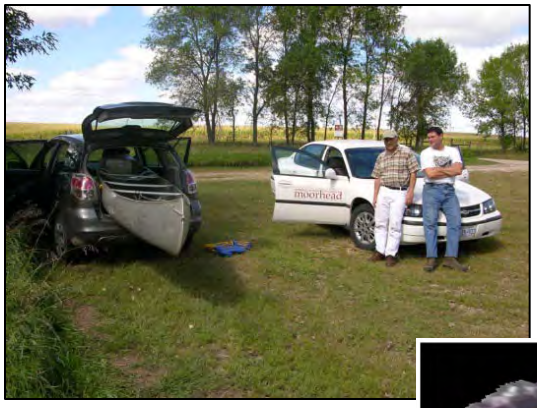
A Summary of the *Statewide Survey of Historical and Archaeological Sites,* 2010-2013 and a Plan for the Future



Minnesota Legacy Amendment –
Arts and Cultural Heritage Fund

Scott Anfinson, State Archaeologist

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You cannot do effective historic preservation without first answering three questions: 1) Where are the resources? 2) Which resources are worth saving? 3) What are the most effective and efficient ways to preserve important resources? To answer these questions, you must first do comprehensive surveys, then do property evaluations, and finally develop practical management strategies. Utilizing Legislative Commission on Minnesota Resources (LCMR) and other funding in the late 1970s and early 1980s, the Minnesota State Historic Preservation Office (SHPO) undertook an initial statewide historic sites survey, but this effort was not able to look at all areas of the state and all property types, especially with regard to archaeological resources. Furthermore, what is considered to be historic has changed over the last 30 years.

In May 2009, the Minnesota Legislature allocated $500,000 from the biennial budget of 2010 - 2011 *Arts and Cultural Heritage Fund* for a *Statewide Survey of Historical and Archaeological Sites*. A second appropriation for the same amount was allocated for the FY 2012–2013 biennium. The legislation appropriated the funds to the Minnesota Historical Society and required that competitive bid contracts be used to conduct a statewide survey of Minnesota's sites of historical, archaeological, and cultural significance.

The law specifies that the Office of the State Archaeologist, the Minnesota Historical Society, and the Minnesota Indian Affairs Council each appoint a representative to an Oversight Board. The Board determines which projects to undertake, selects contractors, and directs the conduct of the surveys. The Minnesota Historical Society appointed the head of their Archaeology Department, Patricia Emerson, to the Oversight Board. The Minnesota Indian Affairs Council appointed Jim Jones, their Cultural Resource Director. The third member of the Board is State Archaeologist Scott Anfinson.

The Oversight Board determined that archaeological resources should receive principal survey emphasis because archaeological resources are less well known as they are largely invisible on the surface. Due to this invisibility, archaeological resources are often overlooked by most local planning agencies, thus archaeological resources are more vulnerable to destruction by development than standing structures. However, the Board recognized the need to also locate and evaluate poorly known non-archaeological historic and cultural resources.

Following consultation with MnDOT, DNR, and the SHPO, the *Statewide Survey* Oversight Board concluded that the general survey strategy to be employed should: 1) examine poorly known areas of the state, 2) examine poorly known property types, and 3) examine poorly known statewide historic contexts. While some fundamental research has to be done to accomplish all of these goals, the primary objective of the *Statewide Survey* is not research, but fostering the preservation of important historical, cultural, and archaeological properties.

The projects undertaken to fulfill the first two objectives have been greatly expanding our inventories of archaeological sites and historic properties. The third objective is being addressed by carefully evaluating a wide variety of known properties and utilizing a thematic approach to determine which ones are truly worthy of preservation.

Since the greatest threat to cultural resources is development, the ultimate goal of the *Statewide Survey* is to assist state and local agencies with finding, assessing, protecting, and managing

resources under their jurisdiction. In order to fulfill this goal, these agencies need to be provided with tools to comprehensively assess potential impacts to significant historic properties affected by their undertakings or undertakings they allow. They also need to be provided with management guidelines and mechanisms that help them better understand, preserve, and interpret important resources under their control. The assessment tools include providing convenient access to inventories of known sites and providing accurate, easy to use predictive models that allow agencies to assess site potentials in unsurveyed areas.

A total of eight competitive bid contracts were implemented the first biennium of the survey. These contracts were: *LiDAR Survey to Assess the Status of Burial Mound Sites in Scott and Crow Wing Counties, Survey to Identify and Evaluate Indian Sacred Sites and Traditional Cultural Properties in the Twin Cities Metropolitan Area, An Archaeological Survey of Swift County, An Archaeological Survey of Olmsted County, An Archaeological Survey of the Lake Superior Region, A Survey to Find Minnesota's Earliest Archaeological Sites, Investigating Unrecorded Historic Cemeteries in Minnesota*, and *The Age of Brainerd Ceramics*. Final reports for all these completed contracts can be found at: http://www.osa.admin.state.mn.us/

Eight additional projects have been undertaken in the 2012-13 biennium. These projects are: *Archaeological Survey of Red Lake County, Archaeological Survey of Steele County, Archaeological Survey of McLeod County, LiDAR Analysis of Burial Mounds in High Mound Counties, Study of Minnesota Plains Village Complexes, Study of Woodland Period Complexes in West Central Minnesota, Study of Historic Masonry Ruins*, and *Study of Historic Dams.* As soon as reports are available for these projects, they too will be made available on the State Archaeologist's webpage cited above.

These 16 projects have greatly contributed to our knowledge of Minnesota's history and prehistory. Surveys have included work in 32 different counties. Over 10,000 acres have been surveyed for historic and archaeological sites and over 100 new archaeological sites have been located. Seventy-nine (79) new radiocarbon dates have been obtained helping us to better date prehistoric cultures and environmental events. Utilizing new technologies such as LiDAR, we are completing the first comprehensive assessment of burial mounds in over 100 years. A detailed literature search has resulted in the first state database of historic cemeteries. Studies of historic dams and masonry ruins will allow improved management and interpretation of these interesting, but problematic historic structures.

What follows are brief summaries of the 16 projects funded for the first two bienniums of the *Statewide Survey of Historical and Archaeological Sites*. After the summaries, a brief plan for possible future *Statewide Survey* projects is presented.

FY 2010 – 2011 *Statewide Survey* Projects

Archaeological Survey of Swift County

Category: Poorly Known Area

Purpose: There were only 15 confirmed prehistoric sites recorded in Swift County prior to this survey. There are no professionally excavated sites in Swift County and only one prehistoric site in the county (21SW14) has been subjected to formal archaeological testing. Prior surveys were for a few small area developments, the Dome/Alliance/Alaska Pipeline, and several short highway surveys. The purpose of this project was to review the archaeological resources of Swift County through examination of existing artifact collections and known sites, and to conduct a field survey to find additional archaeological sites.

Contractor: Minnesota State University–Moorhead (Mike Michlovic and George Holley)

Results:

- surveyed 1,900 acres of land
- re-examined all previously recorded sites (15)
- located 45 previously unrecorded archaeological sites
- examined four major artifact collections
- worked with local artifact collectors to locate previously unrecorded site
- examined 11 deep soil locations utilizing advanced geophysical methods
- developed a narrative model to explain and predict prehistoric site locations
- made multiple public presentations

Conclusions/Recommendations:

- most prehistoric sites are on the larger stream channels and larger lakes
- sites are mostly lithic (stone tool) scatters and only a few sites contain pottery
- many artifact scatters are small in size and contain relatively few artifacts
- Swift County was not intensively occupied in prehistoric times, although there may have been occasional small resident populations
- artifacts demonstrate Indian use from 12,000 years ago through historic times
- existing site locational models appear adequate for site prediction
- future work should focus on the recovery of larger samples of cultural material from individual sites for the purpose of more complete understanding of the timing and nature of the prehistoric cultural history of the county and the region

Archaeological Survey of Olmsted County

Category: Poorly Known Area

Purpose: There were 38 known prehistoric sites recorded in Olmsted County prior to this survey. There are no professionally excavated sites in Olmsted County, although five prehistoric sites have been subjected to limited archaeological testing. Prior archaeological surveys included small area developments, especially in the Rochester area, and recent surveys along Trunk Highway 52 north of Rochester. The purpose of this project was to review the archaeological resources of Olmsted County through examination of existing collections and known sites, and to conduct a field survey to document previously unrecorded archaeological sites.

Contractor: Mississippi Valley Archaeological Center (Connie Arzigian)

Results:

- plotted on maps all areas previously archaeologically surveyed in Olmsted County
- field examined and completed site update forms for 9 previously known sites
- made multiple visits to the Olmsted County History Center to examine and photograph all Native American prehistoric artifacts
- worked with local artifact collectors to document their collections
- utilized local volunteers to help with the field survey
- surveyed 866 acres in 32 different locations within the county
- located 9 previously unrecorded prehistoric archaeological sites
- conducted geomorphological testing at two Early Prehistoric site localities
- investigated the effects of major floods on archaeological sites in SE Minnesota

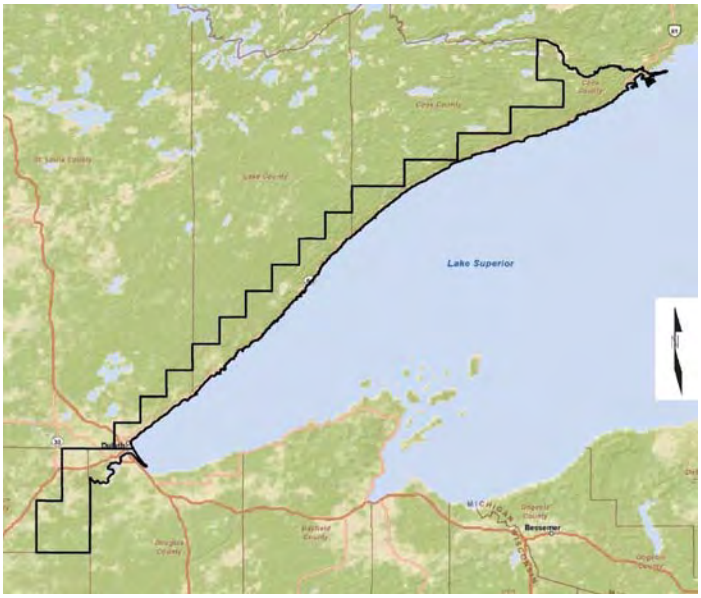
Conclusions/Recommendations:

- of the 65 known or reported sites, three are Paleoindian, nine are Archaic, and five are Woodland
- the environment and landscape during Paleoindian times (12,000–7,000 BC) would have been very different than that of the early historic period and some early sites may be deeply buried by alluvium or colluvium
- during dry Archaic times, springs were probably important to site location
- no burial mounds have been recorded by archaeologists in Olmsted County, although five locations have reported but unconfirmed mounds; the survey found none

- no Late Prehistoric Mississippian or Oneota sites have been recorded in Olmsted County
- prehistoric ceramics are rare in Olmsted County
- all known prehistoric sites in Olmsted County are small with no evidence for intensive and long-term village occupation
- site locations are mainly on terraces along rivers and streams especially at confluences and where fire-protected areas would have existed (e.g., east banks, river bends)
- most valley bottoms have been significantly re-worked by Holocene floods destroying many sites except perhaps those at the very edges of the valleys
- the relative scarcity of prehistoric sites especially large village sites in Olmsted County appears to be an accurate reflection of prehistoric land use rather than modern site destruction or the lack of extensive archaeological survey

Archaeological Survey of the Lake Superior Region

Category: Poorly Known Area



Purpose: This region is along the Lake Superior shore within the basin of Glacial Lake Duluth. It includes portions of Cook, Lake, St. Louis, and Carlton counties. At the beginning of the survey, only 34 archaeological sites had been recorded in the region. The purpose of the project was to review the archaeological resources of Minnesota's Lake Superior Region through examination of existing collections and known sites, and to conduct a field survey to document previously unrecorded sites.

Contractor: Duluth Archaeological Center (Sue and Steve Mulholland)

Results:

- compiled GIS layers to identify areas with high potential for archaeological sites, focusing on areas with less than 7 degrees of slope, less than 100 meters from surface water plus land ownership, transportation routes, geomorphology, USGS topographic maps, and glacial lake shoreline features
- artifact collections were reviewed at the Historical Societies of Cook, Lake, St. Louis, and Carlton Counties
- interviews with members of the Northern Lakes Archaeological Society provided information on approximately two dozen sites in the Two Harbors area

- field surveyed approximately 144 acres
- located 6 previously unrecorded prehistoric archaeological sites
- confirmed the existence of 20 previously recorded sites

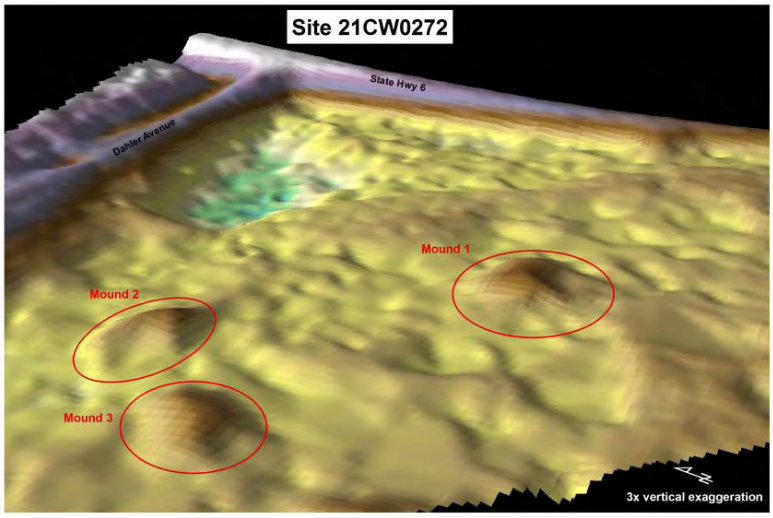
Conclusions/Recommendations:

- the low numbers of sites make accurate site location prediction difficult
- degree of slope and distance from surface water seem to be the most important site locational variables in the region
- sites appear either to be less than 50 m from water or more than 100 m from water, with fewer sites between 50m–100m from water
- just over half the sites are on land that slopes less than 5 degrees, with 22% between 5 and 10 degrees, and 27% on slopes of over 10 degrees
- Early Paleoindian sites (fluted point) are rare in the region
- sites yielding prehistoric ceramics are very rare in the region
- all known prehistoric sites in the region are small with no evidence for intensive and long-term village occupation
- the relative scarcity of prehistoric sites especially large village sites in the region appears to be an accurate reflection of prehistoric land use rather than modern site destruction or the lack of extensive archaeological survey, although prehistoric sites are very difficult to find in the region because of the lack of surface soil exposure due to limited cultivation

LiDAR Survey to Assess the Status of Burial Mound Sites in Scott and Crow Wing Counties

Category: Poorly Known Property Type

Purpose: The purpose of this project was to determine the current status of prehistoric burial mounds in two sample counties in order to assist the State Archaeologist with burial mound authentication and to better inform landowners and agencies of their obligations under the Private Cemeteries Act (Minnesota Statutes 307). The project sought to utilize new technologies such as Light Detection and Ranging (LiDAR), geographic information systems (GIS), and geographic positioning systems (GPS) for more efficiently and accurately mapping and recording earthworks.



Contractor: University of Iowa - Office of the State Archaeologist (Joe Artz)

Results:

- provided site-by-site information comparing LiDAR and field survey results to early mound maps
- LiDAR analysis detected 285 Precontact earthworks at 37 sites in the two counties
- field examined 10 mound sites
- demonstrated the use of LiDAR as a cost-effective means of initially scanning a landscape for mounds with the right LiDAR data sets and the right expertise
- analyzed critical issues needed for accurate mound plotting using LiDAR

Conclusions/Recommendations:

- demonstrated the need for LiDAR data to meet or exceed the U.S. Geological Survey National Geospatial Program's LiDAR Guidelines and Base Specification as being required by the current Legacy funded
- demonstrated the necessity of field survey to follow LiDAR analysis in order to confirm features are prehistoric earthen mounds
- demonstrated the need for additional county surveys using LiDAR

Survey to Identify and Evaluate Indian Sacred Sites and Traditional Cultural Properties in the Twin Cities Metropolitan Area

Category: Poorly Known Property Type

Purpose: Indian traditional cultural properties (TCPs) and sacred sites often have no structural or artifactual manifestations so they do not fit standard definitions as archaeological or historical properties even though they are important cultural sites. There is no database of such sites at state agencies, no appropriate place in official repositories to file information about them, and their boundaries are difficult to exactly define. The primary goal of this project was to create a process through which a state inventory of American Indian sacred places and important sites could be completed to insure that such sites are adequately considered in environmental review procedures and, if appropriate, protected from harm. The project was to focus on Dakota sites in the Twin Cities area.

Contractor: St. Cloud State University (Kelly Branam)

Results:

- interviewed Dakota Elders and cultural knowledge keepers from Dakota communities
- interviewed archaeologists and cultural anthropologists who are invested in preservation of TCPs and sacred sites

- analyzed forms and processes that are used to identify and preserve native traditional use sites and sacred places in other states
- recognized current communities' relationships with sacred places is not merely a historical relationship, but what currently defines a place as being important

Conclusions/Recommendations:

- need for a phased process, which emphasizes meaningful and thorough consultation with multiple communities
- need expansion of the project to include Ojibwe communities and sacred sites and traditional cultural properties in other regions of the state

Survey to Find Minnesota's Earliest Archaeological Sites

Category: Poorly Known Historic Context

Purpose: The first human occupation of North America is thought to have occurred at least 15,000 years ago. The actual age of this first occupation and the search to find sites from this time period are perhaps the most interesting and controversial New World archaeological problems. The first widespread cultural complex is called Clovis and dates between 11,500 BC and 10,500 BC. The purpose of this project is to determine if relatively intact sites dating prior to 10,000 BC can be found in Minnesota through a comprehensive analysis of environmental and archaeological records followed by some field survey of one or more high potential areas. A major element of the project was to summarize all known early Paleoindian artifact finds in Minnesota and reconstruct the Paleoindian environment.

Contractor: Augustana College Archaeological Laboratory (Adrien Hannus)

Results:

- examined collections from 20 public institutions and 15 private collections
- documented 133 Early Paleoindian sites by literature search and collections
- Paleoindian points were divided into Clovis, Folsom/Midland, Eastern Fluted, Plainview, and Undetermined categories
- two new Early Paleoindian sites were discovered by the project, along with one new prehistoric site of undetermined affiliation
- geomorphological, paleoecological, and archaeological fieldwork was concentrated in the southwestern corner of the state as it had high surface visibility and was not ice-covered during the last glaciation
- a lake sediment core from Fish Lake near Windom was analyzed in order to reconstruct the post-glacial environment in detail for southwestern Minnesota, resulting in a detailed vegetational and climatic reconstruction
- geomorphological investigations focused on the Blue Mounds locality produced a detailed sedimentary record

Conclusions/Recommendations:

- most Early Paleoindian sites have been found in central (44) and southwestern (38) regions with the fewest in the north-central (2) and northeast regions (0)
- Clovis and Folsom points are rare in northern Minnesota
- building a site locational model for the entire state is difficult considering the extensive environmental changes and diversity in Minnesota over 14,000 years
- five locations are considered to have the highest potential for Early Paleoindian sites in Minnesota: Mississippi River and Minnesota River terraces, wetland basins or basin margins formed by the collapse of glacial ice, within and beneath colluvial slopes dating to or post-dating the Early Paleoindian Period, glacial beach ridges, and Aeolian dune fields
- three archaeological regions appear to have the highest potential for Early Paleoindian sites: Southwest Prairie Lakes, Southeast Riverine, and Central Deciduous Lakes
- the greatest need is to find a relatively intact Early Paleoindian site in Minnesota, carefully excavate it, and obtain radiocarbon dates

Investigating Unrecorded Historic Cemeteries in Minnesota

Category: Poorly Known Property Type

Purpose: Under Minnesota Statutes 307.08, the State Archaeologist is charged with authenticating unrecorded historic cemeteries. The State Archaeologist has certain management responsibilities for unrecorded cemeteries if they are authenticated as non-Indian. No state agency maintains a comprehensive list of cemeteries in Minnesota and many counties do not have lists of their cemeteries, recorded or unrecorded. The purpose of this project was to summarize what is known about the locations of unrecorded historic cemeteries in Minnesota, to update the State Archaeologist's site file with regard to such cemeteries, and to conduct limited field work to determine the status of unrecorded cemeteries in three counties.

Contractor: Two Pines Resource Group (Michelle Terrell and Andrea Vermeer)

Results:

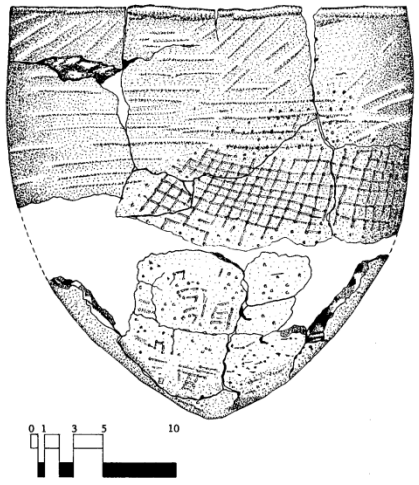
- the literature search identified 5,876 historic period cemeteries in Minnesota
- there is no clear legal definition in Minnesota of what a *recorded cemetery* is; for the purposes of this project, *recorded* was assumed to mean that a legal record of the cemetery existed at a state agency or local unit of government such as a plat filed as a

cemetery, a deed designating an area as a cemetery, tax records showing an area as tax exempt, or recognized *abandoned* or *neglected* cemeteries (MS 306) where local governments have assumed maintenance responsibilities
- 3,334 cemeteries were classified as recorded and 2,542 as unrecorded
- locational, descriptive, and legal information for each cemetery was listed in a database compatible with the current State Archaeologist Burials Database
- the literature search did not include an intensive investigation of federal land records because the State Archaeologist and local governments do not have jurisdiction so the majority of cemeteries in the database are on private land or non-federal public land
- field examined 9 cemeteries in Dakota County, 10 cemeteries in Redwood County, and 14 cemeteries in Washington County

Conclusions/Recommendations:
- this project compiled the first comprehensive electronic database of historic period cemeteries in Minnesota
- unrecorded cemeteries need to be added to the State Archaeologist's database
- unrecorded cemeteries exhibit a wide variety of sizes, descriptive characteristics, affiliation, and condition
- additional literature search is needed of obscure, particularistic, or non-public sources including the DNR Underground Mine Mapping database for the Iron Range, US-Dakota War of 1862 sources for western Minnesota burials associated with that conflict, Indian reservation records for non-federal (non-trust) land, institutional records associated with county poor farms and state hospitals, and manuscript data relating to early historic occupations in Minnesota
- extensive field survey is needed to assess the current condition of and establish legal boundaries for most unrecorded cemeteries
- state law should include a definition of *recorded cemetery*

The Age of Brainerd Ceramics

Category: Poorly Known Historic Context



Purpose: Brainerd is a prehistoric pottery type first defined in the 1970s following excavations at Gull Lake. Based on radiocarbon dates from a number of sites, some researchers have proposed that Brainerd ceramics may be the earliest ceramics in the Midwest beginning around 1500 BC and lasting as late as AD 700. The purpose of this project was to determine if Brainerd ceramics appear as early and survive as late as some researchers suggest, to see if contamination with old carbon plays a significant role in radiocarbon dates on food residues from Minnesota prehistoric ceramics, and to see if the contamination is dependent on region of origin of the ceramics, the natural food sources of the charred material, or laboratory pre-

treatment methods. Better understanding the definition and dating of Brainerd ceramics will allow management agencies to better assess site significance, promote economical management practices, and aid future research in radiocarbon dating and prehistoric ceramic analysis.

Contractor: Soils Consulting (Christy A. H. Caine and Leigh Syms)

Results:

- obtained 40 new radiocarbon dates and 10 optically stimulated luminescence (OSL) dates from 13 previously excavated archaeological sites
- radiocarbon dates are from ceramic residues (16), charcoal (14), and animal bone (10)
- re-examined accuracy and contexts of 32 previously obtained Brainerd dates
- re-examined the chronological range of Brainerd ceramics and possible causes of dating error
- examined the ceramic and lithic technologies associated with Brainerd

Recommendations/Conclusions:

- prior to this study, the age of Brainerd ceramics was suggested to begin as early as 2450 BC and last as long as AD 650 (4400–1300 Before Present), the earliest and longest lasting ceramic complex in the North American Midcontinent, but based on this study, the new range is suggested to be 800 BC to AD 250
- the radiocarbon dates demonstrate some impact from the freshwater reservoir effect most noticeable on the ceramic residue dates; 14 of 39 ceramic residue dates appear to be too old
- the most problematic dates have isotope (13c/12c) ratios lower than -30
- most charcoal dates (17 of 21) do not appear to be from Brainerd contexts suggesting pronounced stratigraphic mixing at the sites
- the authors suggest dividing Brainerd ceramics into two distinct wares–*Brainerd Net Impressed* and *La Salle Creek*
- projectile points associated with these ceramics have considerable variation, but all appear to be dart points and not arrow points
- based on the results of this study, additional research should be focused on the problems associated with ceramic residue radiocarbon dates

FY 2012 – 2013 *Statewide Survey* Projects

Archaeological Survey of Red Lake County

Category: Poorly Known Area

Purpose: There were only eight (8) confirmed archaeological sites in Red Lake County at the beginning of this project, of which all but one were prehistoric. The prehistoric sites included two mounds sites, three artifact scatters, and two single artifact sites. The only professionally excavated sites in Red Lake County are the two burial mound sites examined in the first half of the 20th century. Archaeological reconnaissance surveys in Red Lake County have been largely associated with narrow linear projects for highway and pipeline construction. The purposes of this project are to summarize what is known about the prehistoric past of Red Lake County, to update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located.

Contractor: Augustana College Archaeological Laboratory (Adrien Hannus)

Results:

- surveyed 4,454 acres in 27 separate parcels
- located 24 previously unrecorded archaeological sites
- utilized MnModel data to stratify survey parcels into Low, Medium, High potential
- 45% of survey was in High Potential, 33% in Medium, and 22% in Low
- interviewed three local artifact collectors and documented their collections
- did detailed geomorphological examinations of 4 areas
- obtained 10 radiocarbon dates from buried soils retrieved by coring
- constructed a narrative model for predicting site locations

Recommendations/Conclusions:

- 14 of 27 surveyed parcels contained archaeological sites
- prehistoric sites can be primarily assigned to Archaic and Woodland periods
- local collections indicate a Late Paleoindian presence
- no Paleoindian or Late Prehistoric sites were located
- geomorphological testing suggests the majority of sites exist below plow zones
- 51% of prehistoric sites were in MnModel High Probability areas
- 47% of sites were in MnModel Medium Probability areas
- 2% of sites were in MnModel Low Probability areas
- Habitation sites should be located near stream confluences
- Lithic Procurement/Workshop sites should be located near beach ridges
- Burial sites should be located on beach ridges

Archaeological Survey of Steele County

Category: Poorly Known Area

Purpose: At the initiation of this survey, there were only 30 confirmed archaeological sites in Steele County of which 22 were prehistoric. These known sites included two (2) lone mound sites, 15 artifact or lithic scatters, and five (5) single artifact sites. There are no professionally excavated archaeological sites in Steele County, although site 21DO2 in Rice Lake State Park immediately adjacent to the Steele County line was tested by the University of Minnesota in 1972. The purposes of this project were to summarize what is known about the prehistoric past of Steele County, to update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located.

Contractor: 10,000 Lakes/AMEC (Amanda Grondhovdt)

Results:

- developed a site locational model based upon surface water, slope, landform and vegetation
- surveyed 1,115 acres based on High, Medium, and Low ranked areas by the model
- located 13 previously unrecorded prehistoric sites
- examined 11 artifact collections
- re-examined 8 previously recorded archaeological sites
- tested two areas within the Straight River lowlands to assess potential for deeply buried sites
- documented occupations associated with Paleoindian, Archaic, Woodland, and Late Prehistoric cultural components

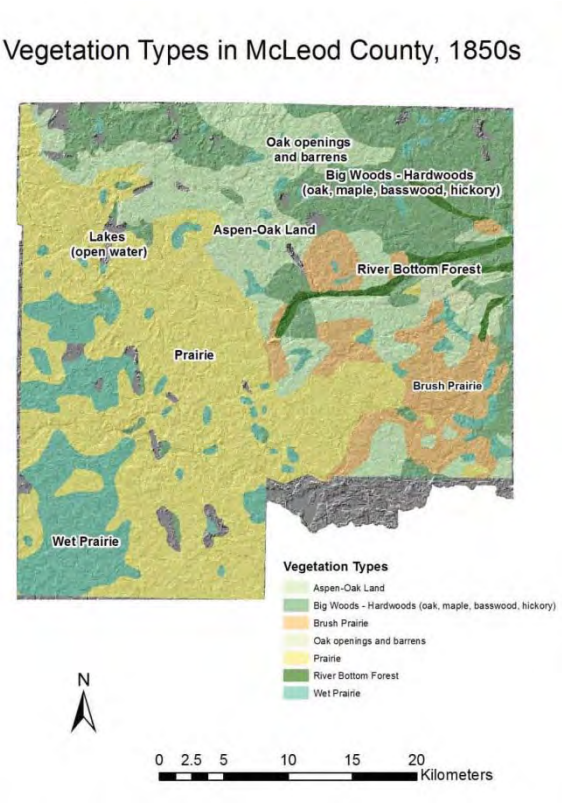
Recommendations/Conclusions:

- contractors emphasized model building over optimizing discovery of new sites
- unclear whether relatively low density of sites in county is due to survey limitations or low prehistoric populations
- additional archaeological survey should be done in the county that is focused on high potential locations and discussions with local collectors to maximize the finding of previously unrecorded sites
- a map should be constructed showing areas with the highest potential to contain deeply buried sites

Archaeological Survey of McLeod County

Category: Poorly Known Area

Purpose: There were only 13 confirmed archaeological sites in McLeod County at the beginning of this project, all of which were prehistoric. There are no professionally excavated archaeological sites in McLeod County. Archaeological surveys have been limited, but include trunk highway and county highway surveys (mostly done in the 1970s, 1980s, and early 1990s), DNR small-area surveys, and scattered federally-required surveys for pipelines, wastewater treatment plants, and parks. The purposes of this project were to summarize what is known about the prehistoric past of McLeod County, update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located.



Contractor: Bolton and Menk (Dale Maul)

Results:

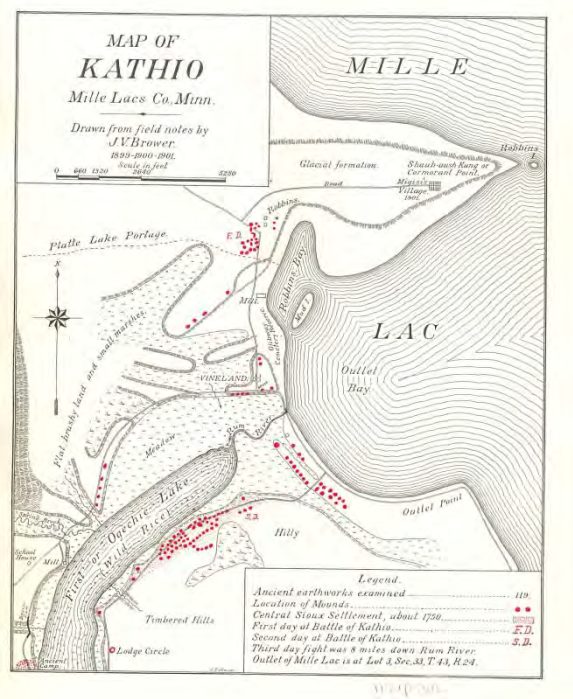
- surveyed 2,000 acres
- located 16 new sites, but all are small and contain few artifacts
- re-examined 7 previously recorded archaeological sites
- examined artifact collections at the McLeod County Historical Society
- documented occupations associated with Paleoindian, Archaic, Woodland, and Late Prehistoric cultural components

Recommendations/Conclusions:

- contractors did not develop an effective model for the discovery of new sites
- contractors did not fully utilize local artifact collectors to optimize locating new sites
- contractors did not assess potential for deeply buried archaeological sites
- it is unclear if the relatively low density of sites in county is due to survey limitations or low prehistoric populations
- additional archaeological survey should be done in the county that is focused on high potential locations and discussions with local collectors
- a map should be constructed showing areas with the highest potential to contain deeply buried sites

LiDAR Analysis of Burial Mounds in High Mound Counties

Category: Poorly Known Property Type



Purpose: Minnesota has over 12,000 recorded burial mounds. Detailed mapping of these mounds began in the late 1860s and peaked with the surveys of Theodore Lewis (1883–1895) and Jacob Brower (1889 - 1905). Many mound sites mapped by Brower and Lewis have not been formally assessed by modern professional archaeologists and few mound sites have been re-mapped in any detail. In 2009, Clean Water Legacy funding was allocated to the DNR to complete high-quality LiDAR mapping of the entire state of Minnesota. In 2010, a pilot study in Scott and Crow Wing counties completed for the *Statewide Survey* demonstrated the usefulness of LiDAR for mound mapping. The new LiDAR-Mound project will undertake a detailed LiDAR analysis of previously recorded burial mound sites in 16 counties that have both large numbers of mounds and the availability of high-definition LiDAR. These counties are Goodhue, Hennepin, Scott, Wabasha, Otter Tail, Mille Lacs, Wright, Kanabec, Sherburne, Washington, Houston, Dakota, Sibley, Douglas, Pine, and Isanti. The project will produce high-quality LiDAR images of all burial mound sites in these counties to allow for the first compressive assessment of mound survival in over 100 years and to assist the Office of the State Archaeologist (OSA), the Minnesota Indian Affairs Council (MIAC), other public agencies, and private landowners with management issues involving burials mounds. In addition, the consultant will provide some training for Minnesota archaeologists who want to use LiDAR for research and environmental review purposes.

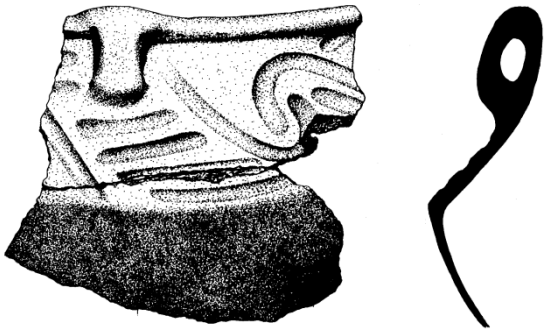
Contractor: University of Iowa - Office of the State Archaeologist (Joe Artz)

Results: The project is scheduled to be completed by June 30, 2013. The LiDAR training was provided at the Council for Minnesota Archaeology research symposium on 2/8/13. Over 70 individuals attended the training.

Recommendations/Conclusions: Awaiting project completion.

Study of Minnesota Plains Village Complexes

Category: Poorly Known Historic Context



Purpose: The Late Prehistoric Period in Minnesota (AD 1000–1650) is a period of great cultural change. In western Minnesota, Plains Village cultures feature a settlement-subsistence orientation with one foot in the woodlands and one foot in the Great Plains combining focal bison hunting, gardening, and broad-based hunter-gathering. The ceramics of these Plains Village complexes also exhibit a blend of traits with well-made grit tempered ceramics that have both smoothed and cordmarked surfaces as well as trailed line and cord-impressed decoration. By the end of the period, many of the cultural complexes in southern and western Minnesota have disappeared with the transition to modern ethnographically known groups unclear. The purpose of this project is to investigate what Plains Village contexts are present in western Minnesota, how early they appear, how late they survive, their physical manifestations, and their interaction with other historic contexts.

Contractor: Minnesota State University–Moorhead (Mike Michlovic and George Holley)

Results: The contractors have obtained 16 radiocarbon dates and field examined one site (21TR5). The project is scheduled to be completed by June 30, 2013.

Recommendations/Conclusions: Awaiting project completion.

Study of Woodland Period Complexes in West Central Minnesota

Category: Poorly Known Historic Context

Purpose: The Woodland Period in Minnesota (500 BC–AD 1000) is perhaps the most well-known prehistoric period in the state due to numerous excavated sites and relatively well-defined ceramic types that allow us to identify discrete times and what appear to be discrete cultural groups. It is the period when earthen mounds become the preferred burial mode, ceramics and the bow and arrow first appear, and when new forms of vegetal foods are intensively utilized (e.g. wild rice). West-central Minnesota is one of the poorest known areas of Minnesota in terms of archaeology. There have been very few intensive excavations in the region, especially with regard to the Woodland Period so there are very few radiocarbon dates and very few in-depth analyses of Woodland Period artifacts. The purpose of this project is to

investigate Woodland historic contexts in west-central Minnesota to determine how early they appear, how late they survive, their physical manifestations, and their interaction with other prehistoric contexts that pre-date them, that are coeval with them, and that post-date them.

Contractor: Augustana College Archaeological Laboratory (Adrien Hannus)

Results: The project is scheduled to be completed by August 31, 2013.

Recommendations/Conclusions: Awaiting project completion.

Study of Historic Masonry Ruins

Category: Poorly Known Property Type

Purpose: Masonry ruins are among the most memorable and picturesque places in the world. While ancient ruins are common in much of the world, in the Upper Midwest masonry structures were not constructed by Native Americans or early European fur traders, explorers, and initial settlers. The earliest masonry structures in the Midwest date to the period well after European intrusion and are associated with intensive Euro-American settlement. In Minnesota, the earliest masonry building construction was Fort Snelling in 1820. Once intensive Euro-American settlement began, masonry buildings, dams, and bridges were built. Stone became a popular construction method for water-powered flour mills. With the conversion to steam power in the 1880s, masonry construction was needed for boiler houses, engine houses, and smoke stacks associated with all types of manufacturing facilities. This coincided with the ready availability of commercially produced brick. Residential and farm construction also utilized a variety of masonry construction techniques. Most 19th and early 20th century masonry structures in Minnesota either survive almost fully intact still serving their original purpose or they have been demolished. Few ruins survive in urban areas because they occupied valuable development land or their ruins were deemed dangerous. The purposes of the project are to create an inventory of known masonry ruin sites, to develop a framework for evaluating their historical significance, and to develop strategies for their stabilization and interpretation.

Contractor: Two Pines Resource Group (Michelle Terrell and Andrea Vermeer)

Results: The project is scheduled to be completed by June 30, 2013.

Recommendations/Conclusions: Awaiting project completion.

Study of Historic Dams

Category: Poorly Known Property Type

Purpose: Minnesota currently has more than 1,250 dams of which 800 are publicly owned. At least one million dollars is spent annually by the state in dam maintenance and an estimated 114 million dollars is needed over the next 20 years just to keep public dams safe. There are pressures to remove dams not only for safety and economic reasons, but for environmental reasons as well. Dams disrupt the natural ecology of rivers, especially with regard to fish movement, but dams can also help retard the spread of invasive species. Dams can be categorized by their principal purpose, the raw materials used in their construction, or their architectural type. In Minnesota, most dams were built for hydropower, transportation, and flow control/flood control reasons. Current DNR strategies for dam maintenance and removal largely ignore historic preservation concerns. The purpose of this project is to create a comprehensive inventory of historic dams in Minnesota and then use examples from this inventory to develop strategies to evaluate historical significance, define management issues, and explore interpretive opportunities.

Contractor: Archaeo-Physics (Douglas Birk, Sigrid Arnott, and David Maki)

Results: The project is scheduled to be completed by August 31, 2013.

Recommendations/Conclusions: Awaiting project completion.

A Preliminary Plan for Future Statewide Survey Initiatives

The first 16 projects of the *Statewide Survey of Historical and Archaeological Sites* have clearly demonstrated the value of the survey to site preservation and cultural resource management. The projects have also provided employment for various cultural resource management entities. If additional funding can be secured, future projects could again include the three types of projects that were the focus of the first four years of the survey–*Poorly Known Areas, Poorly Known Property Types,* and *Poorly Known Historic Contexts*. We could also add a new category–*Managing Minnesota Historic and Archaeological Resources* - projects focused on providing state agencies, local governments, and private landowners with practical advice and cost-effective tools for finding, assessing, preserving, and interpreting valuable cultural resources.

Poorly Known Areas: Surveys could include the counties of Aitkin, Hennepin, Jackson, Kittson, Lake of the Woods, Lac Qui Parle, Le Sueur, Mower, Pope, Todd, and Wilkin. All of these counties have witnessed limited modern archaeological work concerning the prehistoric past. It could also include a multi-county survey of the bottomlands of the Minnesota River Valley in an attempt to determine if important sites have been deeply buried by alluvial (flooding) and colluvial (slope erosion) deposition. As well as finding important archaeological sites (especially very early sites), the Minnesota River Valley survey would assist MnDOT, county highway departments, and local governments with environmental impact evaluations for bottomland road projects, bridge replacements, and flood control projects.

Poorly Known Property Types: Surveys could include Ojibwe Traditional Cultural Properties, CCC Camps, Farmsteads as Archaeological Sites, County Fair Grounds, State Owned Buildings, Cultural Landscapes, and Poor Farm Cemeteries as well as additional Burial Mound surveys aided by LiDAR. These investigations should assist multiple agencies with determining sites worthy of preservation. Additional LiDAR–Mound surveys should also help assess burial mound survival in the 70 counties not subject to previous LiDAR-Mound investigations.

Poorly Known Contexts: Surveys could focus on the Archaic Period (7000–500 BC) statewide, the Woodland Period (500 BC–AD 1000) in southeastern Minnesota, statewide sites of the Late Paleoindian Period (9000–7000 BC), and historic period Indian sites (AD 1650–1890).

Managing Minnesota Historic and Archaeological Resources: Projects could include easy to use models for predicting archaeological site locations in particular areas (e.g., county narratives), providing local government internet access to the State Archaeologist's Archaeological Database and the State Historic Preservation Office's Historic Structures database, and site importance evaluation frameworks utilizing the Multiple Property Documentation Form (MPDF) format developed by the National Register of Historic Places (like we are doing for Ruins and Dams).

The independent nature of the *Statewide Survey* as established by the Legislature has been beneficial to the fulfillment of the *Survey's* goals. Previous legislation has allowed the Advisory Board of the *Statewide Survey* to focus funding on some of the greatest needs of historic preservation in the state, allowed for continuity in this focus from year to year, and allowed the Board the ability to contract with necessary experts that would not be eligible for MHS grants (e.g., private companies).