

Golder Associates Inc.
44 Union Boulevard, Suite 300
Lakewood, CO USA 80228
Telephone: (303) 980-0540
Fax: (303) 985-2080
www.golder.com



BASELINE STUDY REPORT

A CLASS III CULTURAL RESOURCE INVENTORY: SOUTH HEART PROJECT STARK COUNTY, NORTH DAKOTA

Prepared for:

*South Heart Coal LLC
173 Cottonwood Road
Townsend, Montana 59644*

and

*Golder Associates Inc.
44 Union Boulevard, Suite 300
Lakewood, Colorado 80228*

*Prepared by:
Golder Associates Ltd.
1000, 940-6th Avenue S.W.
Calgary, Alberta
Canada T2P 3T1*

*Report Authors:
Thomas Hoffert
David Blower
Cathryn Williamson
Laureen Bryant*

Distribution:

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1 copy – Golder Associates Ltd. Calgary
1 copy – State Historical Society of North Dakota, Bismarck

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EXECUTIVE SUMMARY

In October of 2006 and May of 2007, Golder Associates Ltd. (Golder) completed a Class III cultural resources inventory in Stark County for the South Heart Project (SHP) on behalf of South Heart Coal LLC (SHC). This survey will be used to support surface mine permitting and reclamation planning in accordance with laws and regulations administered by the North Dakota Public Service Commission (PSC). The study area (Study Area) included 7,127 acres. During the assessment a total of 13 sites and 12 isolated finds was recorded. This includes two previously known historic sites that were revisited. Seven prehistoric sites and four previously unrecorded historic sites were identified during the site investigation. All of the isolated finds are prehistoric. All six of the historic sites and all of the isolated finds are recommended as ineligible for inclusion in the National Register of Historic Places (National Register). The seven prehistoric sites are recommended as potentially eligible; however, these sites are either located outside of the Permit Boundary and will not be disturbed or are in areas where mine planning has included a 100 foot buffer around the site to avoid any indirect and direct effects.

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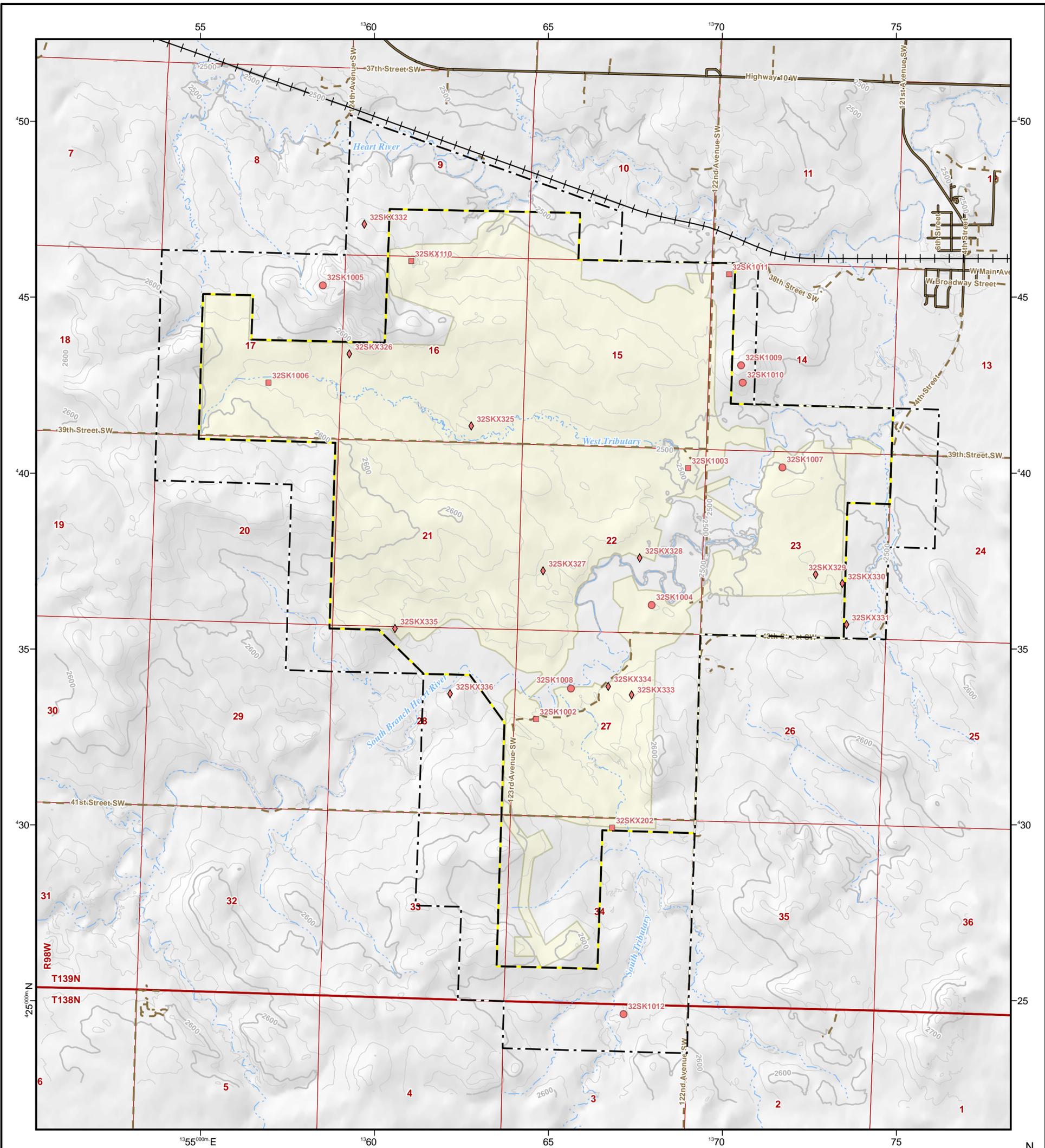
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1.0 PROJECT INTRODUCTION

South Heart Coal LLC (SHC) intends to develop the South Heart Project (SHP), located west of South Heart in Stark County, North Dakota. In support of this project, Golder Associates (Golder) conducted a Class III Cultural Resources Inventory (CRI) study within the area of the proposed development. The Study Area for the CRI includes the area within the Permit Boundary as shown on Figure 1.0-1. The results of this study are presented herein.

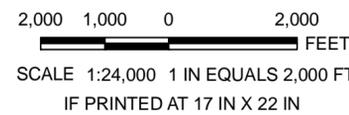


LEGEND

- | | |
|---|----------------------------------|
| Cultural Resource Location | Public Land Survey System (PLSS) |
| National Register Eligibility | Railroad |
| ● Potentially Eligible - 100 Ft. Buffer | Paved Road |
| ■ Ineligible | Unpaved Road |
| ◆ Ineligible Isolated Find | Drainage Way |
| Study Area | Index Contour - 100 Ft Interval |
| Permit Boundary | Contour - 20 Ft Interval |
| Disturbance Area | |

REFERENCE

Study Area: Golder, 10/18/2007.
 Permit Boundary, Mine Plan, Disturbance Area: Norwest, 12/17/2007.
 PLSS: ND HUB, 6/20/2006.
 Roads, Railroad, Drainage Ways: Digitized from aerial photography, 6/19/2006.
 Contours: Generated from aerial photography stereo pairs, 6/19/2006.
 Projection: StatePlane, North Dakota South, NAD27, Feet.



REV	DATE	DES	REVISION DESCRIPTION	GIS	CHK	RWW

PROJECT: SOUTH HEART COAL LLC
 SOUTH HEART PROJECT
 SOUTH HEART, NORTH DAKOTA

TITLE: **CULTURAL RESOURCES**

PROJECT NO.	063-2174	FILE	SH_SHPD_Report.mxd
DESIGN	AJR	06/16/2007	SCALE AS SHOWN
GIS	AJR	02/01/2008	REV. A
CHECK	ADM	02/01/2008	
REVIEW	PJS	02/04/2008	

FIG 1.0-1



2.0 STUDY OBJECTIVES

The Public Service Commission (PSC) is the state agency with Section 106 compliance responsibilities for the SHP. As a standard practice the PSC requires applicants for permits to submit a report of cultural resources inventory and evaluations conducted on the property for which the permit is required. As the lead state agency, it is the responsibility of the PSC to conduct the consultation regarding the potential effects on historic properties from the activities described in the SHP Permit Application.

In support of the SHP Permit Application, Golder conducted an intensive systematic CRI of the Area of Potential Effect (APE), also referred to as the Study Area. Golder is a North Dakota permitted cultural resources contractor listed with the State Historical Society of North Dakota (SHSND) per the requirements of North Dakota Century Code (NDCC) 55-03-01. As such, Golder is authorized to conduct cultural resources investigations in the State of North Dakota.

The objectives for the CRI are as follows:

- Identify and record all cultural resources located within the Study Area. Field personnel would record all sites and isolated finds greater than 50 years old on North Dakota Cultural Resources Survey (NDCRS) Site Inventory Forms.
- Recommend sites that meet the prescribed criteria (National Park Service [NPS] 1991, Bennet and Olausen 1986) for listing in the National Register of Historic Places (National Register) and/or the North Dakota State Historic Sites Registry, or recommend what further work is necessary to accomplish their evaluation.
- Submit a report providing a description of the cultural resource inventory results and the contractor's conclusions and recommendations for protection of National Register-listed and eligible properties and other cultural resources.

Archaeological properties are generally determined eligible based on their potential to yield important information at the state or Study Unit level. The potential importance of a site is assessed with reference to a particular research topic, period of time and area of concern (historic context). While in the field Golder made a comprehensive, systematic effort to identify all cultural resources within the Study Area that might qualify for the National Register and/or the North Dakota State Historic Sites Registry, and to record information sufficient to permit their evaluation. Formal archaeological testing, conducted with SHSND concurrence, is necessary for sites identified as potentially eligible before a final determination of National Register eligibility can be made.

These sites would undergo formal testing after the SHSND and other consulting parties have had an opportunity to comment on a testing design if they are located in areas to be disturbed. The potentially eligible sites identified during this CRI that require additional testing are either located outside of the Permit Boundary and will not be disturbed or are in areas where mine planning has included a 100 foot buffer around the site to avoid any indirect and direct effects. As a result, no formal testing was conducted for this CRI.

Shovel testing conducted during initial inventory efforts was used to define the vertical and horizontal extent of cultural materials within sites or to identify sites in areas with low ground surface visibility (SHSND 2006). Shovel testing is best suited for delineating site boundaries or assessing the potential for deposition rather than to demonstrate the lack of, or presence of, significant buried cultural deposits (BLM 2002).

3.0 AREA OF STUDY

3.1 Potential Impacts

The APE (Study Area) encompasses 7,127 acres. The majority of the proposed mine plan features including coal mine pits, a network of haul roads, pit waste areas and mine ponds are located in the disturbance area within the Permit Boundary as shown on Figure 1.0-1. Each mine feature involves ground disturbing activities that have the potential to disturb or destroy significant cultural resources.

Cultural resources are non-renewable resources that may be at or near the ground surface or may be deeply buried. Artifact context is fundamental to interpretation of archaeological sites. Alteration of the landscape can result in the damage or complete destruction of all or portions of sites. These alterations often involve the displacement of artifacts resulting in the loss of valuable contextual information or may involve the destruction of artifacts and features resulting in complete information loss. These losses are permanent and irreversible. Direct, indirect and cumulative effects may occur.

Direct effects include those disturbances resulting immediately from construction and mining activities. These impacts include but are not limited to vegetation clearance, mining, facilities construction, road construction, vehicle traffic, and reclamation activities. Sites subject to the direct effects of the mine pits and haul road areas would be displaced completely and architectural structures destroyed. Sites located within the disturbance area but protected by avoidance measures (100 foot buffer zone) will not be affected. This is also true for sites situated outside of the disturbance area but within the Permit Boundary.

Dependent upon the type of archaeological site indirect effects may occur. The sights and sounds associated with the development of any facility, could negatively affect the cultural environment. Indirect effects may also impact cultural use of the biophysical environment. Indirect impacts may result from the creation of auditory and visual contamination affecting traditional use areas or the setting of sacred areas. Changes to the traditional setting of significant buildings and known archaeological sites on adjacent land parcels outside of development areas would constitute an indirect visual impact. For the most part, indirect impacts are caused by associated activities such as vehicular traffic outside of specified access roads. In addition, the presence of additional people increases the potential for vandalism, resulting in the destruction of sites through uncontrolled collection. This form of effect can be equally significant to any direct effect. At present, none of the

sites recorded in the APE, or known sites outside of the APE would be affected by the proposed development.

If a large, stratified, buried prehistoric archaeological site or discrete filled-in historic period feature were encountered during construction activities, the possibility of cumulative impacts would arise because such sites might be highly significant, and may have been destroyed or damaged by previous agricultural activity and/or commercial/industrial/residential development in the vicinity of the Study Area.

The SHP would have a significant impact on cultural resources if it would:

- Cause a substantial adverse change to an important prehistoric archaeological resource;
- Cause the loss or a substantial adverse change to an important historical resource; or
- Disturb any human remains.

Substantial adverse impact to the significance of a historical resource means the demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that its significance is materially impaired. The significance of an important or unique archaeological resource that is not an historic resource would be impaired when the site is demolished, moved or altered.

3.2 Project Location

The 7,127 acre Study Area is located in Stark County approximately two miles south of South Heart, North Dakota. Visitors can reach the northeast corner of the Study Area by traveling south from South Heart, North Dakota on 4th Street for 1 mile and then south and west via a series of graveled secondary roads. The Study Area includes lands encompassed by the South Heart (1973) and Belfield SE (1962), North Dakota, United States Geological Survey (USGS) 7.5 Minute, 1:24,000 Scale Quadrangles (Table 3.2-1).

TABLE 3.2-1**LEGAL DESCRIPTION OF THE STUDY AREA**

7.5' USGS Quadrangle	Township and Range	Section (Portions of)
South Heart (1973)	T 139 N., R 98 W	Sections 13 and 24
Belfield SE (1962)	T 139 N., R 98 W	Sections 9-11, 14-17, 19-23, 27-29, 33-34
	T 138 N., R 98 W	Section 3

3.3 Environmental Setting

The Study Area is within the Great Plains physiographic province (McNab and Avers 1984). The Great Plains extends south from Canada to central Texas, and from the base of the Rocky Mountains on the west to the Eastern Woodlands on the east and south (Wood 1998). Although the Great Plains is dominated by grasslands, it is not environmentally homogenous and can be divided into many subregions. The Study Area is situated in the Missouri Slope Upland (Missouri Plateau) subregion (SHSND 1990). The region is characterized by rolling to hilly plains except in badlands areas and near prominent buttes (Bluemle 2000).

The Study Area includes gently sloping to rolling, moderately dissected plains. The majority of these lands have been previously broken by agricultural practices. The bulk of these are under cultivation. Presently, most of the unbroken grassland is used as pasture, with cattle the primary livestock.

Badland formations occur in several locales outside of the Study Area where streams are entrenched in soft geologic material such as the Little Badlands approximately 1.5 miles south of the southern end of the Study Area. These steep, non-stony barren lands are dissected by many intermittent drainage channels and geologic erosion is quite active.

Elevations within the Study Area vary from approximately 2,470 feet (ft) above mean sea level (amsl) in the northeast corner of the Study Area near the Heart River to approximately 2,711 ft amsl in the northwest. The area is marked by a semi-arid temperate climate. The warm, moist tropical maritime air that flows in from the Gulf of Mexico, the prime contributor of moisture to the Plains, commonly curves up the Mississippi Valley and then moves northeast, missing much of the western Great Plains entirely. Precipitation averages approximately 15 inches (in) a year, with about 10 in falling from

May through September. An average growing season is 124 frost free days (Edwards and Ableiter 1951).

Historically, most of the region was grassland. Chokecherry (*Prunus virginiana*), Cottonwood (*Populus deltoids*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus Americana*), and burr oak (*Quercus macrocarpa*) can be found in shelterbelts and along riparian zones.

The valley of the Heart River is approximately 180 miles long and decreases in elevation from about 2,620 ft amsl at its headwaters to about 1,610 ft amsl where it flows into the Missouri River at Mandan, North Dakota. The Heart River channel is approximately 284 miles allowing the river to drop on average 3.6 ft per mile (SHSND 1990).

Bison at one time were the most abundant big game animal in the grasslands of the Heart River drainage. Today, white tailed deer and pronghorn are the dominant large mammals in the region. The wooded bottomlands of stream valleys are home to beavers, raccoons and other fur bearers. According to findings from other field investigations for fish and wildlife habitat for the SHP, good fish species richness is supported within the Study Area, but fish are a minor component of the fauna and are limited to a comparatively low diversity of non-game species adapted to shallow, warm, and turbid stream habitat provided by the South Branch Heart River and the Heart River.

3.4 Cultural Context

The cultural chronology of North Dakota is quite complex. Both temporal and spatial divisions have been made to aid in the discussion/definition of archaeological sites. The state has been divided into Study Units based upon drainage basins as defined by the 1974 hydrological map of North Dakota prepared by the USGS and the U.S. Water Resources Council (SHSND 1990). The 7,127 acres surveyed in 2006 and 2007 are located within Stark County. Stark County, along with Billings, Grant, Hettinger and Morton Counties all lie within the Heart River Study Unit (HRSU) as defined by SHSND. The HRSU covers approximately 3,348 square miles.

Human adaptation to the environment is a major factor in the resultant cultural adaptation of large groups of peoples over time. These adaptations form sequences of socioeconomic activities that represent cultural contexts for how people lived; in particular, their settlement patterns, tool kits, and subsistence techniques. Understanding the recognized cultural sequence in the SHP region provides a

framework within which both potential impacts from activities described in the SHP Permit Application and the cultural resources identified can be interpreted and evaluated.

3.4.1 Paleo-Indian: 12,500 to 7,500 BP

Nomadic hunting and gathering cultures would have moved into and/or through the HRSU shortly after the retreat of the Keewatin and Cordilleran glaciers (Reeves 1978, Vickers 1986). The Paleo-Indian Cultural Period is characterized by the presence of spearheads in the archaeological assemblages, an initial focus on the hunting of Pleistocene fauna and later the transition to where bison became the primary game animal.

Due to a lack of surviving artifacts of organic origin, the identification of human groups and cultures is defined by trait similarities, and the grouping of stylistic tendencies in tool making. Stylistic variation in diagnostic tools such as projectile points is used to identify complexes, sequences, and phases of human occupation.

The first evidence for human occupation in the Plains region comes primarily from surface finds of Clovis and Folsom fluted projectile points that date between 12,000 and 10,000 years ago. Within North Dakota, few early Paleo-Indian sites have been identified. Clovis sites have been recorded in the Cannonball River Study Unit (to the south of the Study Area), and the Northern Red River Study Unit (32PB25), and along the southern shoreline of Lake Sakakawea (32ME946) (Brown et al. 1982:101, 338, 368; Floodman 1988:220).

In central areas of the Plains the makers of Clovis projectile points were highly nomadic hunters of the large megafauna of the Late Pleistocene. Early research from sites excavated throughout the Great Plains, suggest that Clovis people primarily hunted mammoth (Agenbroad 1984) and may have contributed to the extinction of the megafauna in North America (Martin 1984). After the extinction of megafauna there is no doubt that bison became the main source of food.

The Goshen Complex was initially identified at the Hell Gap site in southeastern Wyoming (Williams et al. 1973). Stratigraphically situated below the Folsom deposits at the Hell Gap site, the Goshen projectile point form resembles an un-fluted Clovis point that had been basally thinned through the removal of multiple flakes. The Mill Iron site in southeastern Montana produced nine Goshen projectile points (Frison 1988). Evidence obtained from this site suggests a coeval existence of Clovis and Goshen cultures towards the latter part of the Clovis time range (Frison 1988). A Goshen

point was recovered at the Alkali Creek quarry site near Halliday, North Dakota (Allison 1991). It is possible that Goshen points have been mistakenly defined as Plainview points which are prevalent in the southern Plains and are of a post-Folsom age (Frison 1991). The Meserve projectile point has also been attributed to the Goshen Complex. This point is stylistically similar to a Plainview point and is represented in North Dakota by an isolated find within the Southern Missouri River Study Unit (Wormington 1957:265).

Studies of Folsom bison kill sites and hunting techniques in the southern Plains indicate a correlation between lithic procurement and Folsom mobility. In short, Folsom hunters followed the game and took advantage of lithic availability for creating, retouching, and collecting lithic materials (Bement 1999:146-143). This opportunistic approach to lithic procurement provides fuel for speculation on which came first; the search for tool materials to hunt with, or the search for food resources that required tools to obtain. The Folsom Complex is characterized by precisely made stone tools and sophisticated bone tool and antler technologies (Frison and Zeimens 1980). Folsom fluted points are characteristic of the complex; however, not all points that date to this time period were fluted. Midland points are unfluted and have been found in numerous Folsom site assemblages including: Lindenmeier, Hanson, and Agate Basin sites. The most notable Folsom recovery in North Dakota is represented in the assemblage at the Moe site (32MN101) along the Missouri River in the Garrison Study Unit (Schneider 1975). Folsom sites have been identified throughout the state; however they appear to be more prevalent in the west.

The Hell Gap-Agate Basin Complex follows the Folsom Complex. Agate Basin dates are typically 10,500 to 10,000 BP succeeded by Hell Gap which typically ranges from 10,000 to 9,500 BP. Frison (1983:114) notes that aside from differences in point morphology, the bison procurement strategies of these two cultures are practically identical and it is likely Hell Gap developed directly out of Agate Basin. Both Agate Basin and Hell Gap points have been recovered in locations throughout the state (Beckes and Keyser 1983; Schneider 1975). A re-worked Hell Gap point was recovered at the Alkali Creek quarry site (Allison 1991).

Within North Dakota cultural chronology, the Cody Complex includes several point styles that may be viewed as different complex indicators (Wheat 1972:163-164). The Cody Complex is defined as including; Alberta points, Scottsbluff points, Eden points, Cody knives, and the associated debitage (Agenbroad 1978a, 1978b, Jepsen 1953). The Cody Complex ranges from 10,000 to 8,500 BP. Frison (1983:117) believes that the Alberta cultural materials are directly ancestral to Scottsbluff

materials. Cody Complex materials have been identified throughout North Dakota, primarily as surface finds (Beckes and Keyser 1983; Gregg 1985:79-155; Root et al. 1986:428; Schneider 1982). Two Cody Complex projectile points have been identified in a private collection within Stark County. A Scottsbluff point was collected from 32SK37 and an Eden point was reportedly collected from 32SKX48 (SHSND 1990).

The Parallel-Oblique Flaked Complex includes a variety of projectile point styles that typically have parallel-oblique flaking. The temporal range of this complex is 9,000 to 7,500 BP. Parallel-oblique points include: Yuma, Angostura, Milnes and Browns Valley, Lovell Constricted, Lusk, Frederick, and Allen.

The Pryor Stemmed Complex was first identified in the Pryor and Bighorn Mountains of southeast Montana (Frison and Zeimens 1980; Husted 1969). These projectile points range in shape from lanceolate to stemmed. In North Dakota, Pryor stemmed components date to 8,500 to 7,500 BP. Materials of this complex have been identified in the Knife River Study Unit and the Souris River Study Unit (Root et al. 1986:430).

Initially identified in southeastern Manitoba, the Caribou Lake Complex is characterized by trihedral adzes and two projectile point styles. Lanceolate forms are reminiscent of earlier Paleo-Indian forms. Some interpret the Caribou Lake Complex as terminal Paleo-Indian while others consider it Early Middle Prehistoric. Many of these sites are located in settings below today's water levels.

Paleo-Indian settlement strategies within the HRSU are not clear. It appears that terraces adjacent to major waterways, such as the Missouri River, were preferred. However, difficulty in finding these sites can be attributed to the fact that many Paleo-Indian living surfaces have been destroyed by erosion, or deeply buried through alluvial and aeolian sedimentation. Frison (1982: Figure 2.119) notes that the HRSU lies in the direct route of travel between the Agate Basin site in northeastern Wyoming and the Knife River Study Unit. It can be inferred that Paleo-Indian groups likely traversed the HRSU enroute to Knife River Flint quarries.

3.4.2 Early Plains Archaic I: 7,500 to 4,800 BP

The Early Plains Archaic Period I coincides with the Hypsithermal (Altithermal) climatic interval. During this period there was an increase in the mean annual temperature and a decrease in precipitation (Vance 1991). This climatic shift significantly altered the boundaries between the major

ecological zones in the region. Of particular note, and useful to archaeological studies, is the layer of ash deposited around 6,600 BP by a volcanic explosion in Oregon at Mount Mazama, known as Mazama Ash. This provides a recognizable geological and datable marker for archaeological studies (Wright 1995:129) and covers much of the northwest Plains. This chronological benchmark provides an easily identifiable stratigraphic layer that seals off earlier levels and can be used to relative date subsurface finds and to identify any disturbances.

It is during this time, that projectile points exhibit side notches near the basal end which allowed them to be more securely bound to the shaft. Projectile points of the Early Plains Archaic Period are associated with a throwing weapon known as the "atlatl". It was used until the bow and arrow replaced it as the preferred hunting weapon in the Late Prehistoric (Frison 1991; Vickers 1986). Atlatl dart points are typically slightly smaller than the spear points of the Paleo-Indian, are notched rather than stemmed or fluted, and are assumed to have tipped long, feather fletched wooden shafts. Not all projectile points are atlatl or spear points, in some cases they appear slightly asymmetrical and might have been used as knives.

Projectile points of the Early Plains Archaic Period are characterized by medium-sized side or corner-notched point styles which are often referred to as part of the Mummy Cave Complex. Walker (1992) suggests that five statistically identifiable projectile point types occur on the northern Plains during this period. These include the Blackwater Side-Notched, Northern Side-Notched, Hawken Side-Notched, Gowen Side-Notched, and the Mount Albion Side-Notched. Tools are often used intensively during this period, and re-worked tools are frequently associated with sites of this age (Reeves 1990, Walker 1992).

Although side-notched atlatl points, characteristic of the Mummy Cave complex, are present in several surface sites in central Montana, overall Early Middle Prehistoric I sites tend to be rare on the northern Plains. It has been suggested by some that the decrease in precipitation and the increase in temperatures associated with the Hypsithermal resulted in a decrease in population across the High and Central Plains (Reeves 1990). Others suggest that the change in climate was not conducive to the burial and preservation of archaeological sites (Walker 1992). The Middle Prehistoric I Period saw the development of several cultural traits that persisted through the remainder of prehistory (Reeves 1990). Chief among these is the use of large scale communal hunting methods such as buffalo jumps, which generated large meat surpluses and required complex processing and storage techniques. At the same time a transition to small-scale bison procurement strategies begins that

continues from Mummy Cave into the following Oxbow period (Green 2005:108). The ability to continue with large-scale buffalo jumps would be dependent on the size of the human group available for the activity, and in some cases depending upon the season, small group approaches would be effective.

3.4.3 Middle Plains Archaic: 4,800 to 3,000 BP

The climate began to cool during this period with historic conditions essentially reached at approximately 3,500 years ago (Vance 1991). The Middle Plains Archaic Period on the Plains begins with the arrival of the Oxbow Complex. In North Dakota, Oxbow sites are more common than any of the earlier complexes (Beckes and Keyser 1983:98; Loendorf et al. 1982:50). The Oxbow Complex is identified by the presence of relatively large dart points that have a concave basal edge and broad, shallow side notches. Most of the lithic resources for the Oxbow people were procured locally. In sites on the northern Plains long distance trade artifacts do not reflect trade in lithics but instead show the spread of other objects such as marine shells (Green 2005:106). Long distance trade of materials represents a maturation of the social process that ties groups to one another and implies socioeconomic relations and reciprocal relationships. What we see as a trade item coming in to an archaeological site also indicates that local items or services were moving out of the area as a reciprocal trade item.

As the Oxbow Complex begins to fade in the archaeological record, a second cultural tradition, known as the McKean Complex, appears in the region. Radiocarbon dates for the two complexes indicate that Oxbow and McKean may have been coeval for a period of time on the northern Plains (Morlan 1993). The McKean Complex is comprised of three distinct projectile point types known as the McKean, Duncan, and Hanna. These points are found separately in some sites and in direct association at other sites. The temporal span of these points is from 4,500 to 3,000 BP. In North Dakota, these points have been reported in both private collections and at controlled excavations.

A number of McKean complex sites have produced grinding slabs and rock lined hearths. These artifacts and features are commonly interpreted as reflecting an increased reliance on plant foods during McKean complex times (Frison 1991; Keyser 1986). Further north on the Canadian Plains, similar evidence is lacking with McKean peoples predominately hunting bison for subsistence (Frison 1998). Early Middle Prehistoric II times also provide evidence for the use of the tipi as a dwelling and the existence of complex ceremonial activities (Quigg 1986, Calder 1977). Use of the

tipi is a definitive characteristic of Plains cultures that reached its fluorescence in the Late Prehistoric and persists to present times.

Tipi rings, or stone circles, are the most common type of site found throughout the Plains region in general. The tipi is a conical, hide covered (or in the Historic Period canvas covered) structure. There is considerable variation within the historic and ethnographic literature describing the size, shape and internal organization of the tipi. The framework support for the tipi was constructed using a series of poles lashed together at the top. Two distinct methods of construction have been identified in plains ethnographies: the three pole variety and the four pole variety (Finnigan 1982:27). The choice of construction technique appears to be culturally based. The four-pole method was used by the Blackfoot, Crow, Blood and Sarcee, while the three pole variety was used by the Plains Cree, Cheyenne, Sioux and Assiniboine (Lowe 1954, Adams 1978, Finnigan 1982). In both instances the resulting structure is often described as a tilted cone. By having one pole slightly longer than the other two, the three pole variety may have been slightly more angled and had a more oval footprint than the four pole variety (Adams 1978, Finnigan 1982).

Variation is also present in the description of the distribution of these structures within the larger scheme of the camp. Descriptions of some camps suggest that the tipi was typically oriented so that the door faced to the east, in the direction of the rising sun. Other references suggest that if the camp were structured so that the tipis formed a large circle, the doors would be oriented so that they faced inwards towards the centre of the camp circle (Quigg and Brumley 1984). Still other references state that the orientation of the camp, as well as the door opening of individual tipis, was contingent on the geography of the site area and prevailing weather conditions. Tipis would be aligned along a creek valley, narrow landform or terrace edge (Quigg and Brumley 1984). Additional variation could be accounted for in the suggestions that tipis were well designed, light and could be easily rotated by a small number of people should the wind direction or other reasons make it necessary (Quigg and Brumley 1984). Cobble-sized stones were placed along the circumference of the hide tipi, in some cases in two rows deep. Other means of securing the edge of the structure included pegs (wooden or bone), sod blocks and logs.

That stone circle sites are one of the more commonly recorded sites on the northern Plains can be attributed to the fact that they are more durable than organic artifacts and more visible than a scatter of small artifacts. They also represent a large component of life on the prairies. Despite the abundance of stone circles the temporal qualities and the even the original function of the different

types and styles of circles is still not always fully understood. Recent analyses have been completed on stone circle sites in the archaeological database of the province of Alberta (Oetelaar 2003). A total of 5,784 archaeological sites had been recorded in Alberta up to early 2002 representing almost 40,500 stone circles. This figure could be considered comparable for most of the northwestern plains. Of the sites that have dated or stylistically representative materials present, the majority date to the last 2,000 years (Oetelaar 2003: 111). While evidence of Middle and even Early Prehistoric circles exist they are not as common as those from the Late Prehistoric. Oetelaar (2003: 111) speculates that this may be due to older rings being more deeply buried or that the ring rocks of older sites may have been reused in more recent sites thus erasing the features of earlier occupations.

3.4.4 Late Plains Archaic: 3,000 to 2,400 BP

Although tipi rings are ubiquitous, they are not as definitively diagnostic as projectile points. At the onset of the Late Plains Archaic Period, the Pelican Lake Complex is identified by the presence of Pelican Lake projectile points. There are two varieties of these corner-notched points, one with a convex base and another with a straight base (Dyck 1983). It is possible that the straight-based type may incorporate two sub-forms, an early style with a narrow neck and base, and a later form with a wide neck and base (Dyck 1983). Brumley and Dau (1988) have noted that the convex and straight-based varieties seem to be associated with “major differences” in lithic use and distribution patterns. They also speculate that smaller varieties of the straight-based point may represent the introduction of the bow and arrow to the northern Plains (Brumley and Dau 1988).

Pelican Lake projectile points are quite common on the northern Plains. Habitation sites of this period confirm the extensive use of tipis and a familiarity with communal hunting techniques, (Forbis 1962, Reeves 1978; Brink and Dawe 1989). It does not seem that these hunting techniques were as intensively used as those in the Late Prehistoric period. This could represent the increase in small scale bison processing sites, or demonstrate that the Middle Plains culture was a flexible adaptive system that could be either a focused or diverse economic approach (Wright 1995: 332).

3.4.5 Early Plains Woodland: 2,400 to 2,100 BP

The beginning of the Early Plains Woodland Period coincides with the appearance of several new technological advances in the material culture of the region. Changes in hunting equipment include the replacement of the atlatl by the bow and arrow. The bow and arrow allowed for more effective and efficient exploitation of the bison because of its superior rate of fire and accuracy (Reeves 1990).

It became the dominant hunting technology until the introduction of European firearms. Ceramic vessels also made their first appearance in the archaeological assemblage at this time. It is likely that they were introduced to the northern Plains from the Eastern Woodlands (Dyck 1983). Trade goods become more exotic and the appearance of small campsites and tipi rings indicating small-scale group activities occurred (Wright 1999: 814).

Pelican Lake is succeeded by the Besant Complex, which is abundant in the Dakotas (Johnson and Johnson 1998). Besant ceramics are the earliest ceramics on the northern Plains. The Besant Complex existed from approximately 2,400 to 1,150 BP and has been characterized as containing projectile points with straight lateral margins and straight, convex, or concave bases. The straight based variant is the most common. The broad Besant Side-notched category is widely accepted, however, some argue for a regional Sonota variant (Neuman 1975; Syms 1977) while others use the term Samantha for Besant forms that fall into the arrowhead size category (Kehoe and Kehoe 1968; Kehoe 1974; Reeves 1983). Besant assemblages also include cord marked and/or punctated conoidal pottery vessels. Syms (1977) notes the presence of Knife River Flint in Besant assemblages is often an identifying marker.

The Besant peoples were highly efficient communal bison hunters. Reeves (1990) has gone so far as to call the Besant period the fluorescence of bison hunting on the northern Plains. Besant peoples used pounds and, less commonly, bison jumps in the hunt. Evidence suggests that bison were heavily processed for their meat, marrow, and grease.

The Sonota may be a northeastern Plains regional variant of the Besant Complex. The people of this culture appear to be the earliest builders of conical and linear mortuary mounds. Such a mound complex is located in eastern North Dakota along the Forest River. The mounds are situated on a series of benches along the western Lake Agassiz shores. This complex consisted of at least 35 conical mounds and four linear mounds (Larson et al. 1986; Wilford 1970).

At this time there appears to be an increase in the influences from the northeastern plains melding with those from the northwestern plains, creating a regionally diverse cultural groups. North and South Dakota are at the hub of such interactions.

3.4.6 Middle Plains Woodland: 2,100 BP to 600 AD

Mound burial mortuary is assumed to have had its inception at the beginning of this period. To some degree Middle Plains Woodland peoples are believed to have augmented their hunting and gathering subsistence with gardening. Group interactions and trade networks also appear to have been more extensive than they were in the Early Plains Woodland period (Benn 1983).

At approximately 1,600 BP, a new Phase, called Avonlea, begins to appear in the region. Avonlea period bison hunters appear to be the first culture on the northern Plains to use the bow and arrow exclusively. To mesh with the new arrow technology Avonlea projectile points are side to slightly corner-notched points with a straight to concave base. They are small, extremely thin in cross-section, and generally very well made. At approximately 1,300 years ago the atlatl and dart disappear completely after 700 years of overlap with the bow and (Pyszczyk 2003:51). Avonlea ceramics range from early conoidal shapes to later globular manifestations. Exterior surface treatments applied to Avonlea ceramics include; fabric impressed, net impressed, smoothed-over fabric or net impressed, cord marked, smoothed or parallel grooved.

Avonlea materials appear to be more concentrated in the western part of North Dakota. Avonlea assemblages are often dominated by Knife River Flint. Root et al. (1986:121) suggests that there is evidence of a Knife River Flint quarrying associated with the Avonlea complex.

3.4.7 Late Plains Woodland: 600 to 1000 AD

By the beginnings of the Late Plains Woodland Period the use of the bow and arrow had long been established. During this period improvements in ceramic technology enabled the production of thinner, better made, and probably larger vessels. Also supplemental use of garden crops is believed to have increased. To a lesser extent conical mounds, which were initially constructed and used in Middle Woodland times, continued to be used into Late Woodland times (Snortland, Coles 1985). The appearance of linear mound construction (mostly in the eastern part of North Dakota) is suggested to have been an early Late Plains Woodland development in the Northeastern Plains and Middle Missouri subareas as early as 500 or 600 AD (Chomko and Wood 1973).

Five Late Plains Woodland ceramic wares have been identified within excavated assemblages. These show the presence of Avonlea, Blackduck, Mortlach, Old Women's and Sandy Lake complexes present in the state. While these are primarily viewed as Woodland ceramics, the ages

during which ceramics of the latter four of these five complexes were manufactured fall largely within the Plains Village period. It must be remembered however that the Plains Woodland tradition endured until historic contact time in the eastern parts of North Dakota (Howard 1966).

3.4.8 Plains Village: 1000 to 1780 AD

Horticultural-hunter-gatherer lifeways dominated the North Dakota cultural scene from perhaps as early as 1000 until 1780 AD. It is generally believed that the crucial element in Plains Village adaptive strategies was the production of a dependable and storable surplus food supply primarily in the form of dried corn (Lovick and Ahler 1982). Stored food facilitated the growth of larger, more sedentary residential earthlodge villages. Plains Village populations began declining in the 1500's as a result of the spread of epidemic diseases introduced by Europeans.

3.4.9 Equestrian Period: 1780 to 1880 AD

The horse, reintroduced to North America by the Spanish, represented a much improved transportation source over the dog as a beast of burden (Fredlund 1973) and resulted in a substantial increase in the capacity to acquire and transport both perishable and non perishable items. The utilization of horses brought about significant changes in subsistence economies, demographics, social organization and settlement patterns. Horse travel also facilitated more intensive interactions across broader geographic areas which served to equalize various cultural differences. The earliest that people in North Dakota territory would have acquired horses is believed to have been in the mid 1700's. This estimate is based on the initial incursion of horses into adjacent areas to the south. Lehmer (1971) suggested 1720 as a date for the "beginning of the florescence of the horse culture" in the northern plains.

The Protohistoric period is the period in which European influence began affecting the Plains Indian, but prior to the keeping of historical records. This period is typically said to range in North Dakota from 1650 to 1800. The first European cultural influences arrived in the state from the north. These would have been in the form of trade goods and may have been brought in as early as 1650. The appearance of these wares along with the introduction of the horse changed the resource base permanently (Peck and Hudecek-Cuffe 2003:91).

During the protohistoric Reher and Frison (1980) have suggested that the stress on human populations from migration and increasing competition may have been the stimulus for the rise in

tribal level sociocultural integration as opposed to the less complex band level of hunter gatherer groups. Tribes are advanced over bands in the multiplication and integration of the subgroups of society, but there is no increase in economic or political specialization (Service 1968).

During the 18th Century Indians and Euro-Americans first came into contact. The first recorded visitor was the French explorer La Verendrye, who reached the Missouri River from Canada in 1738 while searching for a water route to the Pacific Ocean. Soon others followed, including La Verendrye's sons in 1742. Until the time when Meriwether Lewis and William Clark led the American "voyage of discovery" up the Missouri from St. Louis in 1804, contact was a result of the Canadian fur trade.

The fur trade linked the northern Plains to a world-wide economic and political system. European nations, competing for mercantile supremacy, claimed the plains, and Great Britain, France, and Spain exchanged the territory several times through wars and treaties. In the 1763 Treaty of Paris, all French lands drained by Hudson's Bay were given to Great Britain. France had ceded lands drained by the Missouri and Mississippi Rivers to Spain one year earlier; this territory was returned to France in 1800. Three years later Emperor Napoleon Bonaparte sold French possessions to the fledgling United States. This sale, known as the Louisiana Purchase, inaugurated American ownership of lands now included in North Dakota.

The fur trade was characterized by intense competition, with rival companies competing for prime locations. In 1801, Alexander Henry, Jr., established a post at Pembina that after 1812 became the center for an agricultural colony sponsored by the British crown. However, British influence diminished along the Missouri after 1800, and the area fell into American control in 1818 when the London Convention established the 49th Parallel as the northern boundary between the United States and British possessions in North America.

With several notable exceptions, contact between the Native peoples and American traders, explorers, and military personnel in the northern Plains remained peaceful during the early 19th Century. Native peoples played an integral role in the fur trade. Major trading posts at Fort Union and Fort Clark, and others of lesser significance, catered directly to Native trappers and hunters. In exchange for their meat and furs, the Natives received guns, metal tools, cloth and beads, and other trade goods.

Initially the incursion of the Euro-Americans into the northern Plains caused few confrontations. During the years 1863 through 1865, however, this changed. Major military expeditions roamed the

northern Plains for Santee Dakota who had participated in a violent uprising in Minnesota in 1862. Battles at Whitestone Hill in 1863, at Killdeer Mountain and in the Badlands in 1864 reduced the Dakota resistance, forcing many onto reservations to avoid starvation. Federal presence continued to increase with the establishment of a chain of military outposts, beginning with Fort Abercrombie in 1857.

After 1861 when the Dakota Territory was organized by Congress the American settlement of the northern Plains began in earnest. Immigration grew further in 1872 and 1873 when the westbound Northern Pacific Railway was constructed to the Missouri River. Along the rail line towns sprang up to serve the settlers and track laying crews. Fargo and Bismarck both have their origins as railroad communities. The 1862 Federal Homestead Law stimulated farming settlements in the region. The first claim west of the Red River was filed in 1868 (Remele 1988). During the years 1879 through 1886 a great settlement boom in northern Dakota occurred with over 100,000 people entering the territory. The majority of these were homesteaders.

A second boom in 1905 increased the population from 190,983 in 1890 to 646,872 by 1920. Many were immigrants of Dutch, Scandinavian, Germanic and Scotch-Irish-English origin. So significant was this foreign immigration that in 1915 over 79 percent of all North Dakotans were either immigrants or children of immigrants.

On November 2, 1889, President Benjamin Harrison approved the admission of North Dakota to the Union.

3.4.10 Summary

This brief synopsis of the cultural context as it relates to the Study Area, North Dakota and the northern Plains, is provided as a framework for which sites within the Study Area may be better interpreted. It allows for an understanding of human development based on: early subsistence strategies; technological developments that improve social conditions; group needs and how those needs were met; the incursions of dissimilar ethnic groups; and, the eventual development of modern economic developments that are themselves markers of socioeconomic development on a larger scale. It is within this context that archaeological sites within the Study Area can be interpreted.

4.0 STUDY APPROACH & METHODOLOGY

4.1 Pre-Field Research

On April 4, 2006, a site file search was conducted at the SHSND in Bismarck, North Dakota. The site file search was conducted by Thomas Hoffert under the direction of Paul R. Picha, Chief Archaeologist, Historic Preservation Division.

The search was performed in order to identify any previous cultural resource projects and known sites within the Study Area and immediate vicinity. Only those sites and projects that were found to be within one mile of the Study Area were reviewed. Site forms for all previously known sites were obtained from the SHSND Records Office.

The SHSND file search revealed that there have been six previous cultural resource projects within and near the APE, and there are nine previously known sites, five isolated finds and three site leads (Tables 4.1-1 and 4.1-2). Historic General Land Office (GLO) survey plats maintained by the North Dakota State Water Commission (NDSWC) Map and Data Resources were also consulted. A GLO Survey Plat dated Oct. 29, 1884 shows a structure in the SE/NW/NE of Section 14, T. 139 N., R 98 W (NDSWC n.d.). The word "Morton" is written next to the structure symbol. The Burlington Northern railroad, which lies immediately to the north of the northern Study Area boundary, is labeled as the "Northern Pacific Railroad and Telegraph Line". The Bureau of Land Management (BLM) GLO Patent records for the SE/NW/NE of Section 14, T. 139 N., R 98 W. shows that an Alexander Morton obtained a Homestead Entry Survey (HES) Patent on June 25, 1889 (BLM n.d.).

There are no historic sites listed in the National Register for Stark County, North Dakota. As of April 11, 1989 there were 305 sites and 88 site leads in the HRSU. Thirty-five of the 305 sites recorded are stone circle sites. None of the stone circle sites can be assigned to a specific time period. Regionally, prehistoric sites are most often recorded on elevated landforms (upland plains, hills, knolls, bluffs, ridges and buttes) while historic sites were most often encountered in and around towns and in lowlands suitable for agriculture. Prehistoric sites have been found significant and eligible for inclusion in the National Register because of their scientific potential under Criteria D, and historic sites due to their association with important regional events, influential individuals or architectural uniqueness under Criteria A, B and C.

TABLE 4.1-1**PREVIOUS CULTURAL RESOURCE PROJECTS WITHIN THE STUDY AREA**

Township Range Section(s)	Project Title	Author(s)
The areal extent of the survey is unknown	BLM Survey	K. Schweigert
The areal extent of the survey is unknown	Class III Cultural Resources Inventory Sprint Line in North Dakota	Ken Deaver and Sherri Deaver
The areal extent of the survey is unknown	Charlie Creek to Belfield Transmission Line Project	M. Martorano and D. Killam
The areal extent of the survey is unknown	Southwest Pipeline Project, New England Service Area (Construction segment 7-2)	Cynthia Kordecki
Sections 10 and 11 T.139N, R. 98 W	Stark County Road Improvement and Bridge Replacement. Results of a Class III Cultural Resources Inventory, Stark County, North Dakota	Greg Wermers and Duane Klinner
The areal extent of the survey is unknown	UNDAR West Project # 1954	Greg Wermers and Duane Klinner
Stark, Billings and Slope Counties, North Dakota	CTC South Heart Exchange: Cable Improvements in Stark, Billings and Slope Counties, North Dakota	Duane Klinner

TABLE 4.1-2**PREVIOUSLY RECORDED SITES IN THE STUDY AREA VICINITY**

Site Number	Legal Description	Site Type	National Register Recommendation	Relation to the APE¹
32SK20	T 139 N., R 98 W., Section 18	Historic: farm equipment	Not significant	Outside APE
32SK21	T 139 N., R 98 W., Section 18	Historic: refuse	Not significant	Outside APE
32SK124	T 139 N., R 98 W., Section 11	Lithic scatter	Undetermined	Outside APE
32SK128	T 139 N., R 98 W., Section 10	Historic: refuse/well	Not significant	Outside APE
32SK129	T 139 N., R 98 W., Section 25	Historic: refuse	Not significant	Outside APE

Site Number	Legal Description	Site Type	National Register Recommendation	Relation to the APE ¹
32SKX35	T 139 N., R 98 W., Section 07	Pittsburgh mine	Undetermined	Outside APE
32SKX36	T 139 N., R 98 W., Section 14	Bone locale	Undetermined	In APE
32SKX37	T 139 N., R 98 W., Section 23	Bone locale	Undetermined	In APE
32SKX110	T 139 N., R 98 W., Section 16	Mine	Undetermined	In APE
32SK112	T 139 N., R 98 W., Section 10-11	Historic: bridge	Not significant	Outside APE
32SKX191	T 139 N., R 98 W., Section 33	Isolated find: flake	Not significant	In APE
32SKX194	T 139 N., R 98 W., Section 10	Isolated find: 2 bifaces	Not significant	Outside APE
32SKX202	T 139 N., R 98 W., Section 34	Historic: farmstead	Undetermined	In APE
32SKX246	T 139 N., R 98 W., Section 13	Isolated find: core	Not significant	Outside APE
32SKX274	T 139 N., R 98 W., Section 20	Isolated find: 2 flakes	Not significant	Outside APE
32SKX275	T 139 N., R 98 W., Section 20	Isolated find: 2 flakes	Not significant	In APE
32SKX946	T 139 N., R 98 W., Section 13	Cemetery	Undetermined	Outside APE

¹ APE – Area of Potential Effect

This background review indicates that both prehistoric and historic sites are expected to occur within the APE. Expected prehistoric sites would include stone circles, cairns and lithic scatters. Historic sites pertaining to the settlement of the region, including agricultural activity, ranching, homesteads, debris scatters and wagon road ruts would also be expected.

4.2 Field Methods

Prior to the commencement of fieldwork, Golder applied for, and obtained a Cultural Resource Use Permit from the SHSND. Thomas Hoffert acted as Principal Investigator and Field Supervisor.

David Blower, Dana Dalmer, Susan Tupakka and Cathryn Williamson were field crew members. Thomas Hoffert, David Blower, Laureen Bryant and Cathryn Williamson wrote the report.

This study is a quantitative analysis of the cultural resources located within the Study Area. Cultural resources were defined using the SHSND (2006) guidelines. Guidelines state that the minimum criteria for defining a cultural property, requiring the use of a site record, are that sites should contain the remains of past human activity that are at least 50 years old and consist of at least five artifacts within a 60 meter (m) diameter and/or an intact subsurface cultural deposit regardless of the number of artifacts (SHSND 2006). The field survey included an architectural reconnaissance to determine whether or not there could be significant historic buildings and structures on or immediately adjacent to the Study Area that may be affected by the activities described in the SHP Permit Application.

One crew of four people completed pedestrian visual inspections of 100 percent of the Study Area. The area was covered by walking systematic transects; each spaced no more than 30 m apart. All of the Study Area was intensively surveyed including cultivated and fallow fields. Transects were oriented along topographical features and encompassed all high potential locales. Efforts were made to revisit and rerecord each previously known site located within the Study Area.

The assessment was carried out under snow and frost-free conditions. All subsurface exposures present within the Study Area, including light vehicle tracks, existing road grades, and so forth, were examined to determine if buried cultural components were present. The visual examination of fortuitous subsurface exposures, such as cut banks, erosional features and rodent disturbances, were used to assist in the identification of buried cultural resource components. In addition, intensive shovel testing was undertaken at select locales within the Study Area. The shovel testing program is described in Section 4.3.

Newly identified cultural resources were photographed and documented using current standard practices. All identified site locations were recorded using NDCRS forms. NDCRS forms were prepared following protocols outlined in Snortland et al. (1989) for archaeological sites, historic sites, standing structures and isolated finds. A sketch map was drawn for each site or isolate and all features and stone tools were photographed and sketched. A minimum of two site overview photographs were taken for each cultural property using a Nikon L3 digital camera with 5.1 megapixels set at 300 dots per inch (DPI). Photographs were printed using archival quality ink

and were catalogued and labeled with a Micron .03 Archival Ink Pen for acid free environments, and placed in archival quality photo sleeves. Artifacts were not collected at the time of survey.

Universal Transverse Mercator (UTM) coordinates were collected at all cultural resource sites and isolated finds using a hand-held Garmin unit. The UTM coordinates were collected for the approximate center of the site, the site boundaries, tools and features. Readings were recorded using NAD 83 in Zone 13, meters. Coordinates were converted to StatePlane, North Dakota South, NAD27, feet for GIS mapping.

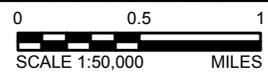
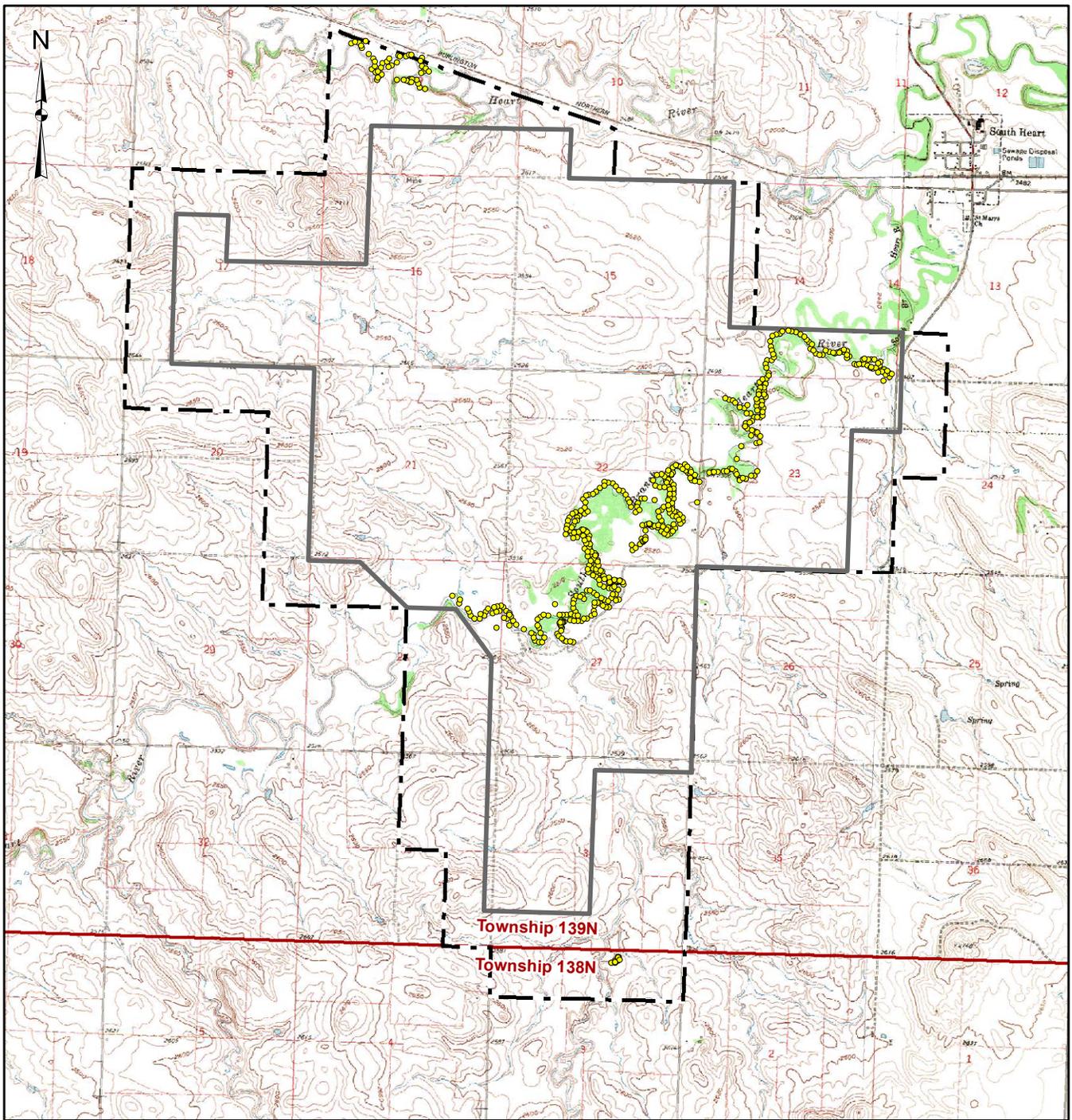
Ground disturbance has occurred in the area in the form of wind/water erosion, crop cultivation, fence construction, and livestock grazing. Ground visibility was variable. Much of the survey was carried out across cropland with late Fall and early Spring growth. Native prairie was characterized by thick dry grasses. Access roads and scoured badlands tended to offer grounds with the highest visibility. No problems were encountered at the time of survey.

An effort was made while in the field for the inventory phase to gather all the information required to make a final National Register eligibility determination for each cultural property. However, further work will be required during a separate formal archaeological testing evaluation phase at some of the sites if they are disturbed in the future. Further testing and evaluation is not currently planned because these sites are either located outside of the Permit Boundary and will not be disturbed or in areas where mine planning has included a 100 foot buffer around the site to avoid any indirect and direct effects.

4.3 Shovel Testing Program

A total of 540 shovel tests were conducted within the Study Area (Figure 4.3-1). The majority of these (number [n]=508) were judgmentally placed along the terraces of the Heart River and South Branch Heart River. The shovel tests were placed along the rivers in areas with low ground visibility that were considered as having high potential for archaeological sites. The remaining tests (n=32) were placed on newly recorded sites in an effort to determine the presence of subsurface cultural material and to help delineate site boundaries.

Shovel tests averaged 40 square centimeters (cm²) in size and were excavated until a clay horizon was encountered (Plate 4.3-1). On average the tests were dug to a depth of 30 cm below surface.



- LEGEND**
- SHOVEL TEST
 - ▭ STUDY AREA
 - ▭ PERMIT BOUNDARY

NOTES
Contour Interval: 10 Feet

REFERENCE
Base Map from USGS 7.5' Quadrangle, Belfield SE (1962), North Dakota. Belfield NE (1981), New Hradec South (1978), South Heart (1978), North Dakota. Base Study Area: Golder, 10/18/2007, Permit Boundary: Norwest, 10/22/2007. Projection: StatePlane, North Dakota South, NAD27, Feet.

PROJECT		SOUTH HEART COAL LLC SOUTH HEART PROJECT SOUTH HEART, NORTH DAKOTA		
TITLE		SHOVEL TEST LOCATIONS		
PROJECT NO.	063-2174	FILE	Fig5.3-1_ShovelTestLoc.mxd	
DESIGN	AJR 06/16/2007	SCALE	AS SHOWN	REV. A
GIS	AC 10/25/2007	FIG 4.3-1		
CHECK	XAM 09/18/2008			
REVIEW	XEJP 09/18/2008			
 Denver, Colorado				



PLATE 4.3-1 PROFILE OF A TYPICAL SHOVEL TEST.

Tested areas consisted of previously undisturbed level ground near water, ridge tops which afforded a good view of the surrounding terrain and areas near topographic features that provided some semblance of shelter from inclement weather. Areas which were not shovel tested consisted of cultivated lands which extended to the river's edge. In conditions such as these surface exposures in the field and subsurface exposures on the terrace faces were adequate in determining the presence or absence of cultural material.

The soils along the Heart and South Branch Heart rivers have developed from a combination of recent and old alluvial deposits with the age of the soil dependant on the height above the active channel. The stable terraces are dominated by stratified soil profiles with thin dark, silty loam and silty clay loam surface soil underlain by lighter colored and coarser textured (loam and fine sandy loam) subsoil exhibiting minimal horizon development. Buried A-horizons are not common, but do occasionally occur. The stream bank and floodplain soils exhibit variable characteristics including profiles similar to the terrace soils, but also including areas with no horizon development. Soils are commonly free of coarse fragments.

5.0 RESULTS

During the assessment a total of 13 sites and 12 isolated finds was recorded (Figure 1.0-1). This includes two previously known historic sites that were revisited. Seven of the sites are prehistoric and six are historic. All of the isolated finds are prehistoric. The six historic sites and the isolated finds are ineligible for inclusion in the National Register. Seven prehistoric sites are potentially eligible for inclusion in the National Register and are recommended for further work before a final determination is made. Further testing and evaluation is not currently planned because these sites are either located outside of the Permit Boundary and will not be disturbed or in areas where mine planning has included a 100 foot buffer around the site to avoid any indirect and direct effects. Table 5.0-1 contains a list of these properties and Golder archaeologists' eligibility recommendations. There is a complete description in Section 5.1 of all the recorded sites. Isolated finds are discussed in Section 5.2. The North Dakota CRIS forms can be found in Appendix I. All field notes, photographs and site forms are on file with the SHSND in Bismarck, ND.

TABLE 5.0-1

**SITE ATTRIBUTES AND NATIONAL REGISTER ELIGIBILITY RECOMMENDATIONS
FOR SITES WITHIN THE STUDY AREA**

Smithsonian Number	Field Designation	Cultural Affiliation	Site Type	Location within Study Area	National Register Recommendations
32 SK1004	SH GAL 1	Prehistoric	Lithic scatter	Within disturbance area	Potentially eligible ¹
32SK1005	SH GAL 2	Prehistoric	Cairn	Within the Study Area	Potentially eligible ²
32SK1006	SH GAL 3	Historic	Refuse	Within disturbance area	Ineligible
32SK1007	SH GAL A	Prehistoric	Lithic scatter	Within disturbance area	Potentially eligible ¹
32SK1008	SH GAL B	Prehistoric	Lithics (buried)	Within disturbance area	Potentially eligible ¹
32SK1009	SH GAL C	Prehistoric	Lithic scatter	Within the Study Area	Potentially eligible ²
32SK1010	SH GAL D	Prehistoric	Lithic scatter	Within the Study Area	Potentially eligible ²
32SK1011	SH GAL E	Historic	Homestead	Within the Permit Boundary	Ineligible
32SK1012	SH GAL F	Prehistoric	Lithic scatter	Within the Study Area	Potentially eligible ²
32SK1002	SH GAL G	Historic	Ranch	Within disturbance area	Ineligible
32SK1003	SH GAL H	Historic	Farmstead	Within disturbance area	Ineligible
32SKX110 Update		Historic	Mine site	Within disturbance area	Ineligible
32SKX202 Update		Historic	Homestead	Within disturbance area	Ineligible

¹ A 100-foot buffer is planned around potentially eligible site to avoid any indirect and direct effects.

² Site is located outside of Permit Boundary and will not be disturbed.

Historic sites are generally related to homesteads and the practice of agriculture and stock raising. Prehistoric sites are often represented by lithic scatters and stone features. The lithic scatters and small stone feature sites likely are the remnant of short term occupations. Prehistoric residential bases representative of longer term, more sedentary occupancy were not encountered within the Study Area.

5.1 Cultural Resource Properties

5.1.1 32SK1004

The site identified as 32SK1004 (Plate 5.1.1-1) consists of a lithic scatter originally recorded by Golder crew members in October of 2006. It was then revisited by Golder archaeologists in May of 2007. In 2006 only ten flakes and a thumbnail scraper were observed. More debitage was exposed over the winter and a shovel testing program produced two positive tests. In 2007, upwards of 30 flakes and a biface fragment was observed. The debitage is manufactured from 60 percent Knife River Flint, 20 percent chalcedony, 10 percent quartzite and 10 percent petrified wood. One flake is a core rejuvenation flake and all others are tertiary. The thumbnail scraper is manufactured from chalcedony with approximately 25 percent patinated surface. The edge wear on the scraper consists of battering and nibbling. The biface fragment is made of Knife River Flint and has a snap fracture horizontally through the body.

The site measures 20 m east to west and 131 m north to south. It is located near the west rim of a terrace above a floodplain of the South Branch Heart River. There is a sharp break in slope down to the floodplain at the west and north edges of the terrace. The majority of the site is within the plow zone of a fallow field. Other than the flake produced in a positive shovel test at the extreme north end of the site, the debitage was observed in a fairly localized area. The terrace slopes gently west. The view is one to two miles to the north, east and west and up to five miles to the south to high rolling upland plains. Cottonwoods line the river located approximately 100 m to the north. Native grasses grow off the 32SK1004 site on the slopes to the west and north. The soil is a medium brown, medium-grained, sandy loam.



PLATE 5.1.1-1 VIEW NORTHWEST TO SITE 32SK1004.

To assist in the identification of the horizontal and vertical boundaries of the 32SK1004 site and to assess areas with low ground visibility on the floodplain below the terrace, a total of 19 shovel tests were placed in the area. Four shovel tests were dug at the base of the west facing slope, four along the edge of the terrace above the west facing slope, eight along the edge of the terrace of the north facing slope and three in the plow zone. Two of the shovel test results placed out of the plowed area were positive, with an artifact from approximately 5 cm below ground surface (bgs) in each test. One yielded a tibia fragment of a large ungulate. It was located on the west rim of the terrace approximately 35 m southwest of the bulk of the lithics. The other positive test produced a Knife River Flint tertiary flake. It was located on the north rim of the terrace overlooking the floodplain below. The three shovel test results within the area with surface lithics (plow zone) and the remaining tests above the west facing slope were negative as were the remaining tests above the west facing slope.

Artifact context at the site has been compromised by agricultural practices. Shovel testing indicated that the plow zone extends 15 cm below surface. Visits to the site seven months apart revealed that artifacts are still being exposed. Although the artifacts from the two positive shovel tests came from

5 cm bgs, the potential for deeper undisturbed deposits does exist. Intact buried cultural deposits would retain integrity of association, location, workmanship and materials.

The site is located in the disturbance area within the Permit Boundary; however, mine planning has included a 100 foot buffer zone around the site to avoid any indirect and direct effects. It is in T. 139 N., R. 98 E., Section 22. Presently the area is impacted by cultivation. The land is owned by Jerry and Sandy Perdaems.

The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will be avoided.

5.1.2 32SK1005

Site 32SK1005 (Plate 5.1.2-1) is a prehistoric cairn situated on a finger ridge below the crest of a hill. It is west facing, overlooking a pasture. There are 23 small subangular limestone rocks visible (Table 5.1.2-1). The cairn is deeply sodded and it is likely that there are more stones which are obscured. It measures 165 cm north/south x 135 cm east/west x 26 cm high. The average rock size is 18 x 12 x 8 cm. It is in moderate condition as approximately ten stones appear to have slipped downhill. There is a commanding view of four to five miles to the northwest, west and south but the view is limited by the rising ridge to the north and east. The cairn is not readily visible from below. Vegetation is native mixed grass prairie surrounding the cairn and thick lichen on the rock faces. The soil is light brown silty clay loam.

TABLE 5.1.2-1

CAIRN ATTRIBUTES AT SITE 32SK1005

Cairn#	Definition	Shape	Diameters		Height	Sodding	Rock Count	Rock Type	Average Rock Size
			N-S	E-W					
1	Moderate	Circle	1.65 meters	1.35 meters	26 centi-meters	Heavy	23	Subangular	18 centi-meters



PLATE 5.1.2-1 VIEW SOUTH OF CAIRN RECORDED AT 32SK1005.

No artifacts were observed in association with the cairn and its temporal classification is unknown, although the amount of sodding and lichen combined with its low height and location suggests it was constructed prehistorically. Dating of rock features is often difficult. Prehistoric cairns are delimited from historic cairns on the basis of size, location and the relative abundance of lichen spores. Findings by Rudolph et al. (2004: 5-21) found that historic cairns are generally over 40 in (100 cm) tall and are constructed on prominent landforms where they can be sighted from long distances, while prehistoric cairns tend to be smaller and the view from the cairn is more important than the view to the cairn. Deaver and Peterson (1999: 1-8) suggest that in prehistoric cairns typically the basal layer of stones is 50 percent buried, the tops of stones are characterized by more lichen growth and that the size range of stones is between 12 to 30 cm.

No subsurface testing was conducted. Testing would disturb the cairn and could destroy its integrity. Any testing should occur under a formal testing program with the concurrence of SHSND.

The cairn appears to retain integrity of location, design, setting, materials, workmanship, feeling and association. The few stones that have toppled from the feature do not represent significant structural decay.

The site is located within the Study Area but outside of the Permit Boundary and will not be disturbed. It is in T. 139 N., R. 98 E., Section 17. The land is owned by Robert and Brenda Kuylen.

The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will not be disturbed.

5.1.3 32SK1006

Site 32SK1006 (Plate 5.1.3-1) consists of historic household debris which is scattered over a 20 m area. The site is located on a relatively flat, broad, open cultivated field. Artifacts consist of a glass marble, a wooden button, earthenware, sherds of manganese, aqua and clear bottle glass, Medalta crockery, bricks, rubber toy tractor tire, window pane glass, unidentified metal scraps and unidentified rubber fragments. The field is currently fallow and the vegetation consists of stalks of cultivated plants and some invasive weeds. The soil is medium brown silty loam. No subsurface testing was conducted.

Past plowing activities have disturbed and scattered the articles. Many of the items likely were in poor condition prior to being thrown out and the effects of time have served to further deteriorate their condition. The dump lacks context and cannot be attributed to a specific time period. The aqua and manganese glass that are known to have ceased production in the early 20th Century may have been saved and dumped at a much later date. GLO records indicate that title to the land was originally held by the Northern Pacific Railroad Co. dated March 31, 1896 (BLM n.d.).



PLATE 5.1.3-1 VIEW TO THE WEST AT SITE 32SK1006.

This site is recommended as ineligible for inclusion in the National Register. While the dump site appears to retain integrity of location it lacks integrity of association. The integrity of a site is its ability to convey significance. There is no information to suggest that the site is associated with any important specific event (Criteria A) or person significant to our past (Criteria B); there are no uniquely constructed features (Criteria C) and there is little opportunity for further scientific information potential (Criteria D).

The site is located in the disturbance area within the Permit Boundary. It is in T. 139 N., R. 98 E., Section 17, on land owned by Robert and Brenda Kuylen. However, planned mining activities will not affect this National Register ineligible property. No further work is recommended. Documentation and locational data are sufficient to provide attribute descriptions and information on historic siting preferences.

5.1.4 32SK1007

Site 32SK1007 (Plate 5.1.4-1) is a moderately dense lithic scatter. The artifacts were observed within a 27 m east-west x 25 m north-south area. All artifacts are Knife River Flint. There are 11 tertiary flakes, one primary flake, one block shatter and a core fragment. The low number of artifacts

indicates it probably was only occupied briefly and served as a location for small scale tool production and/or maintenance. The site is located on a high level terrace that overlooks the floodplain of the South Branch Heart River to the west and north. The terrace is bounded by a remnant meander of the river. The current river channel is approximately 100 m to the north and west. Approximately 250 m to the south there is a high ridge crossed by an east-west trending transmission line. The site is located in a cultivated field which was not in crop at the time of survey. The view to the north and west is obscured by trees on the floodplain but extends in excess of two miles to the south and to the east. One trowel probe demonstrated that the plow zone extends 12 cm below surface. The soil is light brown silty loam from 0 to 12 cm below surface where it then becomes well graveled sandy silt. Plowing has brought some gravel to the surface.



PLATE 5.1.4-1 VIEW EAST TO SOUTHEAST TO LITHIC SCATTER AT 32SK1007.

Overall the condition of the site is poor. Plowing has destroyed the integrity of association of the exposed artifacts. However, given its location on the terrace, the possibility of deeper undisturbed cultural deposits does exist. Intact cultural deposits would retain integrity of location and association.

The site is located in the disturbance area within the Permit Boundary; however, mine planning has included a 100 foot buffer zone around the site to avoid any indirect and direct effects. It is in

T. 139 N., R. 98 E., Section 23. Presently the area is impacted by cultivation. It is on land owned by James and Rosella Perdaems.

The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will be avoided.

5.1.5 32SK1008

Site 32SK1008 (Plate 5.1.5-1) was discovered during shovel testing along a low terrace overlooking a remnant meander of the South Branch Heart River. The current river channel is approximately 100 m to the north. A total of ten shovel tests were placed within a 20 m east/west x 10 m north/south area. Four of the tests were positive; two shovel tests produced unidentifiable bone fragments, one shovel test a piece of Knife River Flint block shatter and one shovel test a porcellanite bifacially retouched flake and an unidentifiable bone fragment. The items were encountered approximately 10-15 cm below surface within a homogeneous blackish brown silt devoid of gravel. No artifacts were observed on the surface.

The buried artifacts appear to be below any zone of previous disturbance related to field clearing activities. There may be further buried cultural deposits and/or features on the terrace. The site appears to retain integrity of location and association.

The site is located in the disturbance area within the Permit Boundary; however, mine planning has included a 100 foot buffer zone around the site to avoid any indirect and direct effects. It is in T. 139 N., R. 98 E., Section 27. It is on land owned by Patrick Kuylen.



PLATE 5.1.5-1 VIEW NORTH TO SITE 32SK1008.

The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will be avoided.

5.1.6 32SK1009

Site 32SK1009 (Plate 5.1.6-1) is a diffuse lithic scatter consisting of 10 Knife River Flint tertiary flakes, one chalcedony tertiary flake, two Knife River Flint primary flakes, one Knife River Flint secondary flake, one Knife River Flint core fragment, an unmodified Knife River Flint nodule, one Knife River Flint block shatter, two chalcedony block shatter and one Knife River Flint biface fragment. Artifacts were observed within a 48 m east-west x 37 m north-south area.



PLATE 5.1.6-1 VIEW TO THE WEST OF SITE 32SK1009.

The site is situated on a large knoll and a short distance down the north and south side slopes. There is a panoramic view for many miles in all directions. The South Branch Heart River is visible approximately 500 m to the southeast. The scatter is in a cultivated field with a new crop just beginning to sprout. Visibility was above 75 percent. A large sandstone erratic boulder is located at the fence line approximately 60 m to the north. A trowel probe revealed the plow zone to extend 14 cm below surface. Plowing, erosion and cattle have impacted the site. Impacts from cattle comprise a churning of the ground surface.

The site is located within the Study Area but outside of the Permit Boundary and will not be disturbed. It is in T. 139 N., R. 98 E., Section 14. It is on land owned by James and Rosella Perdaems.

Plowing has destroyed the integrity of association of the exposed artifacts. However, given its location, the possibility of deeper undisturbed cultural deposits does exist. Intact cultural deposits would retain integrity of location and association.

The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will not be disturbed.

5.1.7 32SK1010

Site 32SK1010 (Plate 5.1.7-1) is a small lithic scatter located within a 16 m east-west x 23 m north-south area. The assemblage consists of six Knife River Flint tertiary flakes and one Knife River Flint biface. The site is 150 m south of lithic scatter 32SK1009, on a bench of an alluvial fan near the toe of a south facing slope. The view is limited on all sides except to the south.



PLATE 5.1.7-1 VIEW TO THE NORTH TO SITE 32SK1010.

The biface has a thick patina. It is square in shape and is snapped laterally. It has steeply beveled, thinly tapered battered edges. It measures 5.6 cm in length x 3.9 cm wide and is 7 mm thick.

The site lies in a cultivated field with new spring growth. Ground visibility is 50 to 75 percent. A trowel probe demonstrated that the plow zone is 14 cm deep within a brown silty loam. Plowing and erosion have impacted the area.

The site is located within the Study Area but outside of the Permit Boundary and will not be disturbed. It is in T. 139 N., R. 98 E., Section 14. It is on land owned by James and Rosella Perdaems.

The integrity of site 32SK1010 has been compromised by past agricultural practices. However, deeper deposits may exist. Lower portions of the site, including other cultural components, may be undisturbed. The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will not be disturbed.

5.1.8 32SK1011

Site 32SK1011 (Plate 5.1.8-1) is an historic homestead consisting of 14 features. The site covers an area 80 m east/west x 105 m north/south. It encompasses a low knoll and a portion of the east facing slope and plain below the knoll. The features include a windmill, foundations, concrete pads, gates and barn debris. The BLM GLO Patent records for this location show that Alexander Morton obtained a Homestead Entry Survey (HES) Patent on June 25, 1889 (BLM n.d.). The 1884 GLO Survey Plat shows a structure at this location which was labeled "Morton" (NDSWC n.d.).

Feature A is a seeder located beside a concrete pad labeled as Feature B. Feature B, the pad, is L-shaped and it measures 10.5 ft north/south x 25 ft east/west along the longest sides. The short north/south wall measures 4 ft. The concrete is fine to medium grained with a sand matrix. It is partially overgrown by moss. There is no discernable entranceway.



PLATE 5.1.8-1 VIEW TO THE EAST OF SITE 32SK1011.

Feature C is a trash/debris pile. The pile consists of barbed wire, milled lumber, fence posts, wood scraps, metal pipes, shingles and unidentified metal fragments.

Feature D is the remains of a barn. The foundation is constructed of unmarked brick. It roughly measures 15 ft east/west x 30 ft north/south. Measurements are approximate because the structure is collapsed. The barn was constructed using milled lumber with an average size 5 ½ inches wide x ½ inch thick, with wire nails. The roof is wooden shake shingles. It has a single gable with a steep pitch and a single haymow window. There are insulators on the interior roof indicating that at one time it had power. It appears that sheep have been bedding down in the interior of what is left of the roof.

Feature E is a windmill located at the bottom of the knoll on the southeast corner of the site. The base of the windmill measures 6 x 6 ft. The metal is stamped with “Sorenson Bros” and “BELFIELD ND” along with “20 FT” and “30 FT”. The windmill has two brown insulators, indicating that it generated power. Directly underneath the windmill is a stone lined well with a diameter of 2 ft 8 inches. Wood debris and a dog house are also located beneath the windmill.

Feature F is a circular metal trough with a concrete floor that is situated directly south of the windmill.

Feature G/I is a fence line which runs northwest/southeast from the windmill to Feature J.

Feature J is a foundation located on top of the knoll. It is composed of squared fieldstone placed in varying one to two courses that is capped on the outside with poured concrete. The concrete is medium grained with a sand/pebble matrix. The northeast corner has a shaped granite slab placed under the fieldstone. There is a concrete pad attached to the outer edge of the south wall of the foundation. It may have served as a porch. This pad is also rimmed in fieldstone that has concrete mortar rather than a cap. The foundation is oriented with the long axis north/south. The foundation is 32 ft long but including the porch feature it measures 39 ft long. An entranceway that is 4 ft wide is located in the east wall.

Feature K is a rectangular foundation located at the base of the knoll. The long axis is oriented east/west. The doorway is in the south wall near the southeast corner. There is a small framed window at ground level in the east wall next to the door. The foundation is poured medium matrix concrete. The north wall is poured in segments consisting of two 5 ft segments and three 3 ft 4 inch segments. Wire nails are visible protruding from the concrete segments, which indicates an internal wood frame. Given the extensive amount of work to reinforce this foundation, it likely supported a large structure. The east/west walls measure 28 ft and the north/south walls are 15 ft 5 inches long.

Feature L is a rectangular concrete pad located on the top of the knoll. It measures 11 ft 2 inches east/west x 9 ft north/south. At the northwest corner there is a small concrete square measuring 3 ft x 3 ft 3 inches. A piece of flagstone measuring 4 ft x 2 ft 3 inches is located at the southeast corner of Feature L. The pad is partially obscured by a dead tree, shingles, a wooden window frame and screen and a wooden frame joist.

Feature M, the outhouse, is located at the top of the knoll. It is filled in with soil, wood planks of 4 x 4 inches and 6 x 4 inches and some bricks. There is a small concrete pad, measuring 1 ft 6 inches x 3 ft 1 inch, at the south end of the hole. It may be larger but the entire feature is overgrown with grasses.

Feature N is an L-shaped depression located at the top of the knoll. It measures 26 ft east/west x 20 ft north/south on its longest walls. It is approximately 3 ft deep and is very overgrown. The walls are

constructed with five courses of flat field stones, pieces of concrete and a few bricks. There is one piece of rebar noted in the north wall. There is up to 1 ft of dirt on top of the field stones.

Feature O is a foundation located at the bottom of the knoll, by the windmill. It is rectangular in shape and measures 11 ft 8 inches east/west x 18 ft 4 inches north/south. The walls are 8 inches thick and 6 ½ inches high. There are no breaks in the foundation to indicate an entrance. It appears to be wood cribbed with concrete fill.

Feature P is the remnant of an old road or the driveway to the homestead. It is completely grown over with grasses. The visible segment of the road is approximately 9 ft wide. There are two wooden posts at the end of the road at the top of the knoll. The posts measure 3 ½ inches x 3 ½ inches x 3 ft high. They stand 2 ft 6 inches apart from edge to edge. There is some metal strapping, which appears to be recent, attached to the north face of the posts. The strapping is 1 ½ inches wide and 2 ft long. Two bolts at the bottom hold the strapping in place.

Feature Q is a concrete slab over a concrete pipe. The slab measures 2 ft 1½ inches x 2 ft ¼ inches. There is an inscription on the bottom of the slab: "1956 JUNE". The pipe underneath the slab is 16 ¼ inches in diameter. The walls of the pipe are 1 ½ inches thick.

The integrity of site 32SK1011 has been compromised by the advanced deterioration of the once standing structures thus precluding the site from being eligible for the National Register under Criteria C. No historical records were uncovered which would indicate that the homestead was associated with an important specific event (Criteria A) or that the homestead was associated with a person or persons important to North Dakota history (Criteria B). Research questions pertaining to chronology, cultural affiliation, settlement and resource use could not be addressed with what remains on site. The site therefore would not be eligible for its scientific data potential (Criteria D).

The site is located within the Permit Boundary but outside of the disturbance area. It is in T. 139 N., R. 98 E., Section 14, on land owned by Robert Pavel. It is not recommended as eligible for inclusion in the National Register. No further work is recommended. Documentation and locational data are sufficient to provide attribute descriptions and information on historic siting preferences.

5.1.9 32SK1012

Site 32SK1012 (Plate 5.1.9-1) is a diffuse lithic scatter spread along the west facing rim of an eroded badland terrace above a tributary to the South Branch Heart River. The artifacts were observed within a 20 m east-west x 25 m north-south area. Surface visibility is low at approximately 30 percent, except for occasional deflated pockets denuded of vegetation. The five pieces of debitage consist of two Knife River Flint tertiary flakes, one Knife River Flint flake shatter, one Knife River Flint block shatter and one chalcedony flake shatter. Native grasses comprise approximately 80 percent of the ground cover, followed by silver sagebrush, various forbs and a small amount of prickly pear cactus. Overall, despite some minor erosion and deflation the site appears to be in good condition.

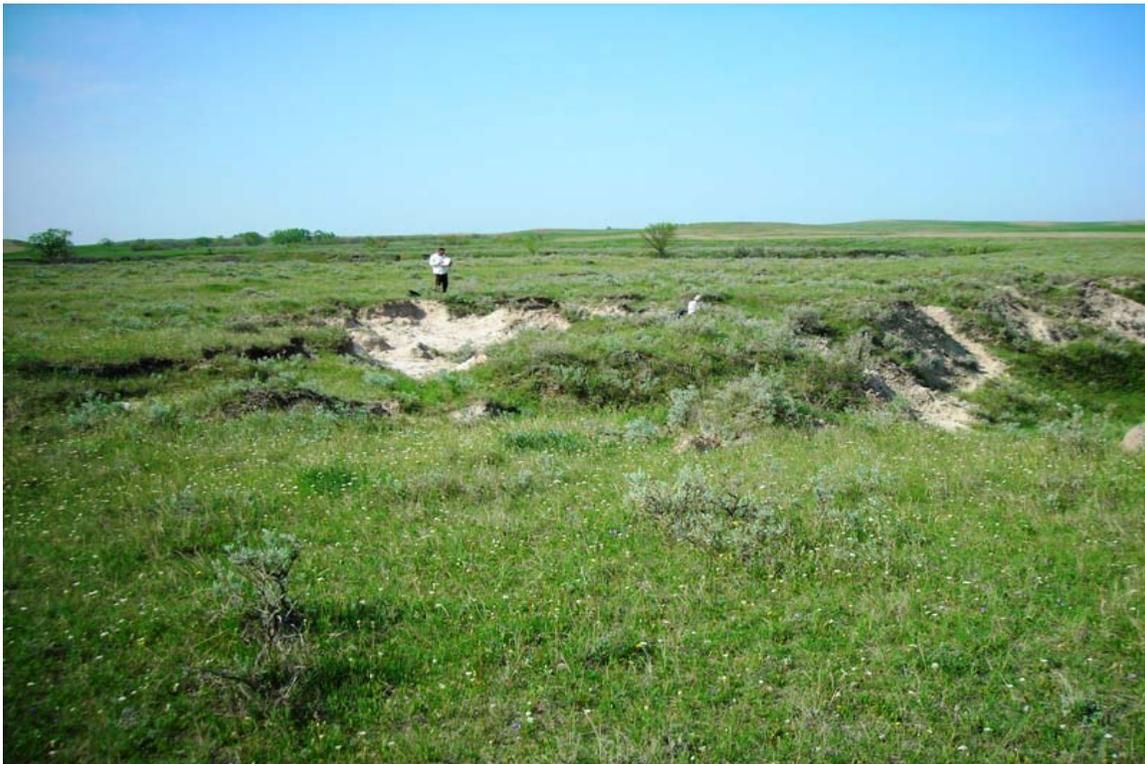


PLATE 5.1.9-1 VIEW TO THE SOUTHWEST OF 32SK1012.

Twelve shovel tests placed within and around the boundary of the observed debitage were negative. Clay was encountered 14 to 22 cm below surface. The cliff face located on the west edge of the site provided good subsurface exposure. No artifacts or buried soil horizons were observed in the exposed cliff face above the clay layer.

The site is located within the Study Area but outside of the Permit Boundary and will not be disturbed. It is in T. 138 N., R. 98 E., Section 3, on land owned by Raymond and Vivian Luptak.

While not currently cultivated the ground has been broken in the past. The integrity of the exposed artifacts at site 32SK1012 has been compromised. However, since the site is located on a terrace, deeper deposits may exist. Lower portions of the site, including other cultural components, may be undisturbed. The National Register eligibility of this site cannot be determined with the available information. Formal archaeological testing is required to discover if there are buried artifacts and/or features which might yield data important to answering pertinent research questions and to understanding area prehistory, making the site eligible under Criteria D. No further work is recommended since the site will not be disturbed.

5.1.10 32SK1002

In May of 2007 Golder Associates Ltd. recorded two historic barns and one recently constructed barn located on the Kuylen property. In November of 2007 Louis N. Hafermehl, a professional Architectural Historian, revisited the site and recorded the barns and the entire ranch of which they are a part (Plate 5.1.10-1). His report is summarized below, and is included in Appendix II of this document. He recorded a total of 20 features and concluded that none was eligible for inclusion in the National Register (Table 5.1.10-1).

Feature 1 is a wood frame, single-family, residence with an attached, oversized, single stall garage. The building, constructed in 1997, is a wood frame, gable roofed, building of rectangular plan, measuring approximately 27' x 63' that sits atop a poured concrete foundation. It occupies the approximate site of a second generation single-family residence that previously stood on the site. The house is metal sided, with boxed metal soffits, and it is roofed with asphalt shingles. Windows are primarily paired casements. On the primary façade is an oriel window to the immediate west of the main entry. Centered on the wall to the east of the main entry is a combination large deadlight flanked by single casements.



PLATE 5.1.10-1 VIEW TO THE NORTHEAST OF THE KUYLEN RANCH (SITE 32SK1002).

TABLE 5.1.10-1

FEATURES AND NATIONAL REGISTER ELIGIBILITY AT THE KUYLEN RANCH (Site 32SK1002).

Feature#	Feature Description	National Register Eligibility
1	Single family dwelling	Not eligible
2	Double stall garage	Not eligible
3	Storm cellar/root cellar	Not eligible
4	Quonset building	Not eligible
5	Workshop	Not eligible
6	Equipment storage building	Not eligible
7	Privy	Not eligible
8	Storm cellar/root cellar	Not eligible
9	Granary	Not eligible
10	Livestock shelter	Not eligible
11	Chicken Coop	Not eligible
12	Livestock shelter	Not eligible
13	Gable roof barn	Not eligible
14	Gable roof barn	Not eligible
15	Livestock shelter	Not eligible
16	Livestock treatment shed	Not eligible
17	Structure with unknown function	Not eligible
18	Sioux brand grain bin	Not eligible
19	Five Westeel-Rosco Brand grain bins	Not eligible
20	Two Columbian Brand Red Top grain bins	Not eligible

Feature 2 is a wood frame, gable roofed, double stall, garage sitting atop a poured concrete foundation. The building is of square plan, measuring approximately 24' x 24'. The building is metal sided and has an asphalt shingle roof covering. The garage door is a segmented metal overhead garage door. The change in roof overhang and the manner in which siding abuts approximately halfway the length of the building's long walls suggest that the south half of the building was built at a different time than the north half. According to the owner, this feature was built on the location of the second house to occupy the site.

Feature 3 is a root/storm cellar entry shaft. We did not examine the interior of the cellar. The shaft is of rectangular plan, measuring approximately 4' x 6'. It is constructed of unglazed structural clay tile brick laid in running bond. The roof is of poured concrete with a slightly domed profile. An unglazed structural clay tile brick mounted at the north edge of the roof serves as a roof vent for the shaft. A door, constructed of short lengths of drop siding, is mounted on the shaft's south wall.

Feature 4 is a corrugated metal Quonset building of rectangular plan. It measures approximately 42' x 63' and sits atop a poured concrete foundation. Equipment access/egress is through a doorway (segmented, metal, overhead door) centered on the building's south wall. A pedestrian doorway is located to the east of the larger door. The structure is free-standing, though provided rigidity by steel U-channels mounted midway up the building's long walls and running their full length and thru-bolted to the structure.

Feature 5 is a wood frame, gable roofed, workshop of rectangular plan. It measures approximately 21' x 33' and sits atop a poured concrete foundation. The building is sided with corrugated, galvanized, metal sheeting, vertically laid. The roof covering is also corrugated, galvanized, metal sheeting. The roof has no eaves overhang. A segmented metal overhead garage door is centered on the building's east wall, and to the south of that door is a pedestrian doorway. A building appears at this location in a 1960 photograph of the site, but its exterior materials cannot be determined from the photograph. Likely, it seems to us, Feature 5 is that building, but refurbished in relatively recent years.

Feature 6 is a flat roofed, metal frame, equipment storage building of rectangular plan, measuring approximately 40' x 60'. It has a poured concrete foundation. It is sided and roofed with enamel coated corrugated metal. Each of the building's long walls carries three rectangular corrugated fiberglass panels, equally distributed along the wall length, to provide natural lighting to the interior. These panels begin at the roofline and extend approximately half the wall height. Centered on the

building's east wall is an exterior mounted, double leaf, sliding door for equipment access/egress to and from the building. To the north of this doorway is a pedestrian doorway with an insulated steel door. The building was constructed sometime after 1960. This feature is built on the approximate location of the earliest known house to occupy this site.

Feature 7 is a wood frame, shed roofed, privy of rectangular plan. It measures approximately 5' x 6'. It is sided and roofed with enamel coated corrugate metal of the same manufacture as that found in feature 6; it was presumably applied at the time of construction for feature 6. The doorway is located on the privy's south wall and is of plywood.

Feature 8 is an earthen covered storm/root cellar of square plan, measuring approximately 20' x 20'. Access to the cellar is via a wooden stairway protected by a wood frame, gable roof, structure centered on the east slope of the cellar's roof berm.

Feature 9 is a wood frame granary of rectangular plan, measuring approximately 37' x 70'. The building sits atop a poured concrete foundation and floor (only partially floored with concrete in the drive-through portion located inside the building's east wall. The building has a catslide roof. It is sided and roofed with corrugated, galvanized, metal (Strongbarn Brand TM). The roof has slight overhangs on the building's long walls and none on its gable ends. Centered on the building's gable ends are vehicle doorways, each with a segmented metal overhead door. The east side of the building is devoted to vehicle access/egress and for equipment storage. The west side is divided into five grain storage bins, each with a hopper bottom from which grain is loaded via auger for hauling.

Feature 10 is a livestock shelter of pole construction and rectangular plan, measuring approximately 15' x 48'. The structure has a shed roof. Siding and roofing materials are enamel coated corrugated metal, of the same kind used in the construction of feature 6. We suspect feature 10 was built at approximately the same time, consequently, as feature 6. In any event, photographic evidence shows that both features post-date 1960.

Feature 11 is a wood frame, shed roofed, chicken coop of rectangular plan, measuring approximately 9' x 11'. It sits atop a foundation of 4" x 4" wood beams laid on grade. The building's south wall is covered with horizontally-laid shiplap siding; its east wall is covered with drop siding; north and west walls are covered with enamel coated corrugated metal sheeting, vertically laid, over drop siding. The shed roof is covered with roll roofing. Two large rectangular window openings are evenly spaced on the coop's south wall. One carries no moveable sash, but a four-light deadlight storm sash.

The other carries four over three double-hung sash. An opening for fowl access/egress is located at grade at the east end of the south wall. Pedestrian access is via a door on the east wall.

Feature 12 is a three-walled livestock shelter of pole construction. It is roofed and sided with corrugated and galvanized metal. The feature measures approximately 18' x 32'.

Feature 13 is a wood-frame, gable roofed building of rectangular plan measuring approximately 24' x 32'. It sits atop a poured concrete foundation, but the building has a dirt floor. It is sided with drop siding with corner trim boards, and roofed with corrugated, galvanized metal sheeting. The roof ridge is covered with a galvanized metal cap with ball finials. Rafter ends are exposed and the soffits are open. Exterior mounted sliding doors are centered on the building's gable ends at ground level; centered above these doors are non-original plywood haymow doors – a cross-braced door on the west wall and a Z-braced door on the east. Four-light deadlight windows flank both sliding doors and a four-light deadlight is centered in each of the gable peaks above the haymow doors. These windows are all vinyl covered sash and are not original to the building, though the openings in which they sit may be original. Walls are of post and beam construction; roof is standard wood-frame construction. Arranged along the north wall of the barn are three stalls. At present the building is used for equipment storage, though it appears to have originally housed livestock and hay. Abutting the building's north wall is a nine-foot wide poured concrete pad that appears to have been the floor of a lean once attached to the building, though the lean was probably not a part of the building's original construction.

Feature 14 is a wood-frame, gable roofed building of rectangular plan measuring approximately 24' x 34'. It sits atop a poured concrete foundation. It is sided with 1 1/2" tongue and groove siding and has a wood shingle roof. The roof ridge is capped with a galvanized metal roof cap with ball finials. There is no roof overhang on long walls or on gable ends. Centered on the building's east and west walls are exterior mounted sliding doors. Above each of the sliding doors are two windows; those on the east gable end are non-original vinyl coated four-light deadlight sash. On the west end one of the windows is covered with a plywood panel while the other is a six-light deadlight covered by a wooden sash three-light storm window, which is missing two lights.

Feature 15 is a three-walled, gable roofed, livestock shelter of rectangular plan. It measures approximately 21' x 57' and is of pole construction. It is sided with vertically laid shiplap. Three cables are strung across the building's width to provide stability. The braced rafters are

gusseted at the gable peaks. The roof is asphalt shingles; roof ridge is covered with a galvanized metal cap with ball finials.

Feature 16 is a wood frame, gable roofed, building of rectangular plan, which sits atop a poured concrete foundation. It measures approximately 9' x 18' and houses a cattle chute. The building may be considerably older than its presence at this location would suggest. A 1960 photograph of the ranch site shows no building at this location, and of the buildings that do appear in that photo, none can be identified as this building. In any event, the four-light deadlight windows, two each on both long walls of the building appear quite old. The building is covered with vertically laid, enamel coated, corrugated metal, beneath which are two non-original wall coverings. The first (i.e., immediately beneath the metal siding) is a layer of granular surfaced asphalt fiber backed panels. Beneath that layer is drop siding. The latter, curiously, was laid with its back side exposed to weather, which suggests to us that the drop siding may have been salvaged from another structure and reversed due to the deterioration of the traditional weather face of the siding. Beneath the drop siding is another layer of siding, presumably the original, which we were unable to distinguish. The Gable roof, which has no eaves, is covered with asphalt shingles.

Feature 17 is a small wood frame, gable roofed structure of rectangular plan, measuring approximately 6' X 8'. The feature appears to have been designed to be moved. It has no foundation and is braced across at ground level on the gable ends with tubular steel. The feature's walls and roof are covered with enamel coated pressed metal. Its purpose is unknown, but in size, shape, and height, it most closely approximates the small farrowing structures sometimes found in somewhat warmer climates where hogs are raised. A 1960 photograph of the ranch site shows no building at this location, and of the buildings that do appear in that photo, none can be identified as this building.

Features 18-20 are grain bins. Feature 18 is a Sioux Brand, grain bin, of approximately 1,200 bushel capacity. Feature 19 consists of four Westeel-Rosco brand steel granaries; each with a capacity of approximately 5,500 bushels. Feature 20 consists of two Columbian brand "Red Top" grain bins, of approximately 1,200 bushel capacity each.

The ranch is located on a flat, grassy floodplain of a tributary to the South Branch of the Heart River. It sits on property that was part of a non-contiguous 11,520.16 acre tract of Stark County lands acquired by the Naamlooze Vennootschap Holland Dakota Landbouw Compagnie (Holland-Dakota Land Company), Amsterdam, Holland, in the summer of 1910. The lands were purchased from Edward, William and Timothy O'Connor, who had acquired them from the Northwest Improvement

Company, a Northern Pacific Railway Company subsidiary established for the purpose of divesting the railroad of its land grant. The Stark County lands acquired by the Holland Land Company were located in T138N R96W, T138N R97W, T139N, R97W and T139N R98W. The Holland-Dakota Land Company continued to acquire land, for a 1914 Atlas of Stark County (Geo. A. Ogle & Co., Chicago) lists them as owners of lands in T 137N R97W, T138N R99W, T139N R96W, and T139N R99W, in addition to those acquired in 1910.

There is little information about the Holland-Dakota Land Company. They acquired the land after a decade of years of above-average rainfall in southwestern North Dakota and during a period when the construction of new railroad lines in the area of North Dakota west of the Missouri River was opening up the land for settlement. The Northern Pacific Rail Road actively promoted settlement in the area, as did other land speculators. Front page headlines in the Belfield Times on July 8, 1910 announced the arrival of forty-four Dutch settlers to begin establishing farms on Holland-Dakota Land Company holdings in Stark County.

The company's activities remained front page headlines in the Times for months to come. Among the items noted was the company's establishment of an 100 acre experimental farm on Belfield's southeastern edge, where grains, vegetables, small fruit, shrubs and trees were to be grown, that a house supplied with water and steam heat had been built on that site, and that both steam and gas-powered sod breaking equipment had been ordered by the company to begin breaking of the sod in the following spring. Two months later, the paper announced the company, under the management of William A. Gropius, had constructed a 25' x 140' two-story warehouse/office building to be used for equipment storage and seed grain treatment and storage in the town as well as a stable on the demonstration farm capable of housing 25 head of horses plus storage for hay and feed.

On February 2, 1911, the Times reported that the company had installed a plant to generate electricity for warehouse use, and supply electricity to several of the local businesses, including the First National Bank, a bowling alley, and a lumber company office. Little more than a month later (3/24/1911) the paper reported that the company had begun field operations with four steam plowing outfits to begin breaking company land, with the intent of seeding (presumably still that spring) 3,000 acres to wheat, 3,500 acres to flax, 50 acres to durum wheat, corn and other crops. The article noted that the company had also constructed a grain warehouse in Zenith, located on the Northern Pacific tracks between Belfield and South Heart.

It is unknown how many different families of Dutch origin ultimately migrated to North Dakota to settle on Holland-Dakota Land Company lands. The 1914 Stark County Atlas produced by Geo. A. Ogle & Co. lists only nine families of Dutch origin in the county, but they were all settled in T139N R98W, where the company owned all or parts of thirteen sections. It was in this township that the company's holdings were most concentrated. It should be noted, however, that not all of these nine families were settled on company land. One who was, however, was Gerrit Noorloos, who is shown at the location of SH GAL G. Presumably settlement on company lands was available to non-Dutch families; for example, one O. F. Olson, listed as Norwegian-born, is shown as a resident on company lands on the edge of Belfield in the 1914 atlas.

The full extent of the company's landholdings, the ethnicity of those settling upon them, the arrangements of settlers with the company regarding payment of services, future opportunities to acquire land, financial and other assistance in getting to North Dakota and in beginning farm operations, providing housing, etc., remain unknown. Hollanders continued to migrate to populate company lands at least as late as 1929, because in that year Alfonse Kuylen, his wife Johanna, and their two sons, John and Andrew, arrived in the United States.

The Kuylen's lived with a brother until December of 1930, when they moved to the site. According to their own account, on moving to the farm they bought all the furniture, seven horses and twelve cows from the previous resident, Cornelius Kooren. Also awaiting them were two salted hogs and seven loaves of freshly baked bread. It appears then that the site may well have been occupied by Dutch families from the time of the land's acquisition by the Holland-Dakota Land Company in 1910. In any event, the Kuylens lived at the site for 17 years, before purchasing it, and all of Section 27, for \$7,680 from the company in 1946.

While the site is clearly associated with what is commonly characterized as the Second Dakota Boom and the settlement of the state west of the Missouri River, and more specifically with the effort of a Dutch land-holding company to bring settlers to the area to farm its lands, there is no information to suggest that either this site or any of its constituent features is associated in an important way with either of these events. Consequently none of the features is recommended as eligible for National Register listing under Criterion A.

Of the site's past occupants biographical information could only be found about Alfonse Kuylen. In addition to farming, he was a school bus-driver for a decade, and also a "road boss" (perhaps in charge of township road maintenance?) for another decade "when roads were being built"

(presumably during the early years of his occupancy of the site). For two decades he was a member of the board of directors of the South Heart Farmers Union Oil Company and the South Heart Co-op elevator. Kuylen retired in 1962 and rented his land to his sons, Andrew and John. Andrew's son, Patrick, now operates the farm. While Alfonse Kuylen's activities as a member of two local agriculturally related boards suggest a degree of respect and standing within the local community, those activities were generally unrelated to this site. No information was found about Kuylen that would indicate he can be considered significant, by National Register definition, in the field of agriculture.

Thirteen (of a total of twenty architectural features on the site) were built after 1960 (based on an aerial photograph of that date found in the 1970 Stark County Atlas, Midland Atlas Company, Milbank, South Dakota). While the structures exhibit some of the distinctive characteristics of contemporary "ranch style" architecture, they do not seem to be an important example of that style within the context of fee-simple ranching, or any other context for that matter, and should not, consequently, be considered eligible for National Register designation under Criterion C.

The examination of the site features does not suggest they are likely to yield information important in history. Consequently, the site in its entirety is not recommended as eligible for the National Register under Criterion D.

5.1.11 32SK1003

In May of 2007 Golder Associates Ltd. recorded an historic barn on the Perdaems property. In November of 2007 Hafermehl revisited the site and recorded the barn and the entire farmstead of which it is a part (Plate 5.1.11-1). His report is summarized below, and is included in Appendix II of this document. He recorded a total of 20 features and concluded that none was eligible for inclusion in the National Register (Table 5.1.11-1).

Feature 1 is a one-story, wood-frame, single-family dwelling of irregular plan. It measures approximately 42' x 60'. The house sits atop a concrete block foundation. Gable roof forms characterize the house proper; a shed roof covers the front porch. House siding is metal, as are the boxed soffits. Windows are a combination of 1/1 double hung sash, sliders, and casements. Buried within the larger structure is a small early dwelling, since obscured by numerous additions, according to the building owner.



PLATE 5.1.11-1 VIEW TO THE NORTHEAST OF THE PERDAEMS FARM.

TABLE 5.1.11-1

**FEATURES AND NATIONAL REGISTER ELIGIBILITY
AT THE PERDAEMS FARMSTEAD (SITE 32SK1003)**

Feature#	Feature Description	National Register Eligibility
1	single family dwelling	not eligible
2	double stall garage	not eligible
3	quonset building	not eligible
4	granary	not eligible
5	granary	not eligible
6	granary	not eligible
7	gambrel roofed barn	not eligible
8	granary	not eligible
9	quonset building	not eligible
10	garage/workshop	not eligible
11	two 5500 bu. grain bins	not eligible
12	two 2750 bu. grain bins	not eligible
13	two hopper type grain bins	not eligible
14	one 3500 bu. grain bin	not eligible
15	L shaped pit silo	not eligible

Feature 2 is a wood frame, gable roofed, three-stall automobile garage, sitting on a poured concrete slab on grade. The building measures approximately 25' x 30'. It is roofed and sided with enamel coated metal corrugated siding. Siding on wall surfaces is laid vertically. USDA Commodity and Stabilization Service Aerial photograph #AZV-3t-147 in the North Dakota Department of

Transportation (hereafter NDDOT) Records Center indicates this building was constructed sometime after 1957. Original siding and roof coverings, windows and doors have been replaced by the present owner.

Feature 3 is a gothic arch Quonset hut sitting atop a poured concrete foundation. Siding/roof is corrugate galvanized steel, vertically laid. A segmented metal, interior mounted, overhead garage door is centered on the building's east wall. The building measures approximately 30' x 60'. The wood frame is composed of 2" wide laminated studs at 4' on center with 2" x 4" purlins at 2' on center. Regularly space midway between foundation and roof ridge on each of the north and south walls are corrugated fiberglass panels measuring approximately 2' x 8'. The building is used for machinery storage. The building was constructed sometime after 1957 according to a USDA 1957 aerial photograph.

Feature 4 is a wood frame, gable roofed, one-story three-bin granary that sits atop a poured concrete foundation. The building is sided with corrugated galvanized metal sheeting, vertically laid. The roof is covered with asphalt shingles. The building measures approximately 30' x 50' and has a grain storage capacity of 8,000 bushels. At the north end of the building's east wall is a large door opening with and interior mounted segmented metal overhead door; one grain bin is located to the north of this doorway, while two are located to its south. According to the owner the building was constructed sometime in the late 1940's. The building does appear on a USDA aerial photograph taken in 1950.

Feature 5 is a wood frame, gable roofed, two-bin granary sitting atop a poured concrete foundation. The building is rectangular in plan and measures approximately 18' x 36'. It is sided with corrugated galvanized metal. The roof has boxed soffits and is covered with asphalt shingles. The granary capacity is 4,500 bushels.

Feature 6 is a wood frame, gable roof, granary that sits atop a poured concrete foundation. The building is sided with drop siding. The soffits are open with exposed rafter ends. The roof is covered with asphalt shingles. The building measures approximately 16' x 33' and has a grain bearing capacity of 3,500 bushels.

Feature 7 is a wood frame, gambrel roofed, barn with a shed roof lean spanning the full length of its east wall and a shed roof lean at the south end of its west wall that is connected to a gable roof shed. The building is of irregular plan and sits atop a poured concrete foundation. The gambrel roofed

section and the east wall lean combined measure approximately 43' x 51'. We did not measure the other shed roof lean or its adjoining gable roof shed.

The walls of the gambrel roof/east wall shed roof lean portion of the building have been covered with vertically laid, enamel coated, corrugated metal panels. All building windows have been replaced with vinyl-coated sash. The gambrel-roofed portion of the building is roofed with shingles. The roof appears to be a modified Wing joist frame type, with each angle of the gambrel rafters braced across with wooden gusset plates. Each rafter set is composed of paired 2" x 6" lumber and rafters are laid approximately 2' on center. Numerous rafters and gusset plates are painted, suggesting that the material had been used in a previous structure. This type of roof construction, sitting atop a balloon frame suggest a barn construction date of between 1915 and 1930, though it might have been constructed after the latter date. In any event, we do know the barn was located on this site by at least 1950, based on an examination of USDA aerial photographs. The east wall lean is not original to the building. The east wall of the gambrel roof section is covered with painted drop siding, which it would not likely have been if the lean had been constructed coterminous with the gambrel-roofed portion.

The gambrel roof section first floor interior is a center hall type, with a feed storage room at the northwest corner, a lab in the southwest corner, with two milking stalls between the two. At the northeast corner are a narrow stairway to the haymow and a pedestrian doorway to the shed roof portion. To the south of the stairs and doorway are stables. Spanning the width of the gambrel portion at its south end is a narrow room, accessed only from the shed portion, which contains a dehorning chute. A wooden feed trough with hay rack mounted above spans the west wall of the shed roof interior.

The shed roof addition at the south end of the west wall of the gambrel portion of the barn is of pole construction, as is the gable roof addition attached to its west wall. The shed roof addition is walled with corrugated galvanized metal on its south wall and vertically laid boards on its north wall. Its roof covering is asphalt sheeting. The gable roof portion is walled with vertically laid boards on all walls and roofed with asphalt shingles. According to the owner, these shed roof gable roof additions were constructed approximately fifteen years ago.

Feature 8 is a wood frame, three-bin, gable-roofed granary measuring approximately 15' x 60' that sits atop a poured concrete foundation. The building is built into the west facing slope of a knoll. The outer faces of the poured concrete foundation wall are battered. The building is sided and roofed

with corrugated galvanized metal. End wall construction is of 4" x 6" studs laid approximately 2' on center; side walls are of 2' x 6" studs laid approximately 16" on center. The east interior wall of each bin is sheathed with plywood panels. Rafters are 2" x 4" laid approximately 24" on center. The bins are braced with two steel cables, one running the width and the other the length of the bin. Bins are accessed by door openings on the west wall.

Feature 9 is a corrugated metal, free standing, Quonset hut that sits atop a poured concrete foundation. The building measures approximately 33' x 50'. Midway through the building's length is a 2" x 8" wooden arch, created in segments, through-bolted to the metal structure. The building is used for grain and heavy equipment storage. At the building's south end is an exterior mounted, double-leafed sliding door. Mounted on the roof approximately one-third of the distance from each end of the building is a circular ventilator. The building was constructed sometime after 1957, for it is not visible on the 1957 USDA aerial photo of the site.

Feature 10 is a concrete block structure atop a poured concrete foundation. The building is of rectangular plan measuring approximately 24' x 36'. The roof is a wood-framed gable roof. Gable end peaks are covered with plywood. A large overhead, segmented, metal garage door is mounted, offset to the east, on the building's south wall. The building, which according to the owner was constructed sometime in the 1960's, is built into the east-facing slope of the hill or low ridgeline upon which most of the site buildings sit.

Features 11-14 are grain bins. Feature 11 consists of two metal grain storage bins with a capacity of 5,500 bushels each. Feature 12 consists of four metal grain storage bins with a capacity of 2,750 bushels each. Feature 13 consists of two welded steel hopper type grain bins. Feature 14 consists of 3,500 bushel galvanized metal grain bin.

Feature 15 is an L-shaped pit silo. Its north wall measures approximately 170' long and its west wall approximately 115' long. The silo's east portal is 27' wide at its base; the south portal is 50' wide at its base. Walls are inward sloping and faced with wire-reinforced panels in some areas and concrete block in others. USDA aerial photos indicate the east/west leg of the pit silo was constructed between 1950 and 1957; the north-south wing was constructed sometime after 1957.

Peter Jensen received a homestead patent to the quarter-section on which this farmstead sits in 1895. In 1907 Jensen sold the property to Ed O'Connor of Renville County, MN, for \$3,200 – a price for that time that suggests capital improvements had been made to the property, as one would expect

since some improvement was necessary to receive the homestead patent. Thirteen months later, in August 1908, O'Connor sold the land as part of a 1,600 acre tract to F. V. Gilse of Roosendaal, Holland.

In that same year Gerald J. Perdaems (b. New Messmer, Holland, 1879; d. 11/27/63) came to North Dakota and settled at this site, just recently purchased by Gilse, ostensibly to farm the land for him. In 1936, Perdaems purchased 960 acres, including this farm-site, from Gilse. The farm has remained in the Perdaems family ever since, presently being operated by Jerry Perdaems, grandson of the original Perdaems owner.

It has been suggested [Stark County Heritage and Destiny, Stark County Historical Society, Taylor Pub. Co., 1978] that Gerald Perdaems came to North Dakota from Holland to manage this land for the Naamlooze Vennootschap Holland Dakota Landbouw (Holland-Dakota Land Company), but in fact the land was never owned by that company. In fact, the company acquired no Stark County, North Dakota, land until 1910, when with one purchase it acquired slightly more than 11,500 acres. Interestingly enough, that purchase was made from Ed O'Connor, who had sold the Perdaems property to the Dutchman, Gilse. Whether or not Gilse was an investor in the Holland Dakota Land Company we do not know. Possibly his acquisition and Perdaems' reports to him about the potential of the farmland even inspired Dutch investors to establish the Holland-Dakota Land Company and its 1910 acquisition of Stark County land, but that is purely speculation at this point. In any event, the Holland-Dakota Land Co. never owned this land.

There is no evidence to suggest that the site has been associated with any significant events which themselves have made any significant contribution to the broad patterns of our history. The site is not recommended as eligible for National Register listing under Criterion A.

Of the past owners of the site, Gerard (Jerry) Perdaems, son of Gerald Perdaems, is the only individual about whom there was found sufficient information to suggest possible significance. He took over the Perdaems farm operation in 1957, along with his brother Francis. As partners until 1973, they doubled the farm's acreage to 3200 acres. They received an award from the Soil Conservation Service in 1971, though it is unclear exactly for what activities the award was given. In 1974 Jerry received an Agriculturalist Award for service to the Agriculture Industry from North Dakota State University. Jerry also served on the South Heart School Board for fifteen years and was at one time president of that board. He was also one of the board of directors of the South Heart Coop Elevator for some years. While these awards and activities suggest a degree of significance in

agriculture and local affairs, they also occurred within the last fifty years. The site in question, of course, bears no relationship to his school board and elevator board activities, while the agricultural awards bear directly on his profession as a farmer. However, since these relate to work occurring in the last fifty years, and because there is no information to suggest they suggest exceptional significance, the property is not recommended as eligible for National Register listing under Criterion B or under Criteria Consideration G.

While several of the site features appear to retain distinctive characteristics of individual types, periods, or methods of construction, none of them appear to be important examples of the building practices of a particular time in history. Consequently, neither any of these features, nor the site in its totality, is recommended as eligible for National Register eligibility under Criterion C.

The examination of the site features does not suggest they are likely to yield information important in history. Consequently, the site cannot be recommended to be eligible for the National Register under Criterion D.

5.1.12 632SKX36 Update

Site 32SKX36 was originally recorded as a site lead by Ted Anderson on January 10, 1980. The site lead consisted of “bone eroding out of the Heart River bank” within Section 14, T. 139 N., R. 98 W. Re-inspection of this area in 2007 failed to reveal any bone locales or other cultural materials eroding out of the South Branch Heart River which flows through Section 14. Since the site lies within a non-disturbance area and therefore will be unaffected it is recommended that the data should remain as a site lead. No further work is recommended.

5.1.13 32SKX37 Update

Site 32SKX37 was originally recorded as a site lead by Ted Anderson on January 10, 1980. The site lead consisted of “bone eroding out of the Heart River bank” within Section 23, T. 139 N., R. 98 W. Re-inspection of this area in 2007 failed to reveal any bone locales or other cultural materials eroding out of the South Branch Heart River which flows through Section 23. Since the site lies within a non-disturbance area and therefore will be unaffected it is recommended that the data should remain as a site lead. No further work is recommended.

5.1.14 32SKX110 Update

Site 32SKX110 (Plate 5.1.14-1) was originally recorded in 1984 by persons unknown. The site consists of a possible strip mine located in Section 16, T. 139 N., R. 98 W, on land owned by Robert and Brenda Kuylen. It is located in the disturbance area within the Permit Boundary. On the site lead form a reference to a book published in 1902 states that at one time strip mining was indeed carried out within this section.



PLATE 5.1.14-1 VIEW TO THE SOUTH OF 32SKX110 UPDATE.

The Belfield SE quadrangle (1962) shows a mine site at this location. Inspection of this area in October of 2006 revealed heavily disturbed terrain and three distinct excavated areas, one of which has since filled with water. Debris in the immediate area consisted of concrete rubble, wooden pallets and a length of PVC pipe.

Research conducted at the regional museum in Dickinson North Dakota revealed that there were many small, privately owned mines in the area. Coal extracted from these small operations was primarily used for personal use or sold to neighboring farms for their consumption.

No standing or remnant structures were observed on site thus precluding the site from being eligible for the National Register under Criterion C. No historical records were uncovered which would indicate that the mine was associated with an important specific event (Criteria A) or was associated with a person or persons important to North Dakota history (Criteria B). Research questions pertaining to chronology, cultural affiliation, settlement and resource use could not be addressed with what remains on site. The site therefore would not be eligible for its scientific data potential under Criteria D.

Based on the available information the site is not recommended as eligible for inclusion in the National Register. The site is located in the disturbance area within the Permit Boundary. No further work is recommended.

5.1.15 32SKX202 Update

Site 32SKX202 (Plate 5.1.15-1) was originally recorded during the Southwest Pipeline Project by Cynthia Kordecki on January 13, 1995. The location is in the disturbance area within the Permit Boundary. Presently the land is owned by Raymond and Vivian Luptak. Based on structures shown on the Belfield SE quadrangle (1962) in Section 34 T. 139 N., R. 98 W., Kordecki revisited the area. At the time of her visit, no structures were remaining and no surface evidence existed of them ever having been located there. Two rows of trees ran north to south with an old fence line detected within the western tree row. An old board and bits of barbed wire were also observed.

GLO records indicate that Carrie M. Parker obtained the first homestead patent on the property in 1910. She and Robert Parent sold it to Adolph and Anton Privratsky in 1928. Anton bought out Adolph's share in 1934 and in 1957 Anton and his wife Cecelia sold the property to Maurice O'Connell. The last transaction was to Peter and Leocadia Emmil in 1974 (BLM n.d.).

Golder revisited the area in 2007 and confirmed that no evidence of depressions, foundations or cultural material remained. Other than the two tree rows, the entire area had been cultivated at one time. Presently bee hives are stored within the tree rows.



PLATE 5.1.15-1 VIEW TO THE SOUTH OF SITE 32SKX202 UPDATE. THE YELLOW BOXES ARE BEE HIVES.

No historical records were uncovered which would indicate that the homestead was associated with an important specific event (Criteria A) or that the homestead was associated with a person or persons important to North Dakota history (Criteria B). The site does not possess unique standing structures (Criteria C). Research questions pertaining to chronology, cultural affiliation, settlement and resource use could not be addressed with what remains on site so there is little scientific potential (Criteria D).

The site is not recommended as eligible for inclusion in the National Register. The site is located in the disturbance area within the Permit Boundary. No further work is recommended

5.2 Isolated Finds

Twelve isolated finds were encountered during the course of survey (Table 5.2-1). All of the finds are prehistoric stone tools and/or debitage. None of the isolated finds are recommended as eligible for inclusion in the National Register.

TABLE 5.2-1
ISOLATED FIND ATTRIBUTES IN THE STUDY AREA

Smithsonian Number	Field Designation	Cultural Affiliation	Site Type
32SKX325	SH IF 1	Prehistoric	Projectile point base and one flake
32SKX326	SH IF 2	Prehistoric	Scraper
32SKX327	SH IF 3	Prehistoric	Retouched flake
32SKX328	SH IF 4	Prehistoric	Retouched flake
32SKX329	SH IF A	Prehistoric	Projectile point fragment
32SKX330	SH IF B	Prehistoric	Retouched flake
32SKX331	SH IF C	Prehistoric	Biface fragment
32SKX332	SH IF E	Prehistoric	Scraper
32SKX333	SH IF F	Prehistoric	Projectile point fragment
32SKX334	SH IF G	Prehistoric	Two flakes and a biface fragment
32SKX335	SH IF H	Prehistoric	Projectile point fragment
32SKX336	SH IF I	Prehistoric	Two flakes and a biface fragment
32SKX191 Update		Prehistoric	One flake
32SKX275 Update		Prehistoric	Two flakes

5.2.1 32SKX325

Artifact 32SKX325 consists of a projectile point base and one flake located in a cultivated field that is currently fallow. The projectile point base is manufactured from Knife River Flint. An oblique snap through the midsection of the point has removed the top half. The flaking pattern is random and there is very fine bifacial retouch along the length of the base, making it very thin (1 millimeter [mm] thick). The base has a deep concavity. The metrics for the point are 2.0 cm long x 2.6 cm wide x 0.2 cm thick. The tertiary Knife River Flint flake was observed 7 m east of the point. The isolated find is located in a cultivated field, on the east side of a low knoll, just below the apex. A meandering seasonal stream is situated approximately 120 m to the south with the flat floodplain of the stream at the base of the hill. The panoramic view extends approximately 1.5 miles in all directions except to the east where the view is approximately 5+ miles. The soil is light brown silty loam with a low percentage of gravels. The ground surface, however, is rocky. Visibility in the field was high and no subsurface testing was conducted.

The artifacts are located within the disturbance area. The integrity of the isolated find 32SKX325 has been compromised by past and current agricultural practices. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences

and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX325 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.2 32SKX326

Artifact 32SKX326 consists of a scraper manufactured from yellow and brown banded chert. The working edge is approximately 65 degrees and is located on the distal end. The metrics are 4.2 cm long x 2.3 cm wide x 0.6 cm thick. It is located on north end of a gravel pit that is situated on a broad open plain approximately 150 m south of an east/west trending ridge. An east/west trending fence line is located approximately 75 m north of the find. The vegetation is a mix of native grasses. The soil is light brown silty loam. Ground visibility in the area was approximately 50 percent. No subsurface testing was conducted.

The artifact is located within the disturbance area. The integrity of the isolated find 32SKX326 has been compromised by past livestock grazing. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX326 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.3 32SKX327

Artifact 32SKX327 is a Knife River Flint retouched flake. The retouch is located along half the length of a lateral edge. The metrics for the flake are 4.5 cm long x 2.4 cm wide x 1.0 cm thick. It is located in a cultivated field that was not in crop. The field is north facing, with a slight slope, set in an undulating plain. The view is 2 to 5 miles in all directions but is the best to the northeast. The soil is light brown silty loam. Ground visibility was good at 75 to 100 percent. No subsurface testing was conducted.

The artifact is located within the disturbance area. The integrity of isolated find 32SKX327 has been compromised by past and current agricultural practices. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX327 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.4 32SKX328

Artifact 32SKX328 is a retouched Knife River Flint flake. The retouch is located along the entire length of the left lateral margin. It measures 4.5 cm long x 4.5 cm wide x 0.5 cm thick. The find is situated on a floodplain north of the South Branch Heart River. The land has been previously broken and is currently used as pasture. There is an east/west trending fence line located approximately 60 m south of the find. The soil is medium brown silty loam with no surficial gravel. Ground visibility in the immediate area was 25 to 50 percent. No subsurface testing was conducted.

The artifact is located within the Permit Boundary but it is outside of the disturbance area. The integrity of 32SKX328 has been compromised by past and current agricultural practices and livestock grazing. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX328 is recommended as ineligible for inclusion in the National Register. No further work recommended.

5.2.5 32SKX329

Artifact 32SKX329 consists of a Knife River Flint side-notched projectile point fragment. Both ears are snapped off and the right lateral margin is damaged. The projectile point measures 4.1 cm long x 2.6 cm wide x 5 mm thick. The neck width is 1.4 cm.

It is located in a gently rolling cultivated field not currently in crop. There was 75 to 100 percent ground visibility in the area. The terrain rises to the south to an upland plain. The South Branch Heart River is visible approximately 800 meters to the northwest. There is a panoramic view extending several miles in all directions. No subsurface testing was conducted.

The artifact is located within the disturbance area. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX329 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.6 32SKX330

Artifact 32SKX330 is a gray porcellanite retouched flake. The flake is complete and the platform and bulb are intact. The retouch is low angle along the distal end. The ventral side is not flaked. The flake measures 3.2 cm long x 4.6 cm wide x 0.8 cm thick.

The isolated find is situated in a cultivated field that is not currently in crop. The field dips gently to the east. There is a view of one mile plus in all directions. The surface visibility is 70 percent. The soil is brown silty loam. No subsurface testing was conducted.

The artifact is located within the disturbance area. The integrity of isolated find 32SKX330 has been compromised by past and current agricultural practices. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX330 is not recommended as eligible for inclusion in the National Register. No further work is recommended.

5.2.7 32SKX331

Artifact 32SKX331 consists of one Knife River Flint biface fragment. The biface has a transverse snap through the middle. It is fully flaked on both sides. The measurements are 3.4 cm long x 5.6 cm wide x 1.1 cm thick.

The isolated find is situated in a cultivated field that is not currently in crop. The field dips gently to the east. There is a view of one mile plus in all directions. Surface visibility is 70 percent. The soil is brown silty clay. No subsurface testing was conducted.

The artifact is located within the Study Area but outside of the Permit Boundary. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX331 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.8 32SKX332

Artifact 32SKX332 consists of a complete Knife River Flint endscraper. It measures 3.1 cm long x 2.4 cm wide x 8 mm thick. The edge angle is approximately 80 degrees. The endscraper is located approximately 800 m from the South Branch Heart River on the north facing side slope near the base of a prominent butte. It is in a cultivated field with young spring crop growth; ground visibility was high at approximately 75 percent. The view is limited in all directions except to the north and northeast. No subsurface testing was conducted.

The artifact is located within the Study Area boundary but it is outside of the Permit Boundary. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX332 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.9 32SKX333

Artifact 32SKX333 consists of a brown chert side-notched projectile point fragment. The point is snapped obliquely mid-way through the body. The base is straight; it has a random flake pattern and the notches are U-shaped. It measures 2.1 cm long x 1.9 cm wide x 4 mm thick. The projectile point is located in a level cultivated field with 75 percent visibility. A large hill is 200 m to the south and the South Branch Heart River is 200 m to the northwest. The view is limited to the south by the hill. No subsurface testing was conducted.

The artifact is located within the disturbance area. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX333 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.10 32SKX334

Artifact 32SKX334 consists of two fine grained tan quartzite tertiary flakes and a siltstone biface. The biface is crudely worked and fine retouch is absent along the margins. Less than 50 percent of

the surface is patinated. The artifacts are located at the toe of a west facing rise within the flood plain of the South Branch Heart River. The river is situated approximately 60 m west of the find. A light duty road running northeast/southwest is located 10 m west. Ground visibility is 75 percent. The soil is brown clayey silt. No subsurface testing was conducted.

The artifacts are located within the disturbance area. The integrity of isolated find 32SKX334 has been compromised by past agricultural practices. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX334 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.11 32SKX335

Artifact 32SKX335 consists of a Knife River Flint corner-notched projectile point fragment. It is snapped obliquely across a portion of the base and the right lateral margin, leaving the left lateral notch intact. It is also snapped transversely through the body. The intact portion of the base is straight. The projectile point measures 1.5 cm long x 2 cm wide x 5 mm thick.

The artifact is located on an east facing side slope below an upland plain approximately 600 m northwest of the South Branch Heart River. Ground visibility was 75 percent ground visibility. No subsurface testing was conducted.

The artifact is located in the disturbance area. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX335 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.12 32SKX336

Artifact 32SKX336 consists of two silicified peat tertiary flakes and a Knife River Flint biface fragment. The artifacts are situated within a disturbed area utilized as a borrow source sometime in the past. The artifacts are on a knoll on the east side of the South Branch Heart River, approximately 30 ft above the river. Large horizontal limestone seams are exposed in the ground surface, and past

mining activities have brought a large amount of gravel to the surface. Some native grasses and low shrubs are established in the area but it is mostly free of vegetation. There was approximately 75 percent ground visibility. Cottonwoods and wild rose line the rim of the knoll and the steep slope down to the river. No subsurface testing was conducted.

The artifacts are located within the Study Area but outside of the Permit Boundary. The integrity of the find 32SKX336 has been compromised by past mining practices. It appears that this site has little potential for further buried cultural resources that would provide scientific data important to prehistory. Its value lies in the information it provides regarding Native American site preferences and areal patterning, so recordation exhausts its research potential. Isolated find 32SKX336 is recommended as ineligible for inclusion in the National Register. No further work is recommended.

5.2.13 3 SKX191

The artifact was recorded by Cynthia Kordecki while conducting work on the Southwest Pipeline Project in January of 1995. It consists of a single Knife River Flint flake observed on the west side of a cultivated ridge overlooking the South Branch Heart River bottomlands. The artifact was located in Section 33, T. 139 N., R. 98 W. Subsequent re-inspection of the area in 2007 failed to find the artifact or any further cultural material. No further work is recommended.

5.2.14 32SKX275

The artifact was recorded by D. Killam and M. Martorano while conducting work on the Charlie Creek to Belfield Transmission Line Project in June of 1989. It consists of a two Knife River Flint flakes (one primary and one secondary) observed on the south side of a cultivated east-west trending ridge. The artifacts were located in Section 20, T. 139 N., R. 98 W. Subsequent re-inspection of the area in 2007 failed to find the two pieces of debitage or any further cultural material. No further work is recommended.

6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In October of 2006 and May of 2007, Golder Associates (Golder) completed a Class III cultural resources inventory for the SHP on behalf of SHC. The Study Area included 7,127 acres. The level of the current investigation is considered adequate to identify any substantial historic and prehistoric resource concerns in the Study Area and to make recommendations on the mitigation of those concerns

During the assessment a total of 13 sites and 12 isolated finds was recorded. This includes two previously known historic sites (32SKX110 and 32SKX202) that were revisited. Seven of the sites are prehistoric and six are historic. All of the isolated finds are prehistoric. All six of the historic sites (32SK1006, 32SK1011, 32SK1002, 32SK1003, 32SKX110 and 32SKX202) and all of the isolated finds are not recommended as eligible for inclusion in the National Register of Historic Places (National Register). Four prehistoric sites located within the Permit Boundary but outside of the disturbance area (32SK1005, 32SK1009, 32SK1010, 32SK1012) and three prehistoric sites located in the disturbance area within the Permit Boundary (32SK1004, 32SK1007 and 32SK1008) are recommended as potentially eligible for inclusion in the National Register. Mine planning has included a 100 foot buffer zone around the three prehistoric sites located in disturbance areas to avoid any indirect and direct effects. Table 6.0-1 contains a list of these localities and Golder archaeologists' management recommendations.

Attempts were made to revisit six previously known sites and isolated finds within the APE. Only two of the sites (32SKX110 and 32SKX202) could be found. The other four sites and isolated finds could not be found due to poor locational data on the original site form for bone locale site leads 32SKX36 and 32SKX37, and due to the sparseness of the artifact assemblage for isolated finds 32SKX191 and 32SKX275.

Seven prehistoric lithic scatters (32SK1004, 32SK1005, 32SK1007, 32SK1008, 32SK1009, 32SK1010 and 32SK1012), were identified with possibly significant artifact densities and in some cases diagnostic tools. In addition, these sites each demonstrated the potential for further intact cultural deposits that would provide information significant to our understanding of regional prehistory. Further testing and evaluation is not currently planned because these sites are either located outside of the Permit Boundary and will not be disturbed or in areas where mine planning has included a 100 foot buffer around the site to avoid any indirect and direct effects.

TABLE 6.0-1

MANAGEMENT RECOMMENDATIONS FOR SITES WITHIN THE STUDY AREA

Site Number	National Register Eligibility	Land Ownership	Impact(s)	Management Recommendations
32SK1004	Potentially eligible	Jerry and Sandra Perdaems	Within disturbance area	Avoidance- mitigation if necessary ¹
32SK1005	Potentially eligible	Robert and Brenda Kuylen	Within the study area	Avoidance- mitigation if necessary ²
32SK1006	Ineligible	Robert and Brenda Kuylen	Within disturbance area	No further work
32SK1007	Potentially eligible	James and Rosella Perdaems	Within disturbance area	Avoidance- mitigation if necessary ¹
32SK1008	Potentially eligible	Patrick Kuylen	Within disturbance area	Avoidance- mitigation if necessary ¹
32SK1009	Potentially eligible	James and Rosella Perdaems	Within the study area	Avoidance- mitigation if necessary ²
32SK1010	Potentially eligible	James and Rosella Perdaems	Within the study area	Avoidance- mitigation if necessary ²
32SK1011	Ineligible	Robert B. Pavel	Within Permit Boundary	No further work
32SK1012	Potentially eligible	Raymond and Vivian Luptak	Within the study area	Avoidance- mitigation if necessary ²
32SK1002	Ineligible	Robert Kuylen	Within disturbance area	No further work
32SK1003	Ineligible	James Perdaems	Within disturbance area	No further work
32SKX110 Update	Ineligible	Robert and Brenda Kuylen	Within disturbance area	No further work
32SKX202 Update	Ineligible	Raymond and Vivian Luptak	Within disturbance area	No further work
32SKX325	Ineligible	Mary Louise Peters et al.	Within disturbance area	No further work
32SKX326	Ineligible	Robert and Brenda Kuylen	Within disturbance area	No further work
32SKX327	Ineligible	Jerry and Sandra Perdaems	Within disturbance area	No further work
32SKX328	Ineligible	Jerry and Sandra Perdaems	Within Permit Boundary	No further work
32SKX329	Ineligible	James and Rosella Perdaems	Within disturbance area	No further work

Site Number	National Register Eligibility	Land Ownership	Impact(s)	Management Recommendations
32SKX330	Ineligible	James and Rosella Perdaems	Within disturbance area	No further work
32SKX331	Ineligible	James and Rosella Perdaems	Within the study area	No further work
32SKX332	Ineligible	Gary L. Meduna	Within the study area	No further work
32SKX333	Ineligible	Patrick Kuylen	Within disturbance area	No further work
32SKX334	Ineligible	Patrick Kuylen	Within disturbance area	No further work
32SKX335	Ineligible	Patrick and Katherine Kuylen	Within disturbance area	No further work
32SKX336	Ineligible	Patrick and Katherine Kuylen	Within the study area	No further work
32SKX191	Ineligible	Larry Klein	Within the study area	No further work
32SKX275	Ineligible	Patrick Kuylen	Within the study area	No further work

- ¹ A 100-foot buffer is planned around potentially eligible site to avoid any indirect and direct effects
- ² Site is located outside of Permit Boundary and will not be disturbed

If there are changes to the mine plan and these sites cannot be avoided, further evaluation through a formal testing program undertaken with the concurrence of the SHSND and other consulting parties is recommended.

The probability of additional unidentified archaeological sites being present (with the possible exception of isolated artifacts) within the APE is considered low. If any previously unrecorded or undiscovered cultural materials or human remains are uncovered as a result of construction or operations activities in the Study Area, the uncovered items must be immediately protected from further disturbances and the SHSND contacted promptly. In the case of human remains the Stark County Sheriff's Department must also be notified. Uncovered sites must be protected from further disturbance until the SHSND approves the resumption of operations in those areas. Should adjustments to the Permit Boundary be required it is recommended that discussions be conducted with the archaeological survey team and local government agencies to determine the potential requirements for further study.

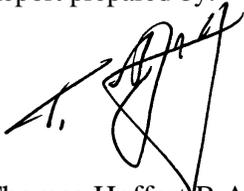
7.0 PERSONNEL CERTIFICATIONS

7.1 Closure

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Report prepared by:



Thomas Hoffert B.A.
Archaeologist, Principal Investigator

Report reviewed by:



Rebecca Balcom, M.A.
Principal



David Blower, Ph.D.
Archaeologist, Principal Investigator



Cathryn Williamson B.A.
Archaeologist



Lauren Bryant M.A.
Archaeologist

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APPENDIX I

NORTH DAKOTA CULTURAL RESOURCES SURVEYS SITE FORMS

Site Forms on file with the State Historical Society of North Dakota.

APPENDIX II

NATIONAL REGISTER EVALUATIONS FOR 32SK1002 AND 32SK1003

LOUIS N. HAFERMEHL

610 North 7th Street #11
Bismarck, ND 58501

Phone (701) 250-

lh@bis.midco.net

8544

November 26, 2007

Annette Moltzan
Geological Engineer
Golder Associates Inc.
44 Union Boulevard, Suite 300
Lakewood, CO 80228

RE: Letter report on National Register Evaluations of SH GAL G (three Kuylen barns, Stark County, North Dakota) and SH GAL H (Perdaem Barn, Stark County, North Dakota).

Site Visitation/Recording

I visited these two sites on November 11 and recorded not only the barns in question but the farm sites of which they are a part the farms sites in their entirety. The site of which SH GAL G is a part contains twenty building features, all of which were recorded, and several fuel tanks, a propane tank, a dog-house, and old well pad, a swing set, and a complexity of feedlot fencing, none of which were recorded. The site of which SH GAL H is a part contains fifteen features, all of which were recorded, and two fuel tanks, a playhouse/slide/ swing set, a clothesline, and a storm cellar, none of which were recorded. All building features recorded, and site elements not recorded, were mapped and photographed.

I completed North Dakota Cultural Resources Architectural Site Forms for both sites, copies of which I will send to you under separate cover. These forms contain site photographs and maps. I recommend you submit the forms to the North Dakota State Historic Preservation Office as updates to any forms already submitted to them, or in lieu of any forms already prepared that have not been submitted. Doing so will, I believe, give the review staff in that office a more complete picture of the sites, thus allowing them to place the barns in question in a broader site context than provided in the August 2007 draft of the Golder Associates report. I believe it will also ultimately save you time; without that information that office may well hold up review and comment on your report.

Research

Deed research to identify chain of ownership of each property was conducted on November 12 in the County Recorder's offices at the Stark County Courthouse , Dickinson, North Dakota. Subsequent to the deed search, the names of all past owners were entered into the North Dakota Biography Index data base maintained by the Institute for Regional Studies, North Dakota State University, to identify sources of biographical information about past owners. This data base indexes over 219,000 biographical sketches about one-time North Dakotans, both living and dead, found in some 762 publications. What little information we have found about past owners derives largely, though not exclusively, from the publications to which the data base directed us.

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We also examined 1950 and 1957 aerial photographs of both sites contained in the North Dakota Department of Transportation Records Center in an attempt to help determine building construction dates. Also perused was a 1914 atlas held in their collection, which led to information about the extent of Stark County land holdings by the Holland-Dakota Land Company (about which see the **Results** section of this letter report).

At the State Historical Society of North Dakota we researched the Secretary of State's Domestic and Foreign Corporations Annual reports (in an attempt to develop information about the nature and extent of the Holland-Dakota Land Company's activities), the Stark County historic photographs collection, and issues of the *Belfield Times* for the period April 29, 1910 through August 19, 1911 (a period when the Holland-Dakota Land Company was bringing the initial Dutch settlers to the area to farm company lands.)

Results

SH GAL G

This property was part of an 11,520.16 acre tract of Stark County lands acquired by the Naamlooze Vennootschap Holland Dakota Landbouw Compagnie (Holland-Dakota Land Company), Amesterdam, Holland, in the summer of 1910. The lands were purchased from Edward, William and Timothy O'Connor, who had acquired them from the Northwest Improvement Company, a Northern Pacific Railway Company subsidiary established for the purpose of divesting the railroad of its land grant. The Stark County lands acquired by the Holland Land Company were located in T138 R96, T138 R97, T139, R97 and T139 R98. The Holland-Dakota Land Company continued to acquire land, for a 1914 Atlas of Stark County (Geo. A. Ogle & Co., Chicago) lists them as owners of lands in T 137/97, T138 R 99, T 139 R 96, and T 139 R 99 in addition to those acquired in 1910.

We have found little information about the Holland-Dakota Land Company. They acquired the land after a decade of years of above-average rainfall in southwestern North Dakota and during a period when the construction of new railroad lines in the area of North Dakota west of the Missouri River was opening up the land for settlement. The Northern Pacific Rail Road actively promoted settlement in the area, as did other land speculators. Front page headlines in the *Belfield Times* on July 8, 1910 announced the arrival of forty-four Dutch settlers to begin establishing farms on Holland-Dakota Land Company holdings in Stark County.

The company's activities remained front page headlines in the *Times* for months to come. Among the items noted was the company's establishment of an 100 acre experimental farm on Belfield's southeastern edge, where grains, vegetables, small fruit, shrubs and trees were to be grown, that a house supplied with water and steam heat had been built on that site, and that both steam and gas-powered sod breaking equipment had been ordered by the company to begin breaking of the sod in the following spring. Two months later, the paper announced the company, under the management of William A. Gropius, had constructed a 25' x 140' two-story warehouse/office building to be used for equipment storage and seed grain treatment and storage in the town as well as a stable on the demonstration farm capable of housing 25 head of horses plus storage for hay and feed.

On February 2, 1911, the *Times* reported that the company had installed an a plant to generate electricity for warehouse use, also supplying electricity to several of the local businesses, including the First National Bank, a bowling alley, and a lumber company office. Little more than a month later (3/24/1911) the paper reported that the company had begun field operations with

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four steam plowing outfits to begin breaking company land, with the intent of seeding, presumably still that spring, 3,000 acres to wheat, 3,500 acres to flax, 50 acres to durum wheat, corn and other crops. The article noted that the company had also constructed a grain warehouse in Zenith, located on the Northern Pacific tracks between Belfield and South Heart.

How many different families of Dutch origin ultimately migrated to North Dakota to settle on Holland-Dakota Land Company lands we do not know. The 1914 Stark County Atlas produced by Geo. A. Ogle & Co. lists only nine families of Dutch origin in the county, but they were all settled in T 139 R 98, where the company owned all or parts of thirteen sections. It was in this township that the company's holdings were most concentrated. It should be noted, however, that not all of these nine families were settled on company land. One who was, however, was Gerrit Noorloos, who is shown at the location of SH GAL G. Presumably settlement on company lands was available to non-Dutch families; for example, one O. F. Olson, listed as Norwegian-born, is shown as a resident on company lands on the edge of Belfield in the 1914 atlas.

The full extent of the company's landholdings, the ethnicity of those settling upon them, the arrangements of settlers with the company regarding payment of services, future opportunities to acquire land, financial and other assistance in getting to North Dakota and in beginning farm operations, housing, etc., remain unknown. We do know that Hollanders continued to migrate to populate company lands at least as late as 1929, because in that year Alfonse Kuylen, his wife Johanna, and their two sons, John and Andrew, arrived in the United States.

The Kuylen's lived with a brother until December of 1930, when they moved to the site of SH GAL G. According to their own account, on moving to the farm they bought all the furniture, seven horses and twelve cows from the previous resident, Cornelius Kooren. Also awaiting them were two salted hogs and seven loaves of freshly baked bread. So, the site may well have been occupied by Dutch families from the time of the land's acquisition by the Holland-Dakota Land Company in 1910. In any event, the Kuylens lived at the site for seventeen years, before purchasing it, and all of Section 27, for \$7,680 from the company in 1946.

While the site is clearly associated with what is commonly characterized as the Second Dakota Boom and the settlement of the state west of the Missouri River, and more specifically with the effort of a Dutch land-holding company to bring settlers to the area to farm its lands, we have found no information to suggest that either this site or any of its constituent features is associated in an important way with either of these events. We recommend, consequently, that the site is not eligible for National Register listing under Criterion A.

Of the site's past occupants we have found biographical information only about Alfonse Kuylen. In addition to farming, he was a school bus-driver for a decade, and also a

"road boss" (perhaps in charge of township road maintenance?) for another decade "when roads were being built" (presumably during the early years of his occupancy of the site). For two decades he was a member of the board of directors of the South Heart Farmers Union Oil Company and the South Heart Co-op elevator. Kuylen retired in 1962 and rented his land to his sons, Andrew and John. Andrew's son, Patrick, now operates the farm. While Alfonse Kuylen's activities as a member of two local agriculturally related boards suggest a degree of respect and standing within the local community, those activities were generally unrelated to this site. We have found no information about Kuylen that would lead us to believe he can be considered significant, by National Register definition, in the field of agriculture. Consequently, we recommend the site is not eligible for National Register listing under Criterion B.

Of the twenty architectural features on the site, thirteen post-date 1960 (based on an aerial photograph of that date found in the 1970 Stark County Atlas, Midland Atlas Company, Milbank,

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South Dakota). According to Robert Kuylen, grandson of Alfonse, feature 13 was located on the site when Alfonse moved there in 1929. The second barn, feature 14, was constructed sometime in the 1930s.

Feature 13, originally recorded as Barn 1 of SH GAL G, is a wood-frame, gable roofed building of rectangular plan measuring approximately 24' x 32'. It sits atop a poured concrete foundation, but the building has a dirt floor. It is sided with drop siding with corner trim boards, and roofed with corrugated, galvanized metal sheeting. The roof ridge is covered with a galvanized metal cap with ball finials. Rafter ends are exposed and the soffits are open. Exterior mounted sliding doors are centered on the building's gable ends at ground level; centered above these doors are non-original plywood haymow doors – a cross-braced door on the west wall and a Z-braced door on the east. Four-light deadlight windows flank both sliding doors and a four-light deadlight is centered in each of the gable peaks above the haymow doors. These windows are all vinyl covered sash and are not original to the building, though the openings in which they sit may be original. Walls are of post and beam construction; roof is standard wood-frame construction. Arranged along the north wall of the barn are three stalls. At present the building is used for equipment storage, though it appears to have originally housed livestock and hay. Abutting the building's north wall is a nine-foot wide poured concrete pad that appears to have been the floor of a lean once attached to the building, though the lean was probably not a part of the building's original construction.

Feature 13 has lost, in varying degrees, integrity of materials, design, and workmanship, as a result of its re-windowing and the replacement of its haymow doors. The building does retain integrity of location, setting, feeling, and association. The building has not lost so much integrity as to disqualify it from National Register consideration on grounds of integrity loss alone.

Feature 14, originally recorded as Barn 2 of SH GAL H, is a wood-frame, gable roofed building of rectangular plan also measuring approximately 24' x 34'. It sits atop a poured concrete foundation. It is sided with 1 ½" tongue and groove siding and has a wood shingle roof. The roof ridge is capped with a galvanized metal roof cap with ball finials. There is no roof overhang on long walls or on gable ends. Centered on the building's east and west walls are exterior mounted sliding doors. Above each of the sliding doors are two windows – those on the east gable end are non-original vinyl coated four-light deadlight sash. On the west end one of the windows is covered with a plywood panel while the other is a six-light deadlight covered by a wooden sash three-light storm window, which is missing two lights.

Feature 14 has lost some integrity of materials, design and workmanship as a result of window replacement. It retains integrity of location, setting, feeling and association. The building has not lost so much integrity as to disqualify it from National Register consideration on grounds of integrity loss alone.

While Features 13 and 14 are associated with the context of fee-simple ranching in the mid-20th Century, as well as the period of Holland-Dakota Land Company ownership of the property, we have found no evidence to suggest their specific association with either context is in any way significant. Consequently, we recommend that neither is eligible for National Register listing under Criterion A.

Feature 15, a three-wall pole barn located due south of Barn 2, is a gable roofed livestock shelter of round post and beam construction. It is rectangular in plan, measuring approximately 21' x 57'. The roof is asphalt shingled with a galvanized metal ridge cap with ball finials. Rafters are braced and reinforced with gusset plates at rafter peaks. The walls are of vertically laid shiplap siding. The building has been reinforced with three steel cables running from three posts on the building's open east wall to the west wall. The building is so weathered and in a condition of

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deterioration as to make it appear of substantial age. However, the building was constructed sometime after 1960, as it does not appear on a USDA aerial photograph of that date. The pole barn appears to retain all aspects of integrity.

Feature 15 is less than fifty years of age and does not satisfy the requirements of Criteria Consideration G; we recommend it is not eligible for National Register listing.

While all three of these features appear to retain distinctive characteristics of individual types, periods, or methods of construction, none of them appear to us to be important examples of the building practices of a particular time in history. Consequently, neither any of these features nor the site in its totality, are in our opinion eligible for National Register eligibility under Criterion C.

Our examination of the site features does not suggest they are likely to yield information important in history. Consequently, we cannot recommend the site to be eligible for the National Register under Criterion D.

SH GAL H

Peter Jensen received a homestead patent to the quarter-section on which this farmstead sits in 1895. In 1907 Jensen sold the property to Ed O'Connor of Renville County, MN, for \$3,200 – a price for that time that suggests capital improvements had been made to the property, as one would expect since some improvement was necessary to receive the homestead patent. Thirteen months later, in August 1908, O'Connor sold the land as part of a 1,600 acre tract to F. V. Gilse of Roosendaal, Holland.

In that same year Gerald J. Perdaems (b. New Messmer, Holland, 1879; d. 11/27/63) came to North Dakota and settled at this site, just recently purchased by Gilse, ostensibly to farm the land for him. In 1936 Perdaems purchased 960 acres, including this farm-site, from Gilse. The farm has remained in the Perdaems family ever since, presently being operated by Jerry Perdaems, grandson of the original Perdaems owner.

It has been suggested [*Stark County Heritage and Destiny*, Stark County Historical Society, Taylor Pub. Co., 1978] that Gerald Perdaems came to North Dakota from Holland to manage this land for the Naamlooze Vennootschap Holland Dakota Landbouw (Holland-Dakota Land Company), but in fact the land was never owned by that company. The company acquired no Stark County, land until 1910, when with one purchase it acquired slightly more than 11,500 acres. Interestingly enough, that purchase was made from Ed O'Connor, who had sold the Perdaems property to the Dutchman, Gilse. Whether or not Gilse was an investor in the Holland-Dakota Land Company we do not know. Possibly his acquisition and Perdaems' reports to him about the potential of the farmland were the inspiration for Dutch investors to establish the Holland-Dakota Land Company and its 1910 acquisition of Stark County land, but that is purely speculation at this point. In any event, the Holland-Dakota Land Co. never owned this land.

We have found no evidence to suggest that the site has been associated with any significant events which themselves have made any significant contribution to the broad patterns of our history. We recommend the site is not eligible for National Register listing under Criterion A.

Of the past owners of the site, Gerard (Jerry) Perdaems, son of Gerald Perdaems, is the only individual about whom we have found sufficient information to suggest possible significance. He took over the Perdaems farm operation, along with his brother Francis, in 1957. As partners until 1973, they doubled the farms acreage to 3200 acres. They received an award from the Soil Conservation Service in 1971, though we have not determined exactly for what activities the

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award was given. In 1974 Jerry received an Agriculturalist Award for service to the Agriculture Industry from North Dakota State University. Jerry also served on the South Heart School Board for fifteen years and was at one time president of that board. He was also one of the board of directors of the South Heart Coop Elevator for some years. While these awards and activities suggest a degree of significance in agriculture and local affairs, they also occurred within the last fifty years. The site in question, of course, bears no relationship to his school board and elevator board activities, while the agricultural awards bear directly on his profession as a farmer. However, since these relate to work occurring in the last fifty years, and because we have found no information to suggest they were of exceptional significance, and because Gerard Perdaems is still alive, we recommend that the property is not eligible for National Register listing under either Criterion B or under Criteria Consideration G.

While several of the site features appear to retain distinctive characteristics of individual types, periods, or methods of construction, none of them appear to us to be important examples of the building practices of a particular time in history. Consequently, neither any of these features, nor the site in its totality, is in our opinion eligible for National Register eligibility under Criterion C.

As regards the 1936 gambrel-roofed barn originally recorded as SH GAL H, it is of wood frame construction. The building is of irregular plan and sits atop a poured concrete foundation. A shed roof lean spans the full length of the gambrel section's east wall. At the south end of the gambrel section's west wall, and constructed perpendicular to it, is a second lean. To the west wall of this lean is connected a gable-roofed shed. The gambrel roofed section and the east wall lean combined measure approximately 43' x 51'. We did not measure the other shed roof lean or its adjoining gable roof shed.

The walls of the gambrel roof/east wall lean portion of the building have been covered with vertically laid, enamel coated, corrugated metal panels. All building windows have been replaced with vinyl-coated sash. The gambrel-roofed portion of the building is roofed with shingles. Structurally the roof appears to be a modified Wing joist frame type, with each angle of the gambrel rafters braced across with wooden gusset plates. Each rafter set is composed of paired 2" x 6" lumber and rafters are laid approximately 2' on center. Numerous rafters and gusset plates are painted, suggesting that the material had been used in a previous structure. This type of roof construction, sitting atop a balloon frame had gained great popularity in the United States by the mid-1920s and accounted for as many as half the barns of "better class" then being built in the North Central part of the country. The east wall lean is not original to the building; the east wall of the gambrel roof section is covered with painted drop siding, which it would not likely have been if the lean had been constructed coterminous with the gambrel-roofed portion.

The gambrel roof section first floor interior is a center hall type, with a feed storage room at the northwest corner, a lab in the southwest corner, with two milking stalls between the two. At the northeast corner are a narrow stairway to the haymow and a pedestrian doorway to the shed roof portion. To the south of the stairs and doorway are stables. Spanning the width of the gambrel portion at its south end is a narrow room, accessed only from the shed portion, which contains a dehorning chute.

A wooden feed trough with hayrack mounted above spans the west wall of the shed roof interior.

The shed roof addition at the south end of the west wall of the gambrel portion of the barn is of pole construction, as is the gable roof addition attached to its west wall. The shed roof addition is walled with corrugated galvanized metal on its south wall and vertically laid boards on its north wall. Its roof covering is asphalt sheeting. The gable roof portion is walled with vertically laid boards on all walls and roofed with asphalt shingles. According to the owner, these shed roof gable roof additions were constructed approximately fifteen years ago.

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The barn has lost, in varying degrees, integrity of materials, design, workmanship, feeling and association as a result of its re-siding and re-windowing, and the three shed and gable roof additions to the original gambrel-roofed structure. In our opinion, these changes constitute sufficient integrity loss to bar the building from further consideration of National Register eligibility on the grounds of integrity loss alone. The building does retain integrity of setting.

While the building is associated with the context of fee-simple ranching in the mid-20th Century, we have found no evidence to suggest its specific association with that context is in any way significant. Consequently, we recommend it is not eligible for National Register listing under Criterion A.

The building is associated with Gerard Perdaems, who may be considered a person significant in our past. However, his significance would post-date the construction of this building and would have occurred within the last fifty years. Consequently, we recommend the building is not eligible for National Register listing under Criterion B. We have found no evidence to suggest Gerard Perdaems was of exceptional significance, consequently we recommend that the building is not eligible for National Register listing under Criteria Consideration G.

While the building exhibits many of the distinctive characteristics of early 20th Century balloon frame, gambrel roof barn construction, we have found no evidence to suggest that is an important example of this type of construction in the context of fee-simple ranching. Consequently, we recommend the building is not eligible for National Register designation under Criterion C.

Our examination of the site features does not suggest they are likely to yield information important in history. Consequently, we cannot recommend the site to be eligible for the National Register under Criterion D.

We recommend that neither this barn, nor any of the other site features, individually or collectively, are eligible for listing in the National Register of Historic Places.

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