Ph		
		32CV206	Ph	32CV217	P		
		32CV208	P				
		32CV209	P				
		32CV210	PH				
		32CV211	P				
		32CV212	Ph				
		32CV214	P				
		32CV215	Ph				
		32CV216	P				
		32CV217	P				
		32CV218	P				

- P = potentially significant prehistoric component
 p = non-significant prehistoric component
 H = potentially significant historic component
 h = non-significant historic component
 * = sites determined eligible for National Register

occupation on the basis of Blackduck pottery and projectile points recovered by Mr. Carl Kartes, a local collector.

The 6 historic components which should be further investigated include site 32CV11, the Mayo Brick Plant and Fargo Bridge which was in commercial operation from 1905 to 1910, and site 32CV12, the Fish Trap. This site contains the discernible remains of a rock dam, a diversion canal for powering a grist mill, the wooden pilings for a bridge across the Pembina River, and remnants of a road. Both sites are believed to be eligible for nomination to the National Register.

Sites Subject to Erosion

Nine sites, containing 8 prehistoric and 7 historic components, will be subjected to shoreline erosion of the Pembilier Reservoir. It is recommended that the 8 prehistoric and 3 historic components are potentially eligible for nomination to the National Register. Sites 32CV204 and 32CV217 contain Manitoba phase components. Site 32CV11, the Mayo Brick Plant, is believed to be eligible for nomination to the National Register.

Sites Subject to Indirect Impacts

Seven sites, containing seven prehistoric and five historic components, may be subjected to indirect impacts from construction of the Pembilier Dam. Site 32CV2 is a multicomponent site situated on the north end of the proposed Pembilier Dam. This site, which contains a substantial prehistoric component and a extant log cabin, will most likely be adversely impacted by the movement and storage of large machinery during construction of the dam. Site 32CV3, a prehistoric component, also close to the north axis of the proposed Pembilier Dam, may also be adversely affected by construction activities.

Sites 32CV4, 32CV5, 32CV6, 32CV7 and 32CV9 are all situated on prominent bluff and ridge tops with prominent views of the Pembina River valley. These areas, unless protected by the U.S. Army Corps of Engineers, are likely to become prime development properties and will, therefore, likely be destroyed as a result of construction of the Pembilier Dam.

Site 32CV7 contains a very large quantity of prehistoric artifacts, and is likely to yield significant information pertaining to the prehistory of the area. It is recommended that all seven sites are potentially eligible for nomination to the National Register.

Cost Estimates

The minimum cost of minimally testing the 28 sites containing prehistoric and historic components is estimated to be, in 1982 dollars, approximately \$25,000 to \$30,000. If it is determined that additional

excavations are warranted for selected sites, then mitigation costs will be substantially greater.

Alternative 2 (Table 26)
Permanently Inundated Sites

The Pembilier dry dam alternative will not permanently inundate any sites containing cultural resources.

Periodically Inundated Sites

A total of 20 sites will be periodically inundated by floodwaters of the Pembilier dry dam alternative. These sites will only be inundated during times of floods during which floodwaters will be impounded by the Pembilier Dam. The 20 sites contain 17 prehistoric and 11 historic components. It is recommended, based upon surface inspection of the sites, that 17 prehistoric components and 6 historic components are potentially eligible or eligible for nomination to the National Register.

Sites 32CV204, 32CV205 and 32CV217 are the only prehistoric components which have been assigned temporal placement. Site 32CV205 contains a Late Prehistoric occupation on the basis of recovered and observed corner notched projectile points (Ames 1975). Sites 32CV204 and 32CV217 contain Manitoba phase occupations on the basis of Blackduck pottery ware and projectile points recovered in 1981 and by Mr. Carl Kartes, a local collector.

The historic components include site 32CV11, the Mayo Brick Plant, and site 32CV12, the Fish Trap. Both sites are believed to be eligible for nomination to the National Register.

Sites Subject to Erosion

Three sites, containing three prehistoric and 2 historic components, will be subject to shoreline erosion during flood pool stage of the Pembilier Dam. It is recommended that the three prehistoric components are potentially eligible for nomination to the National Register.

Sites Subject to Indirect Impacts

Two sites, 32CV2 and 32CV3, containing two prehistoric and one historic component, are located near the north axis of the proposed Pembilier Dam. The three components are potentially eligible for nomination to the National Register. Site 32CV2 contains an extant log cabin which should be further investigated. These two sites are likely to be adversely impacted by the movement and storage of heavy earthmoving equipment during construction of the Pembilier Dam.

TABLE 26

Project Alternative 2 and Site Impacts

Permanent Inundation	Periodic Inundation	Probable Erosion	Probable Indirect Impacts
	32CV8 Ph	32CV212 Ph	32CV2 PH
	32CV10 H	32CV213 P	32CV3 .P
	32CV11 H*	32CV215 Ph	
	32CV12 H*		
	32CV201 PH		
	32CV203 Ph		
	32CV204 PH		
	32CV205 P		
	32CV206 Ph		
	32CV208 P		
	32CV209 P		
	32CV210 PH		
	32CV211 P		
	32CV212 Ph		
	32CV214 P		
	32CV215 Ph		
	32CV216 P		
	32CV217 P		
	32CV218 P		
	32CV219 P		

- P = potentially significant prehistoric component
- p = non-significant prehistoric component
- H = potentially significant historic component
- h = non-significant historic component
- * = sites determined eligible for National Register

Cost Estimates

The minimum cost of testing the 23 sites containing prehistoric and historic resources is estimated to be, in 1982 dollars, approximately \$20,000 to \$25,000. If it is determined that additional excavations are warranted for selected sites, then mitigation costs will be substantially greater.

Alternative 3 (Table 27) Permanently Inundated Sites

Two sites, containing two prehistoric components and one historic component, will be partially or completely inundated by the marsh alternative of the Pembilier Dam. This is based upon a water elevation of 305 meters (1000 feet) above mean sea level to maintain a marsh environment. It is recommended, on the basis of surface inspection of the sites, that the two prehistoric components are potentially eligible for nomination to the National Register.

Periodically Inundated Sites

A total of 20 sites, containing 17 prehistoric and 11 historic components will be periodically inundated by the Pembilier Dam. These sites will only be inundated during times of high flow during which floodwaters will be impounded by the Pembilier Dam. It is recommended, based upon surface inspection of the sites, that 17 prehistoric and 6 historic components are potentially eligible or eligible for nomination to the National Register.

Sites 32CV204, 32CV205 and 32CV217 are the only prehistoric components which have been assigned temporal placement. Site 32CV205 has been assigned a Late Prehistoric occupation on the basis of recovered and observed corner notched projectile points (Ames 1975). Sites 32CV204 and 32CV217 have been assigned Manitoba phase occupations on the basis of Blackduck pottery ware and projectile points recovered by Mr. Carl Kartes, a local collector.

The historic components include site 32CV11, the Mayo Brick Plant, and site 32CV12, the Fish Trap. Both sites are believed to be eligible for nomination to the National Register.

Sites Subject to Erosion

Ten sites, containing 9 prehistoric and 7 historic components, will be subjected to shoreline erosion. It is recommended that 9 prehistoric and 2 historic components are potentially eligible or eligible for nomination to the National Register. Sites 32CV204 and 32CV217 contain Manitoba phase components and site 32CV205 contains a Late Prehistoric component. Site 32CV11, the Mayo Brick Plant, will also be affected by erosion. The maintenance of a marsh will cause erosion to occur at sites 32CV11, 32CV8, 32CV203, 32CV204, 32CV205 and 32CV206. The

TABLE 27

Project Alternative 3 and Site Impacts

Permanent Inundation		Periodic Inundation		Probable Erosion		Probable Indirect Impacts	
32CV8	Ph	32CV8	Ph	32CV8	Ph	32CV2	PH
32CV219	P	32CV10	H	32CV11	H*	32CV3	P
		32CV11	H*	32CV203	Ph		
		32CV12	H*	32CV204	PH		
		32CV201	PH	32CV205	P		
		32CV203	Ph	32CV206	Ph		
		32CV204	PH	32CV212	Ph		
		32CV205	P	32CV213	P		
		32CV206	Ph	32CV215	Ph		
		32CV208	P	32CV217	P		
		32CV209	P				
		32CV210	PH				
		32CV211	P				
		32CV212	Ph				
		32CV214	P				
		32CV215	Ph				
		32CV216	P				
		32CV217	P				
		32CV218	P				
		32CV219	P				

- P = potentially significant prehistoric component
 p = non-significant prehistoric component
 H = Potentially significant historic component
 h = non-significant historic component
 * = sites determined eligible for National Register

floodpool, during impoundment of floodwaters, will cause erosion to occur at sites 32CV212, 32CV213, 32CV215, and 32CV217.

Sites Subject to Indirect Impacts

Two sites, 32CV2 and 32CV3, containing two prehistoric and one historic component, may be subjected to indirect impacts from the construction of the Pembilier Dam. Both sites occur near the north axis of the proposed dam. Site 32CV2 is a multicomponent site situated on the north end of the proposed dam. This site contains a substantial prehistoric component and an extant log cabin. This will probably be destroyed during construction of the dam by the storage and moving of large earthmoving equipment. Site 32CV3, a prehistoric component, may also be adversely impacted by construction activities at the dam site.

Cost Estimates

The minimum cost of testing 23 sites containing prehistoric and historic resources is estimated to be, in 1982 dollars, approximately \$20,000 to \$25,000. If it is determined that additional excavations are warranted for selected sites, then mitigation costs will be substantially greater.

Alternative 4 (Table 28)

Sites Destroyed During Construction

Five sites and four find spots, containing 4 prehistoric and 5 historic components will be destroyed by construction of the boundary floodway channel. Site 32PB8 contains two prehistoric and one historic component. The prehistoric components, based upon recovered projectile points, are Late Archaic and Woodland occupations. The historic component appears to be recent, less than 50 years old. It is recommended that three sites, 32PB8, 32PB9 and 32PB12, are potentially eligible for nomination to the National Register.

Permanently Inundated Sites

No known sites will be permanently inundated by Alternative 4.

Periodically Inundated Sites

One site and three find spots containing four prehistoric components will be periodically inundated by the diversion structure during periods of impounding floodwaters. It is recommended that one site, 32PB17, is potentially eligible for nomination to the National Register.

TABLE 28

Project Alternative 4 and Site Impacts

Destroyed Construction	Permanent Inundation	Periodic Inundation	Probable Erosion	Probable Indirect Impacts	
32PB8	P	32PB17	P	32PB15	h
32PB9	P	USD-17	p	32PB25	Ph
32PB10	h	USD-20	p	32PB26	Ph
32PB11	h	USD-21	p	32PB34	h
32PB12	H				
USD-2	p				
USD-3	h				
USD-14	h				
USD-15	p				

- P = potentially significant historic component
- p = non-significant prehistoric component
- H = potentially significant historic component
- h = non-significant historic component
- * = sites eligible for National Register

Sites Subject to Erosion

Four sites, containing 2 prehistoric and 4 historic components, will be subjected to shoreline erosion when floodwaters are impounded behind the diversion dam.

Site 32PB25 contains a prehistoric component which is believed to be early Paleo-Indian. Mr. Jay Wessels of Walhalla, a local collector, recovered a small Clovis projectile point from the site. The site appears to contain a buried Paleo-Indian component. This is the only recorded Paleo-Indian site in the area and, therefore, warrants further field investigation.

Cost Estimates

The minimum cost of testing 6 sites containing prehistoric and historic remains is estimated to be, in 1982 dollars, approximately \$10,000. If it is determined that additional excavations are warranted for selected sites, then mitigation costs will be substantially greater.

Alternative 5 (Table 29)

Sites Destroyed During Construction

Seven sites and two findspots, containing 5 prehistoric, and 6 historic components, will be destroyed during construction of the boundary floodway. Two sites have been assigned temporal placement. Site 32PB8 contains Late Archaic, Woodland and historic components. The Late Archaic and Woodland components are based upon the style of projectile points recovered from the surface of the site.

Site 32PB31 is a historic site, known locally as Grant's House and Trading Post. Grant's House and Trading Post was built in 1860 and burned in 1881. This site is believed to be eligible for nomination to the National Register. It is recommended, on the basis of field inspection of the sites, that four sites, 32PB8, 32PB9, 32PB12, and 32PB32, are potentially eligible for nomination to the National Register.

Permanently Inundated Sites

Four sites will be permanently inundated if Alternative 5 is constructed. The four sites are located along the Pembina River within the proposed Pembilier Reservoir. Two sites, 32CV11 and 32CV205, have been assigned temporal placement. Site 32CV205 has a Late Prehistoric component based upon observed and collected corner notched projectile points (Ames 1975). Site 32CV11, the Mayo Brick Plant, is believed to be eligible for the National Register. It is recommended, based upon field inspection of the sites, that three sites, 32CV8, 32CV205 and 32CV219, are potentially eligible for nomination to the National Register.

TABLE 29

Project Alternative 5 and Site Impacts

Destroyed Construction		Permanent Inundation		Periodic Inundation		Probable Erosion		Probable Indirect Impacts	
32PB8	P	32CV8	Ph	32PB13	Ph	32CV11	H*	32CV2	PH
32PB9	P	32CV11	H*	32PB14	H	32CV201	PH	32CV3	P
32PB10	h	32CV205	P	32CV8	Ph	32CV203	PH	32CV4	Ph
32PB11	h	32CV219	P	32CV10	H	32CV204	PH	32CV5	PH
32PB12	H			32CV11	H*	32CV206	PH	32CV6	P
32PB31	PH*			32CV12	H*	32CV212	Ph	32CV7	Ph
32PB32	PH			32CV201	PH	32CV213	P	32CV9	PH
USD-2	p			32CV203	PH	32CV215	Ph		
USD-3	h			32CV204	PH	32CV217	P		
				32CV205	P				
				32CV206	PH				
				32CV208	P				
				32CV209	P				
				32CV210	PH				
				32CV211	P				
				32CV212	Ph				
				32CV214	P				
				32CV215	Ph				
				32CV216	P				
				32CV217	P				
				32CV218	P				
				USD-9	h				
				USD-10	p				
				USD-11	h				
				USD-13	h				

P = potentially significant prehistoric component

p = non-significant prehistoric component

H = potentially significant historic component

h = non-significant historic component

* = sites eligible for National Register

Periodically Inundated Sites

Twenty-one sites and four find spots, containing 17 prehistoric and 15 historic components, will be periodically inundated when floodwaters are impounded by the Pembilier Dam. Six sites have been assigned temporal placement. Sites 32CV204 and 32CV217 contain Manitoba phase components and site 32CV205 contains a Late Prehistoric component, based upon Blackduck ceramics and projectile points recovered from the sites.

Historic sites include site 32CV11, the Mayo Brick Plant, and site 32CV12, the Fish Trap. Both sites are believed to be eligible for the National Register. It is recommended, based upon surface inspection of the sites, that 17 prehistoric and 7 historic components are potentially eligible for nomination to the National Register.

Sites Subject to Erosion

Nine sites, containing 8 prehistoric and 7 historic components, will be subjected to shoreline erosion by the boundary floodway. Three sites have been assigned temporal placement, 32CV11, 32CV204 and 32CV217. Sites 32CV204 and 32CV217 contain prehistoric Manitoba phase occupations, based upon Blackduck ceramics and projectile points recovered and observed on the site (Ames 1975). Site 32CV11, the Mayo Brick Plant, is believed to be eligible for the National Register. It is recommended, on the basis of field inspection of the sites, that 8 prehistoric and 4 historic components are potentially eligible for nomination to the National Register.

Sites Subject to Indirect Impacts

Seven sites, representing 7 prehistoric and 5 historic components, are likely to be adversely affected by construction of the Pembilier Dam. Sites 32CV2 and 32CV3 are located near the north axis of the proposed Pembilier Dam. These two sites are likely to be destroyed by the storage and movement of earthmoving equipment during construction of the dam. The other sites are situated on high ridges and bluff tops with prominent views of the Pembina River valley. These sites may become prime development properties if Alternative 5 is constructed. If so, then they will eventually be destroyed as a result of construction of the Pembilier Dam. It is recommended, on the basis of field inspection of the sites, that all seven sites are potentially eligible for nomination to the National Register.

Cost Estimates

The minimum cost of testing the 37 sites containing prehistoric and historic resources is estimated to be, in 1982 dollars, approximately \$40,000 to \$50,000. If it is determined that additional excavations are warranted for selected sites, then mitigation costs will be substantially greater.

Impacts and Recommendations

Introduction

The five structural alternatives for the Pembina River flood control project, northeastern North Dakota, will have direct impacts upon prehistoric and historic sites within the area. The goal of cultural resource management is to preserve as much cultural-historical information within the limits of specific projects. In the case of the Pembina River project, five structural alternatives are available, each with a different level and degree of impact upon the local cultural resources. The following is an assessment of the five structural alternatives upon the cultural resources in the region. The alternatives are discussed in order of their least impact upon cultural resources. Recommendations are made to mitigate impacts upon the cultural resources (Table 30). Since most of the sites are potentially eligible for nomination to the National Register, this phase of mitigation consists only of minimal test excavations in order to determine site significance.

Alternative 4

Construction Alternative 4, the small diversion dam and boundary floodway channel east of Walhalla, has the least impact upon known cultural resources. A total of 17 known sites and find spots will be affected, of which 6 are recommended for further field investigation. Prior to construction, an additional 35 kilometers (22 miles) of the boundary floodway channel and 256 hectares (640 acres) of impoundment lands should be surveyed for the presence of prehistoric and historic sites.

This Alternative will impact the only known Paleo-Indian site for the area, site 32PB25. This site should be intensively investigated prior to construction of Alternative 4.

Alternative 2

Construction of Alternative 2, the Pembilier dry dam, would be the second least destructive Alternative to known cultural resources. A total of 23 sites and find spots will be effected, of which 23 are recommended for further field investigation. No sites will be permanently inundated and the absence of a permanent shoreline (conservation pool) will help reduce extensive erosion of sites periodically inundated by floodwaters.

TABLE 30

Summary of Alternatives and Site Impacts

Construction Alternative	1	2	3	4	5	
Destroyed in construction	test	-	-	-	3	5
	no work	-	-	-	6	4
permanent inundation	test	4	-	2	-	4
	no work	-	-	-	-	-
periodic inundation	test	19	20	20	1	21
	no work	-	-	-	3	4
subject to erosion	test	9	3	10	2	9
	no work	-	-	-	2	-
indirect impacts	test	7	2	2	-	7
	no work	-	-	-	-	-
total number of sites to test	28	23	23	6	37	
total number of sites affected	28	23	23	17	45	
Area needing additional surveying, approximately in acres	2560	2560	2560	2240	4060	
Cost on Known Sites to test for significance in thousands of dollars	25 to 30	20 to 25	20 to 25	10	40 to 50	

Alternative 3

Construction Alternative 3, the Pembilier Dam and marsh, is third least destructive of known cultural resources. A total of 23 sites will be periodically inundated by the Pembilier Dam. No sites will be permanently inundated. It is recommended that 20 prehistoric and 6 historic components should be further investigated to determine the presence or absence of subsurface cultural remains.

Alternative 1

Construction Alternative 1, the Pembilier Dam and Reservoir, is the second most destructive of known cultural resources. A total of 28 sites will be adversely impacted by this construction alternative. Four sites will be permanently inundated and 19 sites will be periodically inundated by flood waters. It is recommended that the 28 sites should be further investigated to determine the presence or absence of subsurface cultural remains.

Alternative 5

Construction Alternative 5, the Pembilier Dam and Reservoir in conjunction with a diversion dam and boundary floodway channel near Neche, will adversely impact 45 known sites and find spots. This is the most destructive Alternative. There are 37 recorded sites which should be further investigated to determine the presence or absence of significant subsurface cultural remains.

Summary

The construction alternatives described above are the minimum impacts upon known cultural resources within each construction alternative area. Table 30 summarizes the impacts. It is emphasized that additional lands need to be systematically surveyed for the presence or absence of additional cultural resources. The total impacts upon all cultural resources within each construction alternative is unknown, since not all lands have been systematically surveyed. Estimates of additional cultural resources can be provided based upon the distribution and density of known resources. The degree to which each Alternative impacts cultural resources remains the same as described above. Therefore, it has been determined that construction Alternative 4 is most desirable while Alternatives 2, 3, 1 and 5 are least desirable, according to their sequential order of impact. Construction Alternative 5 will have the greatest impact upon cultural resources. It is hoped, for the preservation of local landmarks and both historic and prehistoric sites which cannot ever be replaced, that due consideration be given to eliminating Alternatives 3, 1 and 5 from the construction alternatives.



CHAPTER 10

Summary and Conclusions

Cultural resource investigations within the vicinity of the Pembina River flood control project in Cavalier and Pembina Counties, northeastern North Dakota, has yielded a substantial number of prehistoric and historic sites. There have currently been 60 sites and 13 find spots recorded in the project region. The sites and find spots represent 53 prehistoric and 44 historic components spanning the past 10,000 to 12,000 years of human occupation in the region.

The earliest evidence of human occupation in the area is from site 32PB25, which has a possible prehistoric Clovis occupation. There is a substantial gap in the human occupation of the region from the possible Clovis occupation at site 32PB25 to the Late Archaic occupations at sites 32CV204 and 32PB8. This large temporal gap is probably due to bias in site survey methods in conjunction with the probability that these early sites are either deeply buried in alluvium, colluvium and/or have been destroyed by past environmental agents such as stream erosion. The project area has undergone major climatic changes during the past 12,000 years which undoubtedly has contributed to the lack of preservation of past human occupations. The small amount of data available about human occupation in the region from Paleo-Indian through the Plains Archaic makes inferences about past lifeways only tenuous at best. The three known sites which contain remains of human occupation during these times are rare and they deserve special attention for their preservation.

There is a general gap in remains of human occupation of the region from the Late Archaic to the Late Woodland. This phenomena is also probably related to insufficient survey techniques and site preservation. There appears to be frequent use of the region by Late Woodland and later peoples. Several sites have yielded Blackduck ceramics indicative of the Manitoba phase (800 A.D. to 1400 A.D.). The region was probably used for exploiting abundant game and vegetal resources. The project region is in the northwestern periphery of the known distribution of sites with occupations that can be assigned to the Manitoba phase. This makes the known sites of this cultural complex within the Pembina River valley particularly interesting, especially in terms of interaction between different social groups inhabiting fringe areas in relation to their cultural core areas.

There are several known early Euro-American site occupations which date to the mid-19th century. The variety of site types, or functions, varies from habitations to trading posts, a fish trap, and grist mills. These historic Euro-American sites may potentially yield significant information about Euro-American adaptations to a new environment.

Part of this adaptation which confronted Euro-Americans was placement of their permanent houses and businesses. The earliest settlers were from the eastern woodlands, therefore when they originally arrived in the Pembina River valley, they appear to have first settled

along low terraces of the Pembina River and its tributaries. Not being familiar with their new environment, periodic floods probably destroyed their dwellings. Consequently, they eventually moved their residences to higher ground, protected from periodic flooding of the rivers and streams.

The proposed flood control project for the lower Pembina River is undoubtedly a response to the problems encountered by the earliest Euro-American settlers and which are continuing to this day, with the expansion of farmland into all lands capable of being cultivated.

The proposed project will have adverse impacts upon the cultural resources which represent human occupation in the region for the past 10,000 to 12,000 years. It is for this reason that this investigation was conducted, in order to help assess the probable adverse impacts upon the cultural resources within the lower Pembina River valley. Of the 53 known prehistoric components in Pembina and Cavalier Counties, 45 are considered to potentially contain significant information concerning prehistoric human occupation of the region. Of the 44 known historic components, one is currently on the National Register (32PB101) and 20 may potentially contain significant information which may help elucidate the early Euro-American settlement of the region. In conclusion, the lower Pembina River valley has been occupied and used, probably continuously, by different cultures for the past 10,000 to 12,000 years. It is the desire and goal of the U.S. Army Corps of Engineers to help protect this cultural heritage and to minimize any adverse impacts upon these cultural resources through avoidance, preservation, and/or mitigation of impacts by excavation.

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1905d 9(40):8. November 1.
1905e 9(42):5. December 1.
1905f 9(43):8. December 19.
1906a 9(46):5. January 19.
1906b March 6.
1906c 10(26):1. August 17.
1906d 10(39):5. November 13.
1907a January 29.
1907b 11(17):5. June 25.
1908a 12(12):5. May 22.
1908b 12(39):5. November 20.
1909a 12(47):1. January 15.
1909b 13(18):5. June 25.
1909c 13(26):1. August 20.
1909d 13(27):5. August 27.
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n.d. John Lee. Ms. on file: North Dakota State Historical Society Library, North Dakota Heritage Center, Bismarck.

WPA (Works Projects Administration) (cont.)

- n.d. Mrs. Timothy O'Connor. Ms. on file: North Dakota State Historical Society Library, North Dakota Heritage Center, Bismarck.
- n.d. Dave Thompson. Ms. on file: North Dakota State Historical Society Library, North Dakota Heritage Center, Bismarck.
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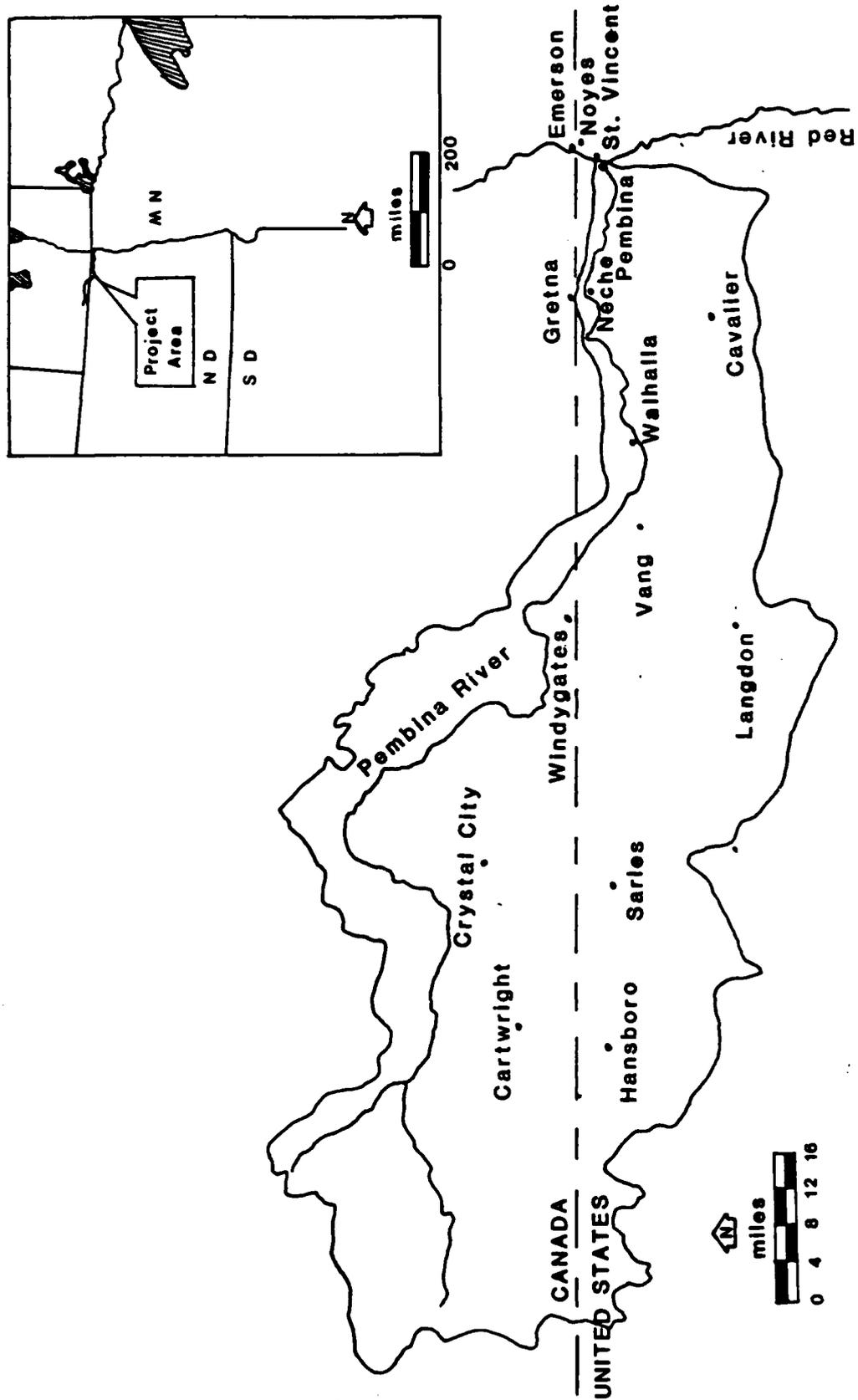
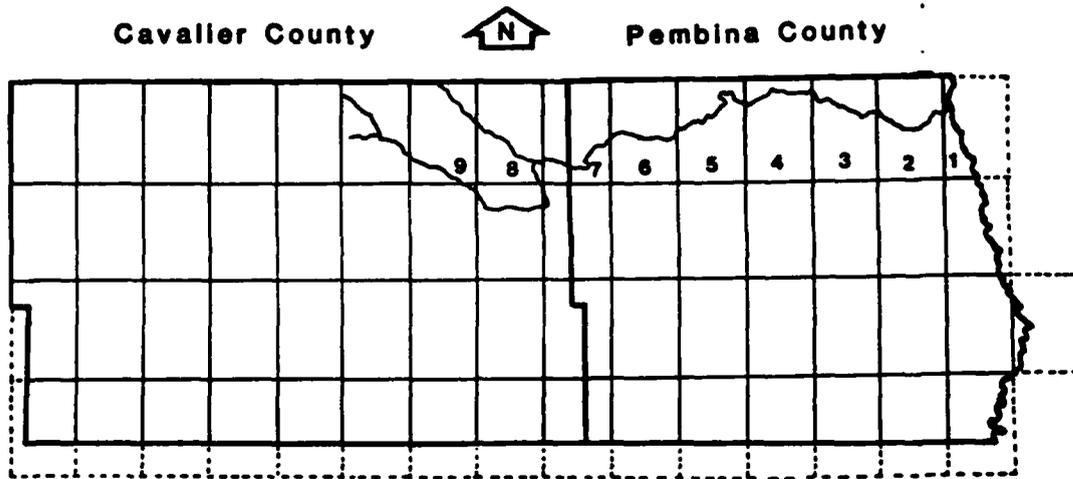


Figure 1 Map of the Pembina River and project area.



1 Pembina

6 Leroy

2 Bathgate NE

7 Walhalla

3 Bathgate

8 Vang

4 Neche

9 Olga NW

5 Cavalier NW

Figure 2 Map key for 7½" U.S.G.S. quadrangle maps in the project area.

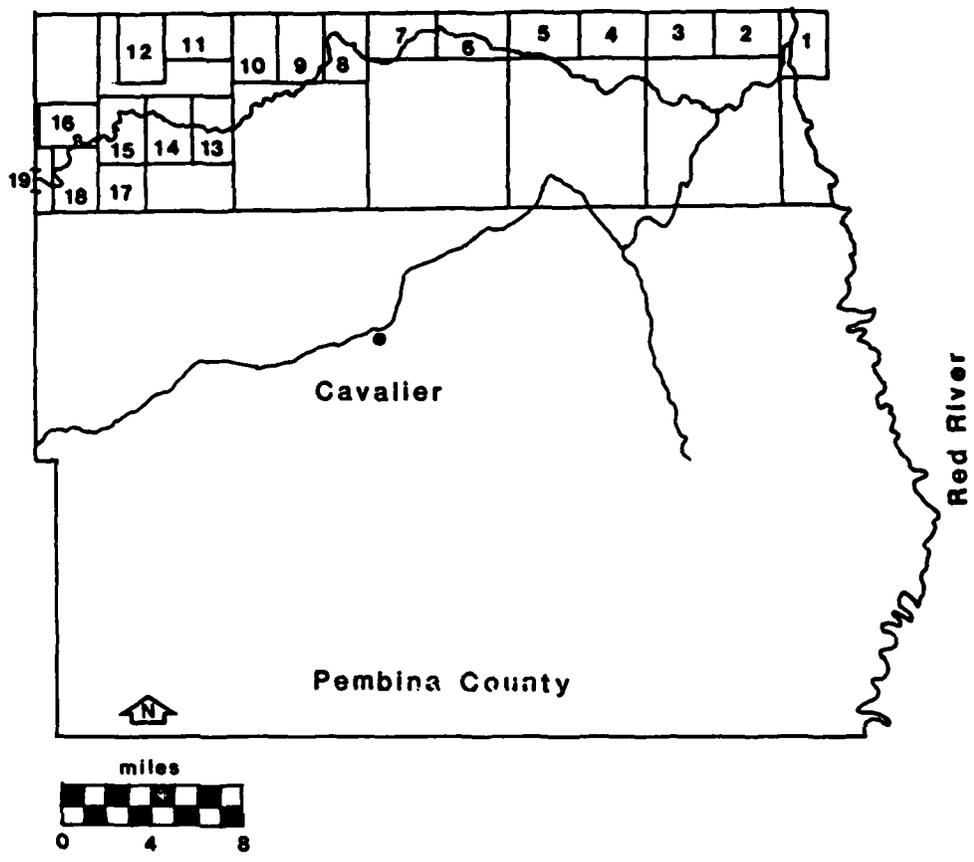


Figure 3 Map key for site topographic maps in Pembina County.

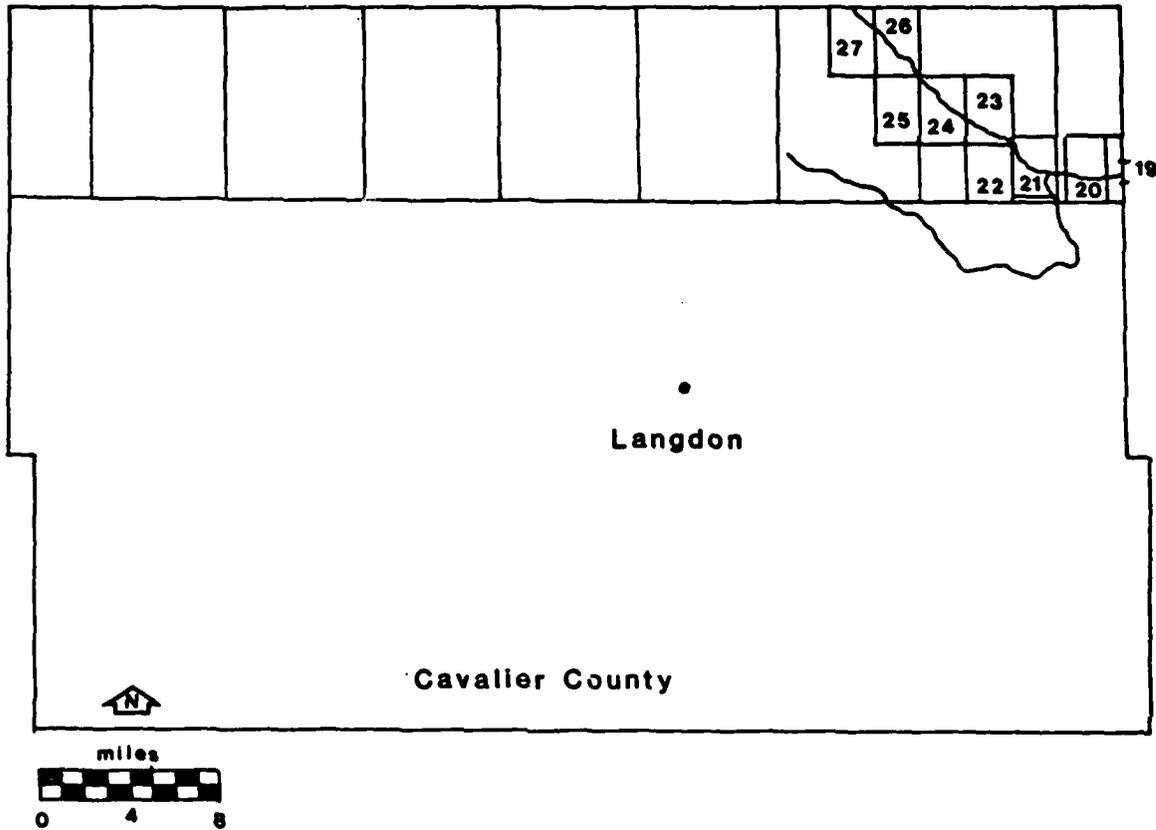


Figure 4 Map key for site topographic maps in Cavalier County.

MAP 1

Pembina Quad

R51W

32PB12

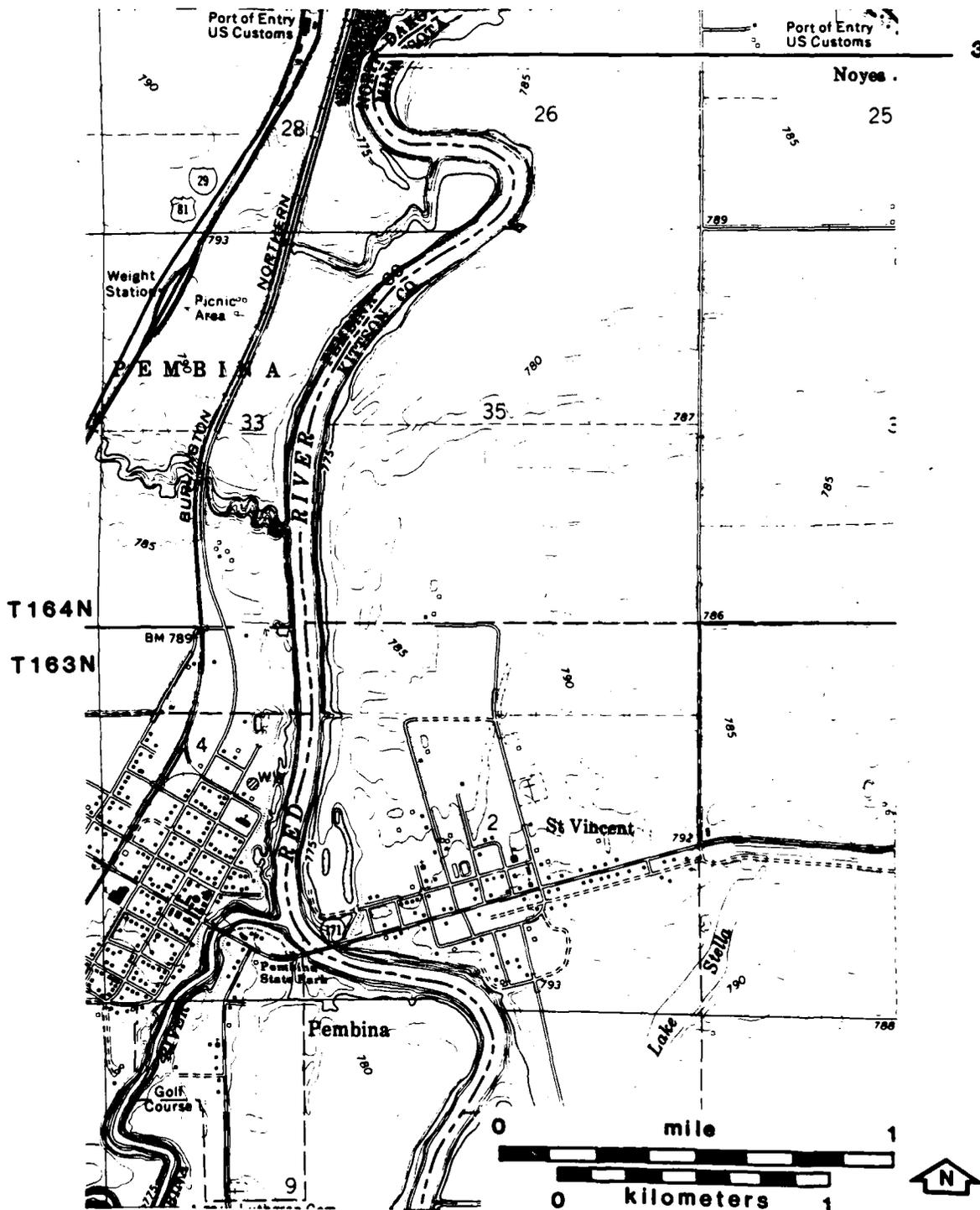


Figure 5 Topographic map for site 32PB12.

Bathgate NE Quad
R52W
NORTH DAKOTA

MAP 3

32PB11

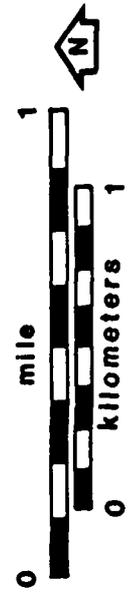
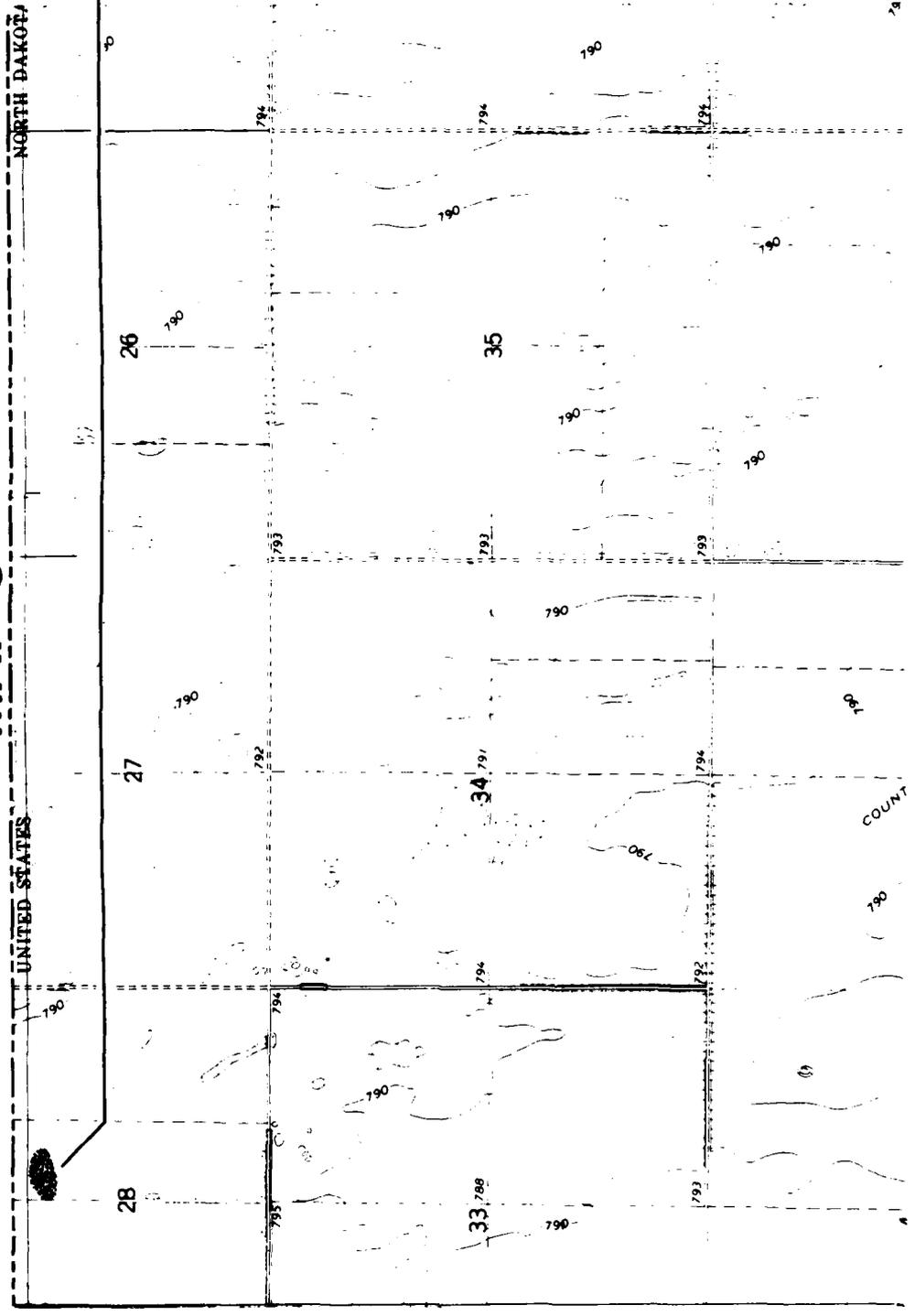


Figure 7 Topographic map for site 32PB11.

Bathgate Quad

MAP 4

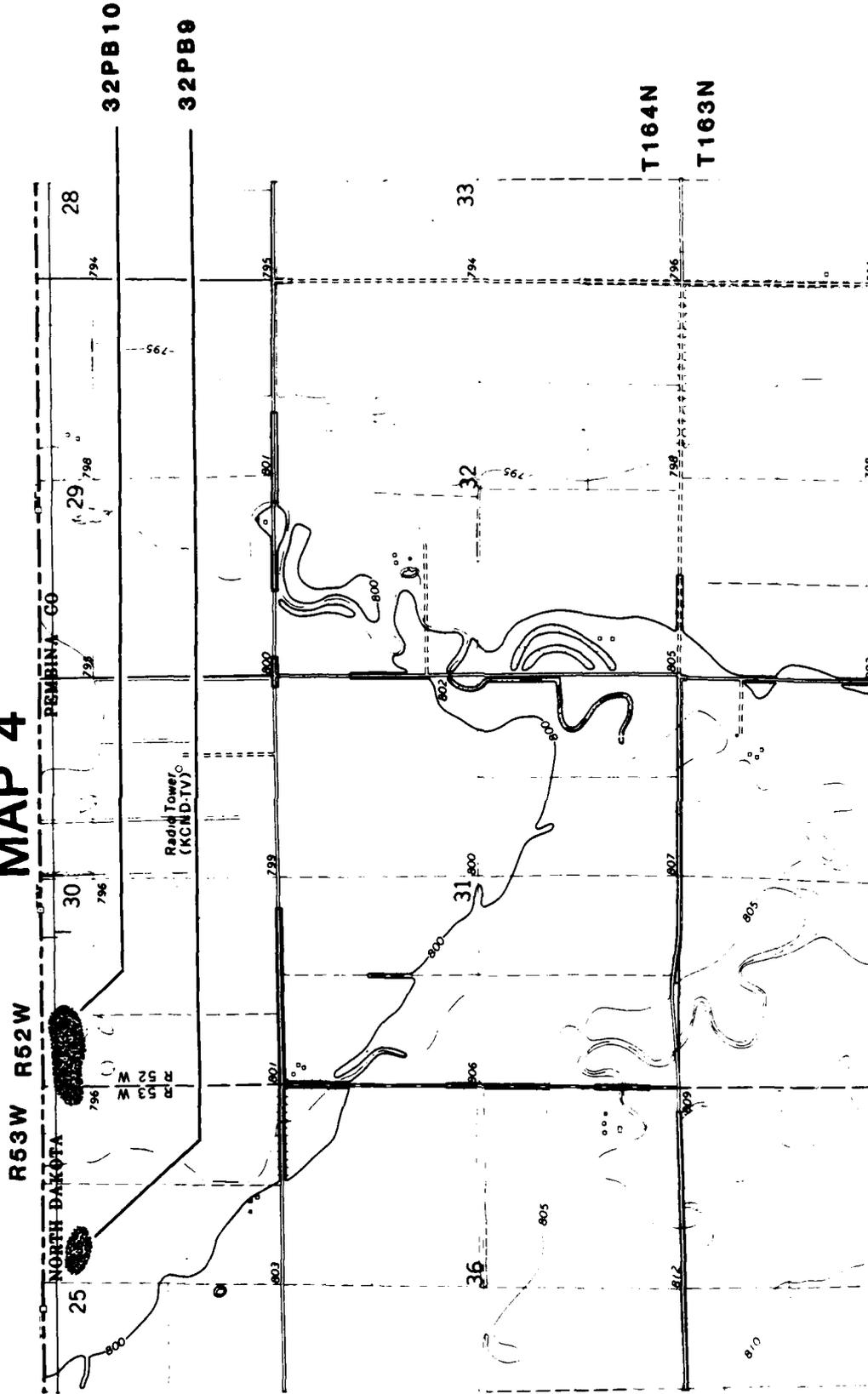


Figure 8 Topographic map for sites 32PB9 and 32PB10.

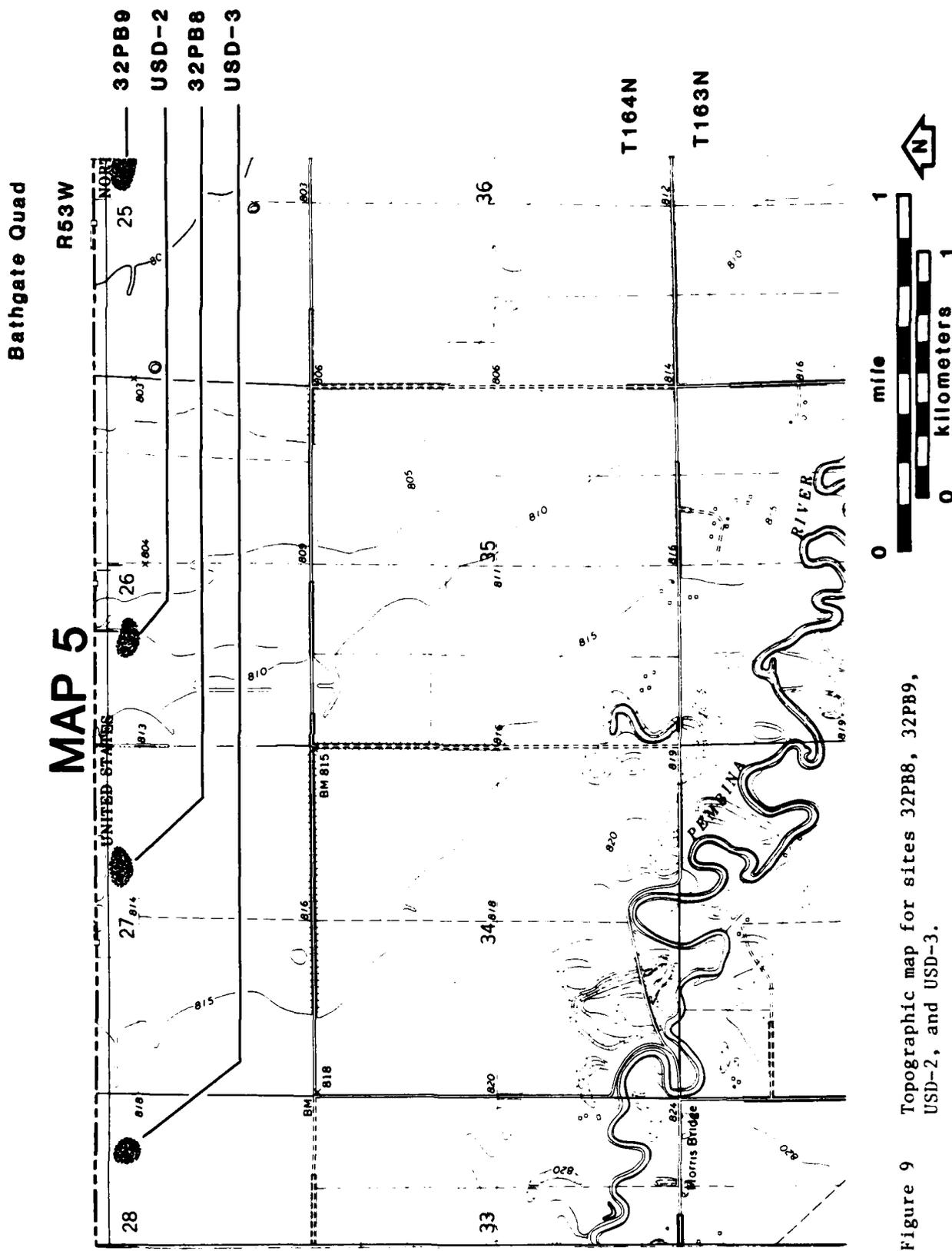


Figure 9 Topographic map for sites 32PB8, 32PB9, USD-2, and USD-3.

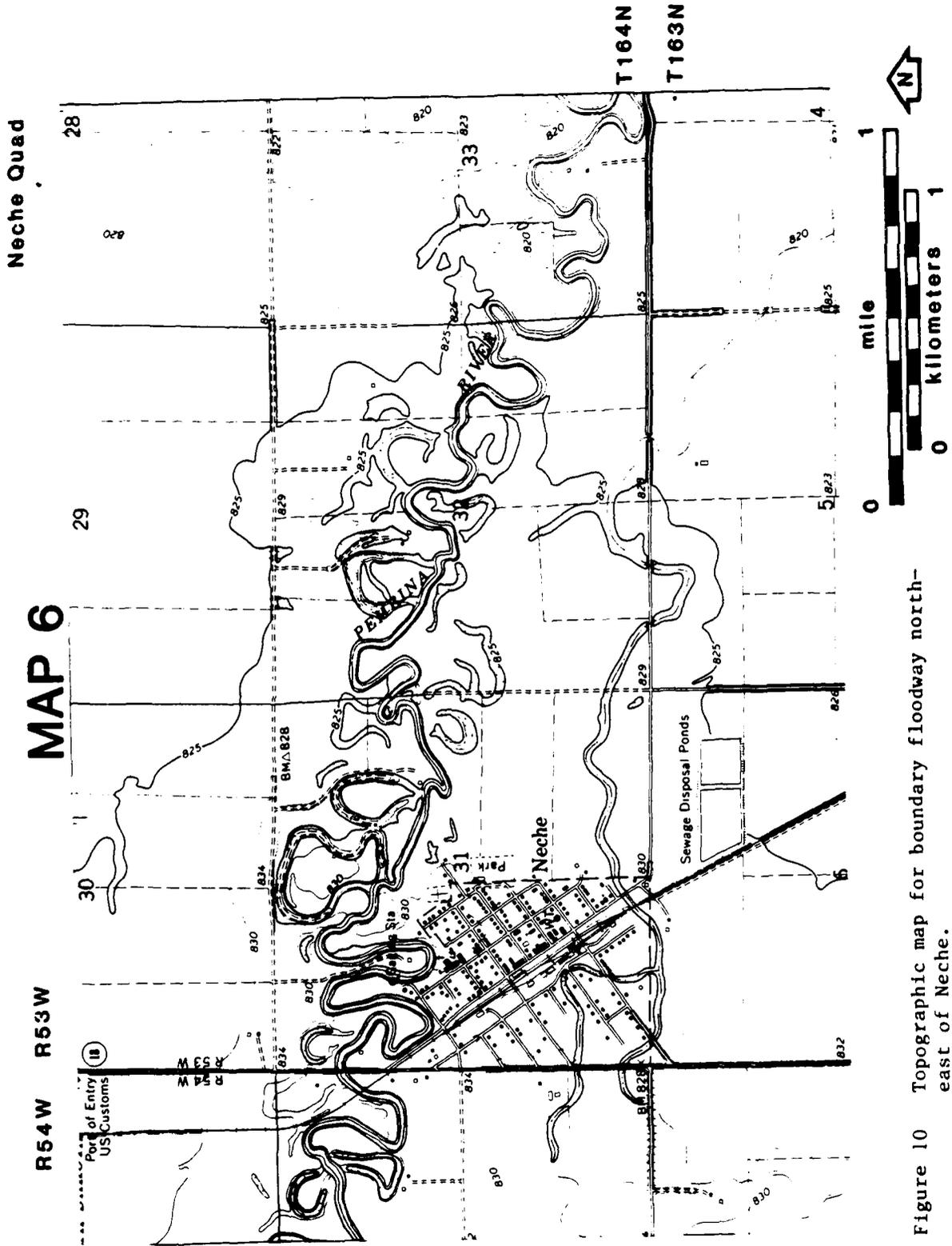


Figure 10 Topographic map for boundary floodway north-east of Neche.

Neché Quad
R54W

MAP 7

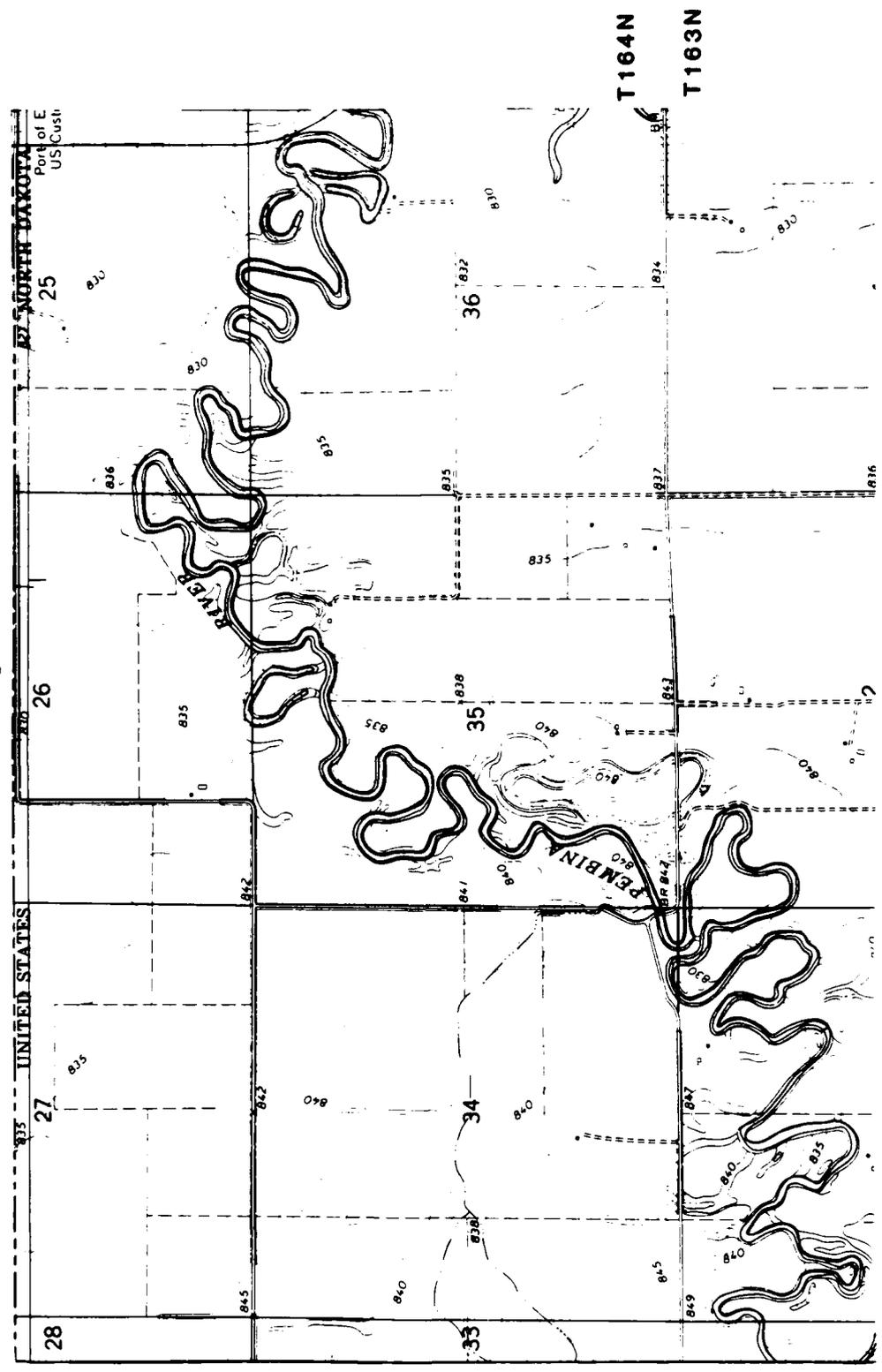


Figure 11 Topographic map for boundary floodway north-west of Neche.

Cavlier NW Quad

MAP 8

R54W

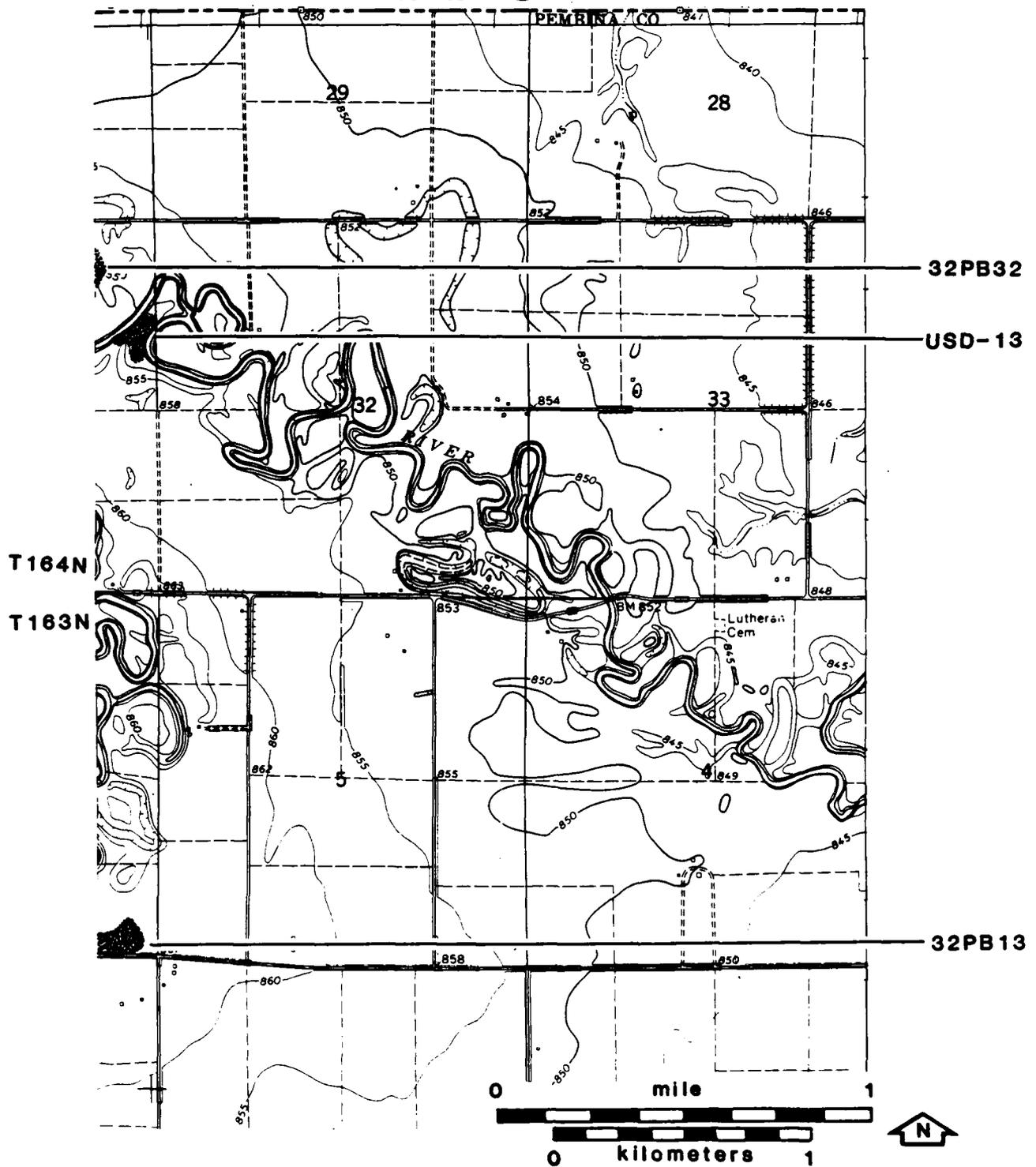


Figure 12 Topographic map for sites 32PB13, 32PB32, and USD-13.

Cavaller NW Quad

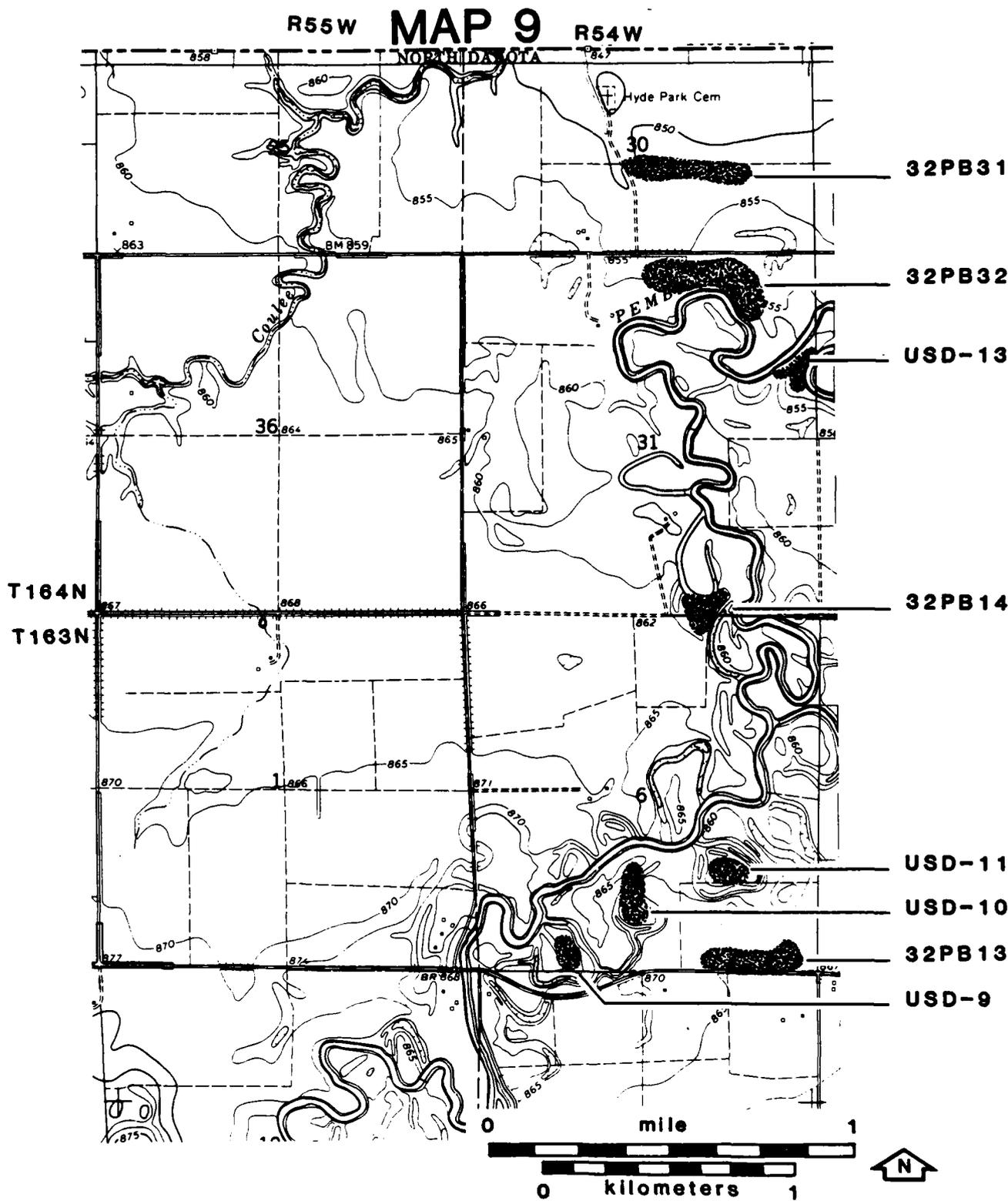


Figure 13 Topographic map for sites 32PB13, 32PB14, 32PB31, 32PB32, USD-9, USD-10, USD-11, and USD-13.

Cavalier NW Quad

MAP 10

R55W

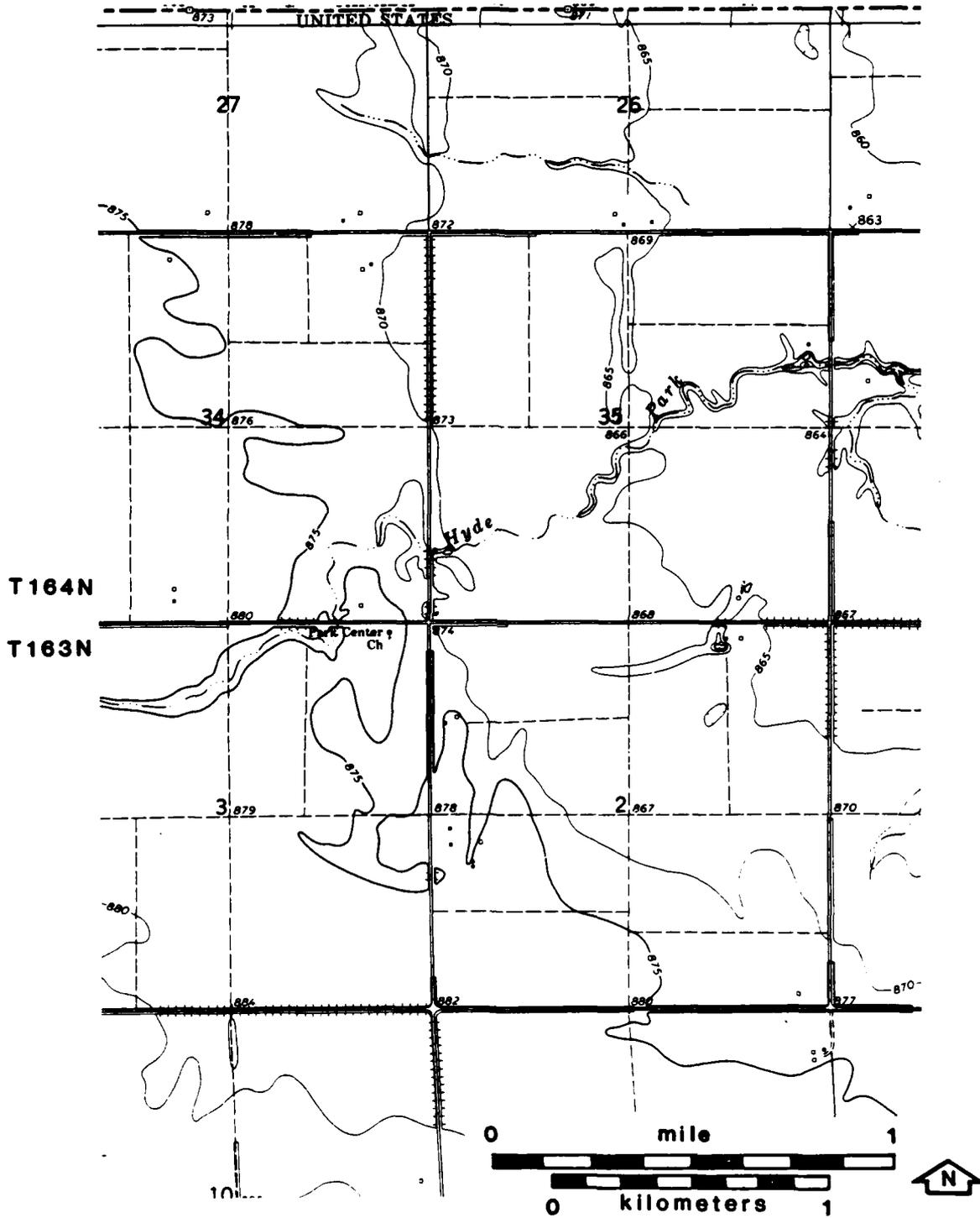


Figure 14 Topographic map for boundary floodway north-west of Hyde Park Cemetery.

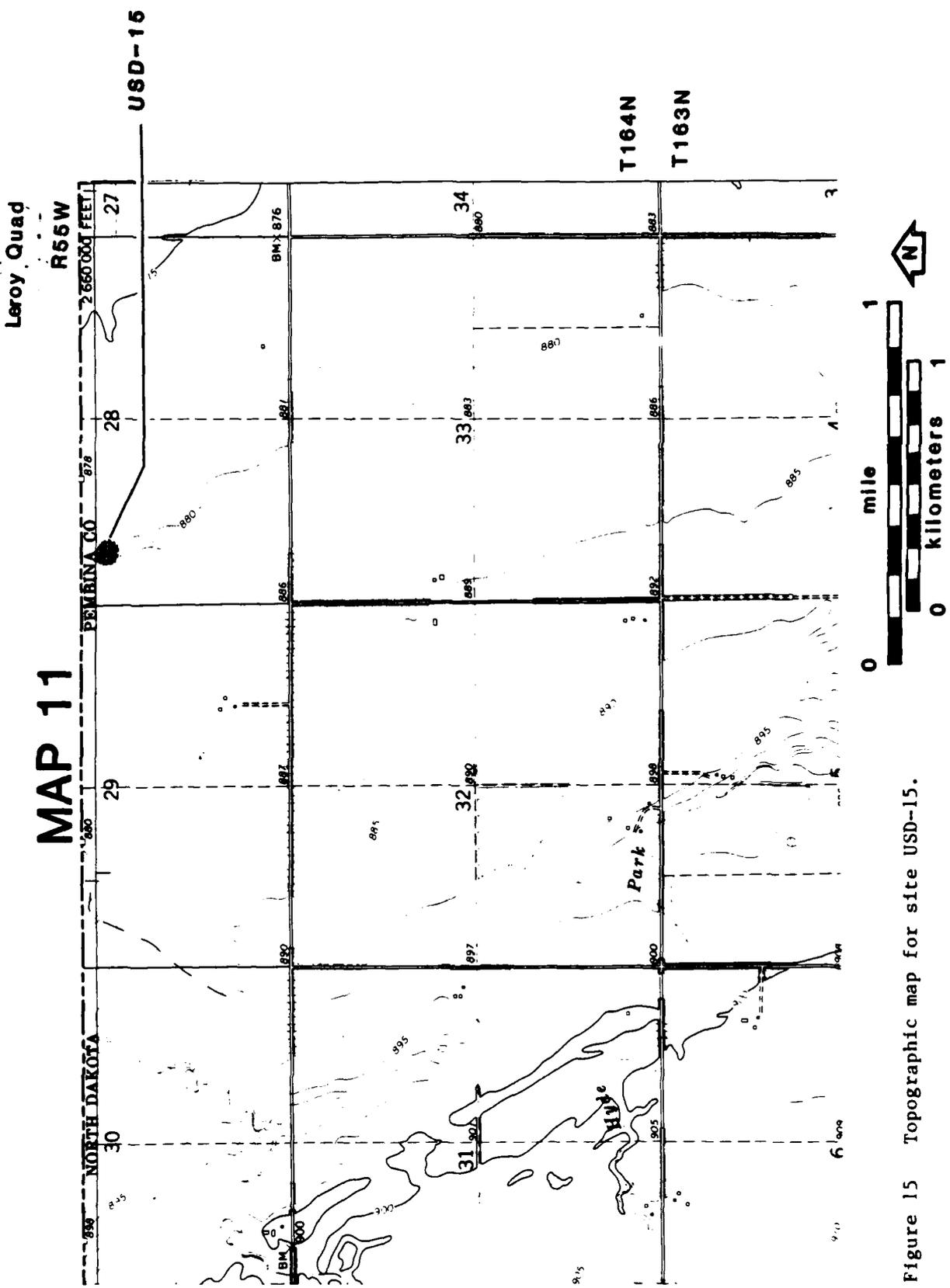


Figure 15 Topographic map for site USD-15.

MAP 12

Leroy Quad
R56W

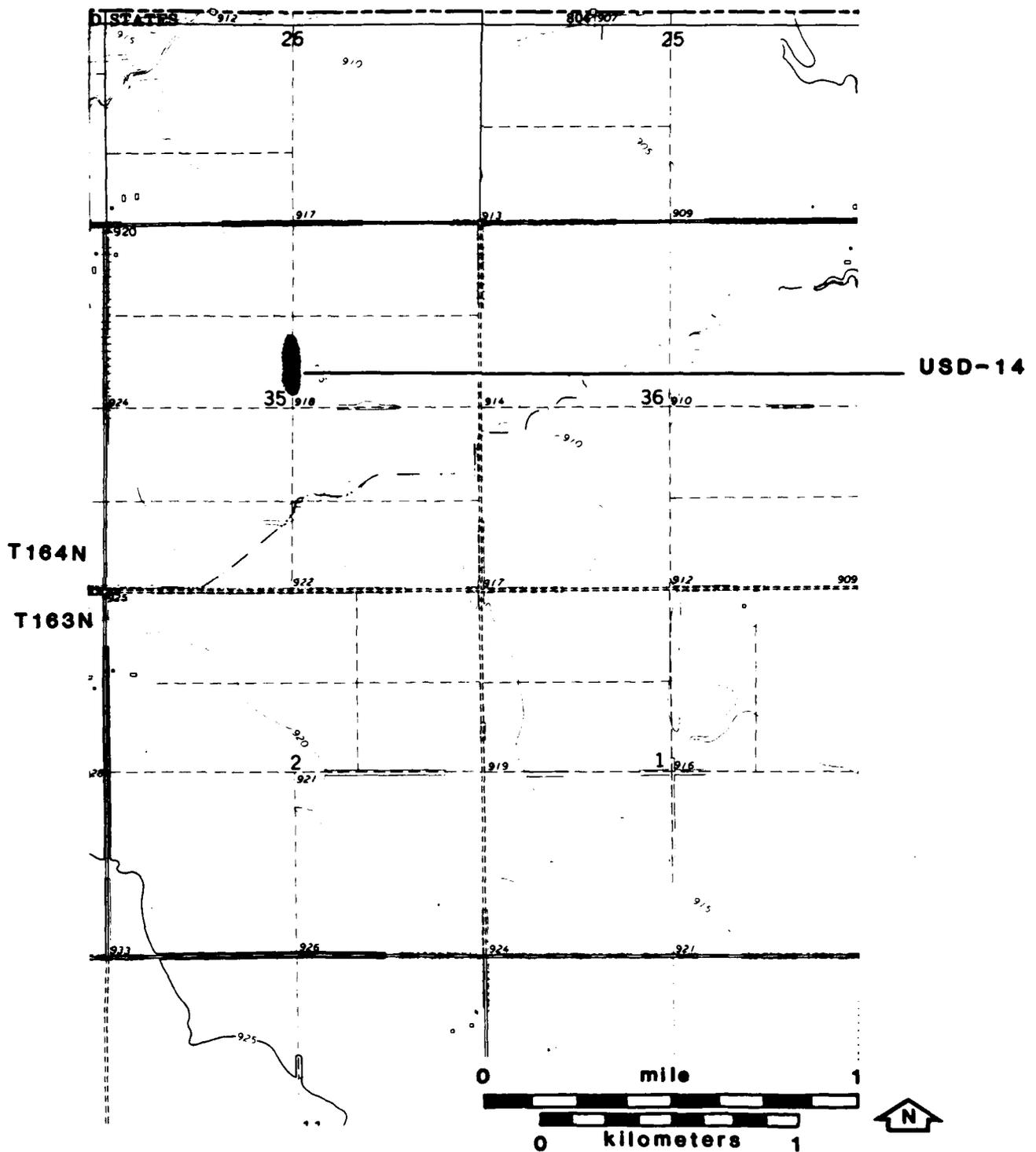


Figure 16 Topographic map for site USD-14.

MAP 13

Leroy Quad

R55W

T163N

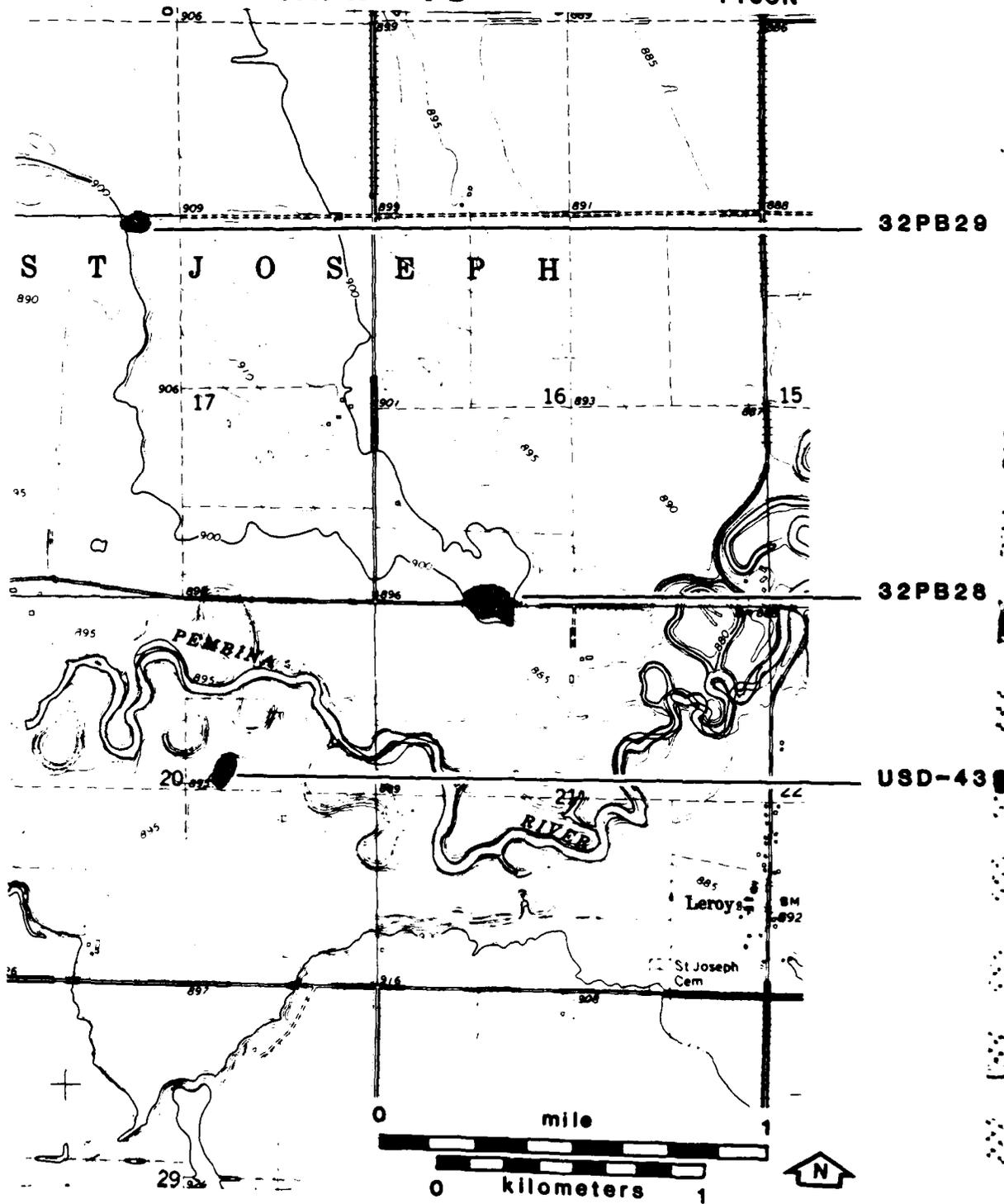


Figure 17 Topographic map for sites 32PB28, 32PB29, and USD-43.

MAP 14

Leroy Quad
R56W
T163N

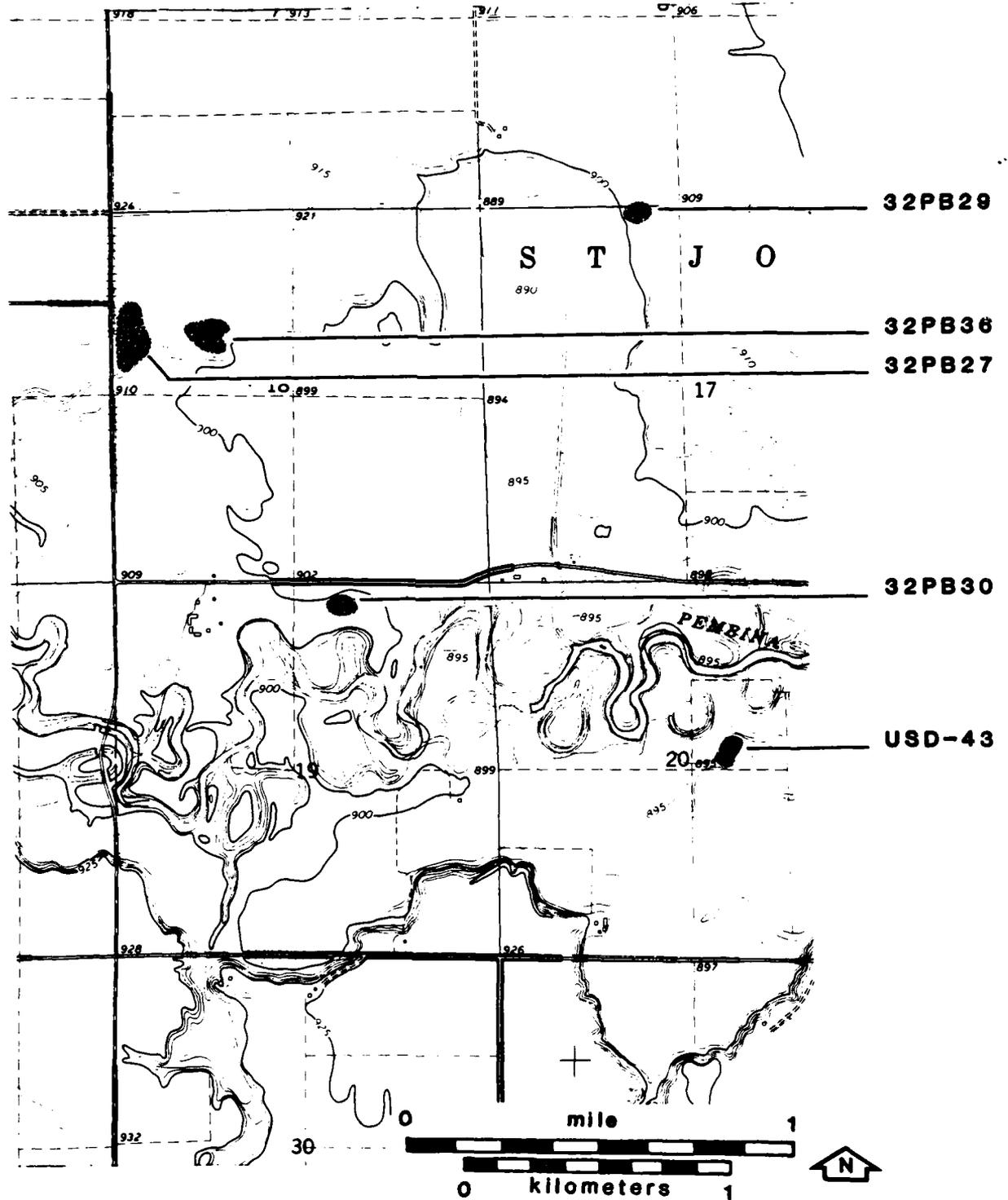


Figure 18 Topographic map for sites 32PB27, 32PB29, 32PB30, 32PB36, and USD-43.

Lerøy Quad
R56W
T163N

MAP 15

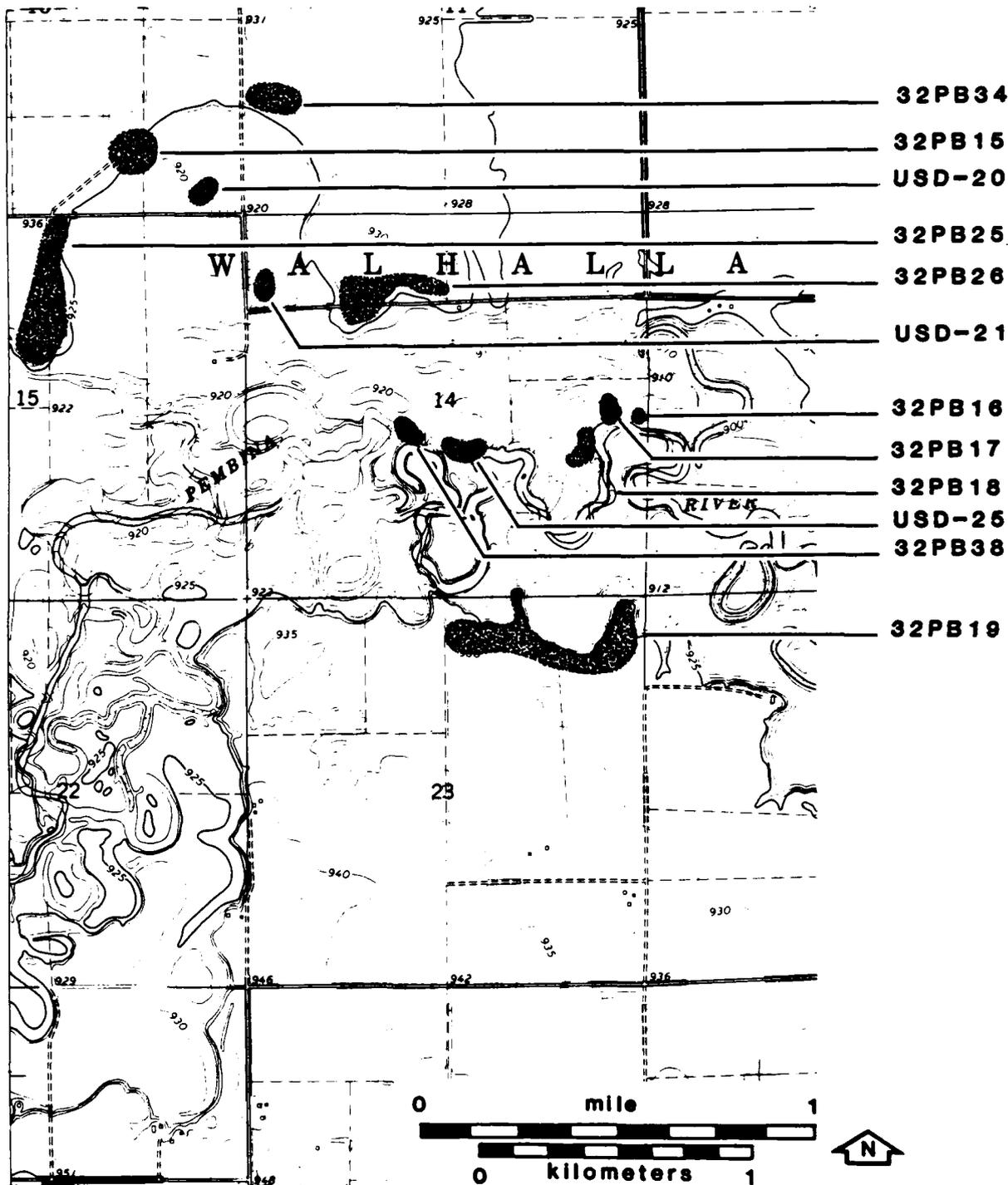


Figure 19 Topographic map for sites 32PB15, 32PB16, 32PB17, 32PB18, 32PB19, 32PB25, 32PB26, 32PB34, 32PB38, USD-20, USD-21, and USD-25.

Wahalla Quad
R56W
T163N

MAP 16

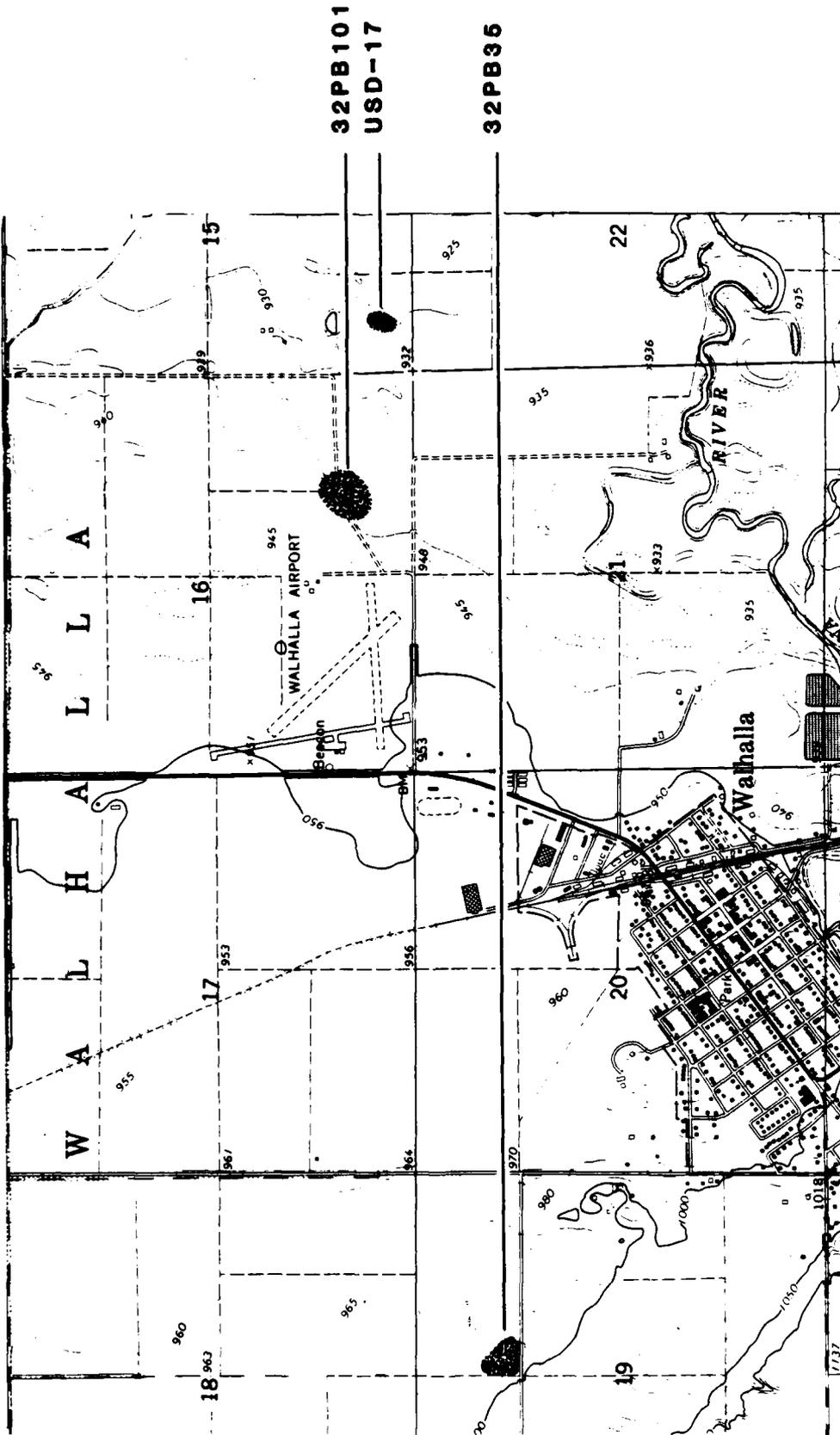


Figure 20 Topographic map for sites 32PB35, 32PB101, and USD-17.

MAP 17

Leroy Quad
R56W

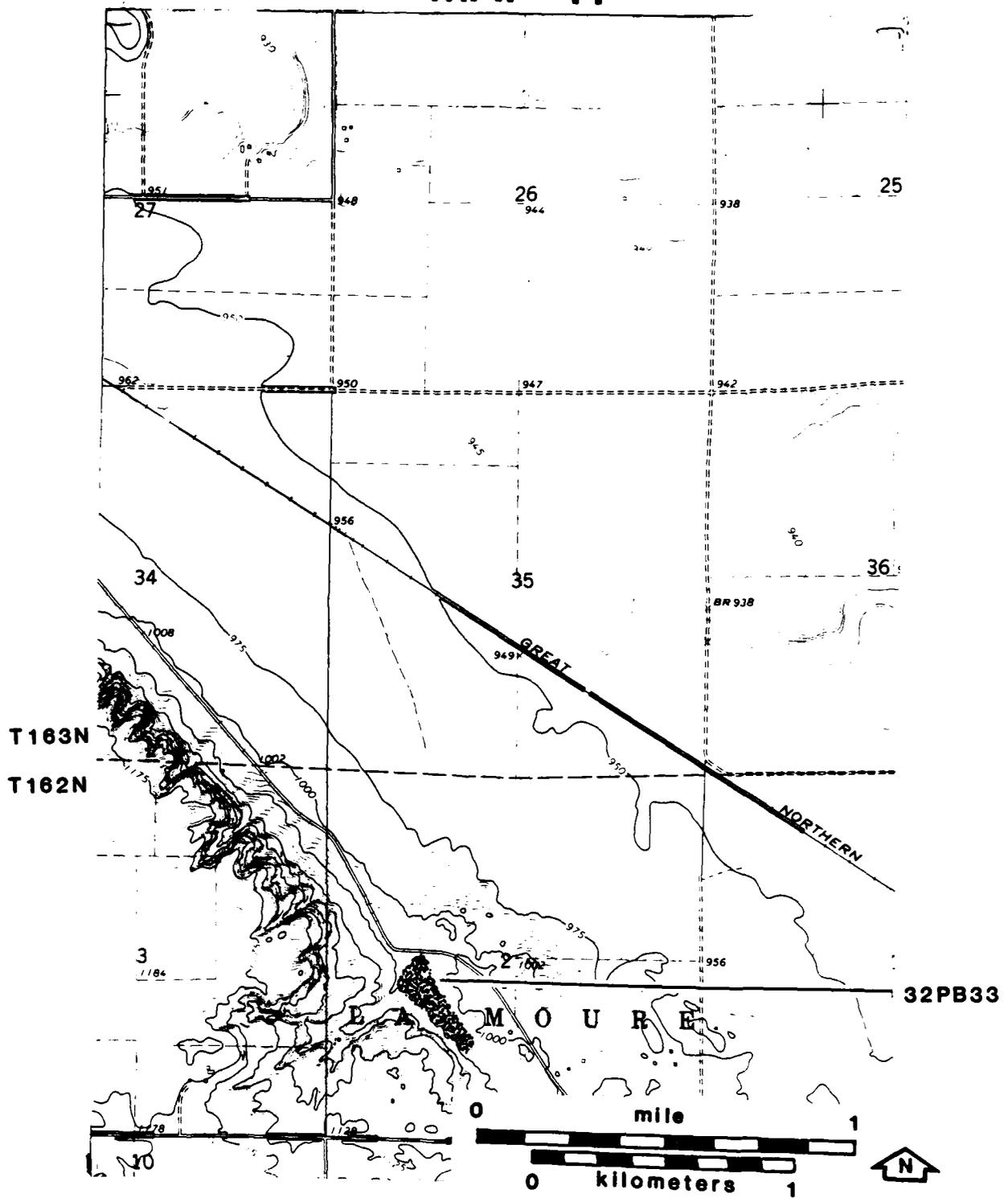


Figure 21 Topographic map for site 32PB33.

MAP 18

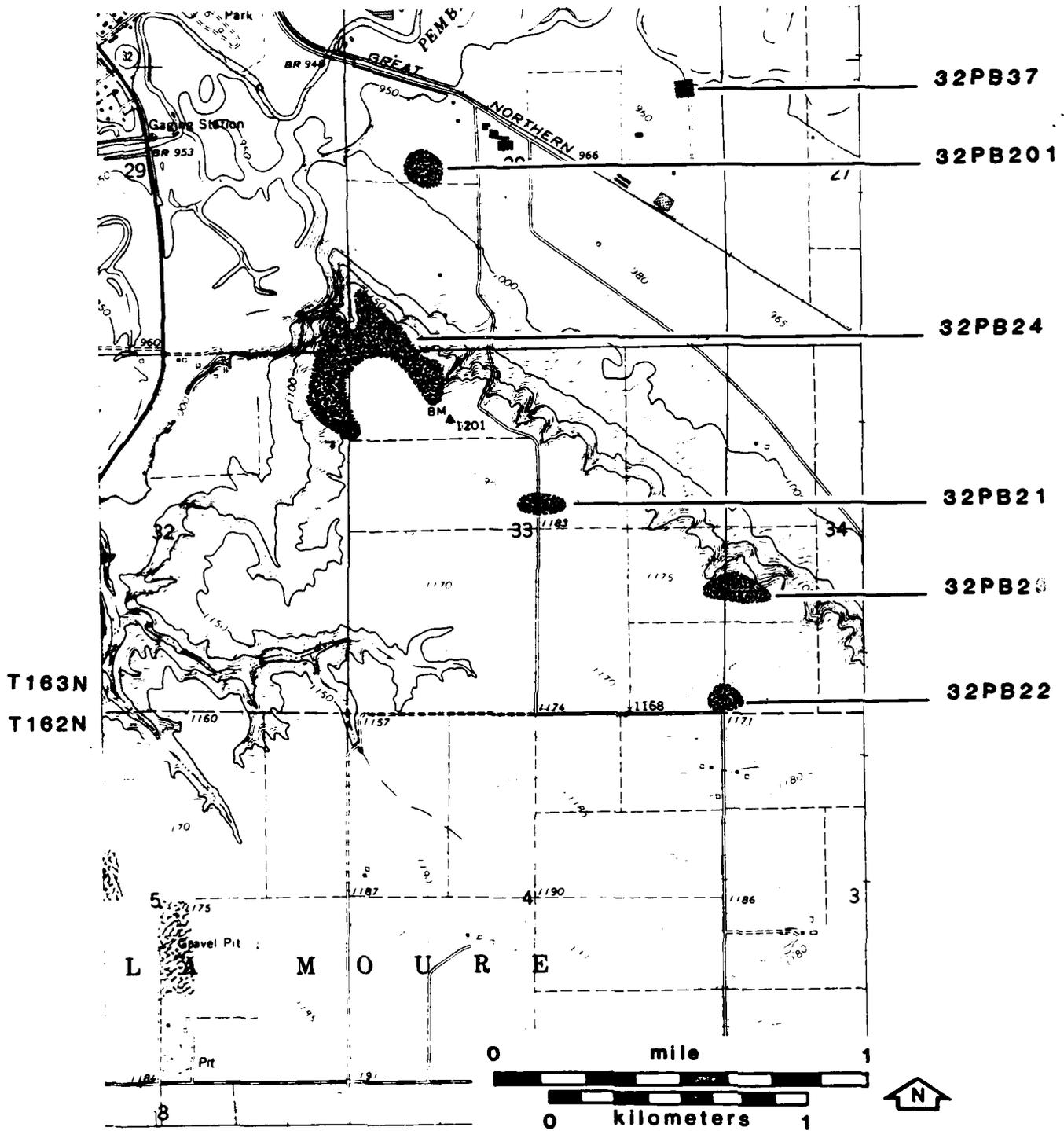


Figure 22 Topographic map for sites 32PB21, 32PB22, 32PB23, 32PB24, 32PB37, and 32PB201.

MAP 19

Walhalla Quad

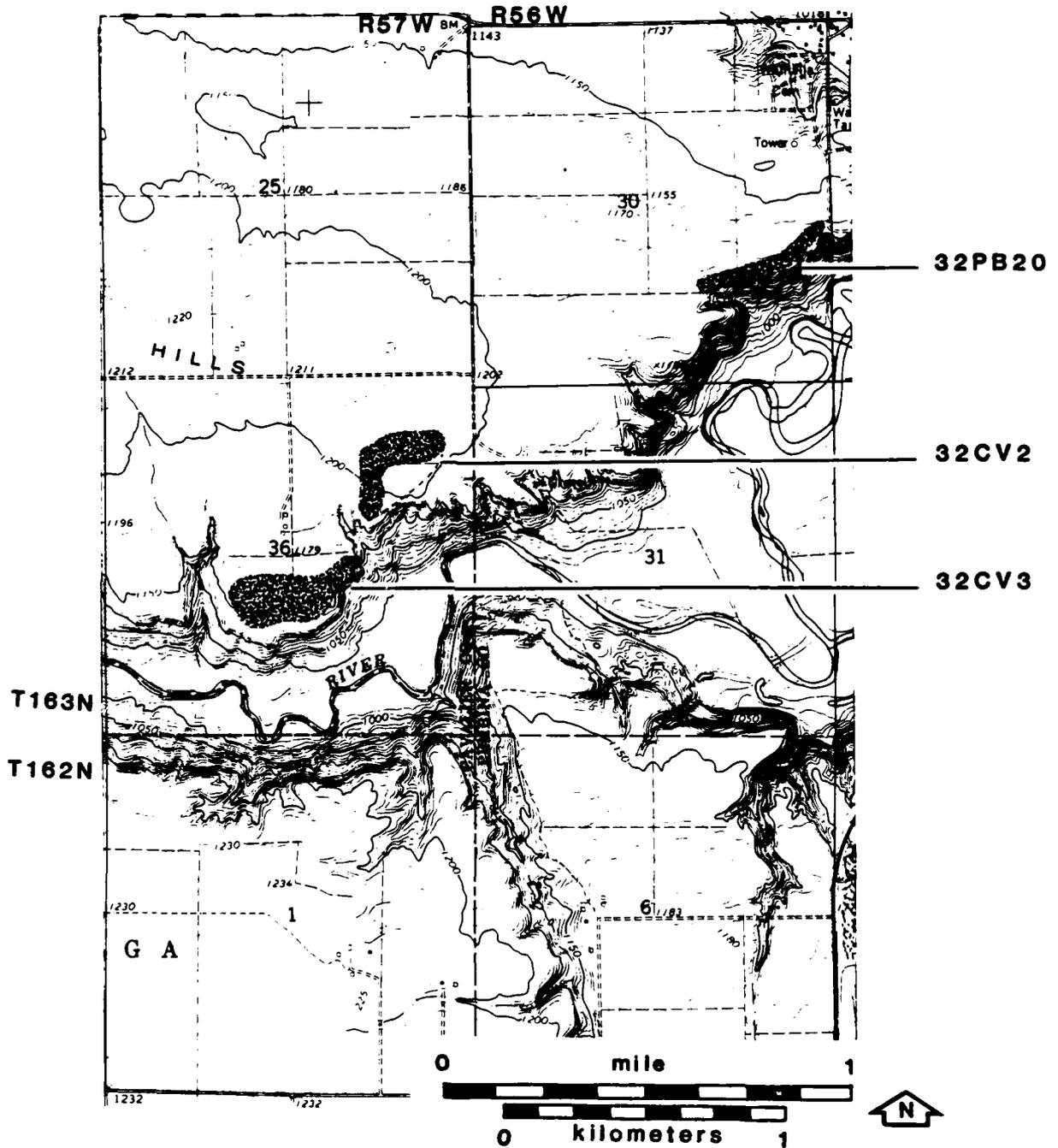


Figure 23 Topographic map for sites 32PB20, 32CV2, and 32CV3.

Walhalla Quad

MAP 20

R57W

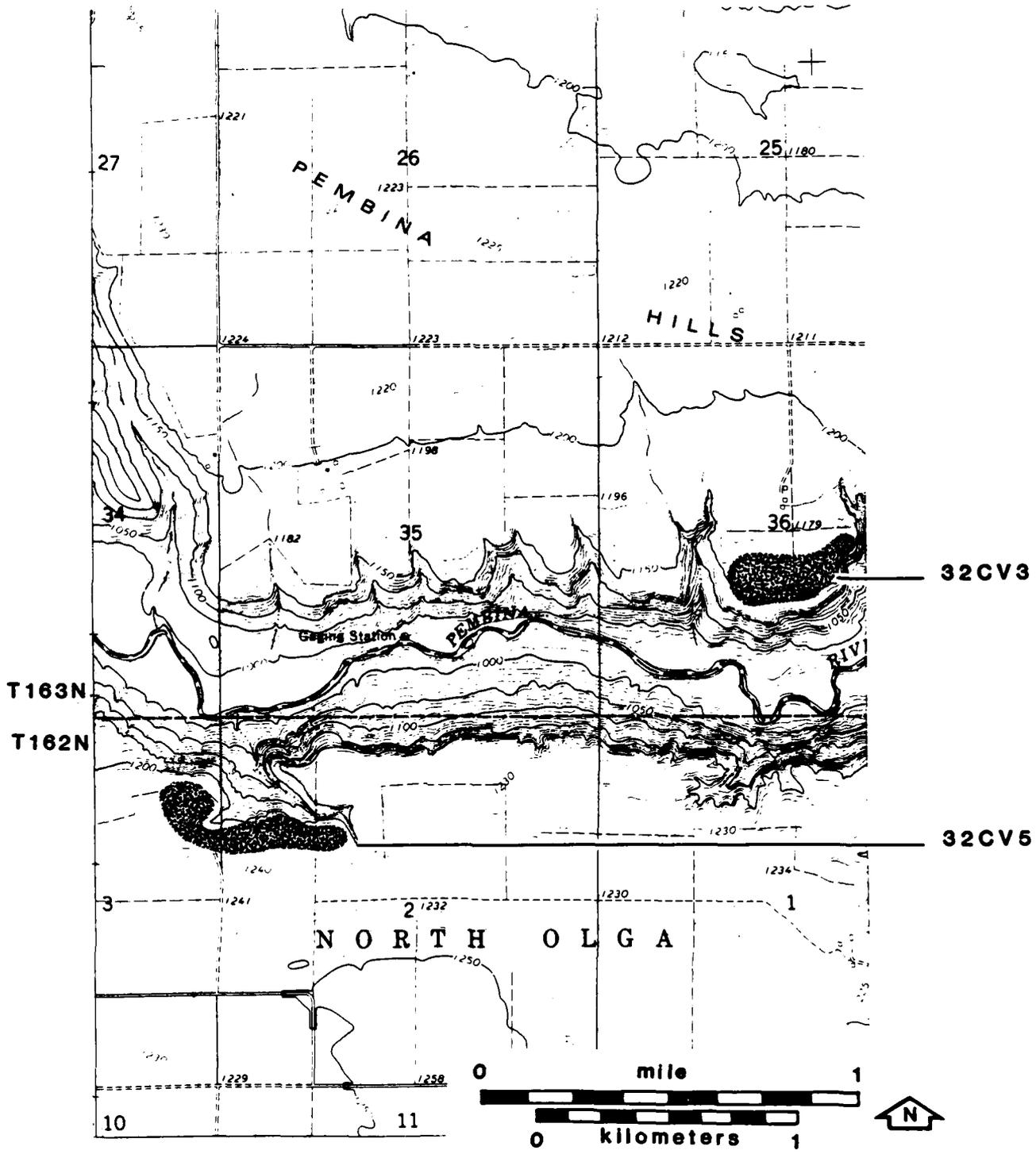


Figure 24 Topographic map for sites 32CV3 and 32CV5.

MAP 21

Vang Quad

R57W

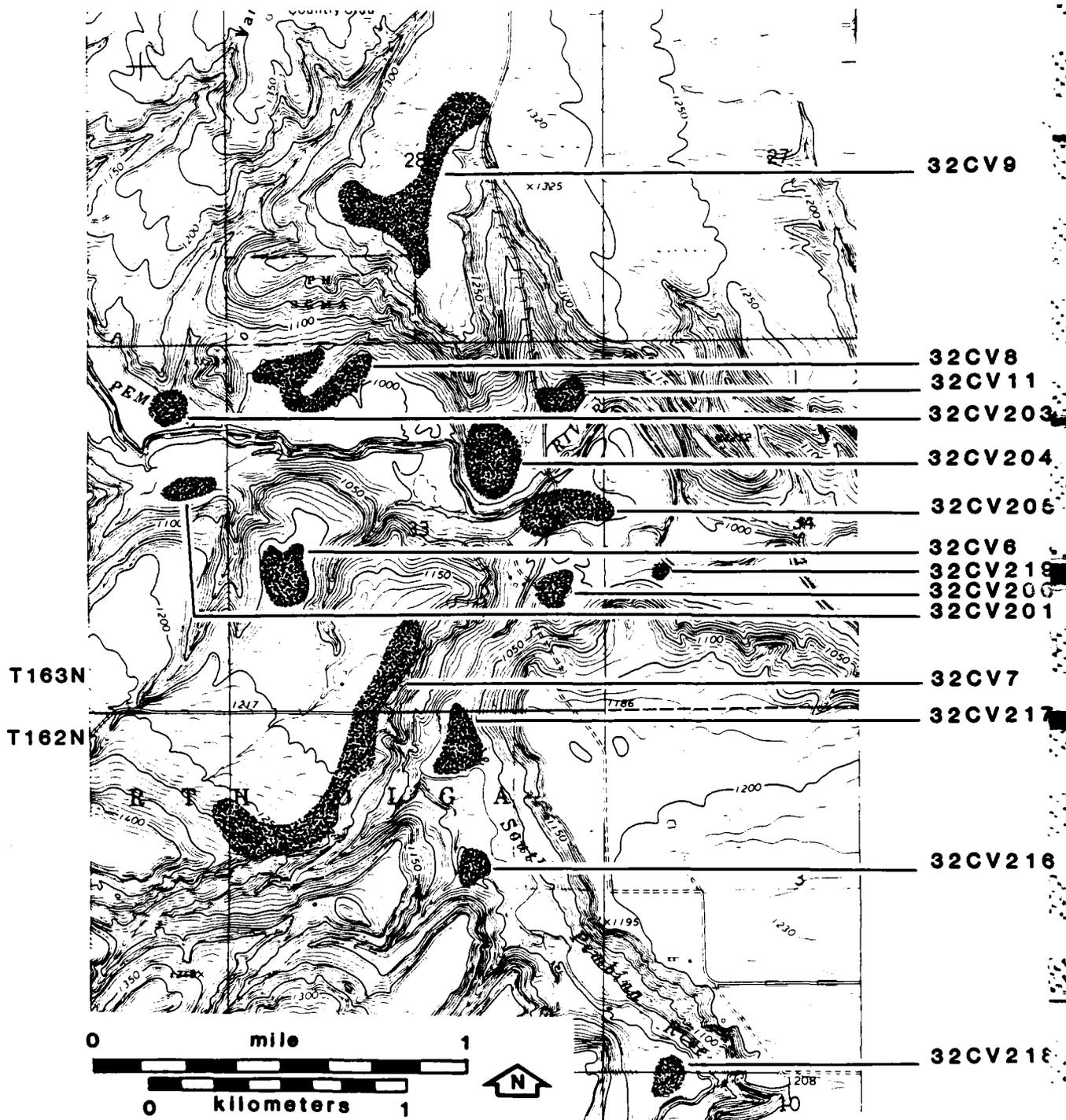


Figure 25 Topographic map for sites 32CV6, 32CV7, 32CV8, 32CV9, 32CV11, 32CV201, 32CV203, 32CV204, 32CV205, 32CV206, 32CV216, 32CV217, 32CV218, and 32CV219.

R58W R57W

MAP 22

Vang Quad

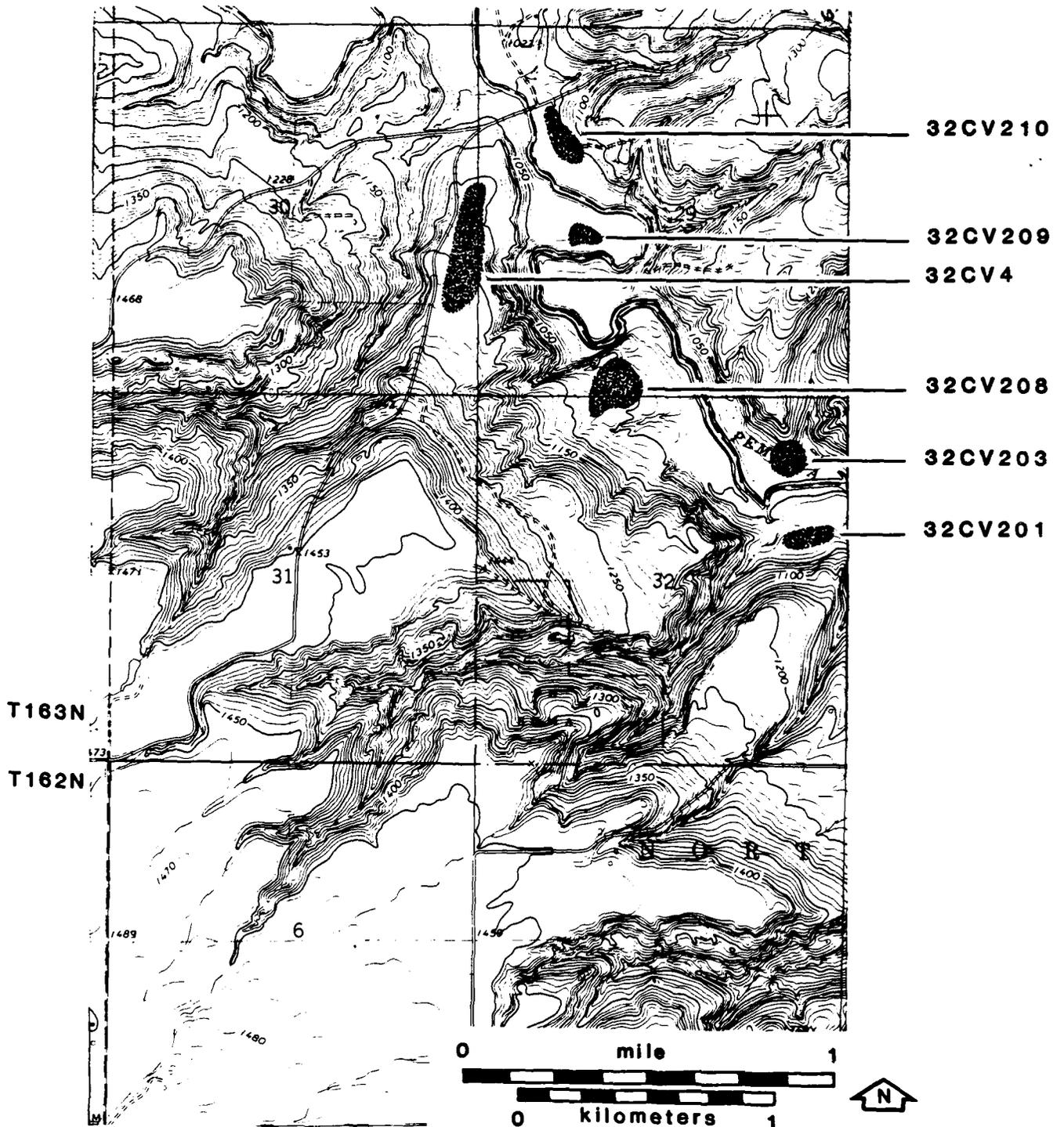


Figure 26 Topographic map for sites 32CV4, 32CV201, 32CV203, 32CV208, 32CV209, and 32CV210.

R58W R57W

MAP 23

Vang Quad
T163N

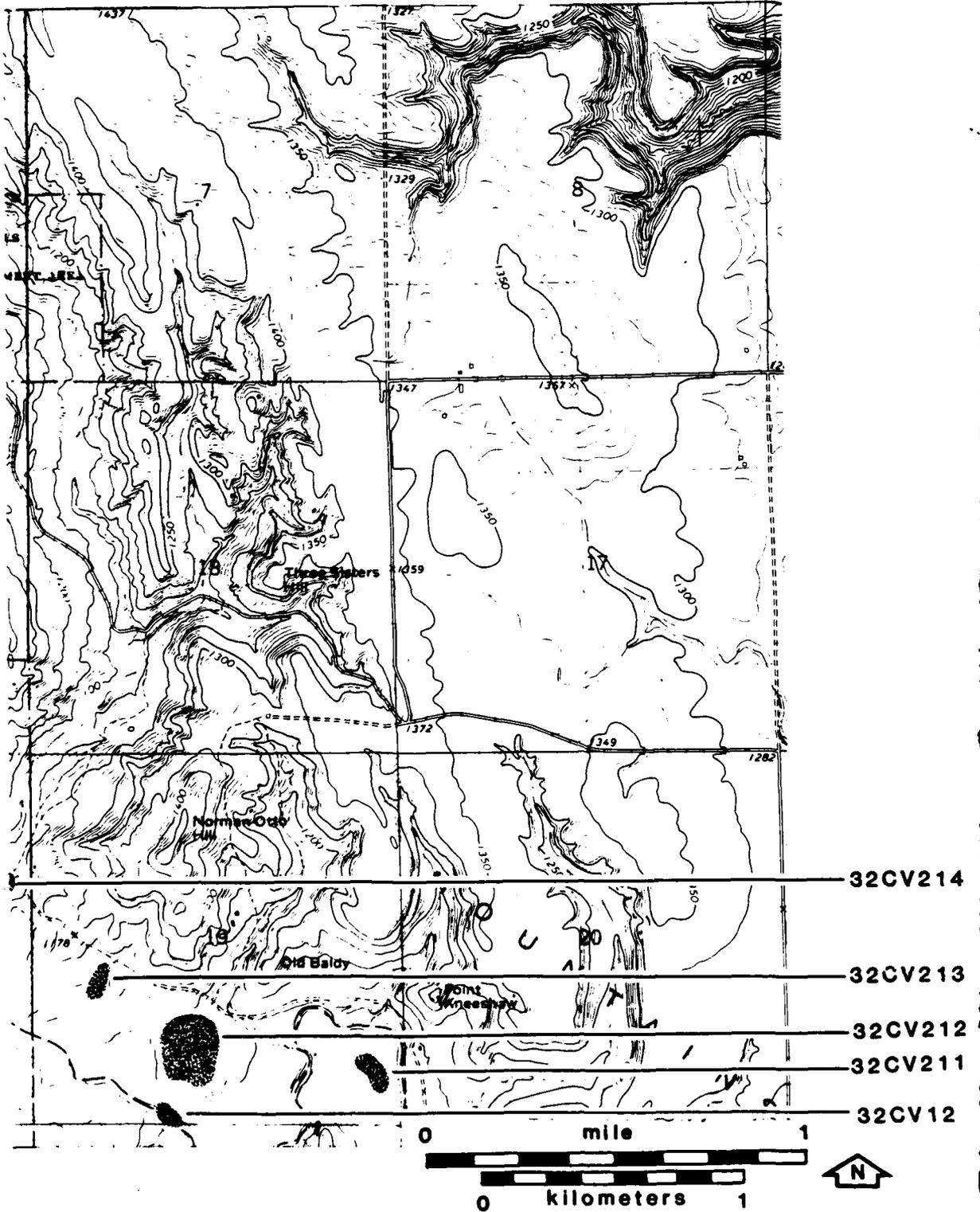


Figure 27 Topographic map for sites 32CV12, 32CV211, 32CV212, 32CV213, and 32CV214.

MAP 24

Vang Quad
R58W
T163N

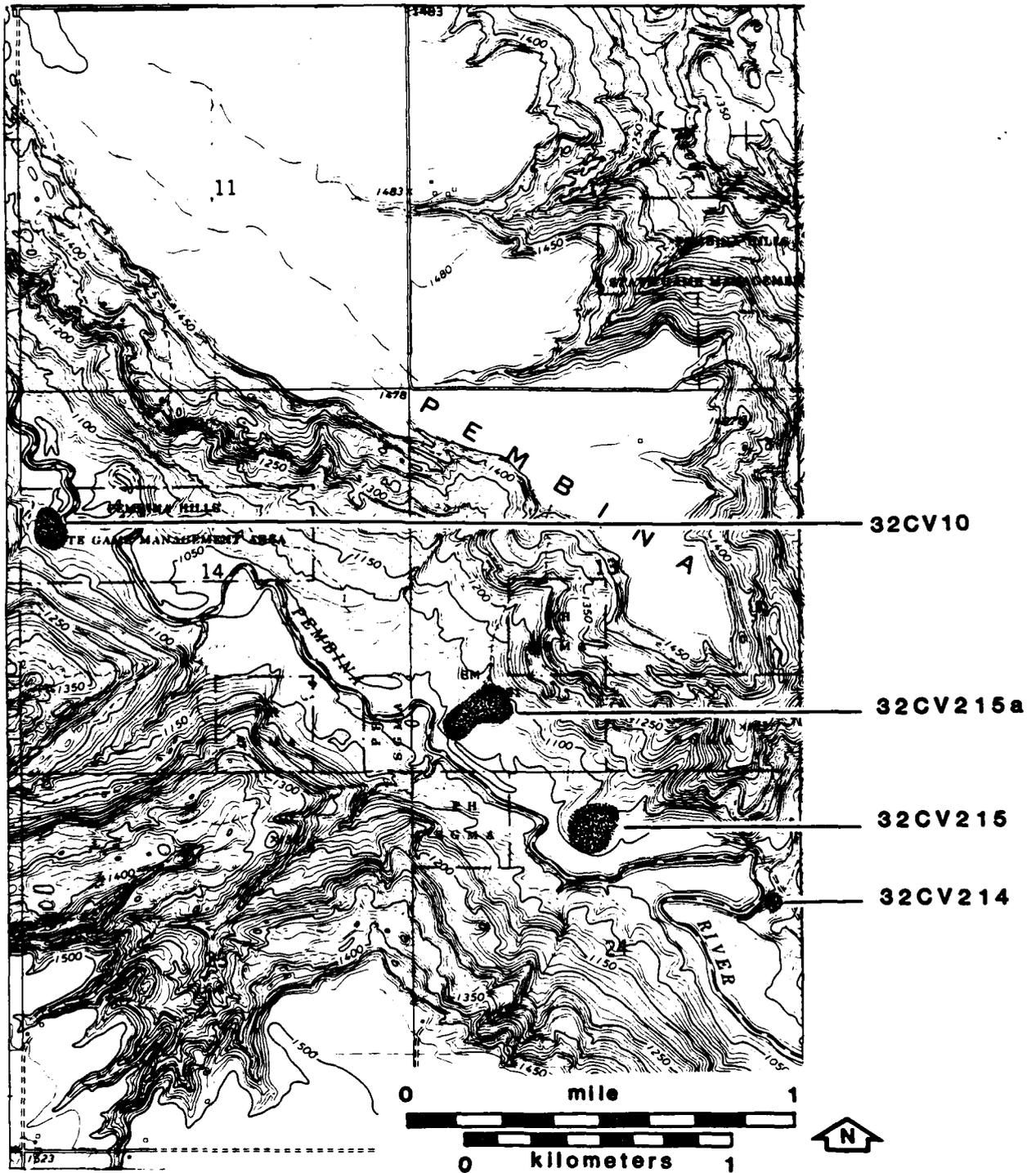


Figure 28 Topographic map for sites 32CV10, 32CV214, 32CV215, and 32CV215a.

Olga NW Quad
R58W
T163N

MAP 25

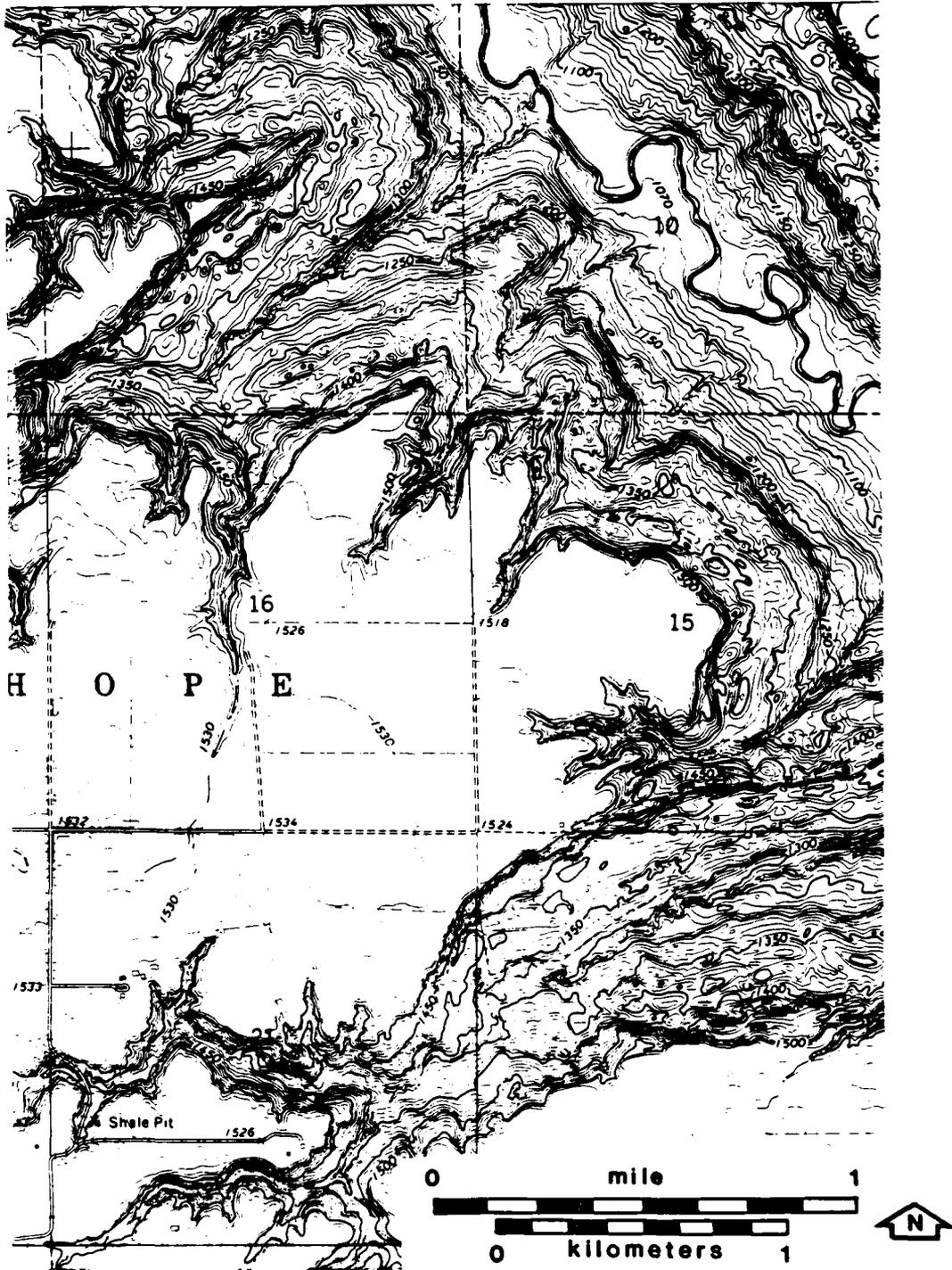


Figure 29 Topographic map for part of Hope Township.

MAP 26

Olga NW Quad
R58W

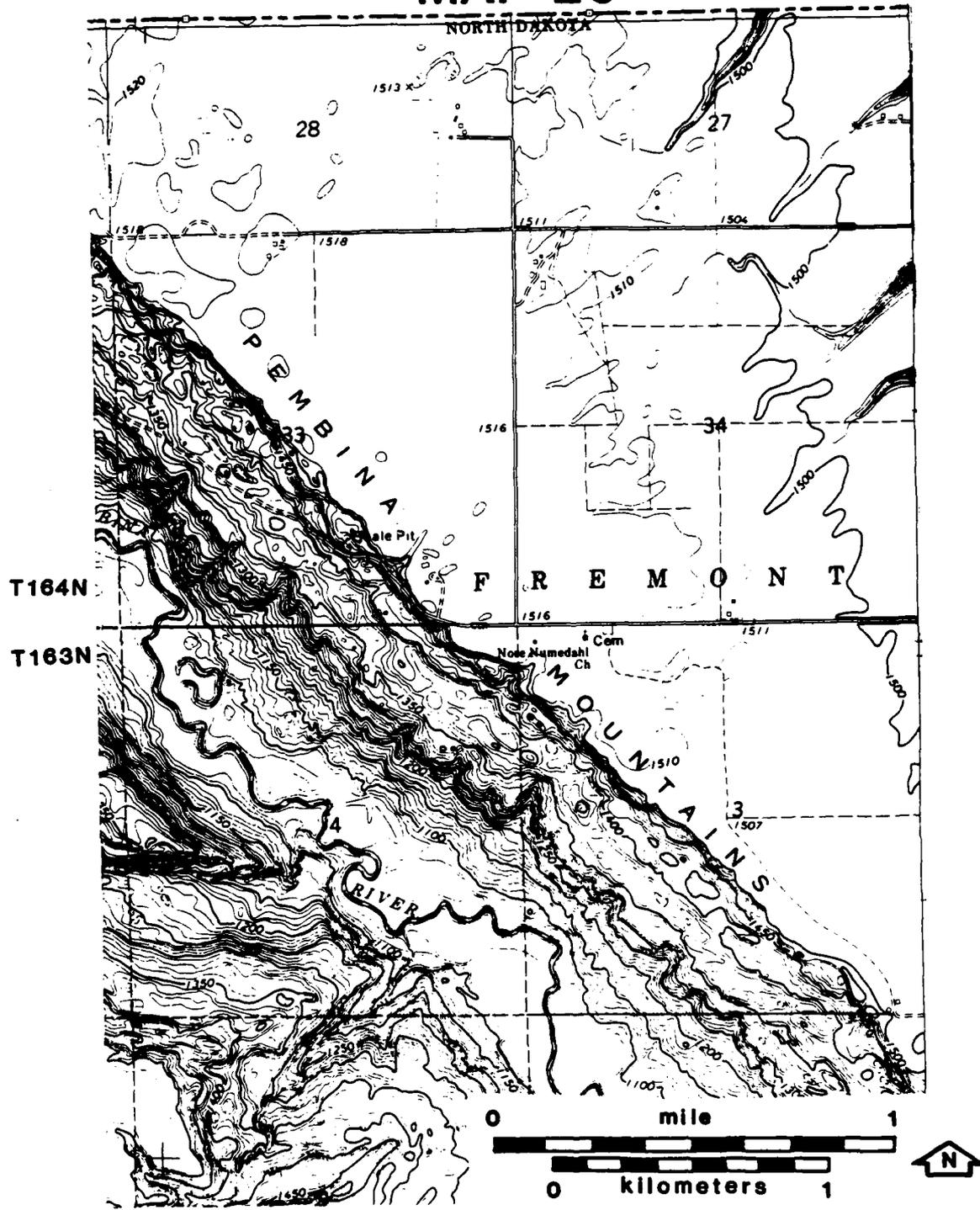


Figure 30 Topographic map of the Numedah Church area in Fremont Township.

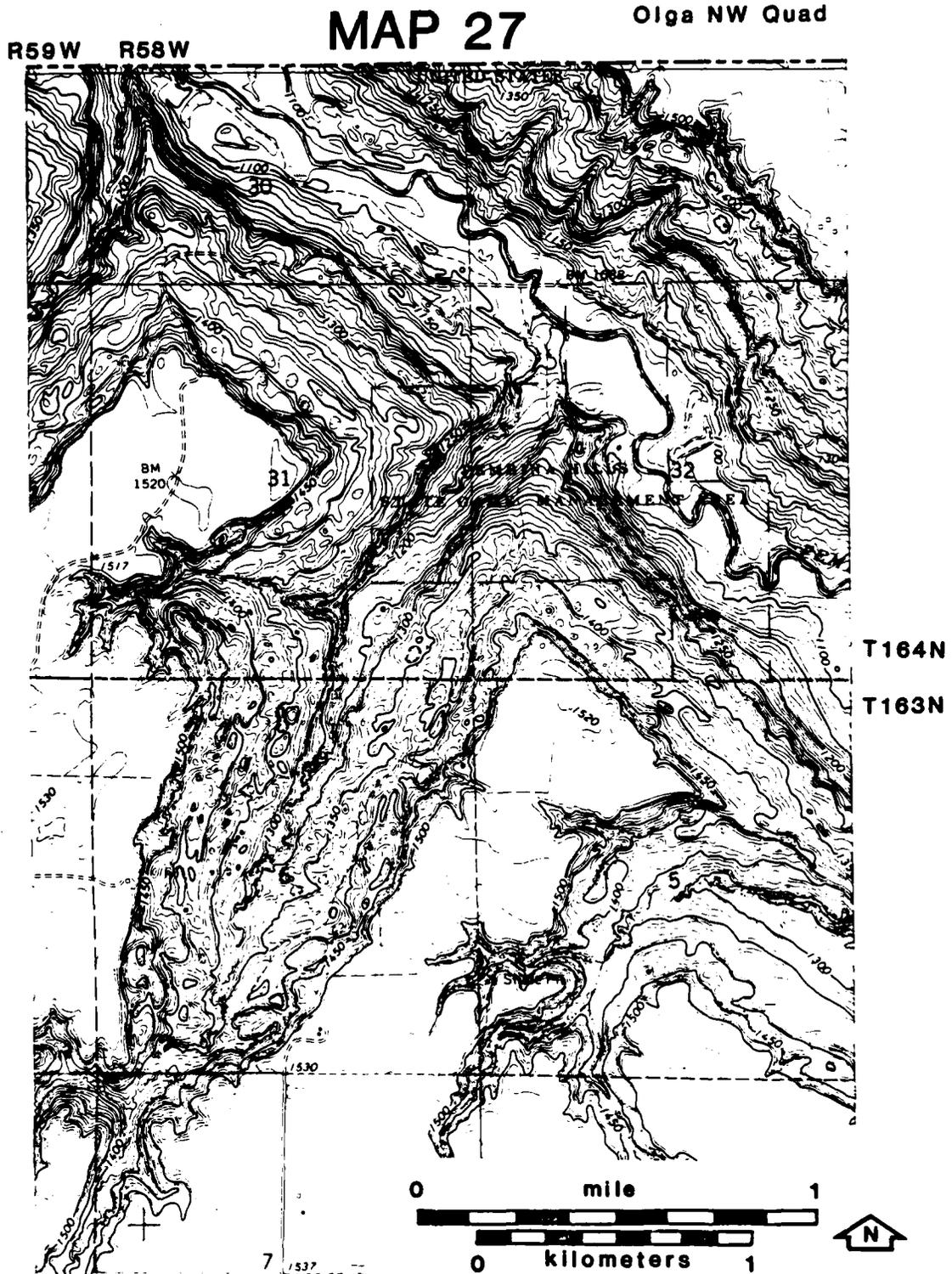


Figure 31 Topographic map of the northern part of Hope Township.

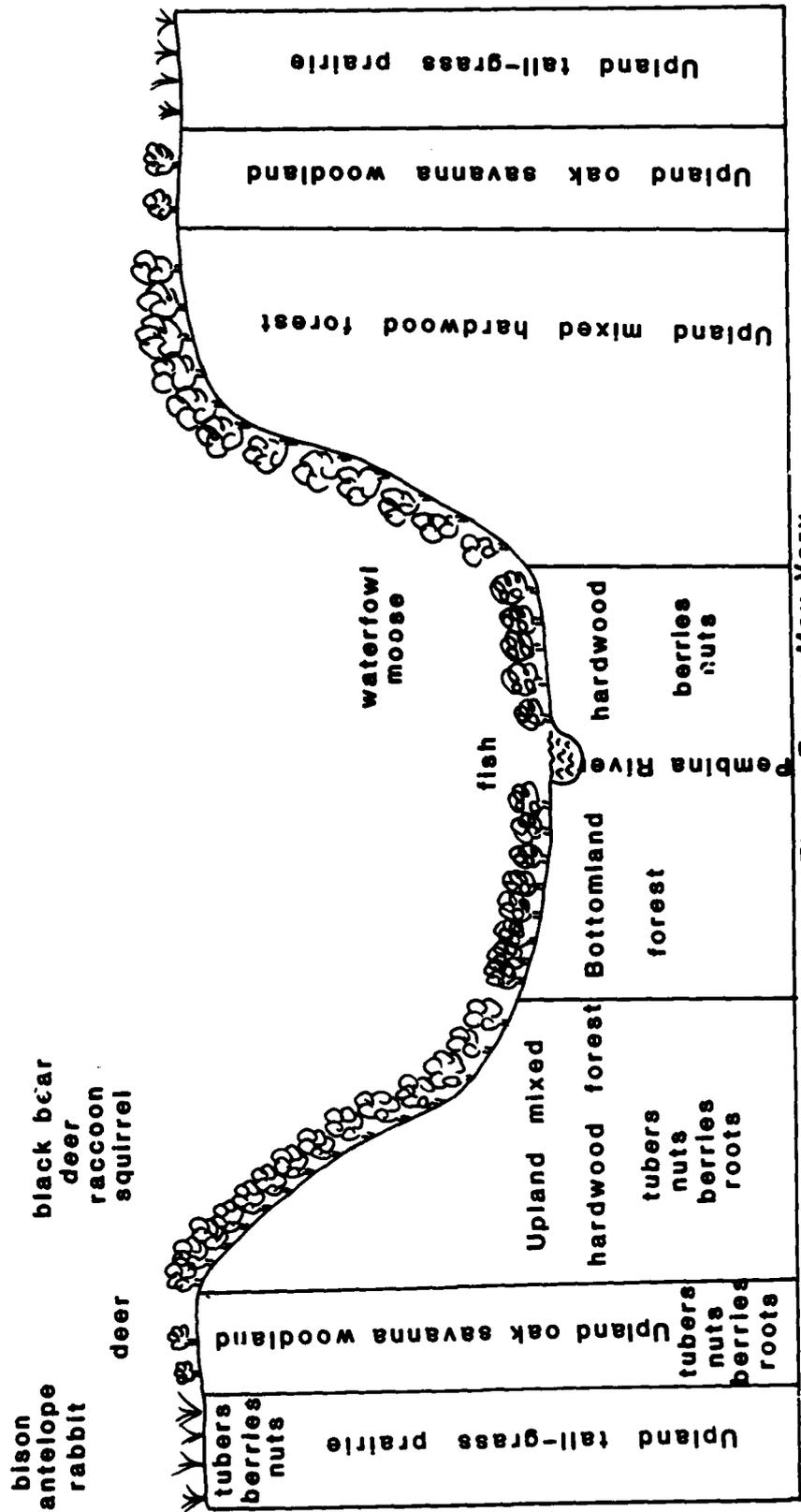


Figure 32 Phytogeographic - subsistence potential model of the Lower Pembina River valley.

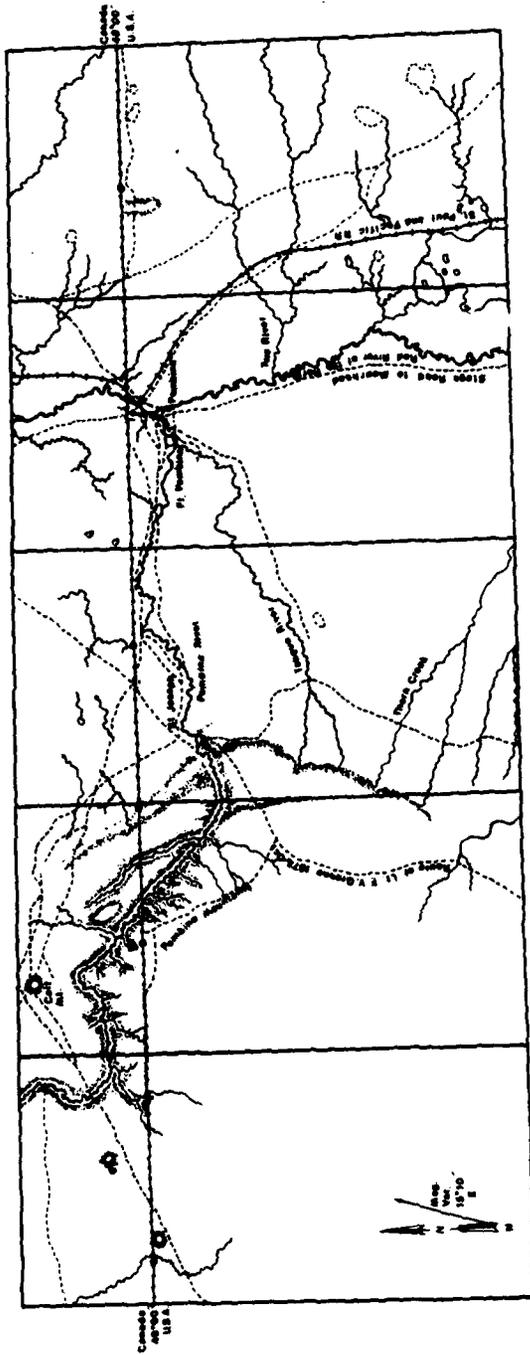


Figure 33 Roads and trails in the project area mapped by the boundary survey crews in 1872-1876.



Hyde Park Cemetery

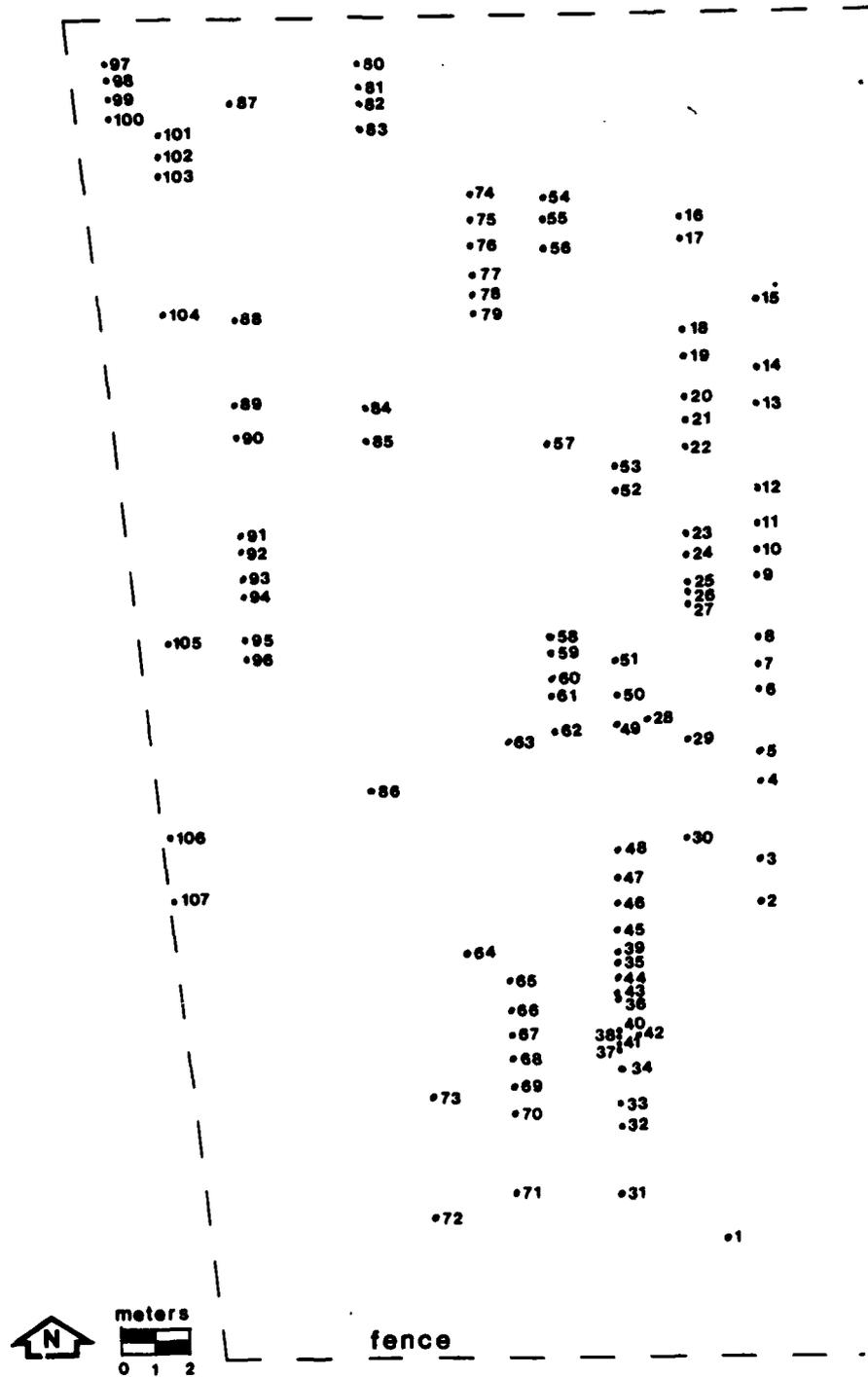


Figure 35 Map of grave markers at Hyde Park Cemetery (see Appendix C).

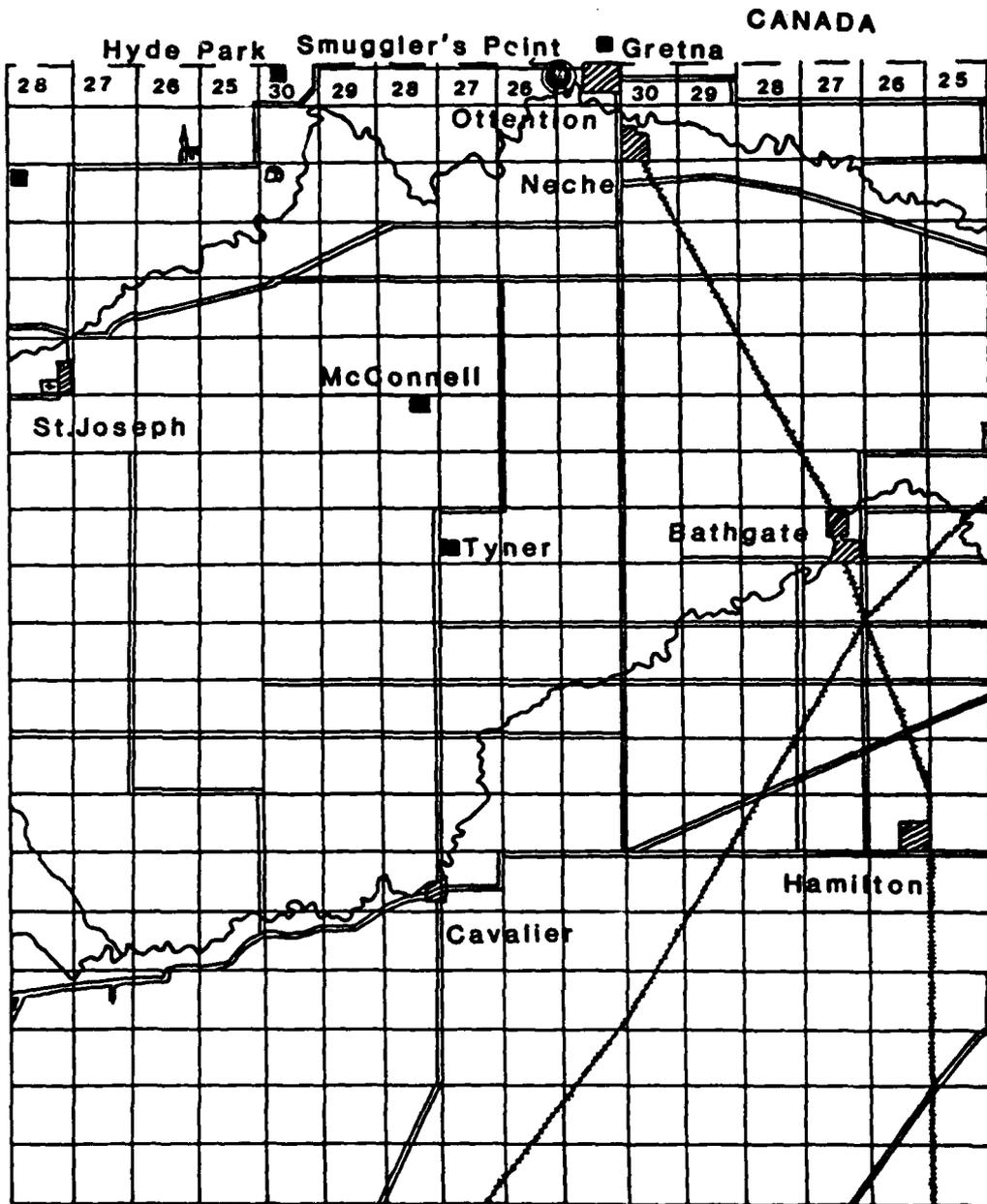


Figure 36 Map of the Necho area from Andreas 1884 atlas.

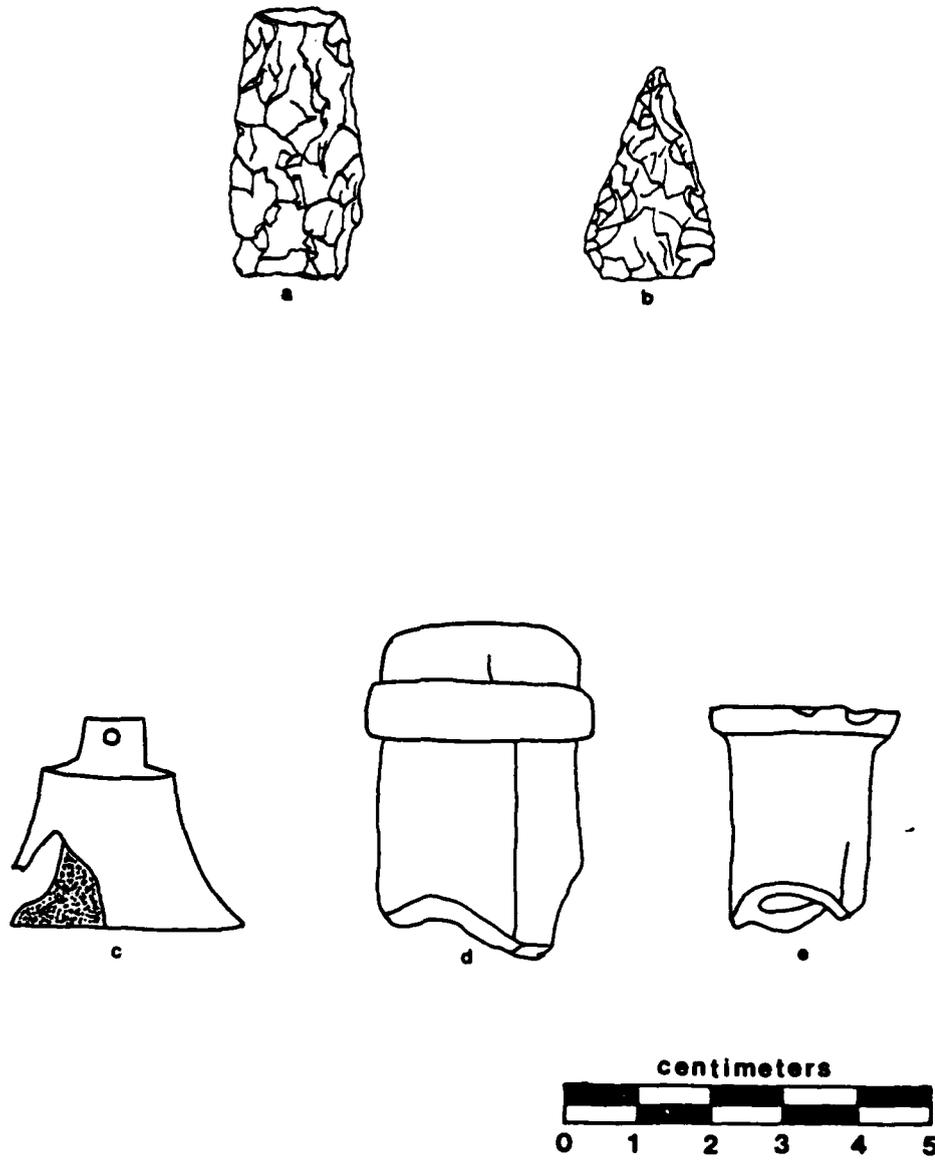


Figure 37 a-b. Projectile points (S-2 and S-1) from 32PB8; c. pewter bell (S-60) and d-e. bottle necks from 32PB14.

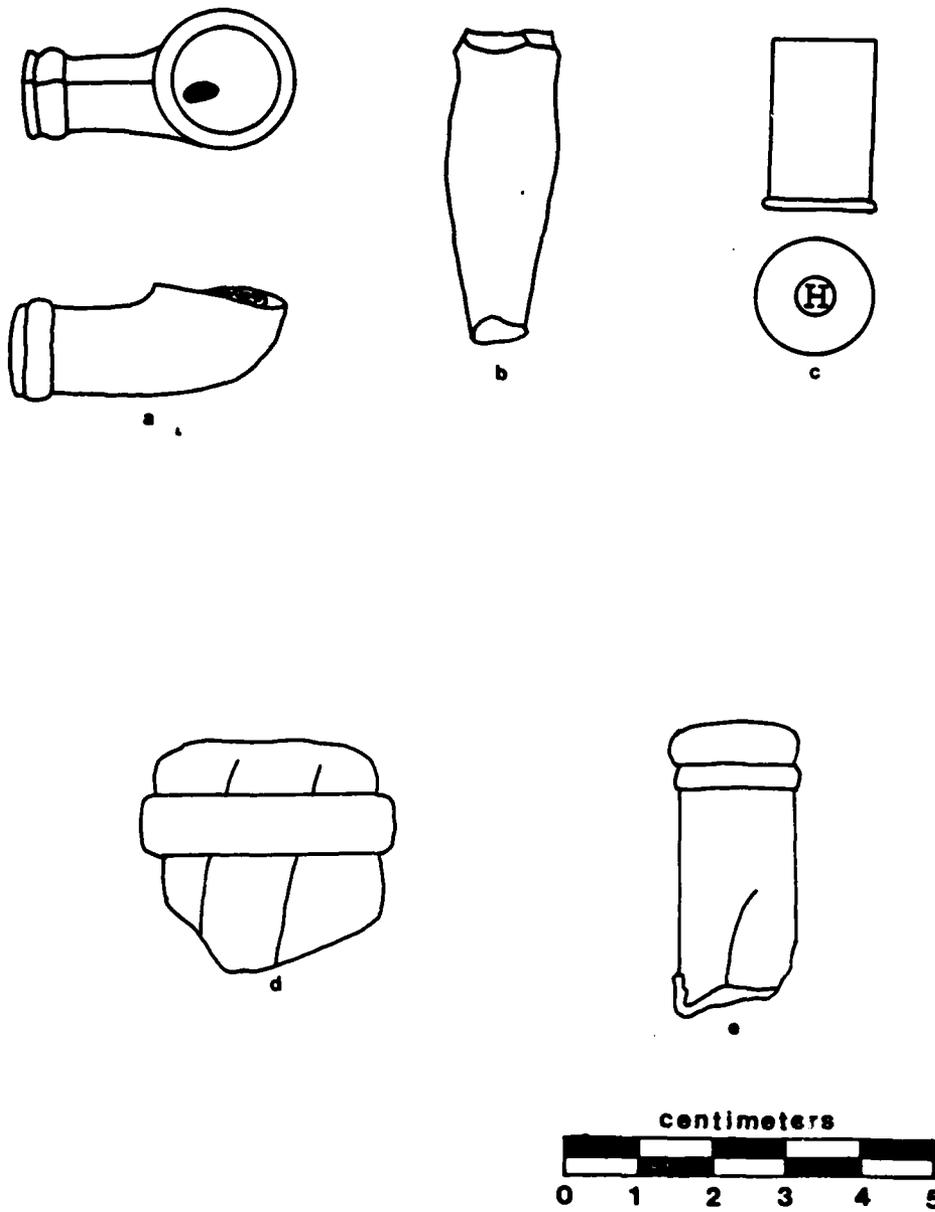


Figure 38 a. Clay pipe (S-26); b. ceramic doll leg (S-39); c. rifle cartridge (S-233); and d-e. bottle necks (S-104 and S-102) from 32PB19.

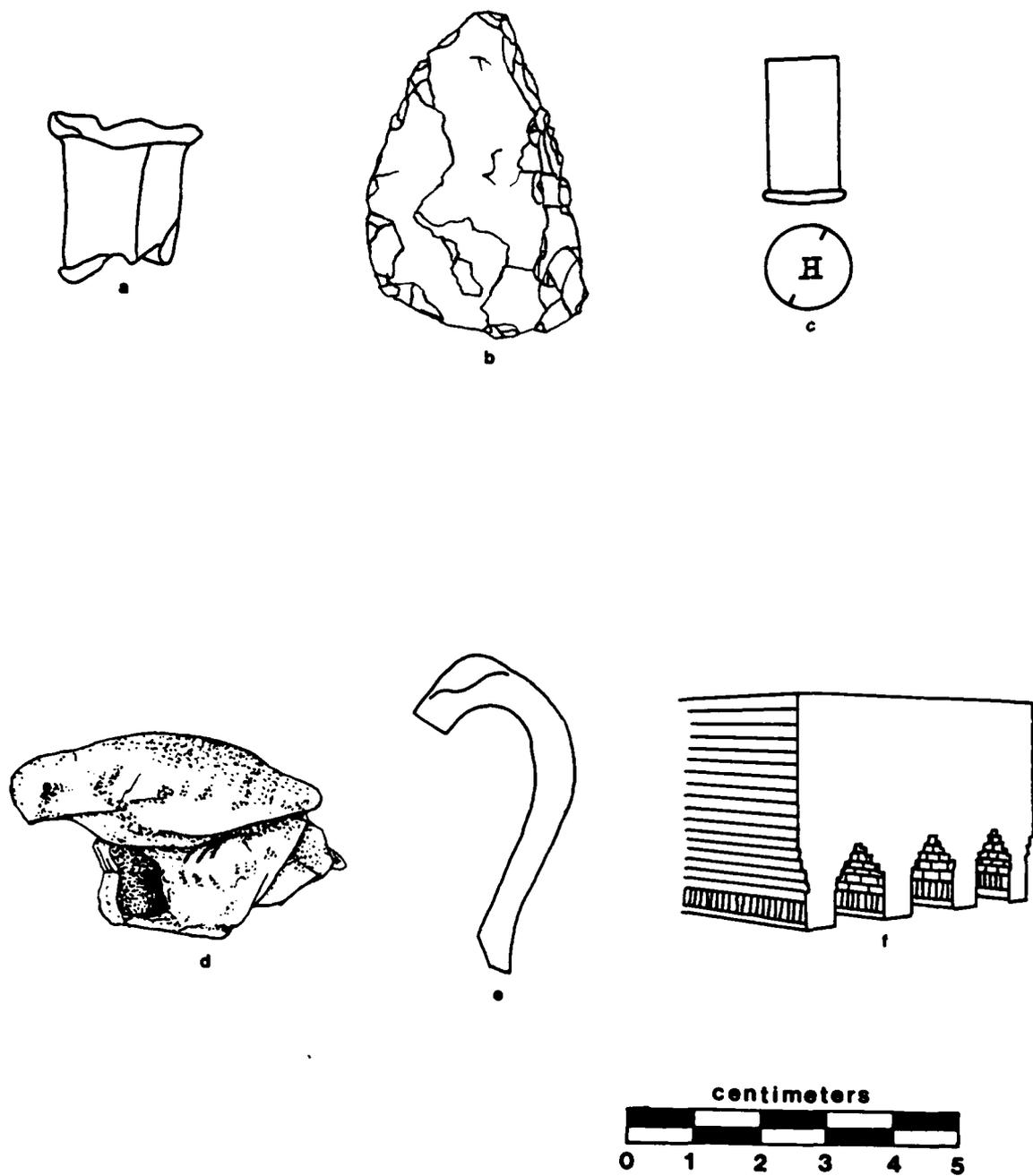


Figure 39 a. Bottle neck (S-33) from 32PB16; b. biface (S-1) from 32PB25; c. rifle cartridge (S-5) 32PB38; d. ceramic bird (81.115.33) and e. ceramic cup handle (81.115.32) from 32PB101; f. illustration of a clamp or scove kiln.

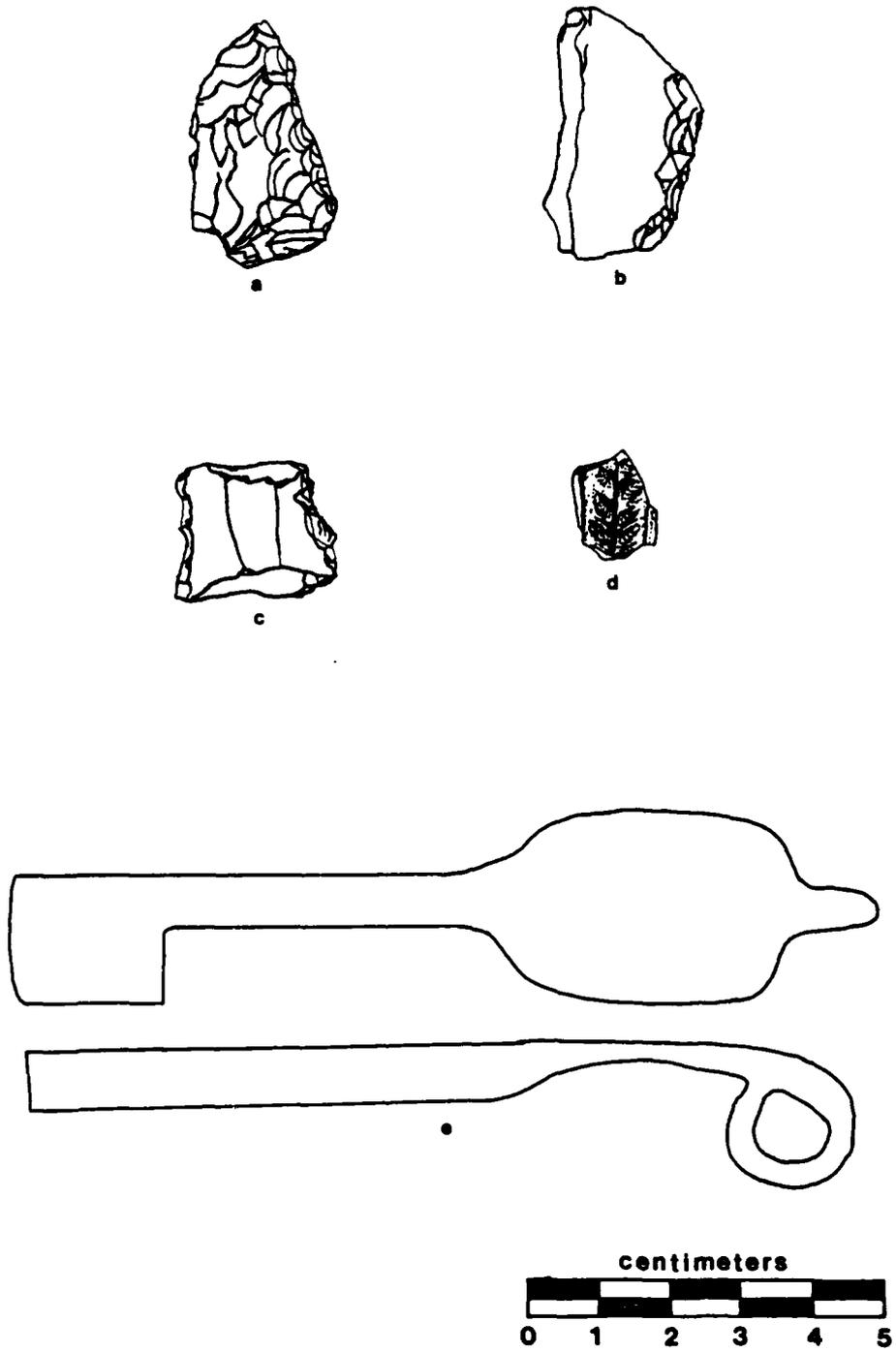


Figure 40 a-b. Prehistoric stone artifacts (S-139 and S-40); c. gunflint (S-1); d. clay pipe bowl fragment (S-67); and e. metal key (S-146) from 32PB31.

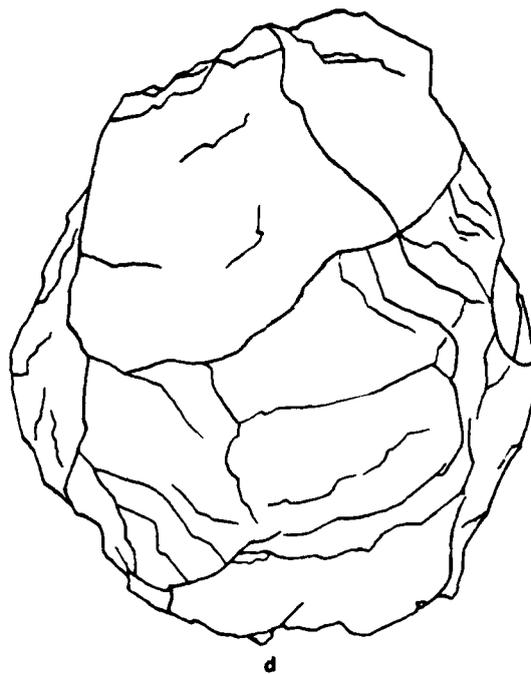
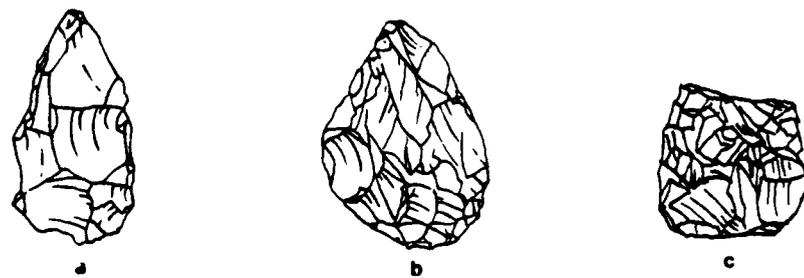


Figure 41 a-b. Bifaces (S-4 and S-5) from 32CV2; c. biface (S-68) from 32CV3; d. chopper (S-6) from 32CV4.

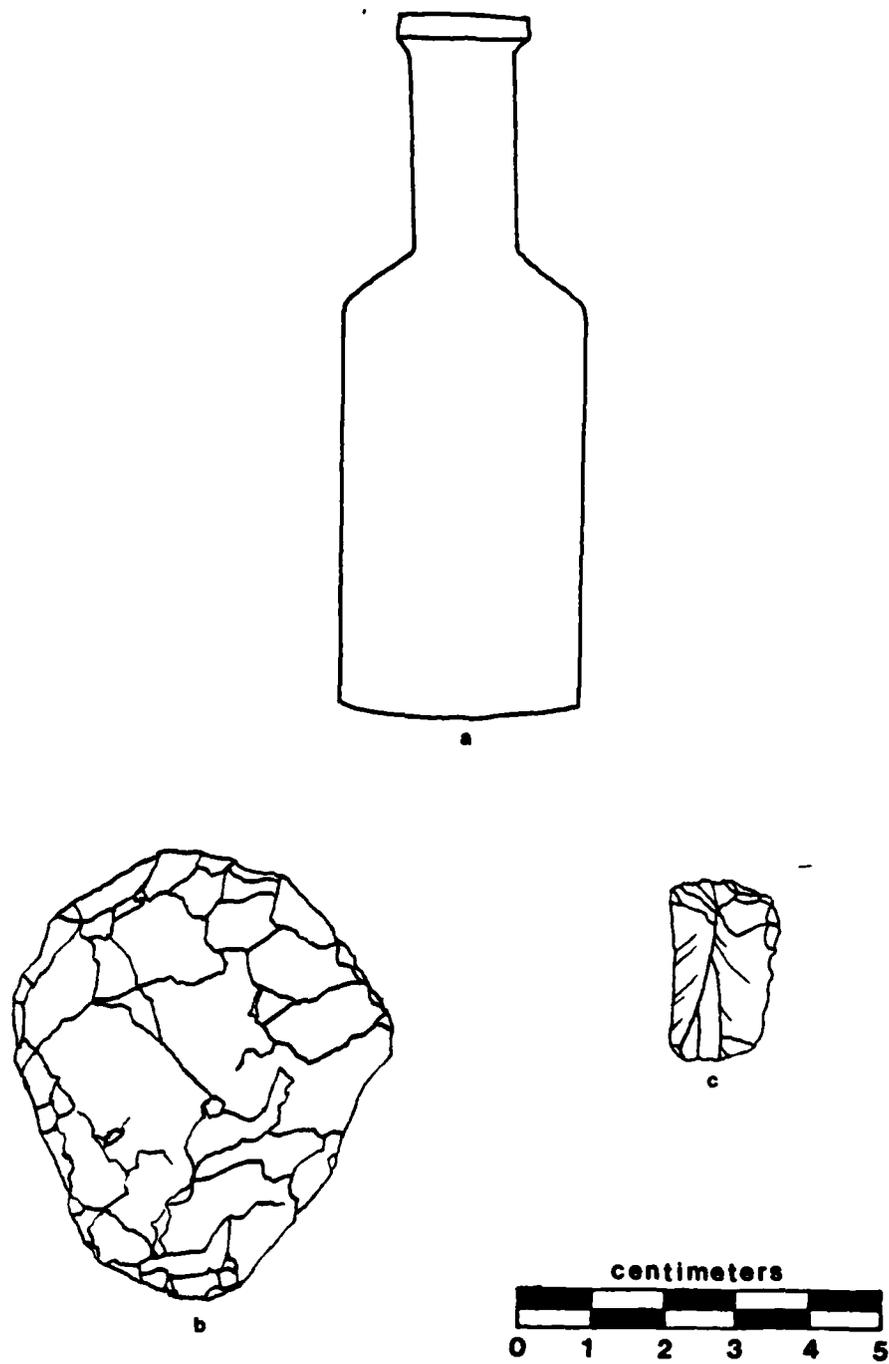


Figure 42 a. Bottle (S-91) from 32CV5; b-c. endscrapers (S-10 and S-1) from 32CV7.

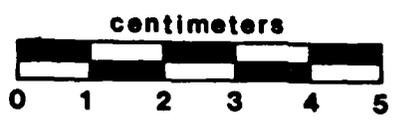
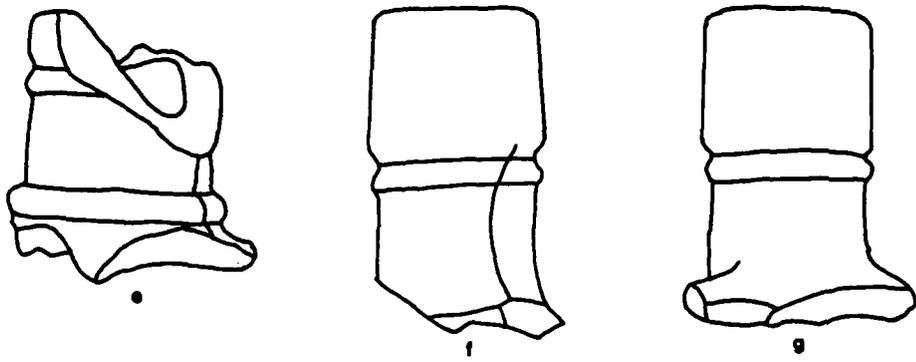
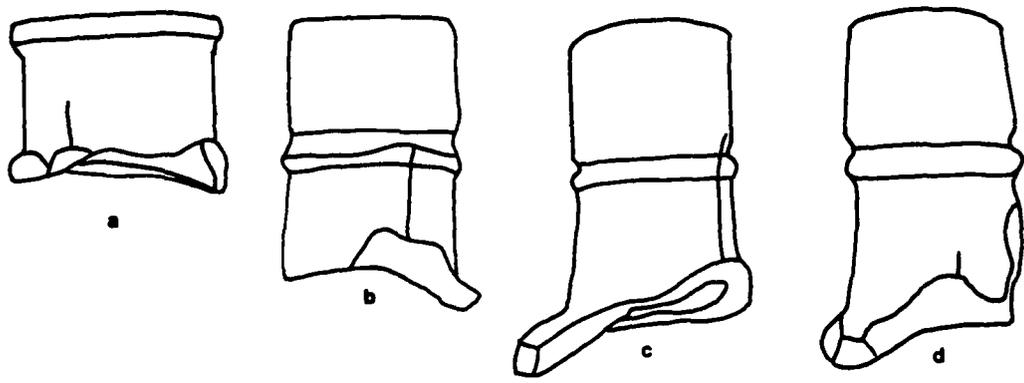


Figure 43 a-g. Bottle necks (S-85, S-89, S-88, S-87, S-86, S-90, and S-84) from 32CV9.

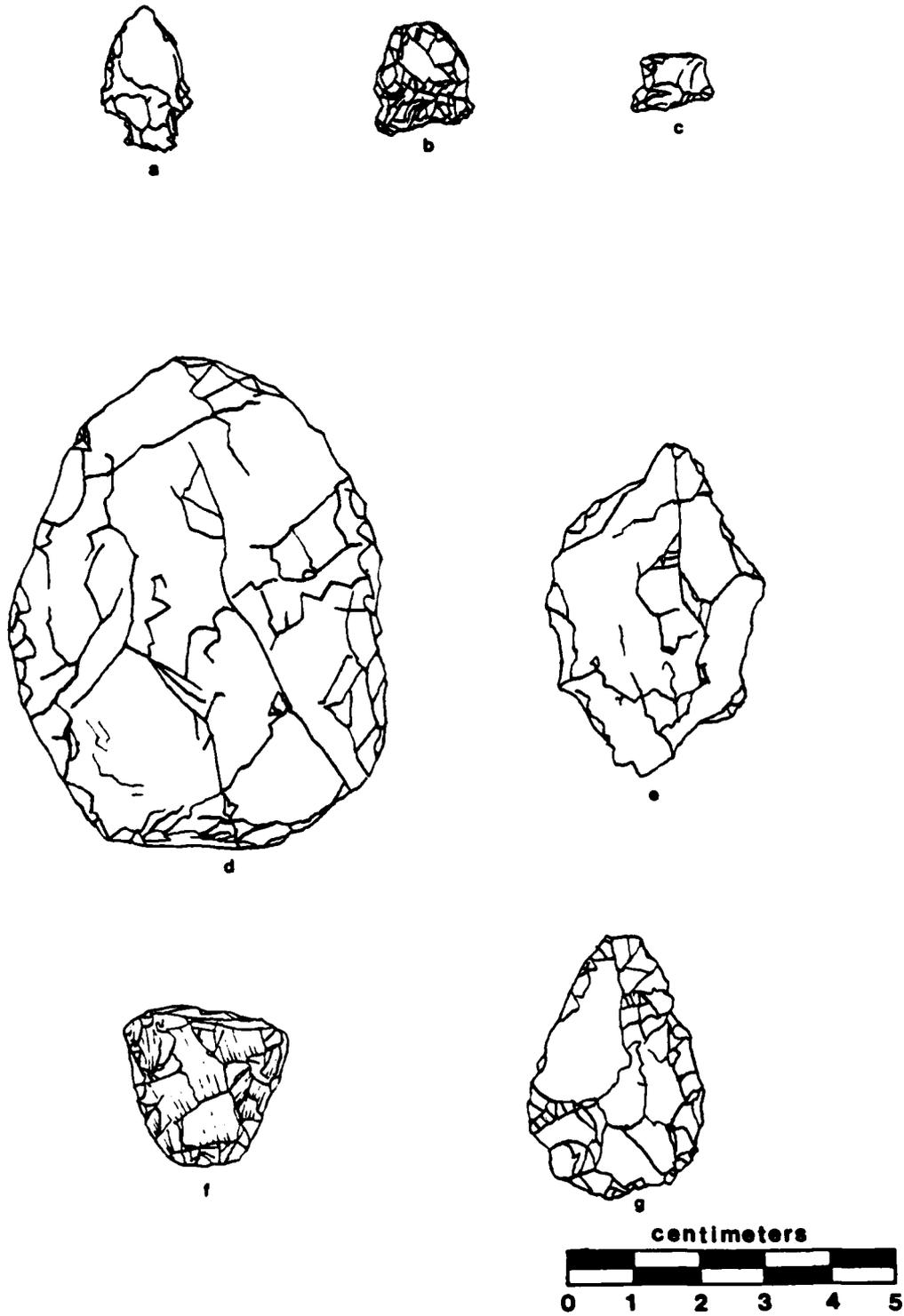


Figure 44 a-c. Projectile points (S-87, S-86, and 4);
 d-e. bifaces (9 and S-625); f. endscraper
 (S-546); and g. biface preform (S-138) from
 32CV204.

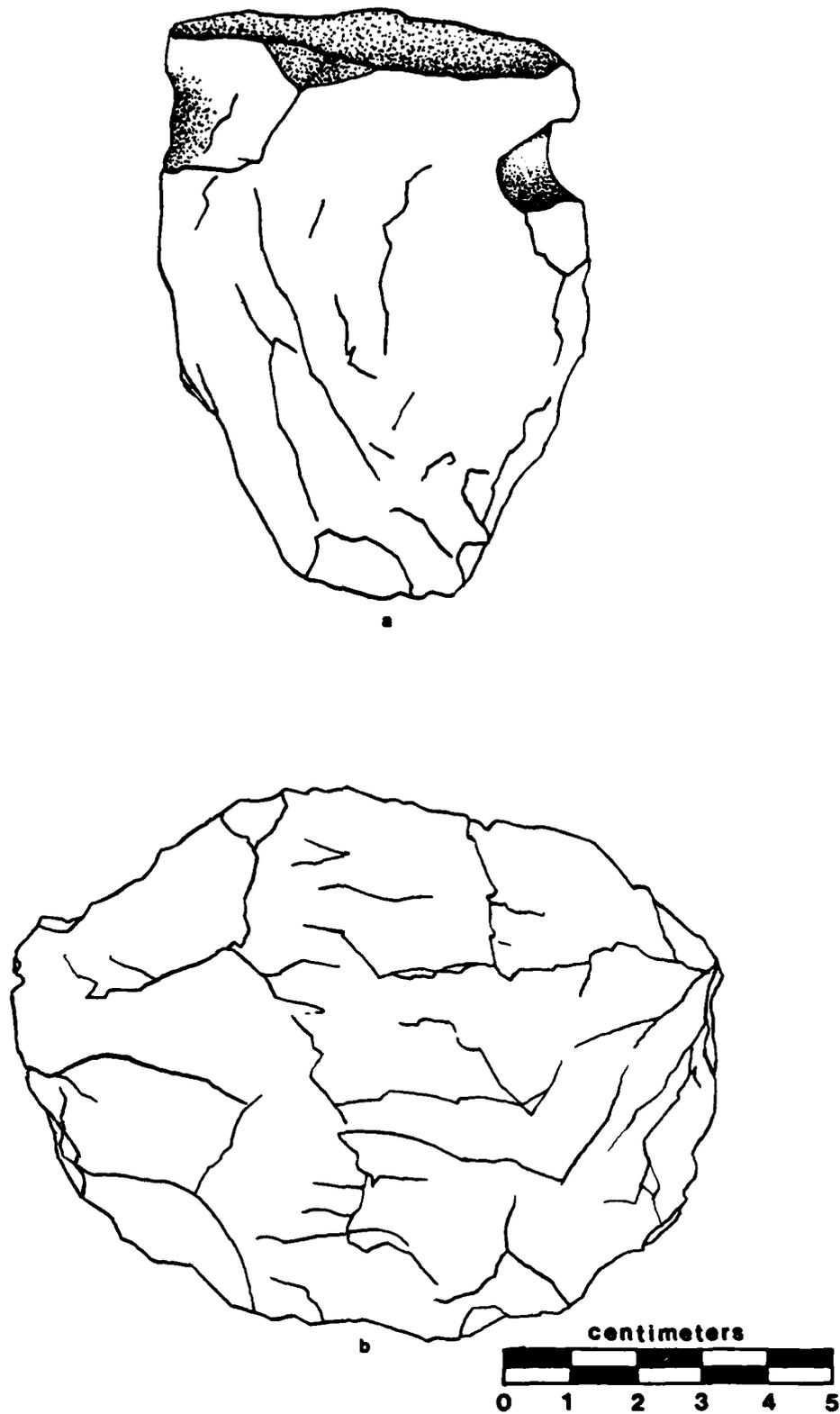


Figure 45 a. Grooved maul (S-540) and b. chopper (47)
from 32CV204.

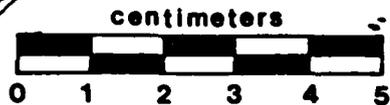
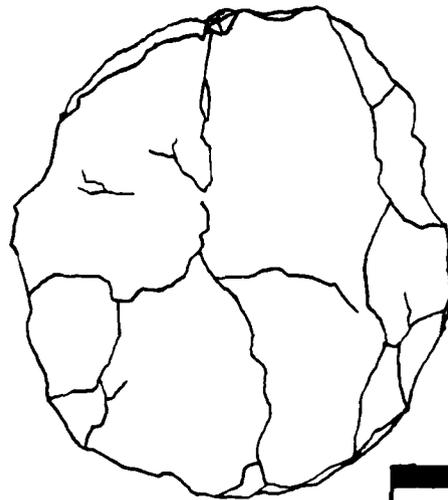
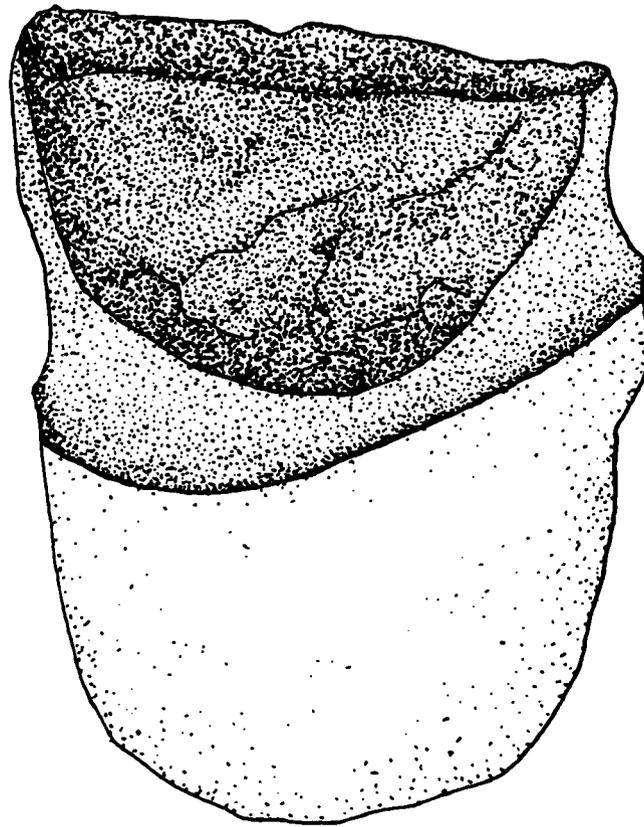


Figure 46 a. Grooved maul (S-539) and b. chopper (48) from 32CV204.

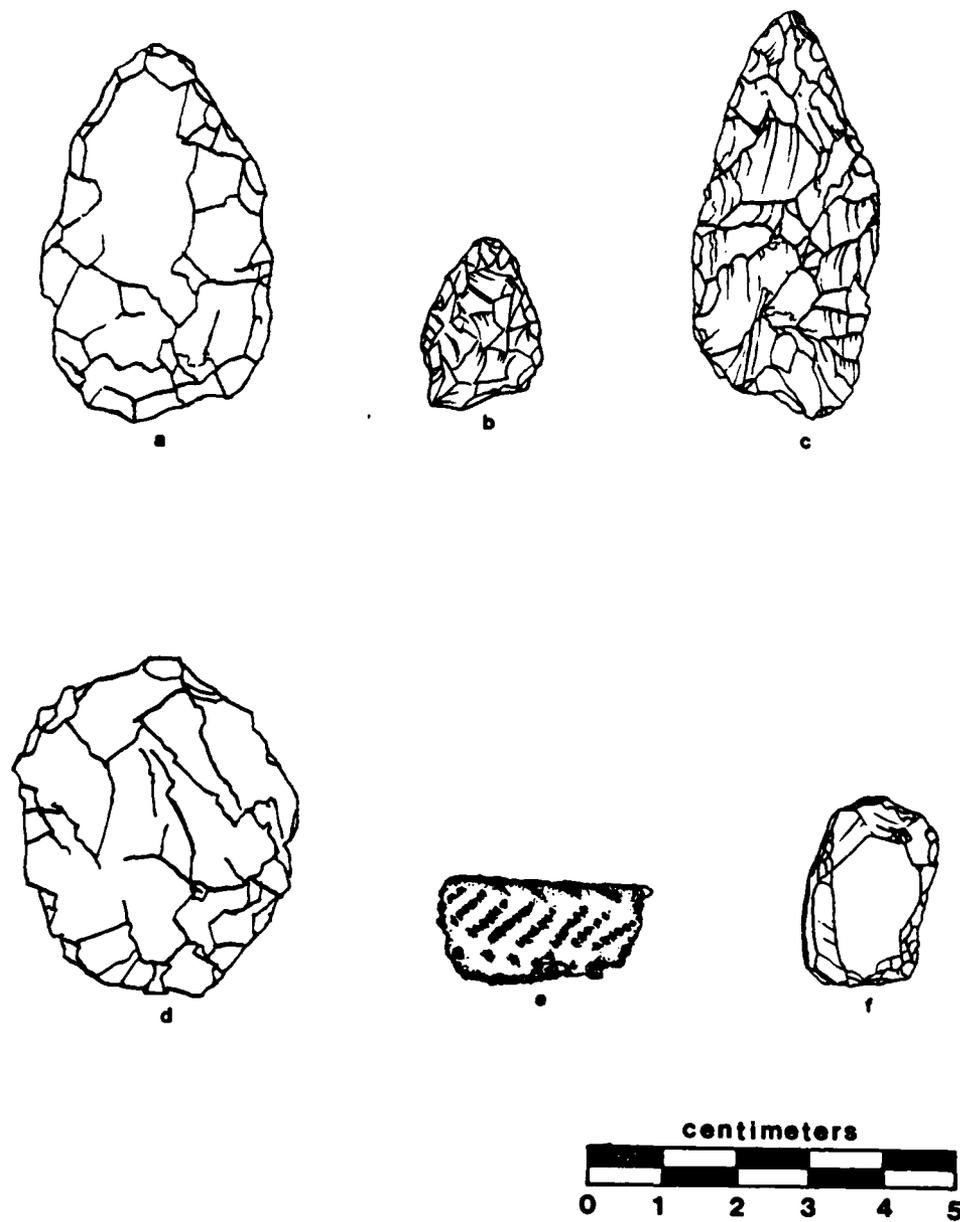
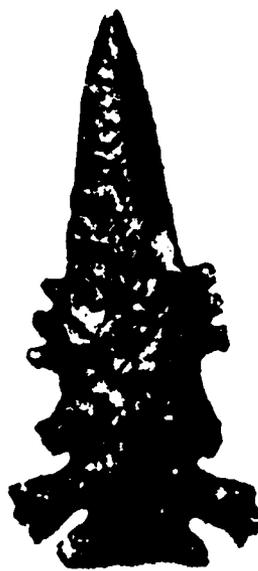


Figure 47 a. Biface (S-1) from 32CV203; b. projectile point (S-13) and c. biface (S-12) from 32CV205; d. biface (S-7) from 32CV215a; e. rim sherd and f. disto-lateral scraper (S-14) from 32CV217.

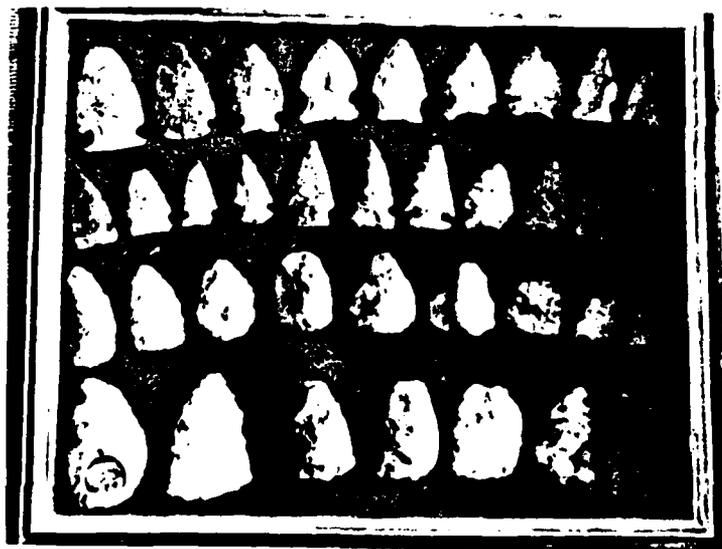
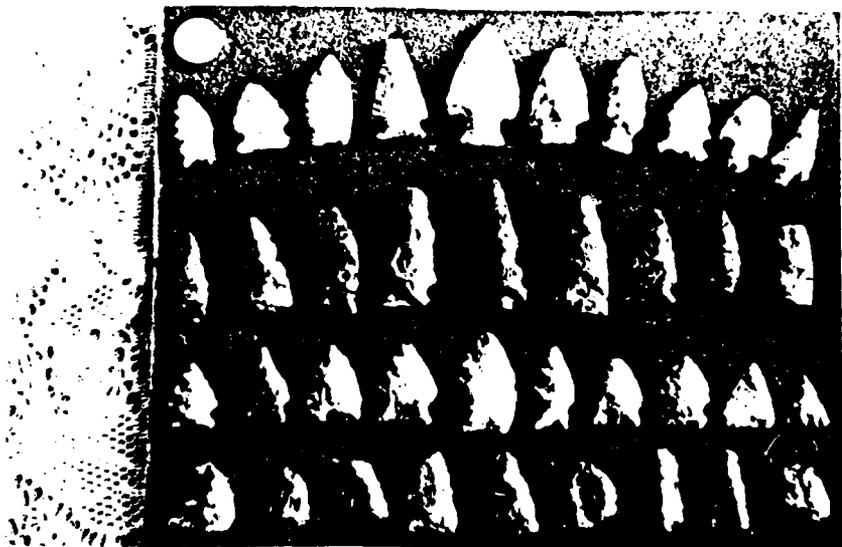


a



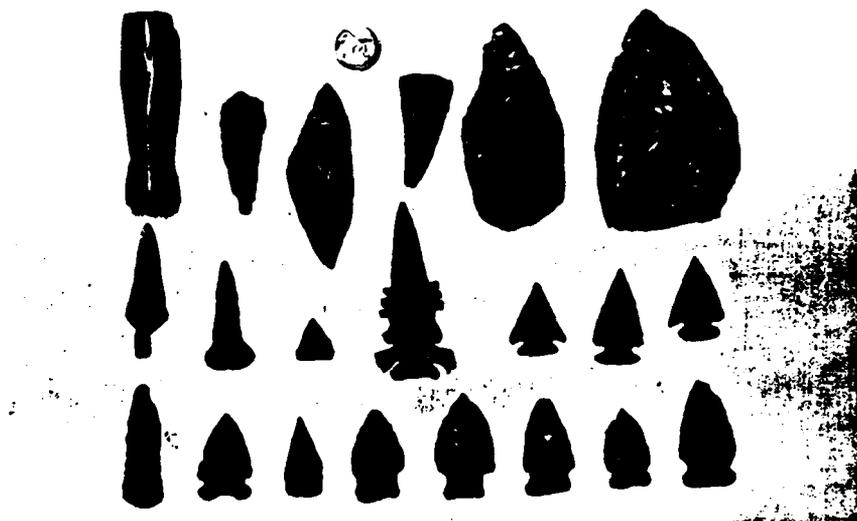
b

Figure 48 a. Catlinite pipe and b. Knife River flint ceremonial projectile point. Both are in the collection of Mr. Carl Kartes.



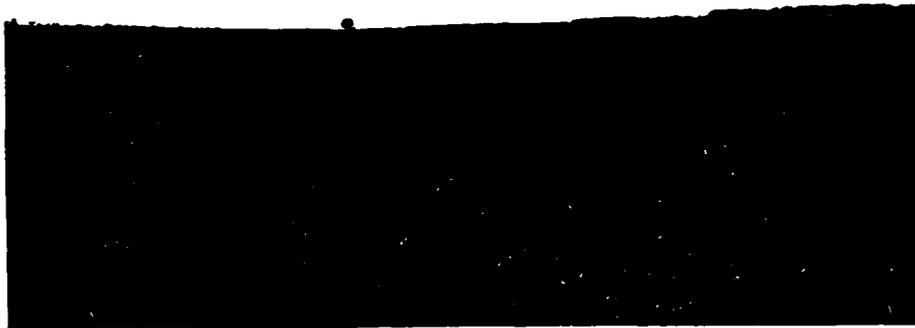
b

Figure 49 a-b. Chipped stone artifacts in the collection of Mr. Jay Wessels. Note the Clovis projectile point in the top photograph, top row, third from the left.



b

Figure 50 a. Various prehistoric and historic Native American artifacts and b. various prehistoric pottery sherds. All are from the collection of Mr. Carl Kartes.



a



b

Figure 51 a. View of 32PB8, looking west; b. view of 32PB9 looking north.



a



b

Figure 52 a. View of 32PB10, looking north; b. view of 32PB11, looking north.



a



b

Figure 53 a. View of 32PB12, looking north; b. view of 32PB13, looking east.



1.0



1.1



1.25



1.4

RESOLUTION



2.8



3.15



3.5



4.0



4.5



2.5



2.2



2.0



1.8



1.6



a

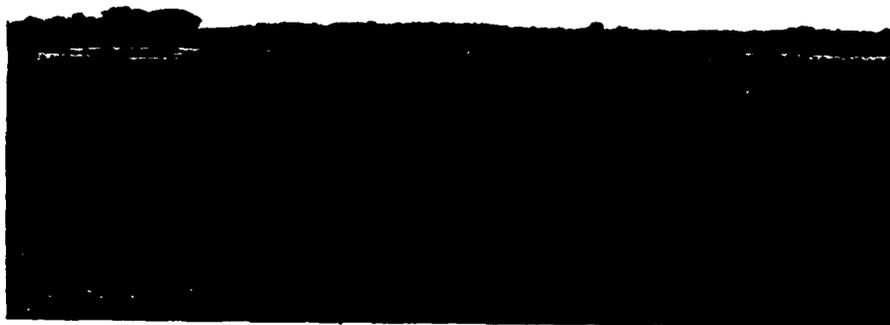


b

Figure 54 a. View of 32PB14, looking east; b. view of 32PB15, USD-20, USD-21, and 32PB34, looking northwest.



a

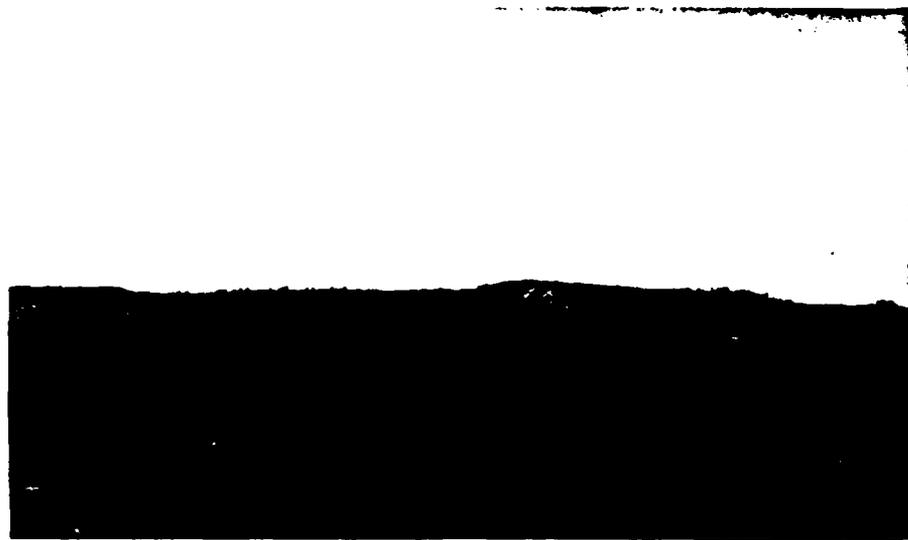


b

Figure 55 a. View of 32PB16, 32PB17, and 32PB18, looking south; b. view of 32PB18 and USD-25, looking south.



a

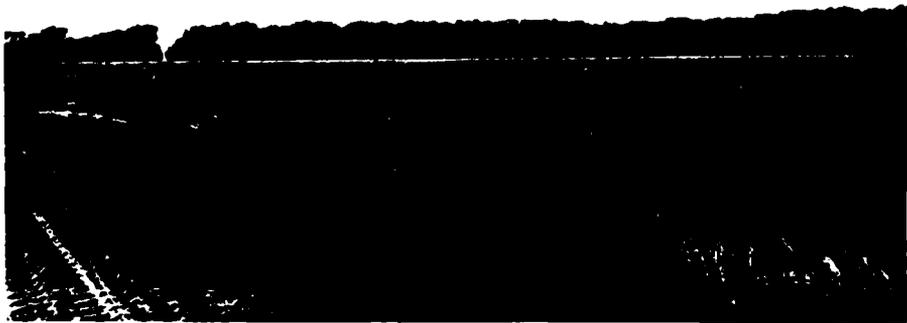


b

Figure 56 a. View of 32PB19, looking west; b. view of 32PB20, looking west.

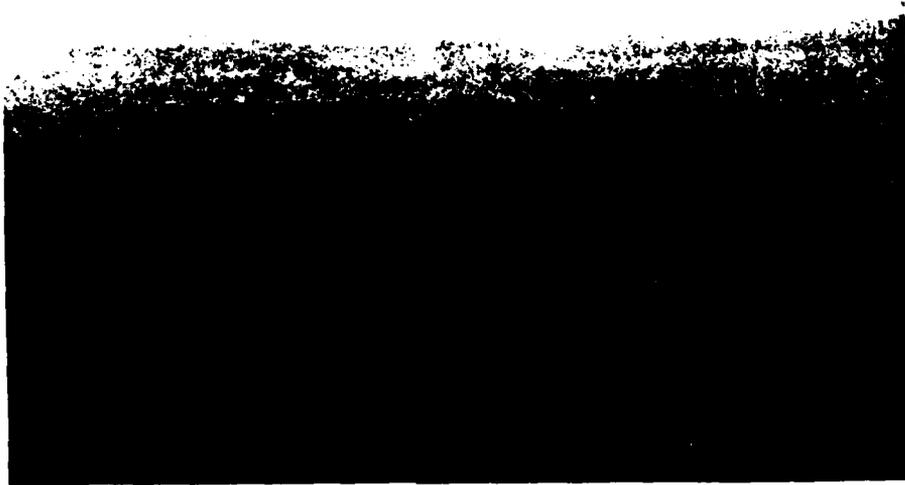


a



b

Figure 57 a. View of 32PB25, looking west; b. view of 32PB26, looking northwest.



a



b

Figure 58 a. View of Grant's House and Trading Post (32PB31), looking north; b. view of 32PB32, looking south.

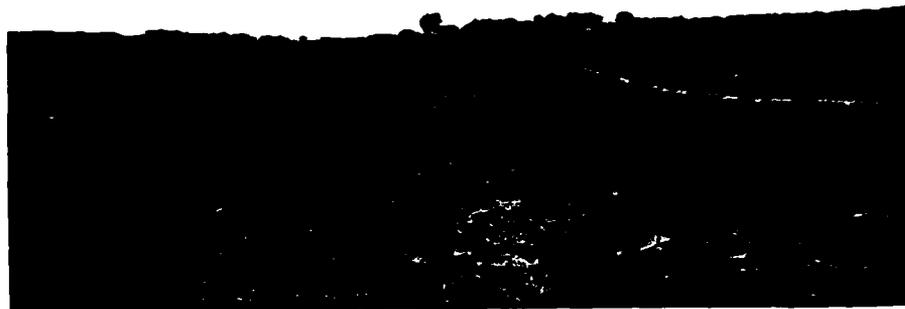


a



b

Figure 59 a. View of the Delorme Massacre Site (32PB37) looking northwest; b. view of USD-25 and 32PB38, looking southwest.



a

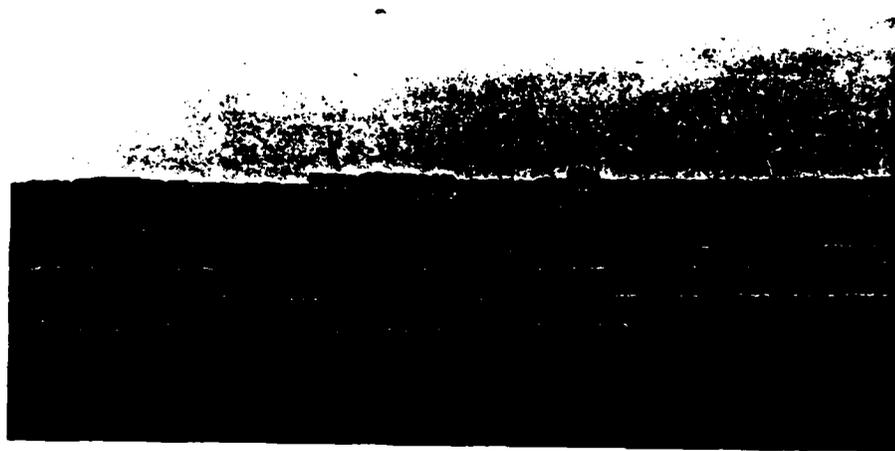


b

Figure 60 a. View of Gingras House and Trading Post (32PB101), looking west; b. view of Gingras House and Trading Post (32PB101), looking east.



a



b

Figure 61 a. View of USD-2, looking north; b. view of USD-3, looking north.



a



b

Figure 62 a. View of USD-9 and USD-10, looking northwest; b. view of USD-11, looking north.



a

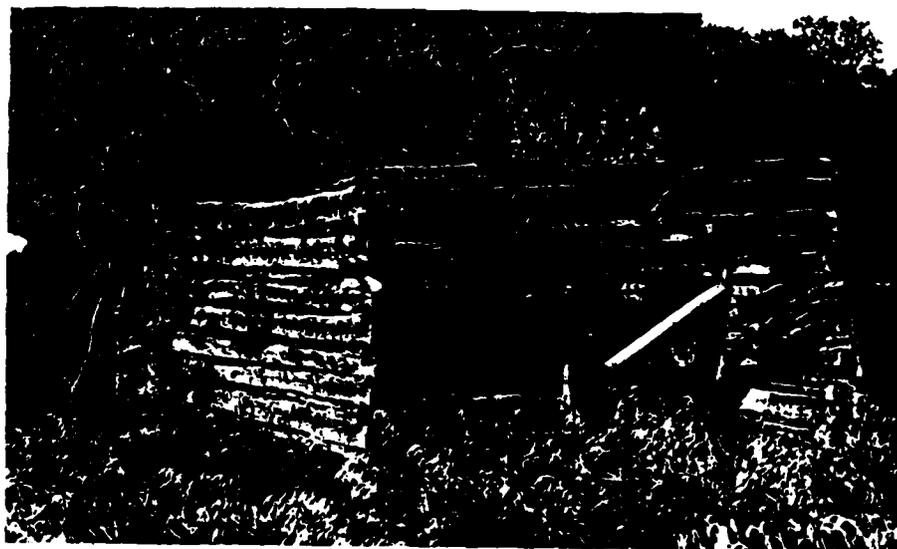


b

Figure 63 a. View of USD-13, looking north; b. view of USD-17, looking southeast.



a



b

Figure 64 a. View of 32CV2, looking south; b. southwest view of log cabin at 32CV2.

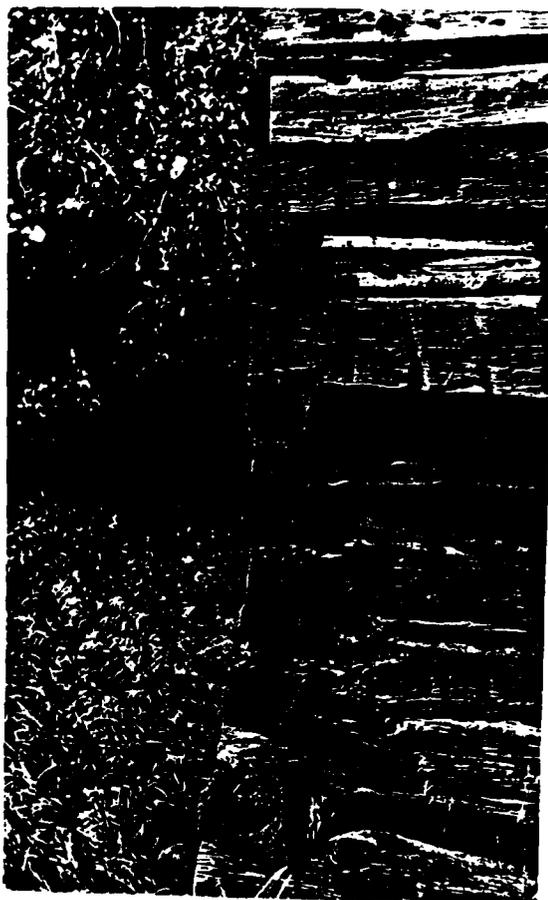
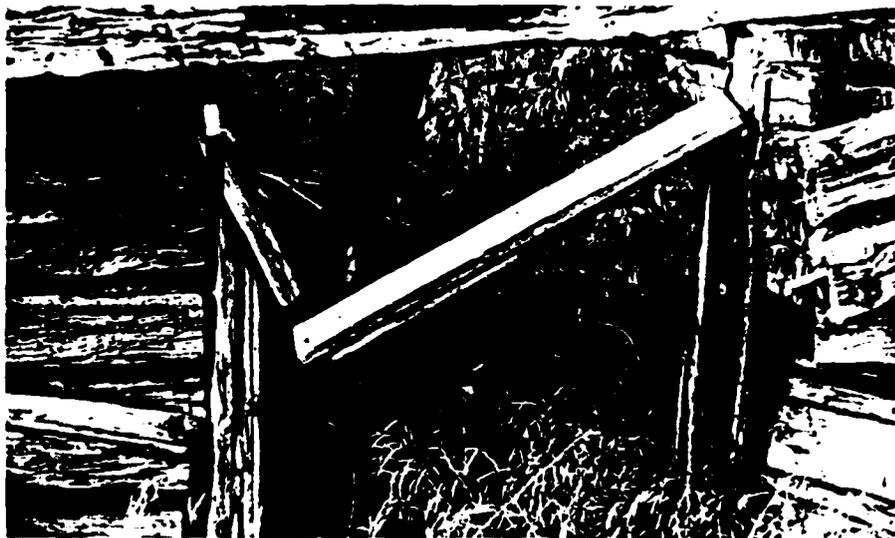


Figure 65 a. Detail of peg construction of log cabin at 32CV2; b. view of southwest corner of log cabin at 32CV2, showing dove-tail construction.



a



b

Figure 66 a. View of 32CV3, looking south; b. view of 32CV4, looking north.



a



b

Figure 67 a. View of 32CV5, looking north; b. view of 32CV5, looking northeast.



a



b

Figure 68 a. View of 32CV6, looking north; b. view of 32CV7, looking south.



a



b

Figure 69 a. View of 32CV7, looking south; b. view of 32CV8, looking northwest.



a



b

Figure 70 a. View of 32CV9, looking south; b. wagon wheel buried in colluvium at 32CV10.



a



b

Figure 71 a. View of 32CV10, looking west; b. view of Mayo Brick Plant (32CV11), looking north.



b

Figure 72 a. View of Fish Trap (32CV12), looking south;
b. diversion channel for powering grist mill
at Fish Trap (32CV12).



a



b

Figure 73 a. Location of bridge at Fish Trap (32CV12);
b. remains of stone dam at Fish Trap
(32CV12).



a



b

Figure 74 a. View of 32CV203, looking west; b. view of 32CV204, looking northwest.



a



b

Figure 75 a. View of 32CV204, looking north; b. view of 32CV205, looking northeast.



a



b

Figure 76 a. View of 32CV206, looking north; b. view of 32CV208, looking north.



•

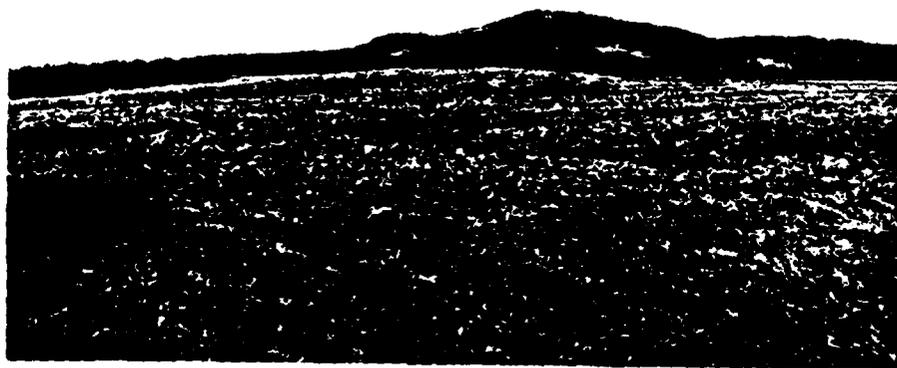


⊥

Figure 77 a. View of 32CV209, looking east; b. view of 32CV210, looking south.



a



b

Figure 78 a. View of 32CV211, looking north; b. view of 32CV212, looking northwest.



a



b

Figure 79 a. View of 32CV215a, looking north; b. view of 32CV217 and 32CV216, looking southeast.



a



b

Figure 80 a. View of Hyde Park Cemetery, looking north;
b. farmstead located in NE $\frac{1}{4}$, NW $\frac{1}{4}$, section
31, T164N, R54W, Cavalier NW quadrangle.



a



b

Figure 81 a. Abandoned farmstead located in NW $\frac{1}{4}$, NW $\frac{1}{4}$, section 5, T163N, R54W, Cavalier NW quadrangle; b. abandoned farmstead located in SW $\frac{1}{4}$, NW $\frac{1}{4}$, section 31, T164N, R54W, Cavalier NW quadrangle.



b

Figure 82 a. Farmstead located in NE $\frac{1}{4}$, SE $\frac{1}{4}$, section 33, T163N, R57W, Vang quadrangle; b. abandoned church located in NE $\frac{1}{4}$, NW $\frac{1}{4}$, section 5, T162N, R57W, Vang quadrangle.



b

Figure 83 a-b. Interior views of the abandoned church, showing vertical log construction.



a



b

Figure 84 a. Abandoned school located in NE $\frac{1}{4}$, NE $\frac{1}{4}$, section 5, T162N, R57W, Vang quadrangle; b. abandoned house across the road from the school. It is located in SE $\frac{1}{4}$, SE $\frac{1}{4}$, section 32, T163N, R57W, Vang quadrangle.



a



b

Figure 85 a. Abandoned house located at 32CV210; b. hand water pump located across the road from 32CV210.



a



b

Figure 86 a. Fargo Bridge, located adjacent to 32CV205;
b. bridge located adjacent to 32CV206.

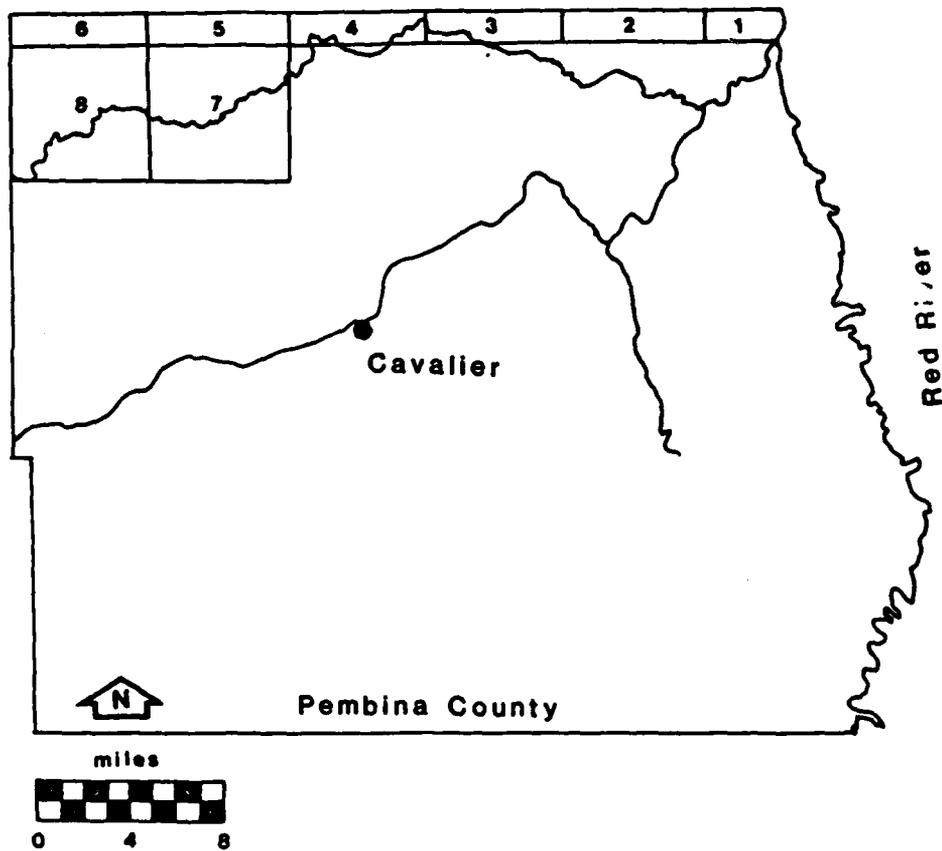


Figure 87 Map key for the U.S. Government Land Office survey maps (c. 1867-1883) in Pembina County.

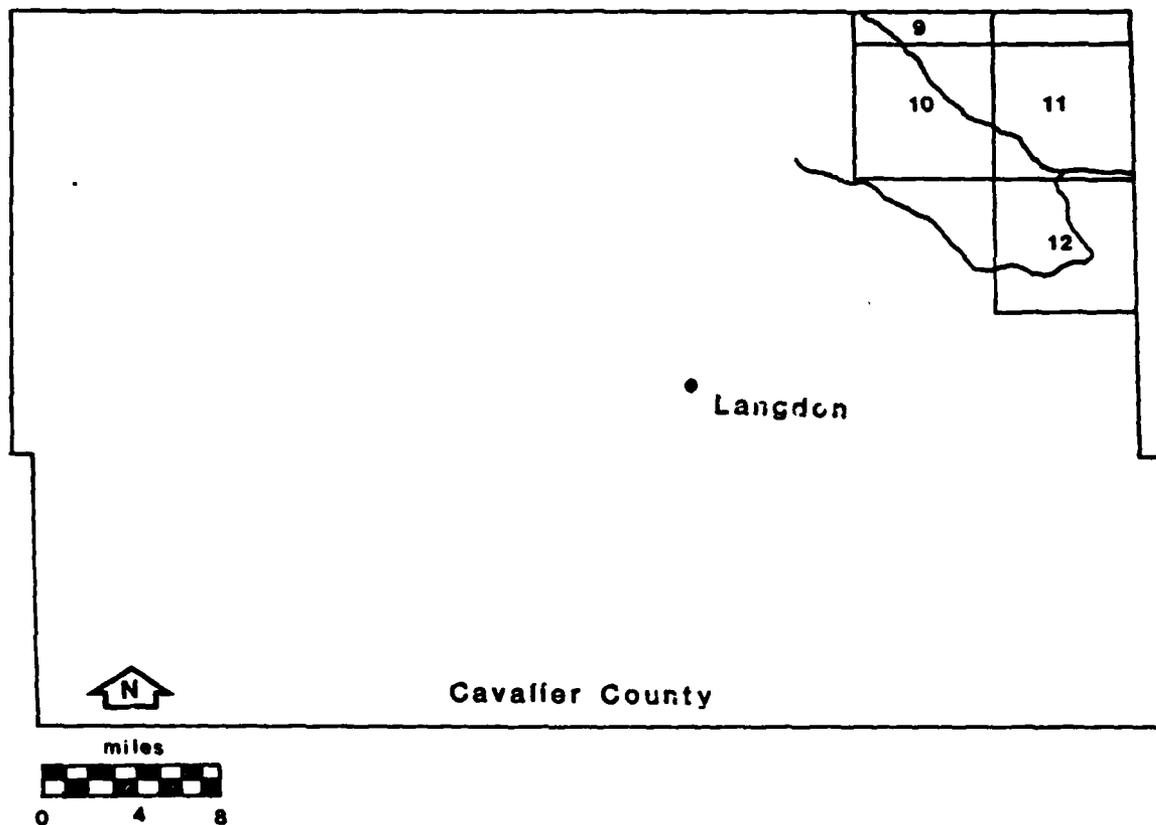


Figure 88 Map key for the U.S. Government Land Office survey maps (c. 1867-1883) in Cavalier County.

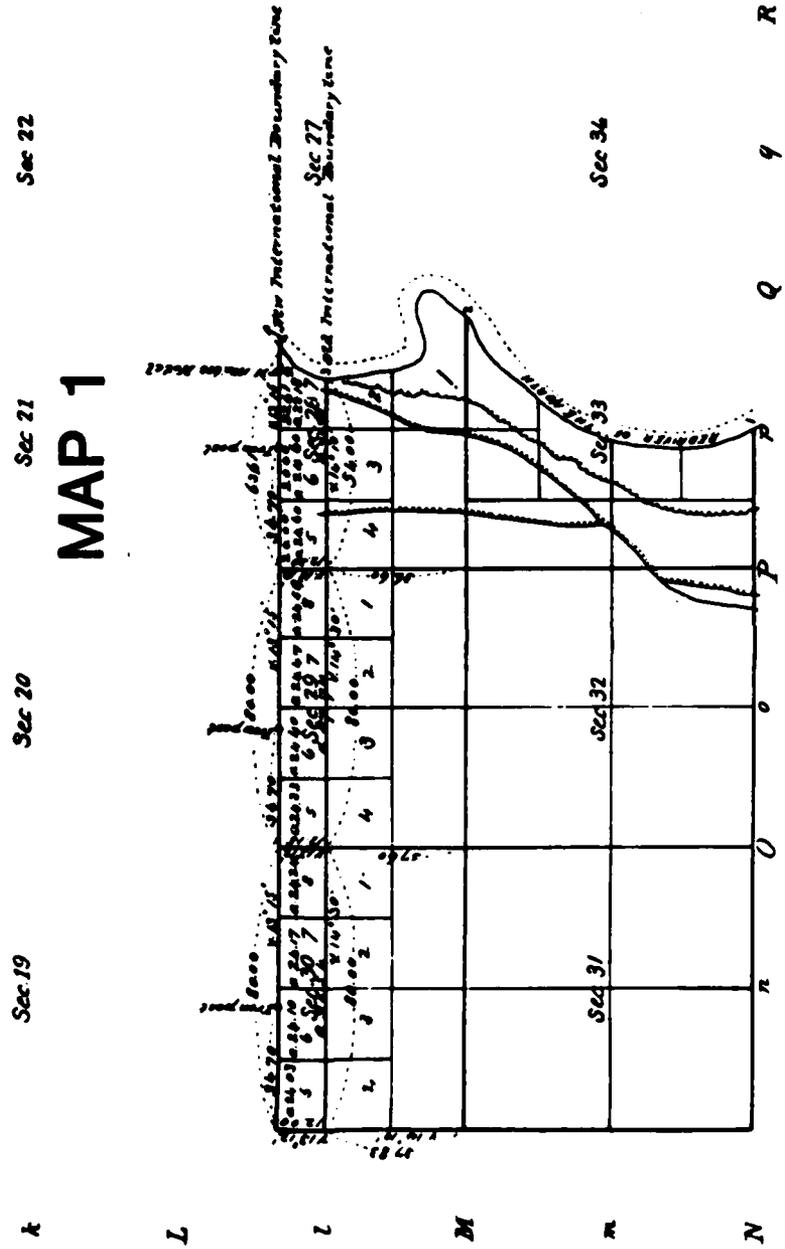


Figure 89 1878 map of T164N, R51W.

MAP 2

International Boundary Line.

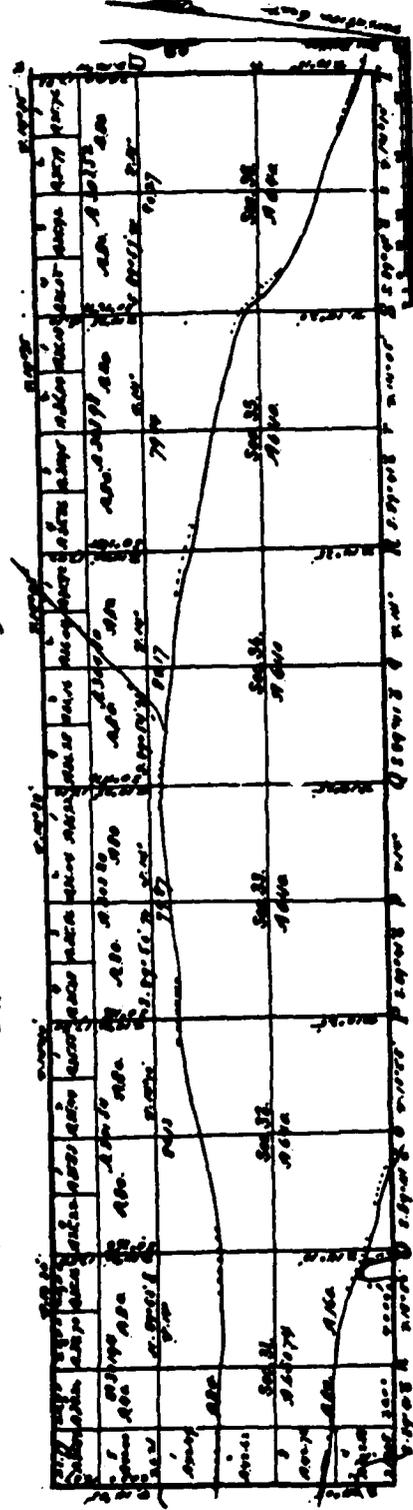


Figure 90 1868 map of T164N, R52W.

MAP 3

Sec. 19 Sec. 20 Sec. 21 Sec. 22 Sec. 23 Sec. 24

International Boundary Line

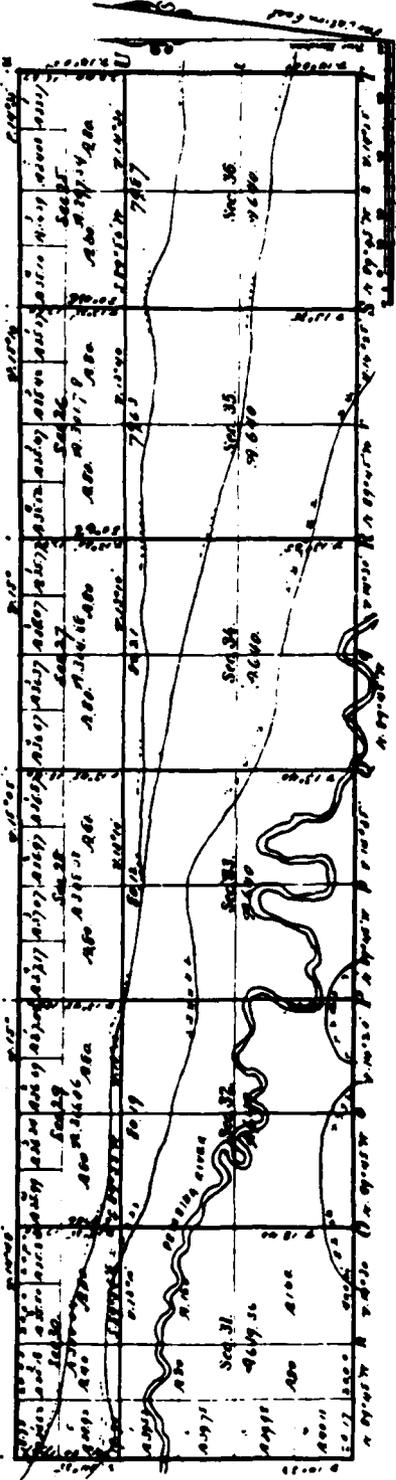


Figure 91 1868 map of T164N, R53W.

MAP 4

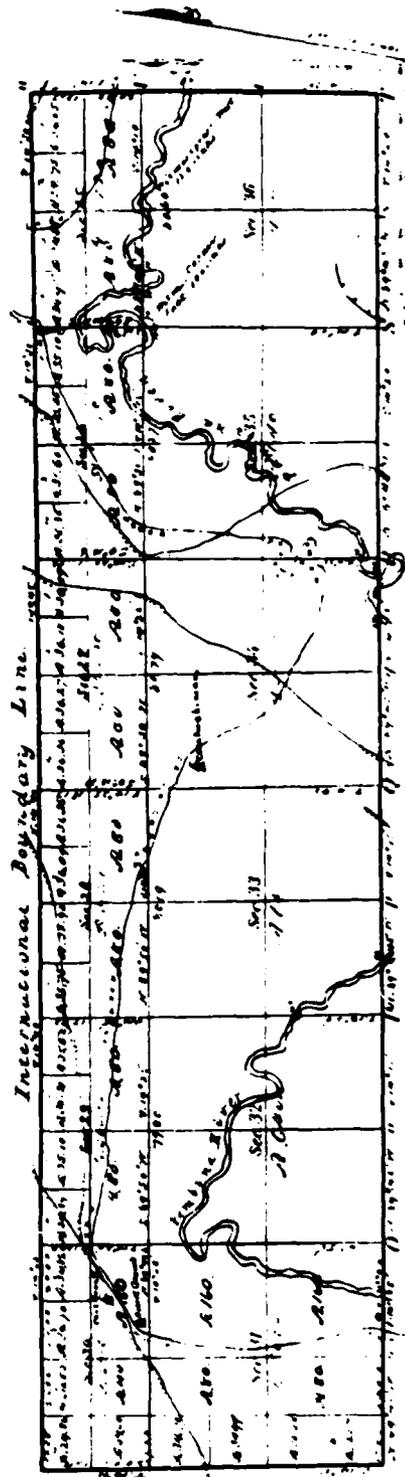


Figure 92 1867 map of T164N, R54W.

MAP 5

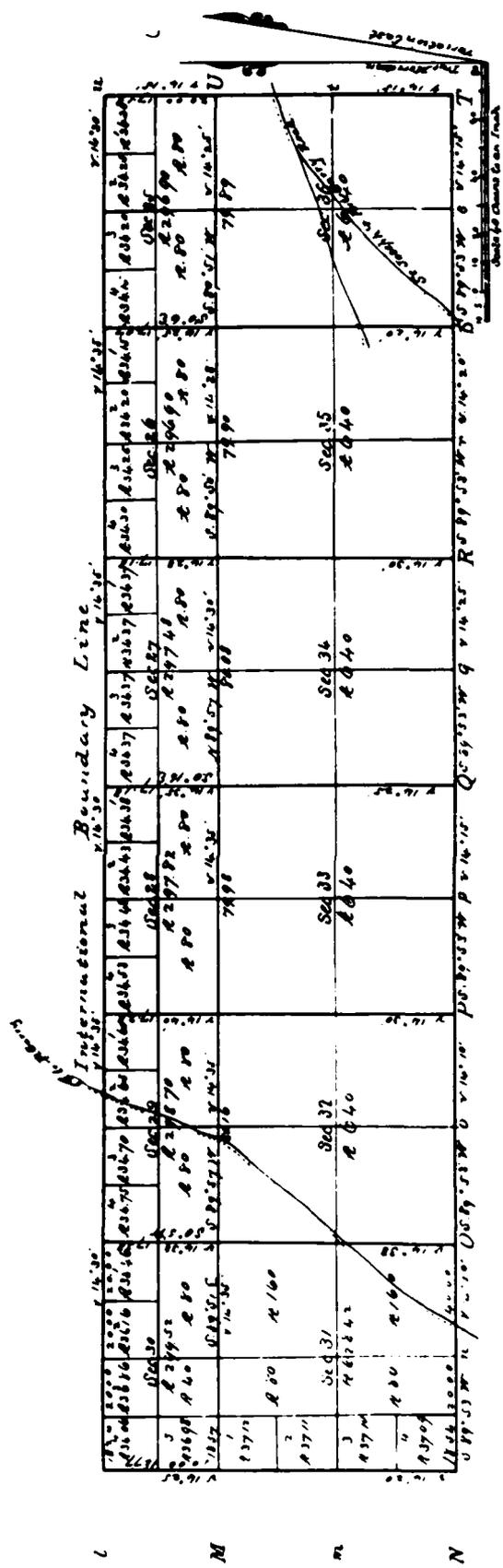


Figure 93 1867 map of T164N, R55W.

Sec 24

Sec 23

Sec 22

Sec 21

Sec 20

Sec 19

MAP 6

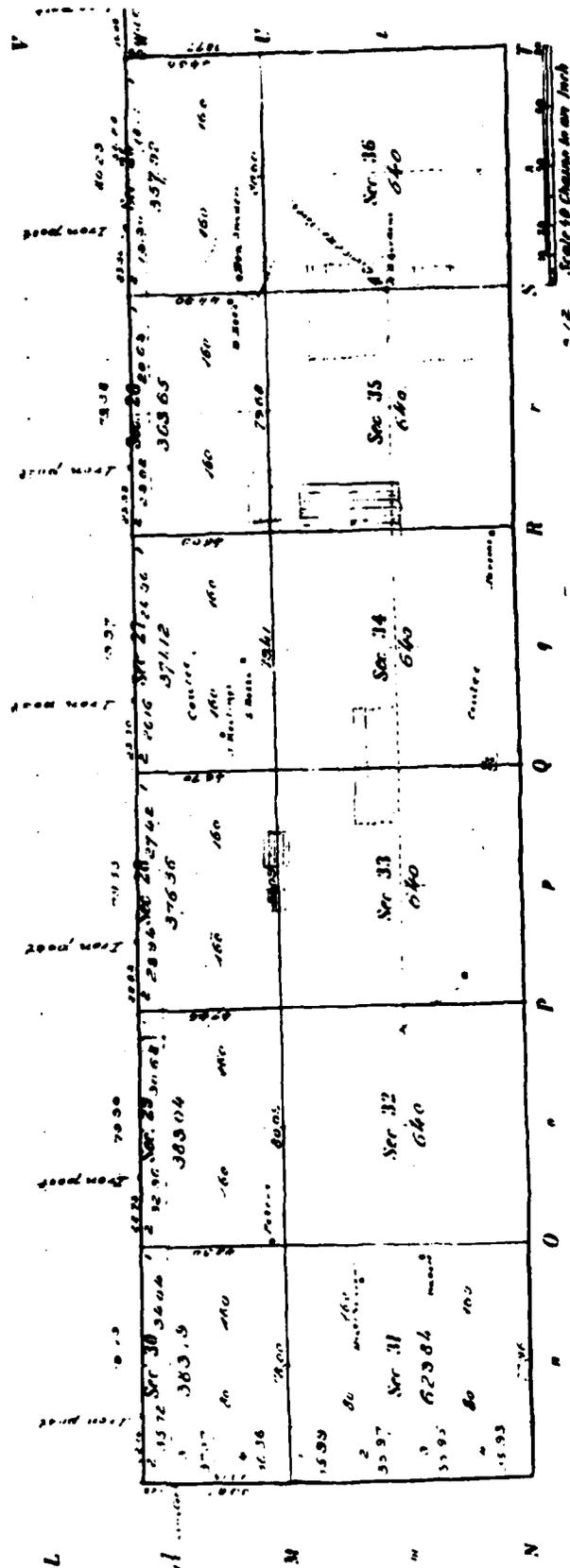


Figure 94 1881 map of T164N, R56W.

TOWNSHIP N: 43 NORTH RANGE N: 55 WEST OF THE 5th PRINCIPAL MERIDIAN

MAP 7

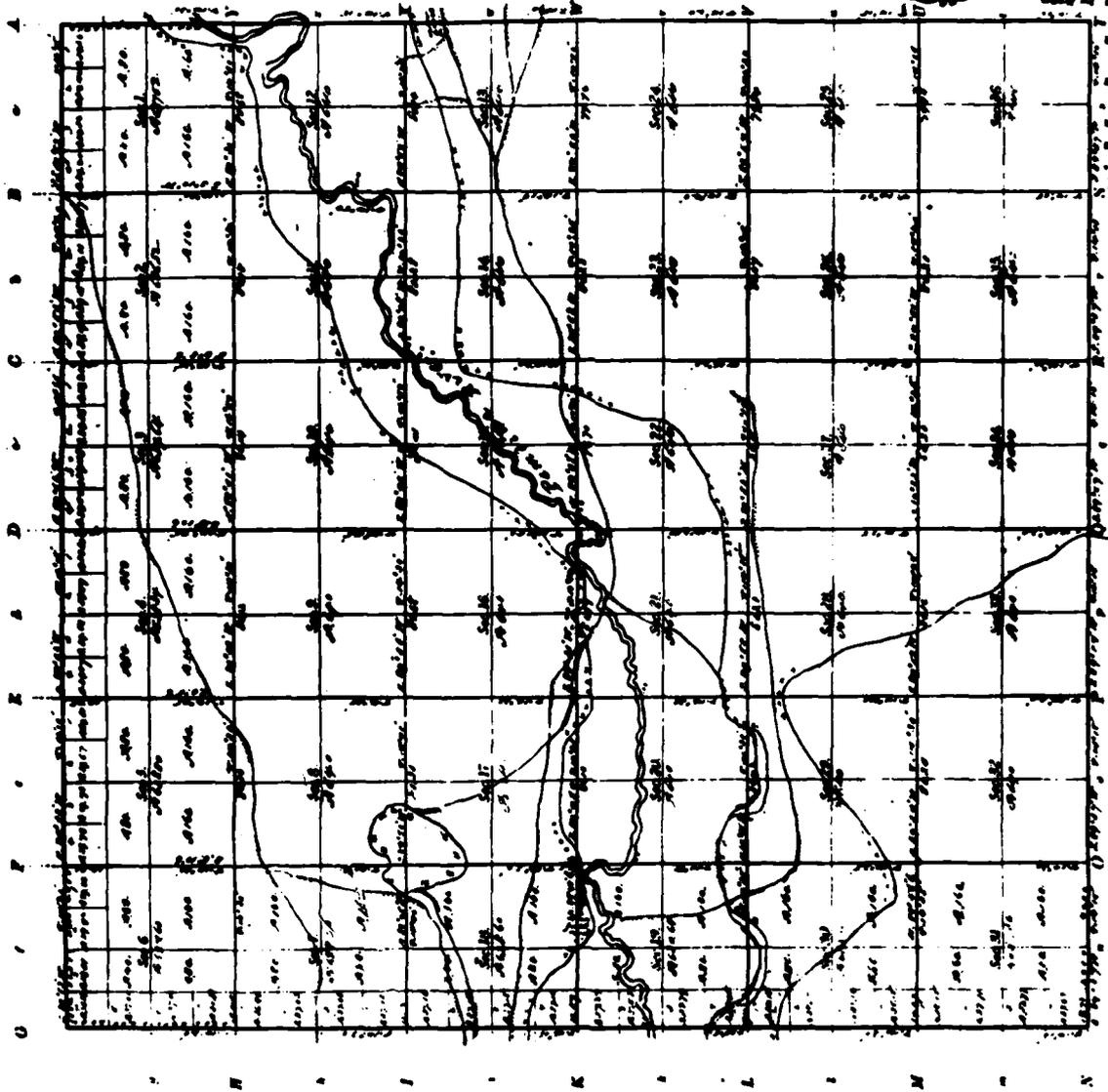


Figure 95 1867 map of T163N, R55W.

Report No. 17460. Dec. 26, 1867

Received with Surveyor General's letter of Dec. 12, 1867 Survey pass for
TOWNSHIP N: 163 NORTH RANGE N: 86 WEST OF THE 5th PRINCIPAL MERIDIAN

1/8 of Sec. 7 and NW 1/4 of Sec. 8 reserved
for Chief of U. S. Army - by order of the
Chief of Army, dated by order of the
Secretary of the Interior, dated March 27, 1868

MAP 8

Duplicate plat filed in local office
Jan'y 25, 1867 - 11070' m. S. m.

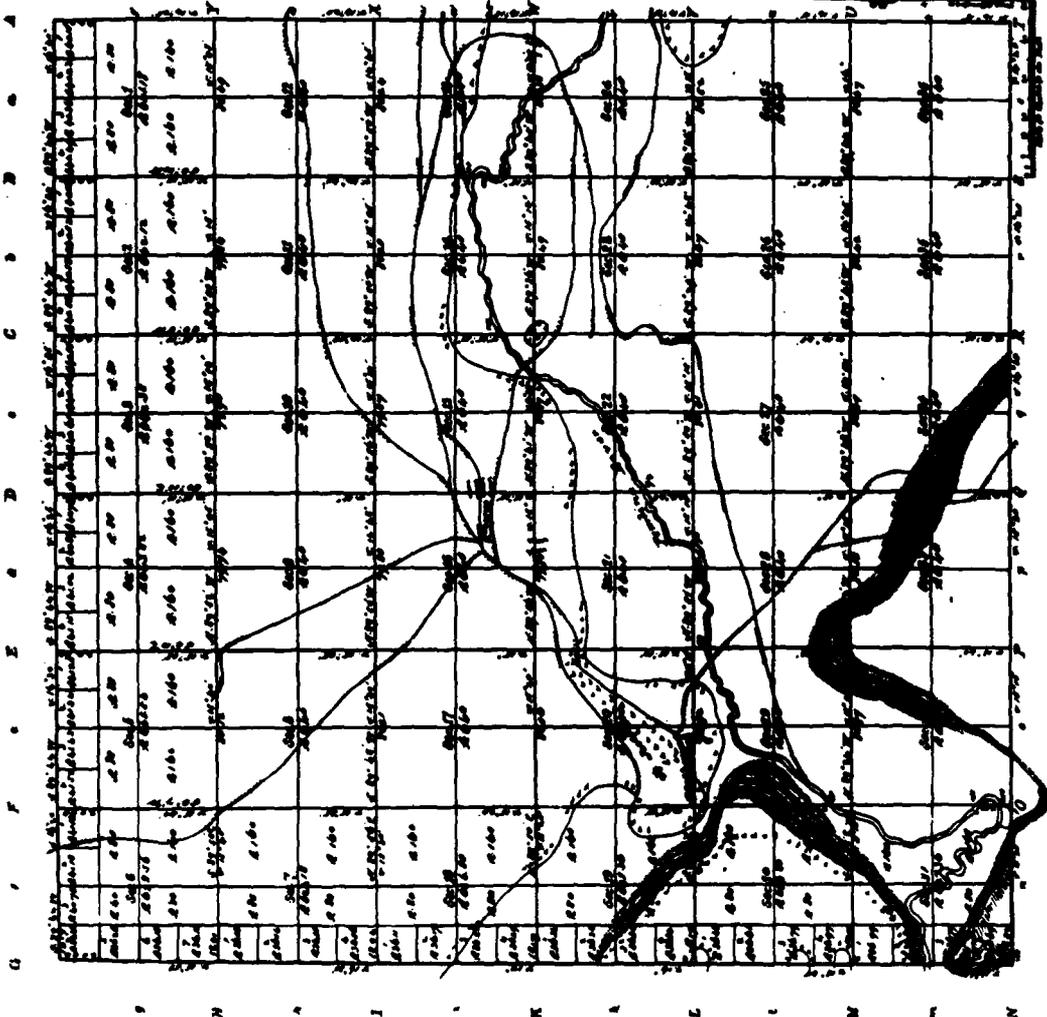


Figure 96 1867 map of T163N, R56W.

MAP 9



Figure 97 1883 map of T164N, R58W.



MAP 11

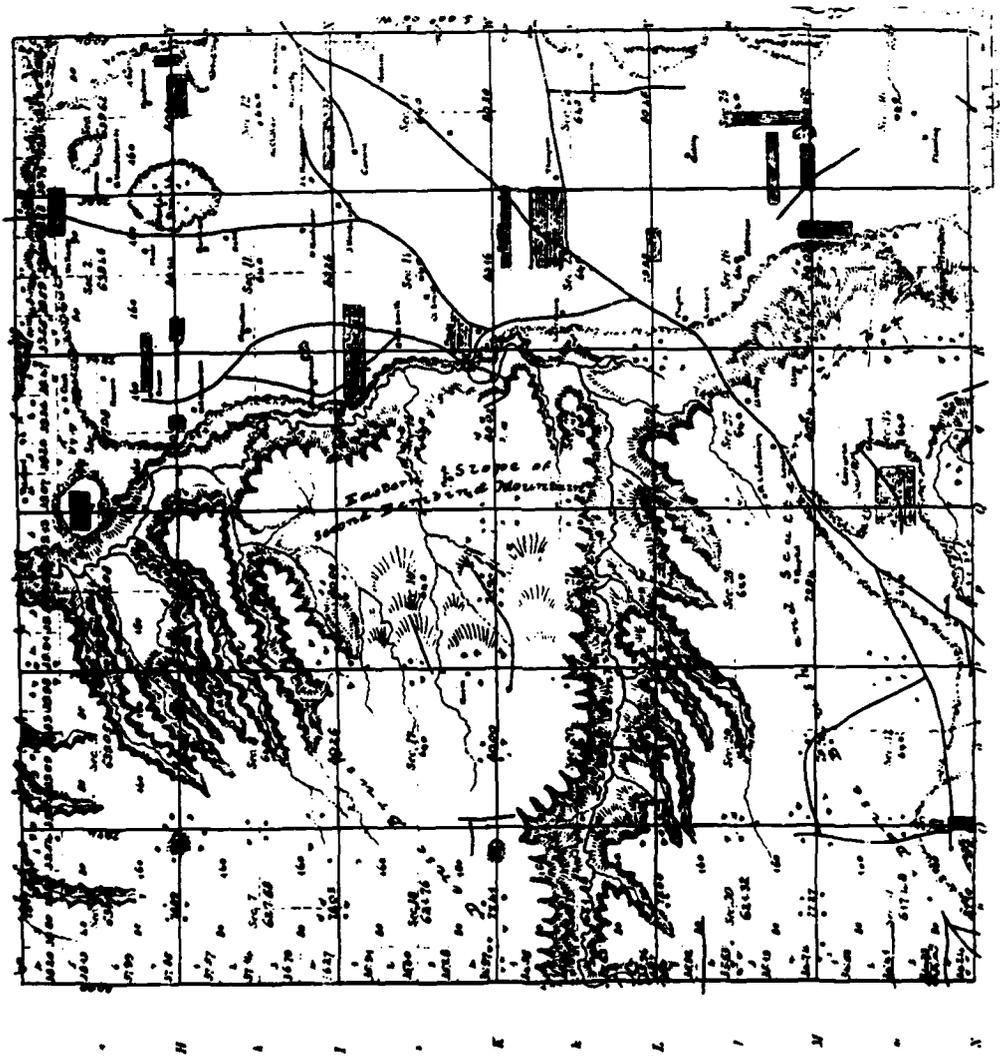
TOWNSHIP NO. 16 S. RANGE NO. 57 WEST OF THE 5TH PRINCIPAL MERIDIAN



Figure 99 1883 map of T163N, R57W.



TOWNSHIP N. 112 NORTH RANGE N. 21 WEST OF THE PRINCIPAL MERIDIAN



MAP 12

Figure 100 1883 map of T162N, R57W.

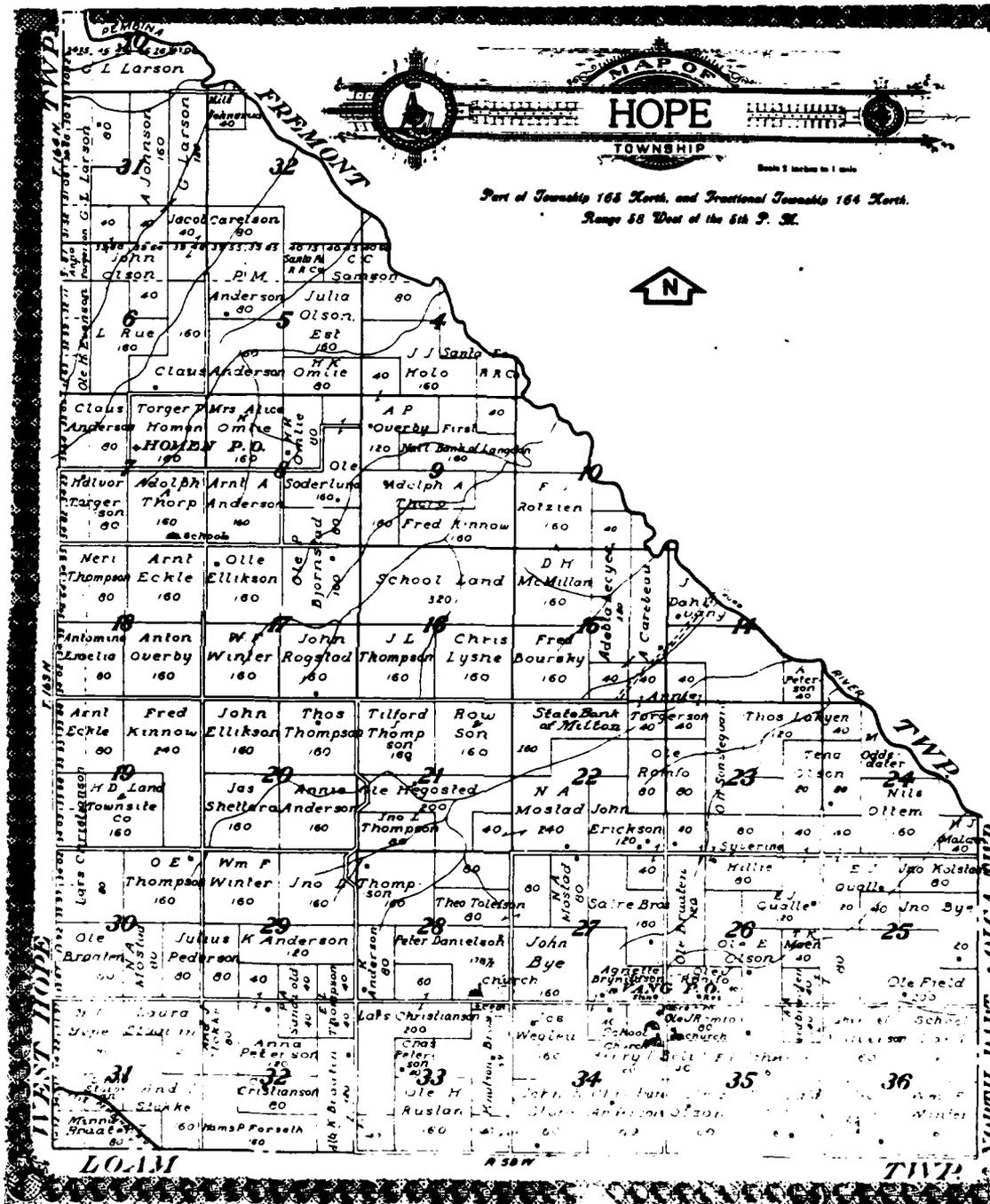


Figure 101 1910 Hope Township map showing landowners and residences.

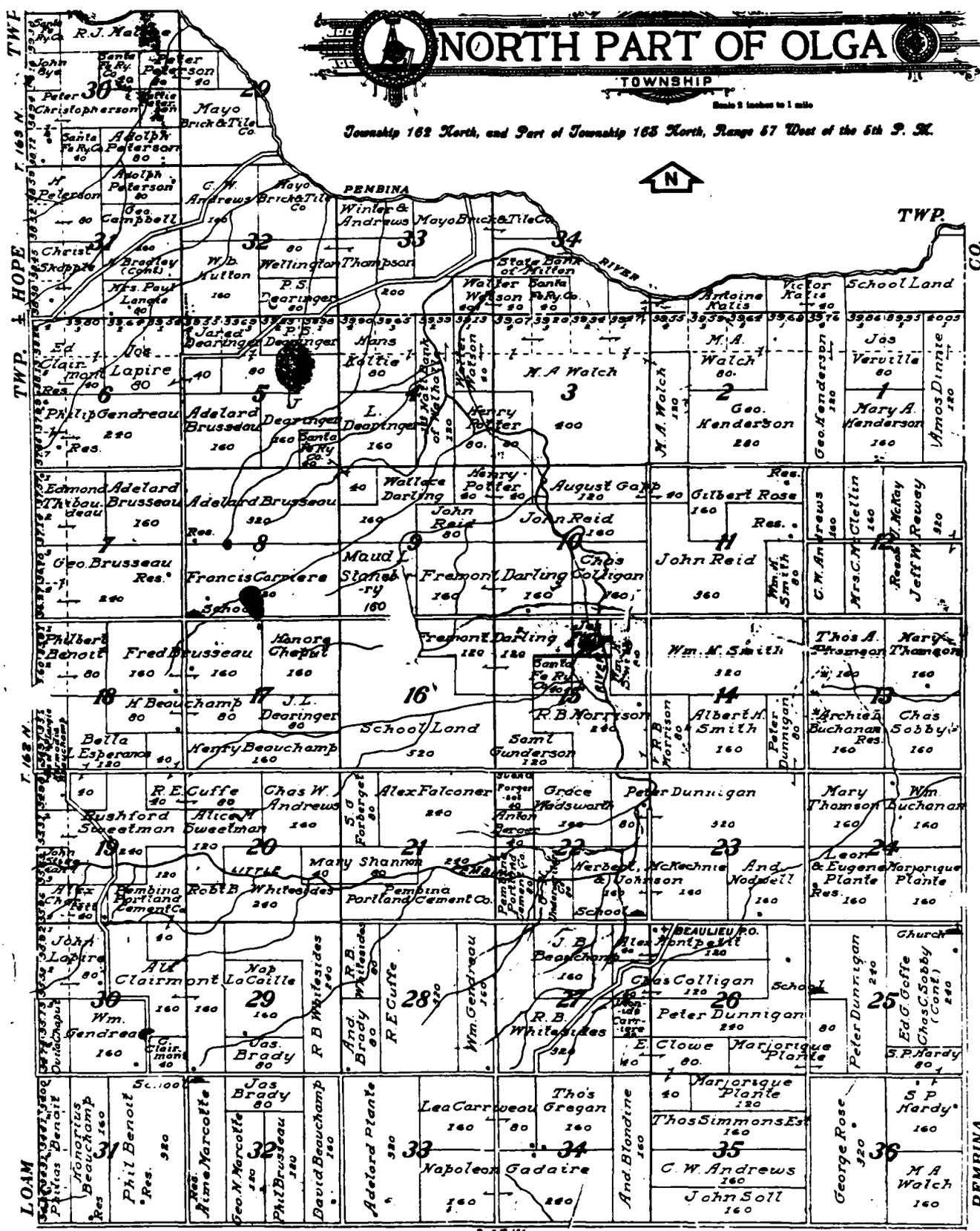


Figure 102 1910 North Part of Olga Township map showing landowners and residences.

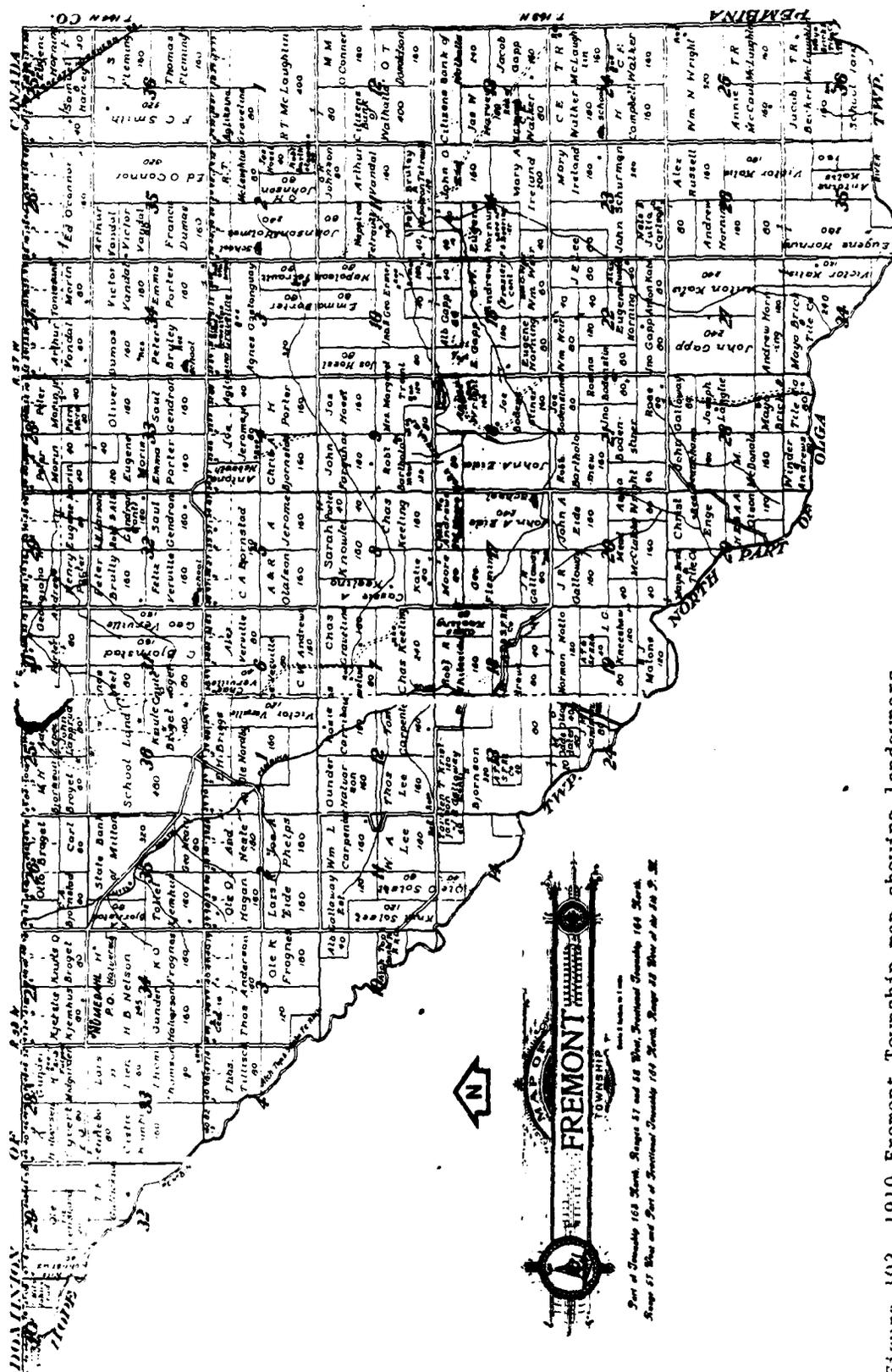


Figure 103 1910 Fremont Township map showing landowners and residences.

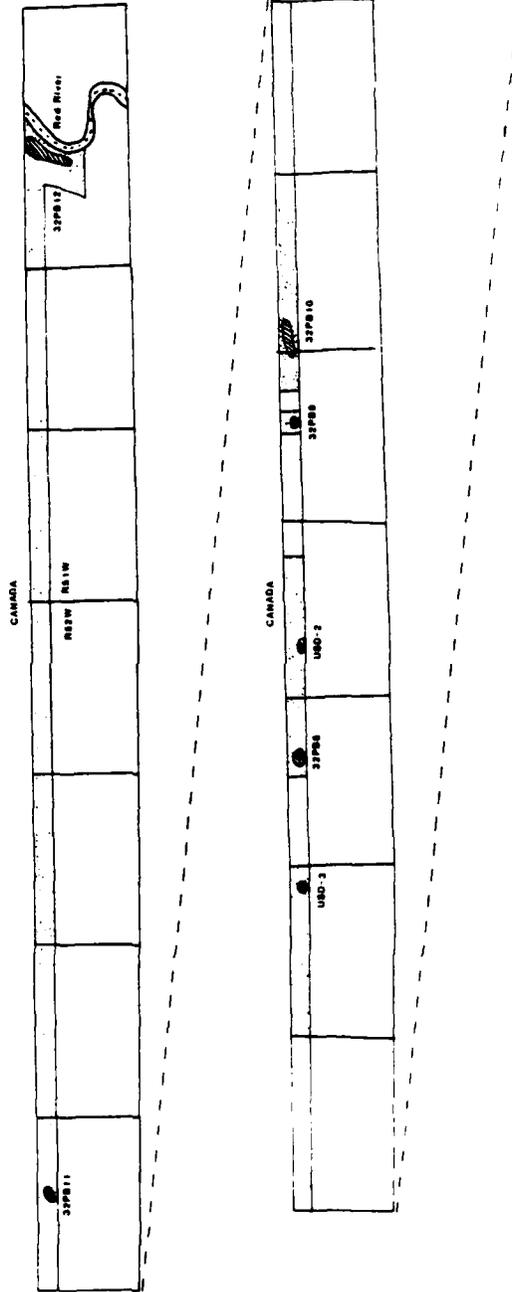


Figure 104 Map showing areas surveyed and site locations in T164N, R51W, and R53W.
 (1) Dense dots are areas surveyed; (2) Light dots are project areas.

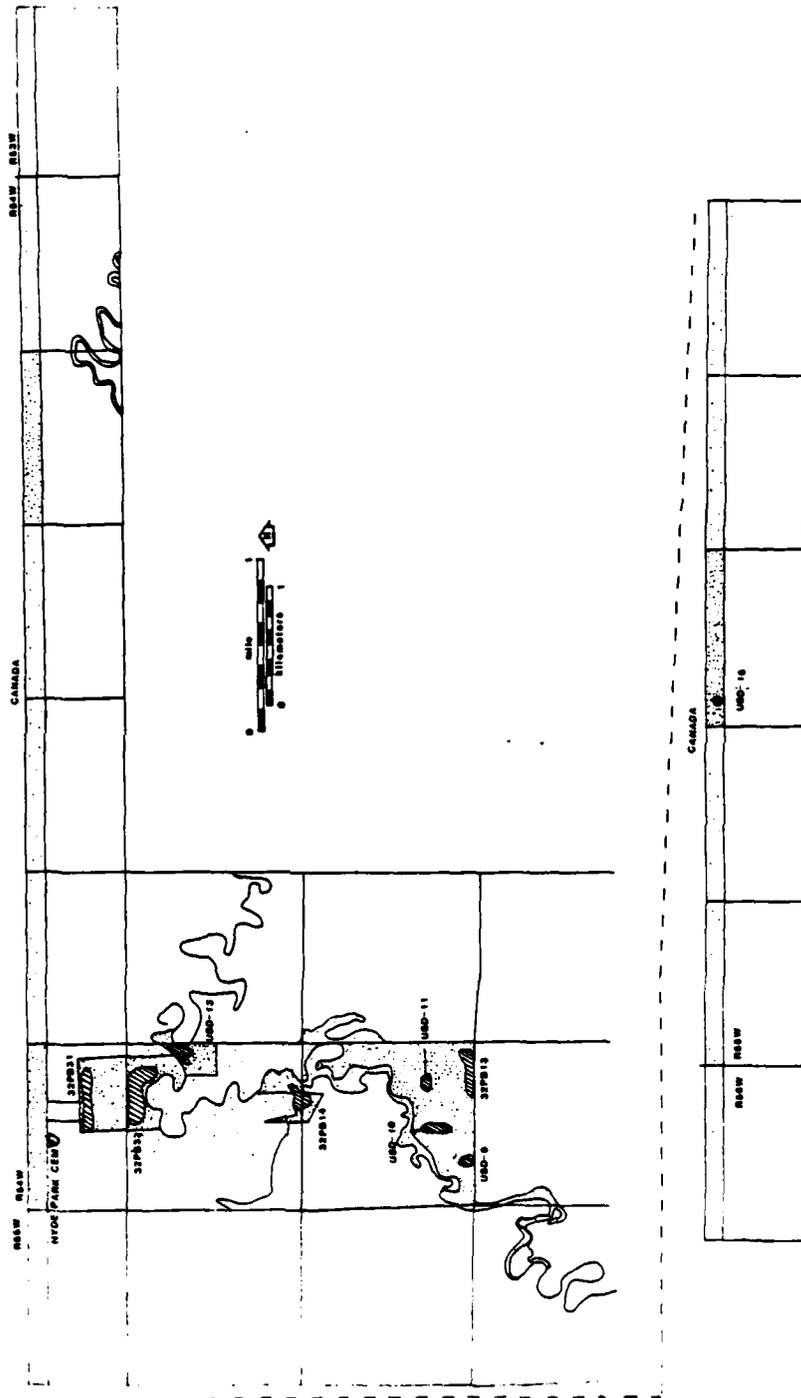


Figure 105 Map showing areas surveyed and site locations in T164N, T163N, R53W, R54W, R55W and R56W.
 (1) Dense dots are areas surveyed; (2) Light dots are project areas.

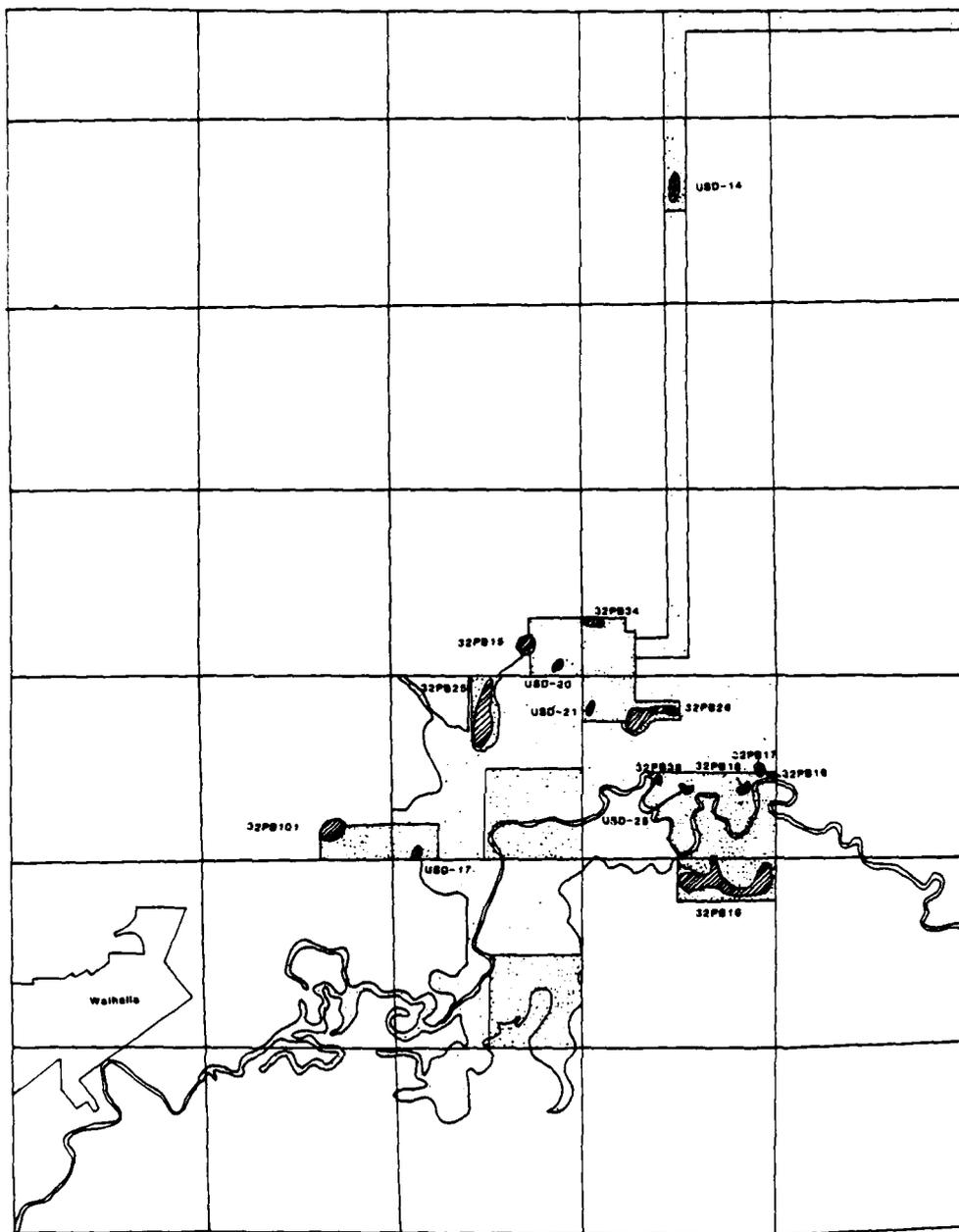


Figure 106 Map showing areas surveyed and site locations in T164N, T163N, R56W. (1) Dense dots are areas surveyed; (2) Light dots are project areas.

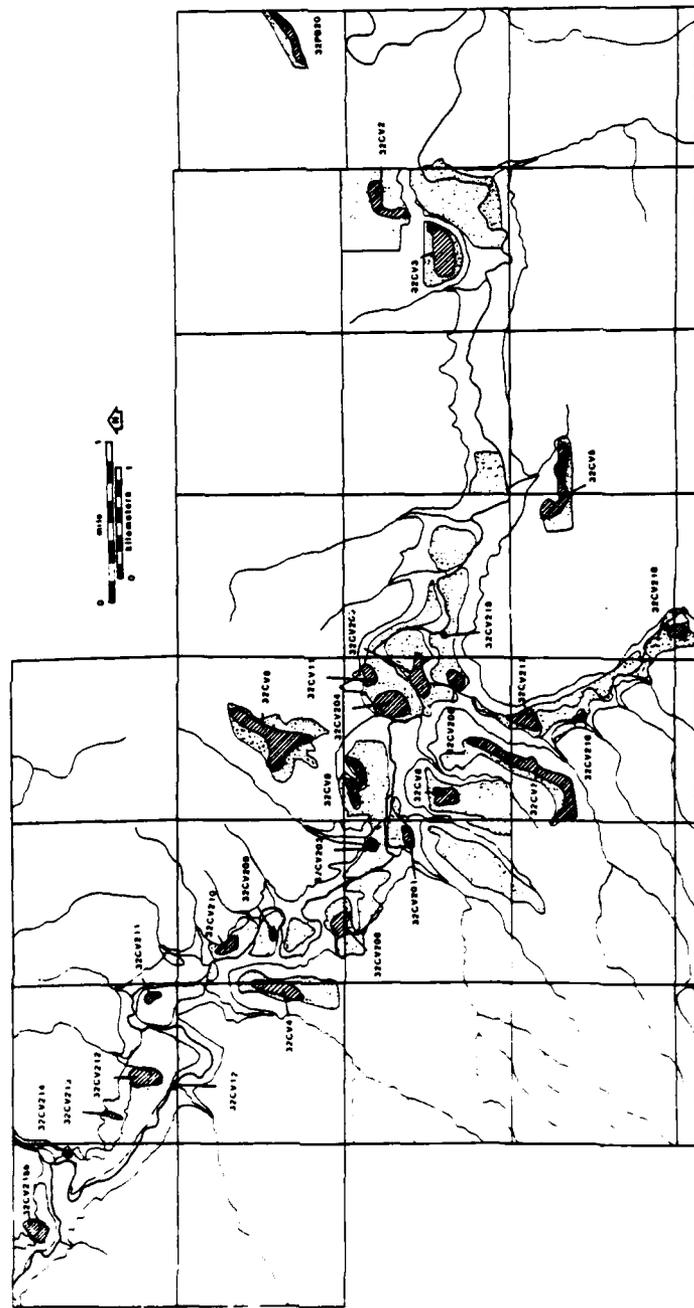


Figure 107 Map showing areas surveyed and site locations in the southern half of the proposed Pembina Reservoir.

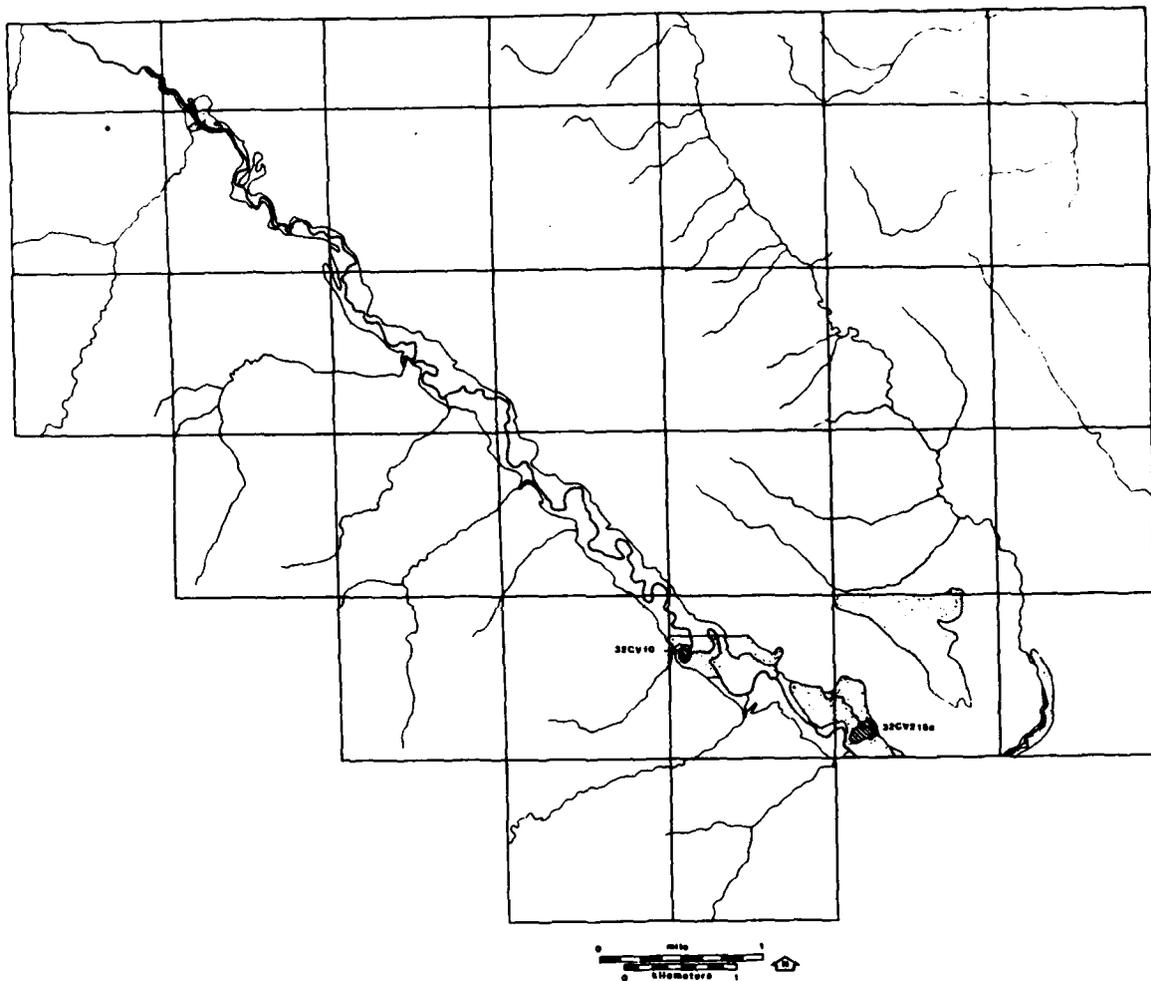


Figure 108 Map showing areas surveyed and site locations in the northern portion of the proposed Pembina Reservoir.
 (1) Dense dots are areas surveyed.

END

1/1-56

DTIC