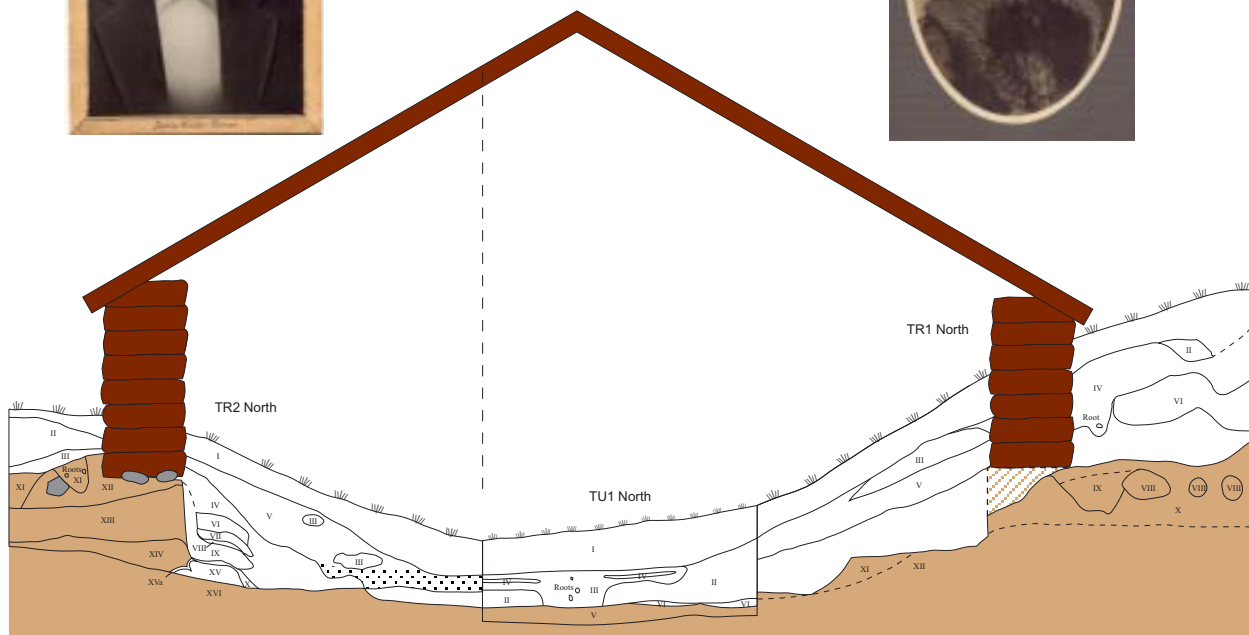


**DIGGING INTO A DUGOUT HOUSE (SITE 21SW17):
THE ARCHAEOLOGY OF NORWEGIAN IMMIGRANT
ANNA BYBERG CHRISTOPHERSON GOULSON,
SWENODA TOWNSHIP, SWIFT COUNTY, MINNESOTA**



U.K. University of Kentucky
Program for Archaeological Research
Department of Anthropology

Technical Report No. 480

May 2003

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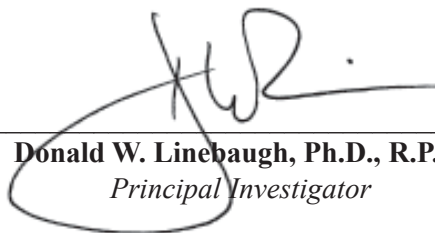
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Technical Report No. 480



Donald W. Linebaugh, Ph.D., R.P.A.

Principal Investigator

May 15, 2003

ABSTRACT

This report presents the results of excavations on the dugout house site (21SW17) of Anna Byberg Christopherson Goulson in west-central Minnesota. The work was completed by Dr. Donald W. Linebaugh of the University of Kentucky and a group of family volunteers between June 6 and 12, 2002. Anna and Lars Christopherson reportedly moved into their dugout house ca. 1868. Lars and two of the five Christopherson children died of scarlet fever ca. 1878. Anna married Hans Goulson, who had immigrated to the area from Wisconsin, in 1879. Sometime after the birth of their first child in the dugout in late 1879, Anna and Hans built a small wood frame house on land located about a half mile south of the dugout. Archaeological survey and investigations identified the dugout house and documented the belowground architecture of the structure. The later ca. 1880 wood frame house was also recorded as part of this project.

ACKNOWLEDGEMENTS

I would like to thank the many members of the Goulson family who made this excavation possible. Without their intense interest and participation this project would not have been possible. First and foremost, I need to thank Hilton and Dan Goulson, who spearheaded the expedition to Minnesota. Their untiring work included recruiting and scheduling the volunteers, arranging for equipment and supplies at the site, and supervising the entire proceedings. The results of this hard work were an organized, effective, and enjoyable project.

The many volunteers who helped at the site provided the labor needed to dig the holes, screen the dirt, keep the records, and importantly, cook the meals. Volunteers who assisted with the excavation and crew support included David Berget, Amy Cutrell, Ashley Cutrell, Stacey Cutrell, Gregg French, Jason French, Mary Nell French, Keith Gordon, Linda Gordon, Dan Goulson, Dawn Goulson, Gregg Goulson, Hilton Goulson, Joann Goulson, Nancy Goulson, Preston Goulson, Richard Goulson, Todd Goulson, Zachary Goulson, Floyd Hagen, Jacqueline Hagen, Connie Hanson, Ronald Hanson, Allison Hutchens, Greg Hutchens, Harry Klyve, Al Knudson, Kae Knudson, Lawrence Larson, Mary Ann Larson, William Larson, Elizabeth Moe, Adam Nokleby, Arnold Nokleby, Jessica Nokleby, Steve Nokleby, Susan Nokleby, Leland Otterholt, Erik Overby, Maren Overby, Libby Read, Richard Space, Diane Skonard, John Skonard, Raymond Smith, Ted Swenson, and William Thompson.

I must also heartily thank Joann and Gregg Goulson, who opened their home to serve as a staging point for the dugout work. They were both so helpful and supportive of the entire expedition, providing daily transportation to the site via tractors and offering help with equipment and logistics. In addition, they and a “talented” crew of helpers cooked and provided meals for the entire crew each day. The food was outstanding and the company great fun.

I must also acknowledge my thanks to the staff of the Minnesota Historical Society. In particular, archaeologist Patricia Emerson provided information on the several dugout sites that had been excavated in Minnesota and on dugouts in general, and later, provided census data that I was not able to get through interlibrary loan. Likewise, Bruce Koenen of the State Archaeologist’s office provided help in completing the site inventory form. Architectural historian Michael Koop of the State Historic Preservation Office kindly assisted with suggested reading and sources on Norwegian housing in Minnesota and the Upper Midwest.

The Goulson family and I wish to thank current landowners Byron and Vicki Olson for their kind permission to excavate on their property.

Without the help of volunteers and kind colleagues, much of the report that follows would not have been possible. Finally, I must thank all of the other residents of Swift and Chippewa counties who have provided help and support during our trip to the area - you are a generous and friendly community.

Donald W. Linebaugh, Ph.D., R.P.A.
Lexington, KY
May 2003

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CHAPTER 1: Introduction and Project Background

Introduction

Over the edge of the bank, the path turned and went slanting down close against the grassy bank that rose up like a wall. Laura went down it cautiously. The bank rose up beside her till she could not see the wagon. Laura went a step farther, then one more step. The path stopped at a wider, flat place, where it turned and dropped down to the creek in stair steps. Then Laura saw the door. It was like a house door, but whatever was behind it was under the ground (Wilder 1953:3-4).

So writes Laura Ingalls Wilder in *On the Banks of Plum Creek* about her first impression of the dugout in Minnesota that was soon to become her home. The idea of living underground has been explored across the world and through the centuries. For example, European settlers to Massachusetts and Virginia used the dugout or pit house in the early 17th century. As it is found in the Midwestern U.S., the dugout home was typically a feature of the settlement period, either as a temporary shelter to weather the first few winters or a subsistence dwelling for pioneer farmers. “‘It’s only till I harvest the first wheat crop,’ said [Laura’s] Pa. ‘Then you’ll have a fine house...’” (Wilder 1953:3-4). Like Laura and her family, many settlers in the expanding regions of the United States found temporary or semi-permanent shelter in dugout houses, and the Anna Byberg Christopherson Goulson family seems typical in this regard.

The expedition to investigate the Christopherson/Goulson dugout grew out of the family’s interest in memorializing the site and teaching their history to the next generation. An archaeological study was undertaken from June 6-12, 2002, with the help of over 60 Goulson family members and friends from across the country (Figure 1.1).

The purpose of the project was to survey and investigate the archaeological resources associated with the Christopherson/Goulson dugout house site, including determining site boundaries, identifying components, assessing the site’s integrity and historical significance, and learning as much as possible about Anna Goulson’s life in early Minnesota. The work examined the dugout house site, documenting the belowground architecture of the structure, and recorded the Goulson’s ca. 1880 wood frame house.

The project was carried out by project director Dr. Donald W. Linebaugh. The archaeological and architectural field investigations were conducted by Dr. Linebaugh and a large group of volunteers including David Berget, Amy Cutrell, Ashley Cutrell, Stacey Cutrell, Gregg French, Jason French, Mary Nell French, Keith Gordon, Linda Gordon, Dan Goulson, Dawn Goulson, Gregg Goulson, Hilton Goulson, Joann Goulson, Nancy Goulson, Preston Goulson, Richard Goulson, Todd Goulson, Zachary Goulson, Floyd Hagen, Jacqueline Hagen, Connie Hanson, Ronald Hanson, Allison Hutchens, Greg Hutchens, Harry Klyve, Al Knudson, Kae Knudson, Lawrence Larson, Mary Ann Larson, William Larson,



Figure 1.1. Dr. Linebaugh addressing volunteers and visitors during the open house.

Elizabeth Moe, Adam Nokleby, Arnold Nokleby, Jessica Nokleby, Steve Nokleby, Susan Nokleby, Leland Otterholt, Erik Overby, Maren Overby, Libby Read, Richard Space, Diane Skonard, John Skonard, Raymond Smith, Ted Swenson, and William Thompson. Dr. Linebaugh prepared the final report and completed the historical research for the project. Laboratory processing and artifact analysis was conducted by PAR laboratory director Rebecca Madsen and technician Alice Carver. More in depth analysis of the faunal remains and wood charcoal were completed by Dr. Tanya Peres and Dr. Renee Bonzani, respectively. Ms. Donna Gilbreath prepared the final site maps and illustrations for the report; Jay Baril photographed diagnostic artifacts for illustration in the report. The conjectural drawings were completed by Steve Culler.

Project Background

The dugout house site of Anna Byberg Christopherson Goulson is located in Swenoda Township, Swift County, in west-central Minnesota (Figure 1.2). The Christopherson/Goulson dugout is located at the top of a steep hillside above the Chippewa River, some 15 miles down river from the town of Benson, Minnesota.

The site consists of a large depression and earthen berms located at the break of the bluff slope; a cultivated field borders the wooded site on the east (Figures 1.3 and 1.4). The area was covered in trees, most of which are 30-50 years old, and a very thick understory vegetation of

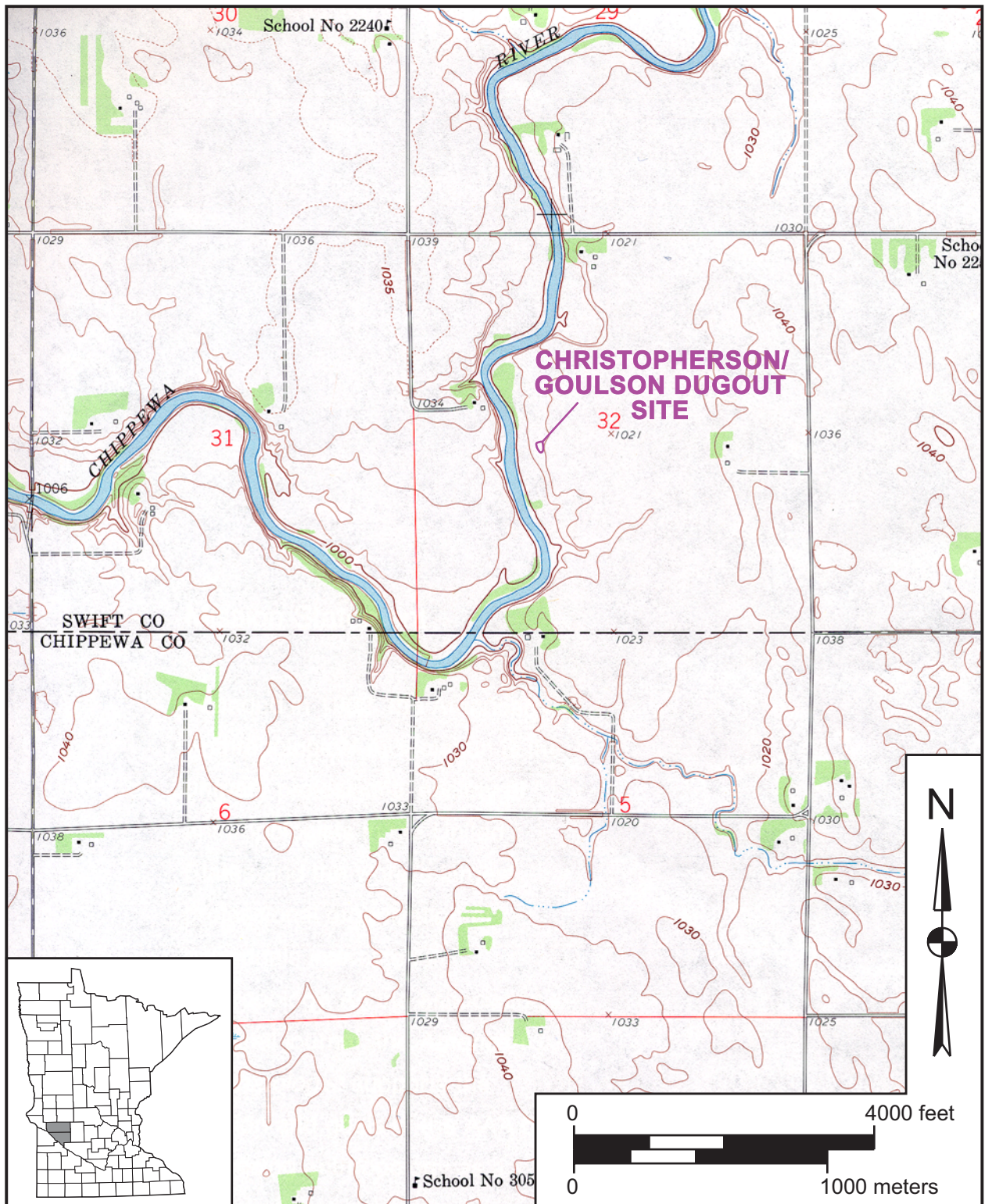


Figure 1.2. Location of Christopherson/Goulson dugout (U.S.G.S. 7.5' Gracelock NW topographic quadrangle, 1958 [photorevised 1977]).

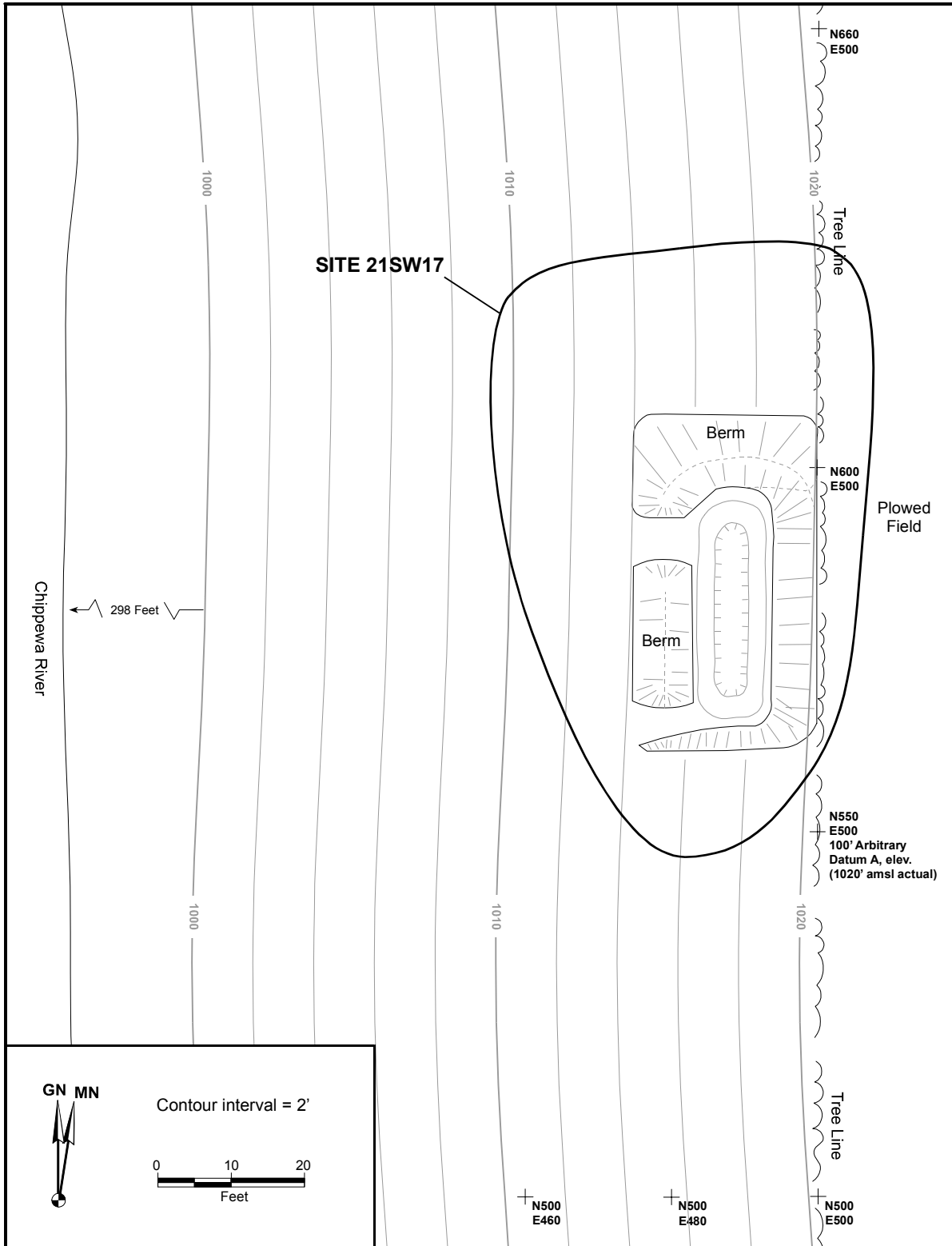


Figure 1.3. Plan of the Christopherson/Goulson digout site area.



Figure 1.4. Dugout site from cultivated field, looking northwest.

shrubs and groundcover (Figure 1.5). The depression measures approximately 40 ft. north/south x 20 ft. east/west and is 4-6 ft. deep (see Figure 1.3; Figure 1.6). The north and west, or downhill sides, of the dugout are mounded with dirt from the cellar excavation; the south side is slightly mounded with a gradual slope down to the deepest section of the depression (Figures 1.7 and 1.8).

The site's location at the break of the bluff slope straddles two principal soil complexes, however, the predominate soil type is a Maddock sandy loam that is found in the cultivated field to the east; this soil carries down the hill slope where it transitions into Lamoure-Rauville complex soils that are associated with the Chippewa River floodplain.

The dugout site was identified and cleared by a group of Goulson family members led by Hilton Goulson in the summers of 1997 and 1998 (Appendices A and B). The dugout was located based on family recollections and a series of inspections of the general area along the Chippewa River. In 1998, the family placed a marker at the northeast corner of the dugout depression during a dedication ceremony (Figure 1.9) (see Appendix A).

Environmental Setting

This section provides background information on the environmental setting of the project area, including information on the physiography, geology, soils, climate, flora, and fauna. In general, and when possible, this information is provided with a historical



Figure 1.5. Dugout site before clearing.

perspective that provides information on how the environmental setting has changed since the time of Anna Christopherson Goulson.

Physiography

The Christopherson/Goulson dugout site is found in south central Swift County, Minnesota (see Figure 1.2). The county is rectangular in shape and includes 21 townships, each 6 miles square. The total area of Swift County is 757 square miles or approximately 484,959 acres (Anonsen 1929:2). The dugout site is located in Swenoda Township, about .5 miles north of the Chippewa County line. Swenoda Township (T120N, R40W) consists of 36 sections encompassing 36 square miles.

Two principal rivers drain Swift County: the Pomme de Terre in the eastern portion of the county, and the Chippewa in the central part of the county; both of these rivers drain into the Minnesota River. From Appleton to its mouth, the Pomme de Terre has a fall of 44 ft. Thus, it was used by early pioneers to power mills to grind grain. Likewise, the drop of the Chippewa River supported several mills (Anonsen 1929:2). The Chippewa River divides Swenoda Township in half, running north to south; Shakopee Creek enters the river from the east in the center of the township. The Chippewa River briefly enters Chippewa County flowing south from Section 32, and then curves north reentering Swift County again in Section 31.

Swift County likely presented a “vast, flat, monotonous stretch of land, unbroken even by trees,” to the pioneer settlers. Topographically the

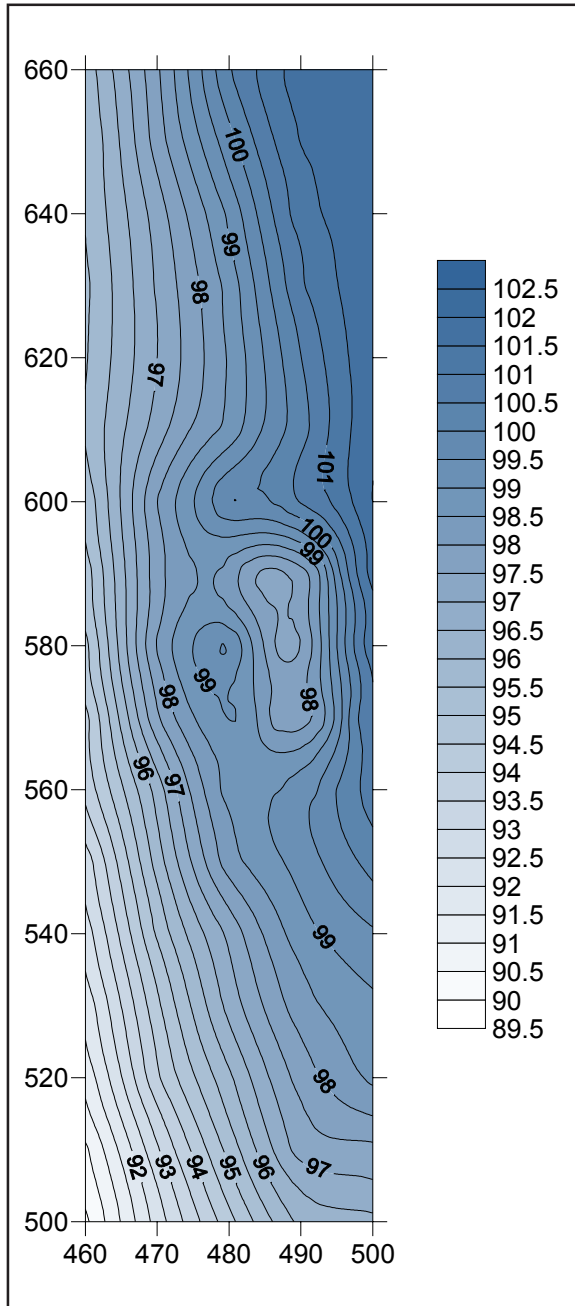


Figure 1.6. Detailed topographic map of dugout depression.

region is characterized by moderately undulating land with elevations and depressions differing by only 10 to 30 feet, and “even these differences are made by long, smooth slopes” (Anonsen 1929:3). Elevations in Swift County range from 987 ft. amsl along the western edge between Swift and Big Stone counties to approximately 1,108 ft. amsl near Kerkhoven in the southeastern portion of the county (Anonsen 1929:2). The central and southern parts of the county consist of a large basin that is “generally nearly level”; most of this basin is at an elevation of less than 1,050 ft. amsl (Diedrick et al. 1973:112). In general, the basin slopes toward the southwestern corner of the county.

Geology

The geology of Swift County is largely the product of the Wisconsin Glaciation. Until about 8,000 years ago, glacial ice covered all of Swift County. When the ice receded, the county was covered by glacial drift and modified glacial drift (Diedrick et al. 1973:112). This mantle of glacial drift ranged in thickness from approximately 150 ft. in the southwestern part of the county to more than 300 ft. in the northeastern portion.

The northeastern section of the county contains a series of “hilly terminal moraines that form part of the Alexandria Moraine Complex” (Diedrick et al. 1973:112). Glacial till material was deposited in the northern part of the county and occurs “mainly in undulating to rolling areas” (Diedrick et al. 1973:112). In the central and southern portions of the county, the glacial drift has been “modified to outwash and lacustrine and alluvial deposits by the action of water” (Diedrick et al. 1973:112). Melting glacial waters carried soil into the central and southern portion of the county forming a basin. “The outwash deposits occur at the mouths of streams, and the lacustrine deposits are in the broad level areas beyond the outwash” (Diedrick et al. 1973:112).



Figure 1.7. Dugout depression after clearing, looking south.



Figure 1.8. Dugout depression after clearing, looking northeast.



Figure 1.9. Plaque placed at dugout site in July 1998.

Soils

Soils in vicinity of the Christopherson/Goulson dugout result from a variety of factors including the geological parent materials, local climate, plant and animal life, and the topography of the region. In general, the soils found in Swift County are formed in glacial drift and modified glacial drift of the Mankato Substage of the Wisconsin Glaciation. Outwash and lacustrine soils occur in a large, nearly level basin that covers most of Swenoda Township. These soils were “deposited by melt water from the glacier as it receded northward” (Diedrick et al. 1973:108). The region’s continental climate has influenced the formation of the county’s soils, as has the native grasses that covered most of the area’s well-drained soils. Topographic relief has

played a part in soil formation as well, particularly the rolling to hilly morainic areas in the northeastern corner of the County, and the valleys of major rivers, including the Chippewa in the central part of the county (Diedrick et al. 1973:109).

The soils in the general vicinity of the Christopherson/Goulson dugout are part of the Tara-Barnes-Hamerly association. These soils are “deep, nearly level to gently rolling, moderately well drained and well drained, medium-textured soils that formed in glacial till” (Diedrick et al. 1973:General Soil Map). The soils immediately around the dugout site are part of the Lamoure-Rauville complex and Maddock sandy loams (Table 1).

<i>Table 1.1 U.S.D.A. soil types in the vicinity of the Christopherson/Goulson Dugout (Site 21SW17).</i>				
Symbol	Soil Type	Drainage	Landform	Parent
Em	Emboles fine sandy loam	Well-drained	Terraces	Alluvium
Lv	Lamoure-Rauville	Poorly-drained	Bottom lands	Alluvium
SfB	Shible fine sandy loam	Well-drained	Uplands	Course textured materials deposited by water
MdB	Maddock sandy loam	Well-drained	Uplands	Wind sifted outwash

The Lamoure-Rauville complex soils are found “in nearly level to slightly depressional areas next to the rivers and streams throughout the county, but they are mainly along the Pomme de Terre and Chippewa Rivers” (Diedrick et al. 1973:27). Lamoure and Rauville series soils are deep, poorly drained soils that formed on terraces adjacent to rivers. These soils are found along the lower portion of the slope below the dugout depression.

The Maddock sandy loams are “deep, well drained soils that formed in sandy outwash partly shifted by wind” (Diedrick et al. 1973:27). A representative profile for these soils is a surface layer that is slightly acid, very dark brown and very dark grayish brown loamy fine sand about 17 inches thick. “The underlying material is loose, weakly cemented fine sand. In the upper part this sand is noncalcareous and dark grayish brown, but it grades to calcareous and dark yellowish brown with depth” (Diedrick et al. 1973:27). The Maddock sandy loams make up the major portion

of the dugout site; they are fully developed along the eastern edge of the site in the cultivated field and have been modified on the slope by both water and wind transport.

Climate

Swift County has a continental climate. Although short term changes have occurred, the climate of the county has been relatively stable since the Little Ice Age (A.D.1200 to 1850). During this period, cooler and wetter conditions prevailed that “altered the distribution of vegetation types in central Minnesota” (Blair and Forsaberg 1996:17). Currently, “summers are warm, winters are cold, and the maximum precipitation is in the summer months” (Diedrick et al. 1973:112). The county’s climate is influenced by its location in a transition zone between “the cold, dry air from the north and the warm, moist air from the south, so there are marked daily changes in the climate” (Diedrick et al. 1973:112). The average

temperature in the winter is approximately 15° F, and the area experiences several days each winter when the temperature drops to 20° below zero (Diedrick et al. 1973:112). The average summer temperature is about 70° F, and days over 100° F occur very infrequently (Diedrick et al. 1973:112).

About 75% of the annual rainfall occurs during the period April through September; this equals about 18 inches of precipitation. The first measurable snowfall typically occurs in October or November and the last snow of the season in April (Diedrick et al. 1973:113). The freeze-free period is “long enough that the staple crops of the county reach maturity without much danger of damage by frost” (Diedrick et al. 1973:113). On average, 40 thunderstorms occur each year, often with hail and damaging winds; between 1933 and 1962, 29 hailstorms were recorded. Tornadoes are infrequent in the county (Diedrick et al. 1973:113).

Historically, the mean temperature and precipitation for the region, recorded at Ft. Snelling beginning in 1819, mirrors the current county averages. For example, the mean annual precipitation for the years 1836 to 1855 is 25.43 inches, while the mean annual temperature for the period 1819 to 1855 is 70.69° F in the summer and 16.07° F in the winter months. Of course, particularly hard winters occurred, for example, the winter of 1849 averaged just 9.04° F and 3.56 inches of precipitation (avg. = 1.92 in.) (Blair and Forsberg 1996:17-18).

Flora

At the time of settlement, Swift County was largely open grassland prairie, except for small stands of trees found along streams and in small groves around lakes. Early land surveys and the geological survey of the county note the following tree species in Swift County: basswood, white or soft maple, box elder, wild plum, green ash, white elm, red or slippery elm, hackberry, burr oak, ironwood, and cottonwood. These same sources

record a variety of under story plants and shrubs including prickly ash, smooth sumach, frost grape, Virginia creeper, climbing bittersweet, choke cherry, red and black raspberries, black currant, red osier dogwood, wolf berry, elder sweet viburnum, and willow (Winchell and Upham 1888[2]:210).

CHAPTER 2: Historical, Archaeological, and Architectural Context

Historical Context

Swift County, Minnesota

In the early nineteenth century, traders established trading posts and missionaries built missions in the area that was to become Swift County, and small settlements began to form. However, it was not until the end of the Civil War and cessation of Indian hostilities that settlement to the region began in earnest. In 1854, Congress extended “preemption or squatter’s rights to lands not yet surveyed...” (Broste 1995:4). This action sparked a land rush with settlers claiming land and immediately beginning to farm; only later did they pay for it at the rate of \$1.25 per acre (Broste 1995:4). To claim the land, a settler had to demonstrate that he had improved it for habitation by “digging a well and building a house or suitable shelter on the property” (Peterson 1992:42). By 1857, the Minnesota Territory had a population of over 150,000, and in 1858 it acquired statehood. The population at this time was centered in the eastern and southeastern portion of the state, but settlement was rapidly moving west. In 1862, the U.S. Congress passed the Homestead Act, superseding the preemption process. Peterson (1992:42) notes that “any adult head of a household who was or was becoming a citizen could, through homesteading, pay a \$10 fee, file on 160 acres of land, and live on and improve that land for at least five years. After that period, a final filing fee of \$5 would secure full title to the land.”

The first settlers probably arrived in Swift County in the mid-1860s. Although traders were in the area earlier, it was not until 1863 that an act

was passed removing all Indian tribes from the state (Anonsen 1929:22). These first permanent settlers established farms in what is now Hayes Township (Diedrick et al. 1973:114). At this time, the area including the dugout site was part of Chippewa County, which was organized in February 1862. Swift County, named for Henry Swift, governor of Minnesota in 1863, was formed out of Chippewa County in 1870 (Diedrick et al. 1973:114).

The area of Chippewa County, Minnesota, that would eventually become Swift County, was a rapidly growing frontier region when the Christophersons and Goulsons arrived in the late 1860s. Historian Stanley Anonsen (1929:24) notes that “Scandinavians and Germans were in a decided majority among these early settlers.” The first Norwegian settlement grew up around Camp Lake in about 1866 (Anonsen 1929:24). At about the same time, Anonsen (1929:24) reports, a group of Norwegians settled in the Chippewa Valley in West Bank and Swenoda townships. By 1870, the population of Chippewa County had reached 1,467 people, most settling in the northern part of the county; the population of what was soon to be Swift County was only about 600 (Anonsen 1929:26, 43). The early settlers generally remained near streams or lakes in order to take advantage of the limited supplies of wood and to be near fresh water. Because of the shortage of lumber on the prairie, early settlers often built dugout and sod houses.

The town of Benson, located about 15 miles northeast of the Christopherson/Goulson dugout, was established in the late 1860s and grew rapidly following the arrival of the St. Paul and Pacific

Railroad in 1870 (Figure 2.1). A store, bar, and lumber yard were opened in 1870, and by 1875, the town boasted over 300 residents. The fact that Benson was the railroad terminus for over a year stimulated the development of the town (Anonsen 1929:18). In 1875, the town contained four general stores, two drug stores, three hotels, two machinery houses, a bank, and two saloons (Anonsen 1929:18). Benson served as the market for a wide territory to the west and provided agricultural and domestic goods for farmers across the region. During 1875 alone, area merchants sold some 1.5 million feet of lumber, 1.2 million shingles, 170,000 lath, 380 reapers, mowers, and harvesters, 240 seeders, 10 threshing machines, 160 plows, 137 wagons, and 61 sulky hay rakes (Anonsen 1929:18). In 1876, the U.S. Land Office was moved from Litchfield, Minnesota, to Benson, further stimulating business in the town (Anonsen 1929:35). The county's first newspaper, the *Swift County Censor*, was published in Benson in 1874. This was followed by the *Benson Times*, *Swift County Advocate*, *Swift County Press*, *Swift County Democrat*, *Swift County Monitor*, and *Swift County Standard* during the last decades of the nineteenth century.

Immigrants were arriving in Benson and Swift County each day by train and covered wagon with the hopes of homesteading in the region. Over 50% of the 3,082 foreign born settlers in the county were from Norway and Sweden, and another 10% were from Germany. Well over half of the 4,391 native born settlers to the area were from Minnesota; both Wisconsin and New York provided large groups as well (Anonsen 1929:24). Agriculture was the primary activity in Swift County and wheat the principal crop. Over 260,000 bushels of wheat were shipped from Benson and Kerkhoven in 1875.

While immigration continued to be strong throughout the decade, the terrible swarms of grasshoppers that descended on the area in 1876 caused massive crop losses and slowed the influx of settlers. Although the pests disappeared in July

1877, the damage was tremendous and “mortgaged and deserted farms became the rule” (Anonsen 1929:23). Even with the terrible insect damage to their crops in mid-century, the population of Swift County grew from 600 to over 7,000 between 1870 and 1880; Swenoda Township was home to 200 residents in 1880. The Benson of 1880 was home to over 450 inhabitants and the business interests had grown as well, with over 30 stores and shops, including a bank and two grain elevators (Anonsen 1929:24). A steam powered flour mill was established in Benson in 1881, but this mill, like those in Kerkhoven and Murdock, soon lost out to the large regional milling centers like Minneapolis (Anonsen 1929:60). The village of Benson was home to the first county courthouse, constructed in 1876, and the village was formally incorporated in 1877. Education in Swift County was well established by 1880, with over 1,474 students taught by 49 teachers; the school term averaged 4 months in 1880 (Anonsen 1929:62).

The average size of a farm in Swift County in 1880 was 170 acres, and the per acre value of land and buildings was over \$8.00 (Anonsen 1929:26). Out of the total 80,783 improved acres, 44,396 were devoted to wheat, 8,037 to oats, 1,809 to corn, 885 to barley, and 9,642 to hay and forage. In addition, Swift County farmers produced over 50,000 bushels of potatoes. Dairy production included 180,000 lbs. of butter and 2,600 lbs. of cheese, mostly for home consumption (Anonsen 1929:27).

It was into this rapidly growing area, with family names reminiscent of Garrison Keillor's fictional Lake Wobegon—Hanson, Thorson, Paulson, Knudson, Halverson, and Ivorsen—that Anna and Lars Christopherson built, or rather dug, their first home.

The Christopherson/Goulson Family

Anna Byberg was born in the fishing village of Byneset, Norway, on December 3, 1847. Anna was the daughter of Ole Olsen Byberg, a

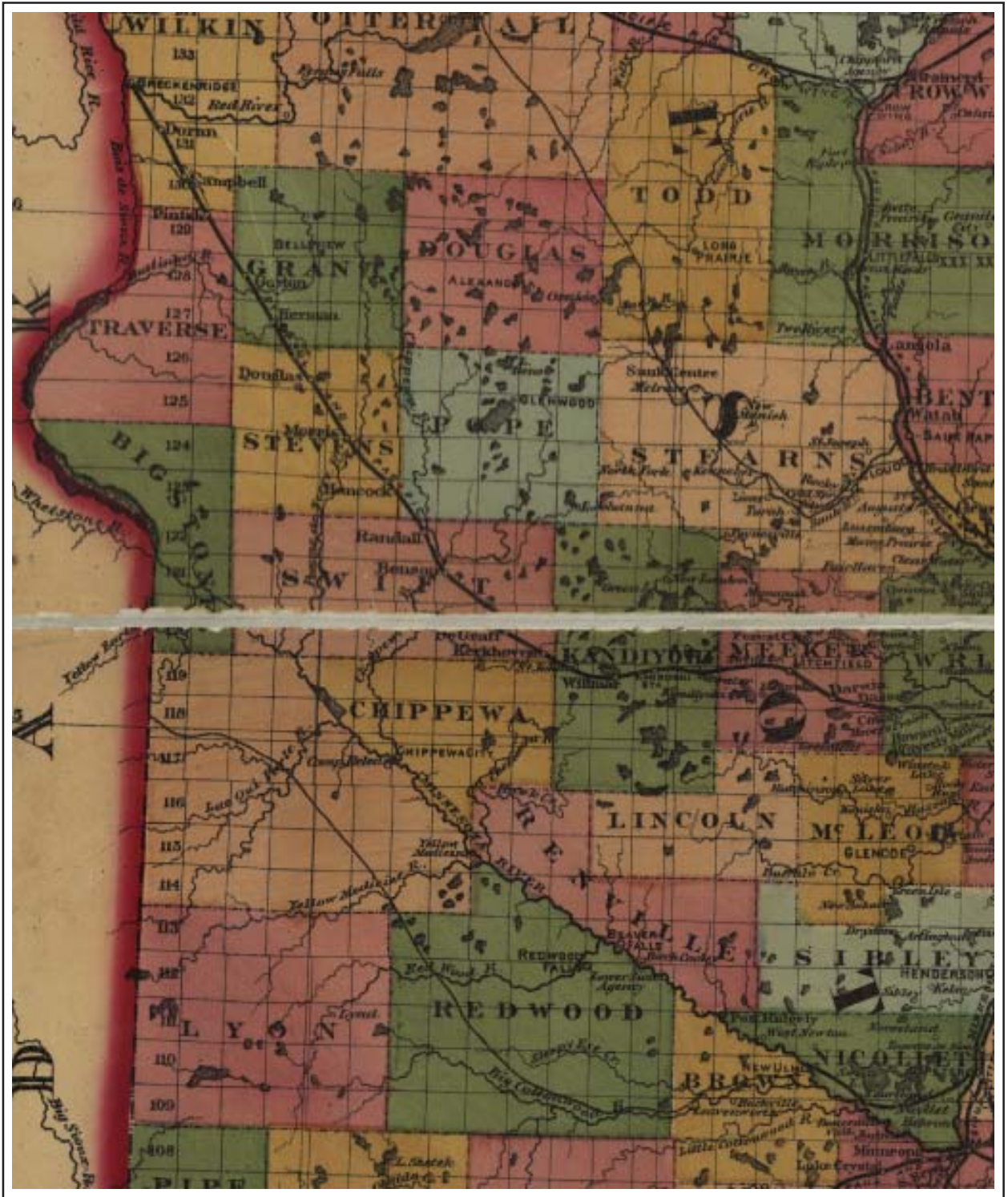


Figure 2.1. Railroad and post office map of Minnesota and Wisconsin (H.H. Lloyd and Co., New York, 1871).

“husmann” or tenant farmer, and his wife Marith. In 1868, the 21-year-old Anna (Figure 2.2) immigrated to Wisconsin with brother Ole, and possibly a sister, Emma. The duo or trio traveled by boat to the port of Quebec and then on to Wisconsin (Goulson 1972; Chippewa County Historical Society 1993:222).

Anna married Lars Christopherson in the Norwegian Lutheran Church in La Crosse,

Wisconsin, on January 3, 1869, and the couple likely set off to homestead in Minnesota in late 1869 or early 1870. Census data places Anna, Lars, and their first child in Chippewa Co., Minnesota, by June 1870 (U.S. Ninth Census - Population Schedules, Chippewa County, MN, 1870). The 35-year-old Lars is listed as a farmer and his place of birth is recorded as Norway. Anna, then 22 years old, is recorded as keeping house. Their 8 month old son Ludwig was reported to have been born in



Figure 2.2. Anna Byberg Christopherson Goulson, ca. 1910.

October 1869 in Wisconsin. The 1870 agricultural census data indicates that Lars and Anna had 5 acres of land under cultivation. They are listed as owning 1 milk cow, 2 working oxen, and 1 other type of cattle, all together valued at \$175.00. In addition, they reported producing 100 lbs. of butter and 10 tons of hay with an estimated value of \$85.00 (U.S. Ninth Census - Agricultural Schedules, Chippewa County, MN, 1870). By 1870, Chippewa County had over 9,524 acres of improved farmland. While the average farm size in Minnesota was 139 acres in 1870, the farms in Chippewa County had improved very few acres; the census suggests that improved lands ranged from just 2 acres to over 40 acres with the average being closer to 10 acres. Having only settled on their land at most a year before the census, the Christophersons were not unusual in having just 5 acres of improved land. Anonsen (1929:28) notes that

the first year or two, five to ten acres of land were broken up and planted to wheat and potatoes. With the markets so far away as to make unprofitable the transportation of the grain in ox carts, it did not pay the farmers to raise much more than would take care of the immediate needs of the family. Much time was spent in fishing, trapping, and hunting, the sale of furs helping to secure the necessary household articles.

In general, wheat production was just beginning among farmers in Chippewa County. The wheat harvest in 1870 was just 9,000 bushels countywide, while 10 years later it had risen to over 400,000 bushels in Swift County alone.

While Lars's homestead patent to the dugout property was not obtained until May 1875, the couple had clearly settled, built the house, and were proving their claim prior to recording the patent (Homestead Certificate No. 2741, filed in Litchfield, MN, May 7, 1875) (Figure 2.3). The Christopherson's homestead patent contained 160

acres consisting of the west half of the southeast quarter and the east half of the southwest quarter of Section 32 in Township 120N and Range 40W (Figure 2.4). The earliest record of Lars paying taxes in Swift County is an 1875 tax bill on personal property and, as would be expected, in 1876 he paid his first real estate tax on land valued at \$264.00. Between 1875 and 1878, the value of Lars's personal property more than doubled. In 1878, he paid tax on a personal estate of \$383.00 and real estate tax on land valued at \$675.00. The tax collector noted that his tax of \$35.04 included "\$24.10 of grasshopper tax not paid previously" (Swift County Tax Records 1878). As mentioned above, 1876 and 1877 were years of terrible grasshopper damage, and Lars's extra tax must have been assessed to help cover costs associated with the major crop loss during this period.

The Christopherson couple mortgaged their land for \$200.00 in November of 1875, and again for \$200 in 1878. In both cases, the liens were paid off within a couple of years; it is possible that the mortgage was to secure a loan for the purchase of the farming equipment and supplies. Lars and Anna had five children during their stay in the dugout, Ludwig (b. 1869), Olena (b. 1871), Aaron (b. 1873), Sophia (b. 1875), and Julius (b. 1877) (Chippewa Co. Historical Society 1993:222). Lars died on Sept. 1, 1878, only a year after the birth of their last child; family tradition holds that Lars and sons Ludwig and Julius died of scarlet fever and this is confirmed by the 1880 census that fails to record either son. Lars Christopherson and sons Ludwig and Julius are reportedly buried in unmarked graves in an area intended to serve as a cemetery for the Mandt Lutheran Church in Chippewa County (Chippewa Co. Historical Society 1993:222).

After what was surely a long fall and winter on her own, Anna married Hans Goulson on May 11, 1879 (Figure 2.5). The newlyweds continued to live in Anna's dugout home with her three

HOMESTEAD PATENT.

United States }
 Lars Christopherson }
 1875 at 4 o'clock P.M. A. D.

Register of Deeds.

Homestead Certificate No. 2741 Application 125-9

THE UNITED STATES OF AMERICA,

TO ALL TO WHOM THESE PRESENTS SHALL COME--GREETING:

WHEREAS, There has been deposited in the General Land Office of the United States, a CERTIFICATE of the Register of the Land Office at Litchfield Minnesota whereby it appears that pursuant to the Act of Congress approved 20th May, 1862, "To secure Homesteads to actual Settlers on the public domain," and the Acts supplemental thereto, the claim of Lars Christopherson

has been established and duly consummated in conformity to law, for the

West half (W 1/2) of the South East quarter (S E 1/4) and the East half (E 1/2) of the South west (S W 1/4) of Section Thirty two (32) in Township One hundred and twenty (120) of Range Forty (40) in the district of land subject to sale in a District in Minnesota containing One hundred and sixty (160) acres

according to the Official Plat of the survey of the said land, returned to the General Land Office by the Surveyor General.

Now Know Ye, that there is therefore granted by the UNITED STATES, unto the said Lars Christopherson


the tract of land above described: TO HAVE AND TO HOLD the said tract of land, with the appurtenances thereof, unto the said Lars Christopherson and to his heirs and assigns, forever.

In Testimony WHEREOF, Victoria C. Wood President of the United States of America, have caused these Letters to be made Patent, and the Seal of the General Land Office to be hereunto affixed.

GIVEN under my hand, at the City of Washington, this 7th day of December in the year of our Lord one thousand eight hundred and seventy five and of the Independence of the United States the 5th year.

By D. E. Connel Secy.

A. W. Hancock Recorder of the General Land Office.



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Figure 2.3. Lars Christopherson's homestead patent, May 7, 1875.

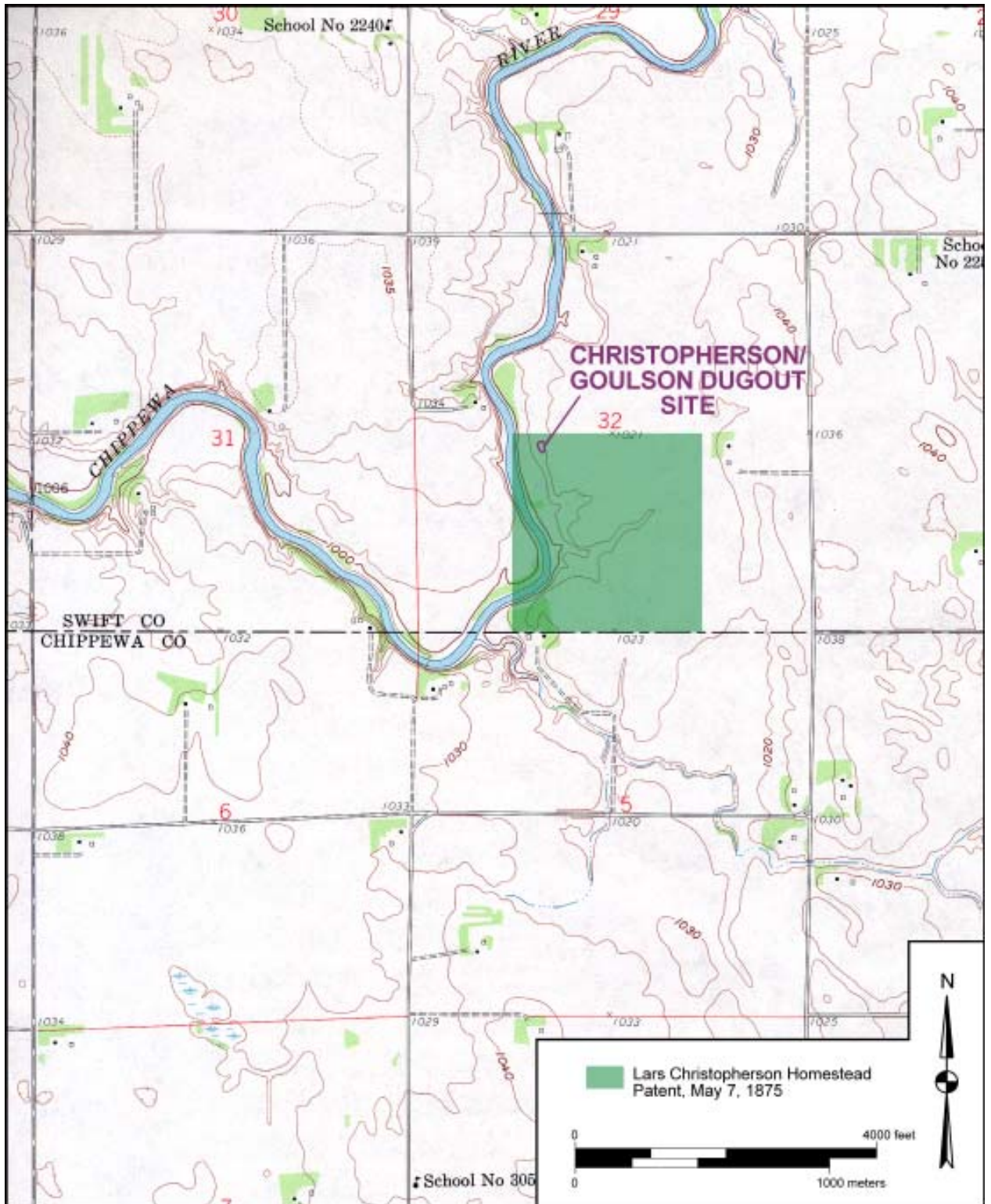


Figure 2.4. Location of Christopherson homestead patent (U.S.G.S. 7.5' Gracelock, NW topographic quadrangle, 1958 [photorevised 1977]).



Figure 2.5. Hans Goulson and Anna Christopherson's marriage certificate, May 11, 1879.

children. Hans Goulson (Figure 2.6) and his brother Ole were second generation Norwegian-Americans who had traveled to Swift County, Minnesota, from their home in Rock County, Wisconsin, in the early 1870s. Hans, the son of Guul Guttormson Ildjarnstadhaugen and Kari Olsdatter Skølt, was born in Brodhead, Wisconsin, on November 13, 1858. Hans's father had immigrated to Rock County, Wisconsin, in 1843

(Chippewa Co. Historical Society 1993:222). Ole first paid personal property tax in Swift County in 1876 and Hans in 1879; Hans is recorded with a personal estate of over \$450, the 4th largest in the county. Hans was apparently living in the vicinity of the Christopherson homestead, perhaps with his brother Ole, and clearly knew the family. Anna and Hans's first child, Gustav, was born in the dugout in 1879.



Figure 2.6. Hans Goulson taken in Benson, MN, ca. 1870s.

The 1880 census records a household including Hans, a 22-year-old farmer, the 31-year-old Anna, Anna's children Olena, Aaron, and Sophie, and the 6-month-old Gustav Goulson; the family was still residing in Swenoda Township in Swift County (U.S. Tenth Census - Population Schedules, Chippewa County, MN, 1880). By 1880, the family had 80 acres of tilled land and 80 acres listed as unimproved (U.S. Tenth Census - Agriculture Schedules, Chippewa County, MN, 1880). The value of the Goulson farmstead, including land and buildings, is listed as \$1,000.00, and they have \$300.00 worth of farming implements and machinery. The farm's livestock, consisting of 4 milk cows, 5 "other" cattle, and 55 poultry [40 chickens], is valued at \$400.00. The farm produced 250 lbs. of butter, 30 lbs. of cheese, and 100 dozen eggs in 1879. It seems likely that the family was selling eggs and possibly butter and, in fact, family tradition reports that Anna regularly sold eggs for cash. The Goulson's crops in 1879 included 5 acres of barley, producing 80 bushels; 2 acres of corn, producing 75 bushels; 7 acres of oats, producing 400 bushels; one quarter acre of potatoes, producing 40 bushels; and 55 acres of wheat, producing 650 bushels. The farm had grown significantly since the 1870 census, and it seems that it had recovered from the devastation caused by grasshoppers in 1876 and 1877.

The property containing the dugout continued to be taxed to Lars Christopherson's estate until 1912, when it is finally transferred to Anna Goulson via a probate decree (Swift County Probate Records, Final Decree, Feb. 26, 1912) (Figure 2.7). Anna received "the homestead herein described for and during her natural; the remainder of the land went to Olena Vikre (a married daughter), Sophie Moe (a married daughter), and Aaron Christopherson (a son) (Swift County Probate Records, Final Decree, February 26, 1912). Anna's homestead portion was described as the west half of the southeast quarter of Section 32, Township 120N, Range 40W (Figure 2.8). The other section of the original Christopherson homestead patent, the east half of the southwest

quarter, was likely transferred to Olena, Sophie, and Aaron.

By the time their son Carl was born in 1881, the family had built a wood frame house on land located about a half mile south of the dugout, as family tradition reports that only Gustav was born in the dugout home. The new home was constructed on the land described as Anna's homestead portion. Hans paid personal property tax in Swift County until 1892, and real estate tax until his death in 1908, suggesting that the family moved from Swift to Chippewa County around 1892 (Swift County Tax Records, 1879-1908). It is possible that this change in paying personal property taxes from Swift to Chippewa counties indicates that the family moved from their ca. 1880 frame house into the larger farm house that is currently used as the farm dwelling, or that they physically moved the ca. 1880 frame house from Swift to Chippewa County and then back to Swift at a later date to be used as a granary. The ca. 1880 frame house is currently located in Swift County and the newer house is located approximately 75 ft. south and just across the county line in Chippewa County.

In 1903, Hans filed a homestead patent for land in Mandt Township, Chippewa County, immediately south of the Christopherson homestead tract. This parcel is described as Lot #3 (NE $\frac{1}{4}$ NW $\frac{1}{4}$) of Section 5 in Township 119N, Range 40W, containing 34 acres and 73/100s of an acre (Homestead patent dated February 26, 1903) (see Figure 2.8). This land would have been immediately south of the family's ca. 1880 wood frame house (see Figure 2.8), and containing the present farm house.

In November 1906, Hans and Anna mortgaged their lands to Gustav Eliason for the sum of \$2,000.00 (Chippewa County Mortgages, November 23, 1906, p. 108). At this point, the family farm contained 154 acres and 73/100s of an acre and consisted of the east half of the

southwest quarter and the southwest quarter of the southwest quarter of Section 32, T120N, R40W and Lot #3 of Section 5 in T119N, R40W (see Figure 2.8). Hans and Anna are listed as residents of Chippewa County by this date. The couple eventually had seven children, Gustav, Oscar, Henry, Thomas, Julia, Clara, and Carl, six of whom were born in the family's wood frame farmhouse

located on land south of the dugout site. In 1908, Hans traveled to Montana in search of yet another new homestead for his large family. On the return trip, he was caught in a snow storm in Williston, North Dakota, and died of pneumonia, leaving Anna alone again with the responsibility for a large family (Chippewa Co. Historical Society 1993:222). Anna kept her family together on the

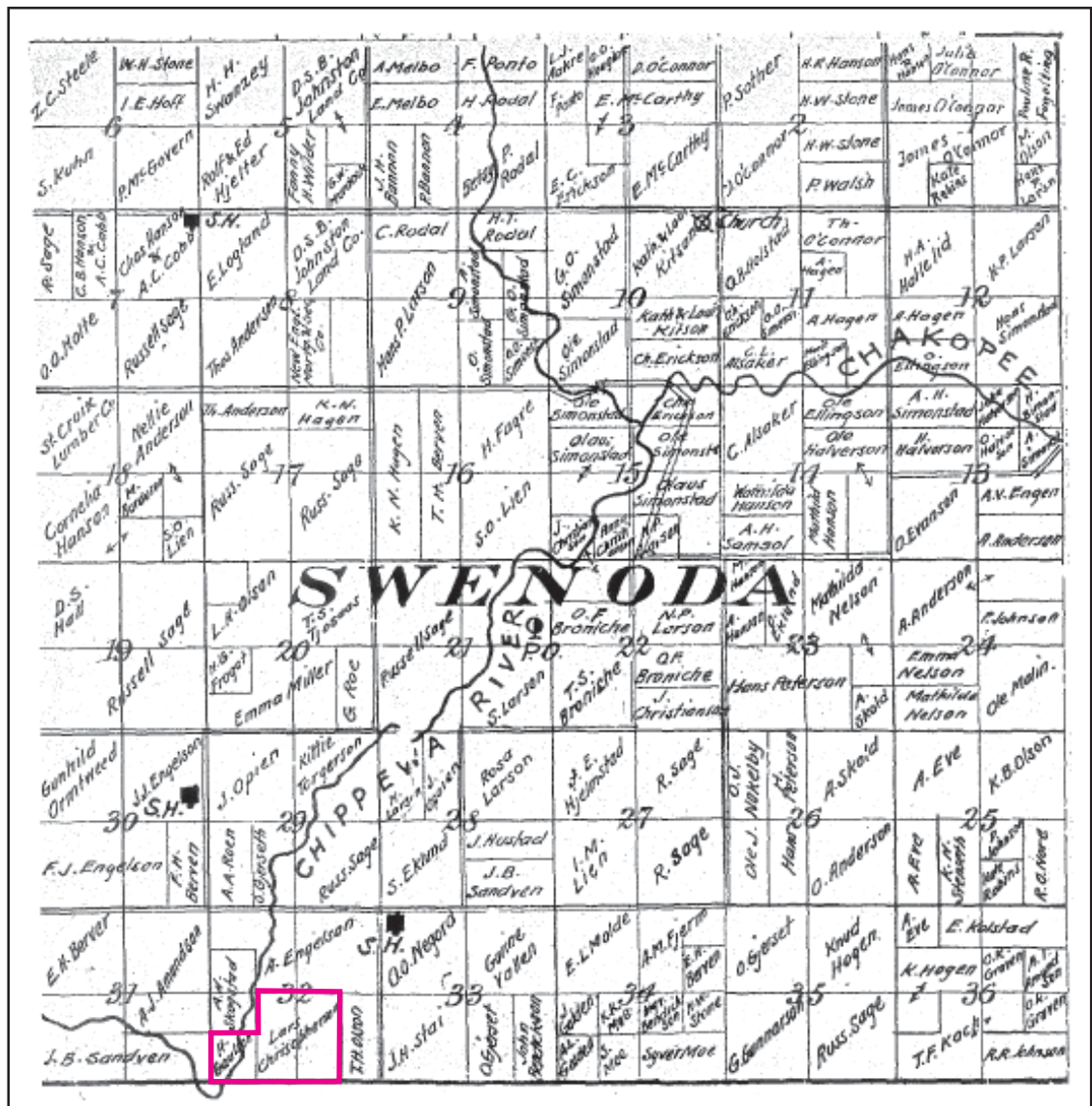


Figure 2.7. Map of Swenoda Township showing H. Goulson and Lars Christopherson properties, 1902.

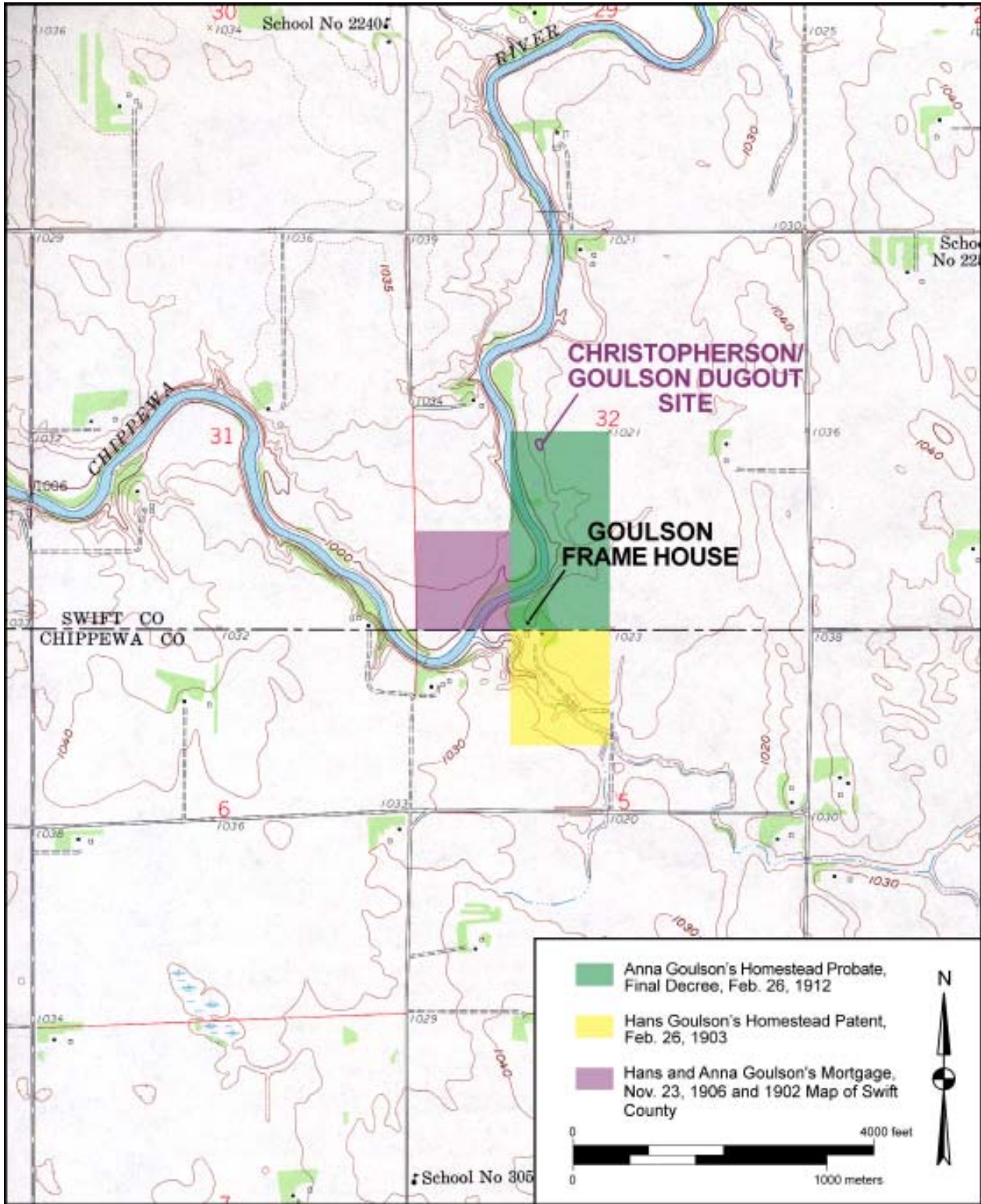


Figure 2.8. Location of Anna Christopherson Goulson's homestead probate, Hans Goulson's homestead patent, and Hans Goulson's property in Swift County (U.S.G.S. 7.5' Gracelock, NW topographic quadrangle, 1958 [photorevised 1977]).

farm and died in 1918. Hans and Anna are buried in the cemetery at Mandt Lutheran Church in Chippewa County (Figure 2.9).

The dugout homestead site remained on Goulson land for much of the twentieth century, as part of the farm of Anna's son Gustar Goulson, and later his son Curtis. Thomas and Mathilda Goulson raised their family of four children, Mary Ann (b. 1924), Hilton (b. 1930), Richard (b. 1935), and Constance (b. 1940), on the Chippewa County portion of the farm (see Appendix B). Richard's son Gregg took over the farm in the 1990s, and by that time the parcel that held the dugout depression had been sold to neighbor Byron Olson.

Archaeological and Architectural Context

Dugout Housing on the Minnesota Frontier

In approaching the excavation of a dugout site, it became clear that contextual information on dugout houses would be essential. Vogel and Stanley (1993:60) suggest that the dugout was common in the U.S. and Canada as "both a temporary shelter on the frontier and as a subsistence dwelling occupied by pioneer farmers." They note that the sod house and dugout of the Great Plains are adaptations of a traditional dugout type brought to North America by European colonists. Although the exact origins of the dugout



Figure 2.9. Mandt Lutheran Church, Mandt Township, Chippewa County, MN.

are unclear, it appears that this house type was selected for life in a treeless environment (McAlester and McAlester 1990:86-87). Peterson (1992:46) notes that

much has been recalled and written, even by those who endured the hardships of life in a cabin, or “soddie,” that romanticizes the nature of these dwellings and perpetuates a myth that “the good life” was something forged in simple circumstances and rudimentary existence. The temporary quality of almost all subsistence shelters on the frontier indicates that “the good life” in these mean surroundings was soon abandoned for an even better life in a larger, more convenient, and comfortable house.

Dugouts, pit houses, and cellar-set houses were clearly used in the early seventeenth-century Massachusetts Bay Colony and in the early Chesapeake Bay region (Carr 2000). Kimball (1922:5-6) and Morrison (1952:9) also document dugout use among the inhabitants of colonial Philadelphia and New Amsterdam. The type apparently persisted in some portions of New England into the late nineteenth century (Vogel and Stanley 1993:60). Thus, it is not surprising to find it showing up in the Great Lakes region as New England farmers moved west. For instance, a settler to the Michigan Territory in the 1830s “lived in a dugout shanty built on a sloping bank, with a fireplace dug into the hillside, and a hole pierced through the turf roof for a chimney” (Vogel and Stanley 1993:60).

It seems clear that the dugouts of Minnesota had precursors in both Scandinavia and other European countries. Sod and dugout houses are known from Iceland, Norway, and Sweden, and dugouts were typical in southern Sweden for an “extremely poor segment of the farm people who did not own any land...” (Ulf Beijbom to Jean

Caspers, 1980). Caspers notes that in the nineteenth century, poorer country people in Sweden often built cottages “half dug into the hill side and usually built of stone....” (Caspers 1980:29). As discussed above, the dugout or pit house was used in North America from the earliest periods of European settlement. It seems likely that the use of sod or dugout houses was familiar to the Scandinavian immigrants to the Midwest and had become a typical housing solution for native-born settlers as well.

Jean Caspers (1980:8) in her *Compendium History of the Dugout and Sod House in Minnesota* writes that a dugout is a structure dug into a hill side or the ground (Figure 2.10). She distinguishes this from a sod house or building which is “an above ground house built of sod in a manner similar to that of laying brick” (Caspers 1980:8). Caspers cautions that in oral tradition, early records, and actual practice the two house types were often mixed.

In his thesis on the Ole Palme dugout, Broste (1995:172) distinguishes the sod house, “made by laying courses of sod block on a level ground surface,” from two types of dugouts. The Type I Dug Out was built on level ground but was semi-subterranean (Figure 2.11). “Their floors were dug into the ground rather than left at ground surface. The upper portion of the walls were of sod or logs, while the lower were of the soil profile.” Broste’s Type II Dug Outs were built into a slope, as noted by Caspers. The walls of these structures “were dug into the hillside....[and] utilized the soil profile and sod block or logs” (Broste 1995:173).

Caspers argues that early settlers in Minnesota built dugout style houses and outbuildings for three principal reasons: the need to quickly establish a shelter prior to the severe Minnesota winter, the cost of lumber due to the lack of or distance to railroads, and the general shortage of timber in the region. Vogel and Stanley (1993:60) add that the structure had the advantage



Figure 2.10. Sketch of a dugout house (from Noble 1981:15).

of being warm in the winter and cool in the summer. Caspers's research suggests that dugouts were more common in Minnesota than sod houses; however, Vogel and Stanley (1993:60) argue that the dugout was probably only popular in the south and western prairie counties of Minnesota. Vogel and Stanley (1993:61) also note that the type was used for structures other than dwellings, such as barns, stables, and storehouses. While acknowledging the extensive use of the dugout and "soddie," Peterson (1992:47) suggests that "the log cabin was the kind of subsistence shelter that pioneers most frequently built in the Upper Midwest."

Although dugout houses had several advantages, they also had some severe drawbacks. Because of their belowground position and lack of or limited number of windows they were poorly lit and ventilated. The structures were also generally very small, due to the amount of labor required to dig the initial cellar hole and the problems of spanning a large area with a roof constructed of small pole rafters. Finally, surface and belowground drainage made it very difficult to maintain a dry interior space (Noble 1981:16).

As Broste's and Caspers's research indicates, the dugout was typically excavated into a hill or slope, and the walls above the hole built up with "several tiers of logs or a lumber framework" (Caspers 1980:8). The walls above the ground level could also be built up using sod blocks when available; this was often the case for the gable wall that contained the door (Noble 1981:14-16). A roof was "constructed of pole rafters, brush, hay, or dirt and sod." These roof structures were notoriously dirty, raining down pieces of brush and fine dirt, and were also very likely to leak profusely during rain storms (Noble 1981:14). Popular names for the structure included "sod cellar, gopher hole, root house, cave, and dirt nest."

Caspers describes a wide variation in the construction methods and materials of dugouts. Vowing that "his dugout would at least be a comfortable place to live, rather than a dwelling...with nothing but earth for the walls and floor and 'not a piece of lumber in them,'" Christian Ahlness excavated a four foot hole for his dugout, added wooden walls, 2 windows, and a homemade door (Caspers 1980:14). Laura Ingalls Wilder (1953:10-11) writes of her family's dugout

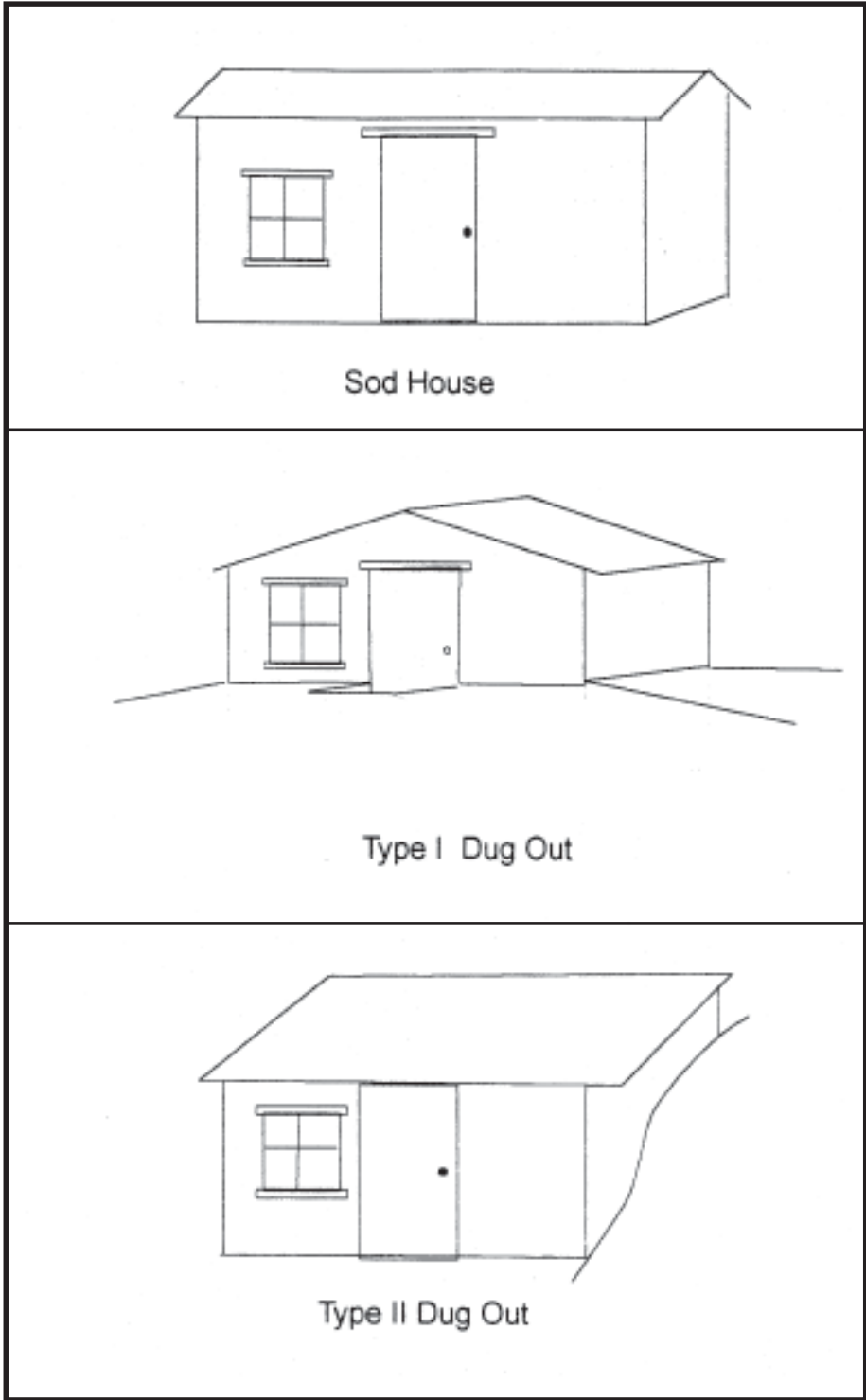


Figure 2.11. Types of sod and dugout houses (after Broste 1995:175).

It was one room, all white. The earth walls had been smoothed and whitewashed. The earth floor was smooth and hard. There was a small greased-paper window beside the door. But the wall was so thick that the light from the window stayed near the window.

That front wall was built of sod. Mr. Hanson had dug out his house and then he had cut long strips of prairie sod and laid them on top of one another, to make the front wall. The ceiling was made of hay. Willow boughs had been laid across and their branches woven together....

Writing in 1929, historian Stanley Anonsen (1929:27) described the construction of a typical Swift County dugout:

a search was made for the steepest hill site, preferably one facing south. A small dugout, about 10 or 15 feet square...was then scooped out. If the hill was fairly steep, only the upper walls and roof had to be built. For these walls, stakes were driven into the ground around the hole, willow branches woven on them, and this lattice work given a coat of mud plaster. A similar latticework was made for the roof, and over it was laid hay, dirt, and sod.

Although usually fairly small, dugouts could vary in size from 7 x 10 ft. to more than 18 x 24 ft. (Broste 1995; Caspers 1980:41). The interior space was usually one room, but could be divided into two rooms on occasion. Interiors walls could be bare earth, whitewashed with lime, or lined with stone or wood. Walls were also lined with cloth such as canvas or burlap. Although floors were often wood boards, they were just as typically bare, packed earth.

Caspers (1980:15) suggests that dugout furnishings were “simple and usually homemade.” “A cast iron or sheet iron stove was used for cooking,” and the furniture might include a trunk or table, a cupboard, and a few chairs or benches. “The children slept in a small draw bed,” she notes, “which was kept under the parent’ bed, or they slept on the floor” (Caspers 1980:15). An 1860s description of a dugout interior survives from Camp Township in Renville County, Minnesota:

Grandpa and Grandma Boyum had brought a wooden chest, flat top (from Norway) and in it they kept clothing, bedding, dishes, cooking equipment, her sewing and knitting. When they lived in the cave [dugout] this chest held all these things and when Grandma wanted to make a meal she opened the chest, took out the things she needed, closed the chest and it was then the table. Grandpa made benches of logs, split in half and used four sticks for legs (Bernice Boyum quoted in Caspers 1980:39).

Although thought of as a temporary structure by many, the dugout often remained a family’s principal residence as they established themselves on a new farm. Caspers (1980:39) reports that Hans Hanson Sagnes and his wife, Bertha, built a dugout in Hawk Creek Township, Renville County, and lived there for 3 years. “After that, they built a larger dugout. The sides were logs and the gabled roof was rails covered with straw and sod. They lived in this dwelling for seven years.”

Previous Archaeological Excavations at Dugout Sites

Only four previous dugout excavations have been completed and reported on in Minnesota, and these projects range from survey level investigations to full excavations. Several dugouts have also been excavated in the Dakotas (Borchert et al. 1982; Borchert, Montgomery, and Vogel

1982). The work on dugouts in Minnesota has detailed structures located in Washington and Ramsey counties in the southeastern part of the state and in Jackson and Watonwan counties in the southwestern portion of the state.

The Rick Lewis dugout site (21WA55) overlooks the Mississippi River in Washington County. The site consists of three depressions “scooped out of the side of a steep south facing slope” (Vogel and Stanley 1993:61) (Figure 2.12).

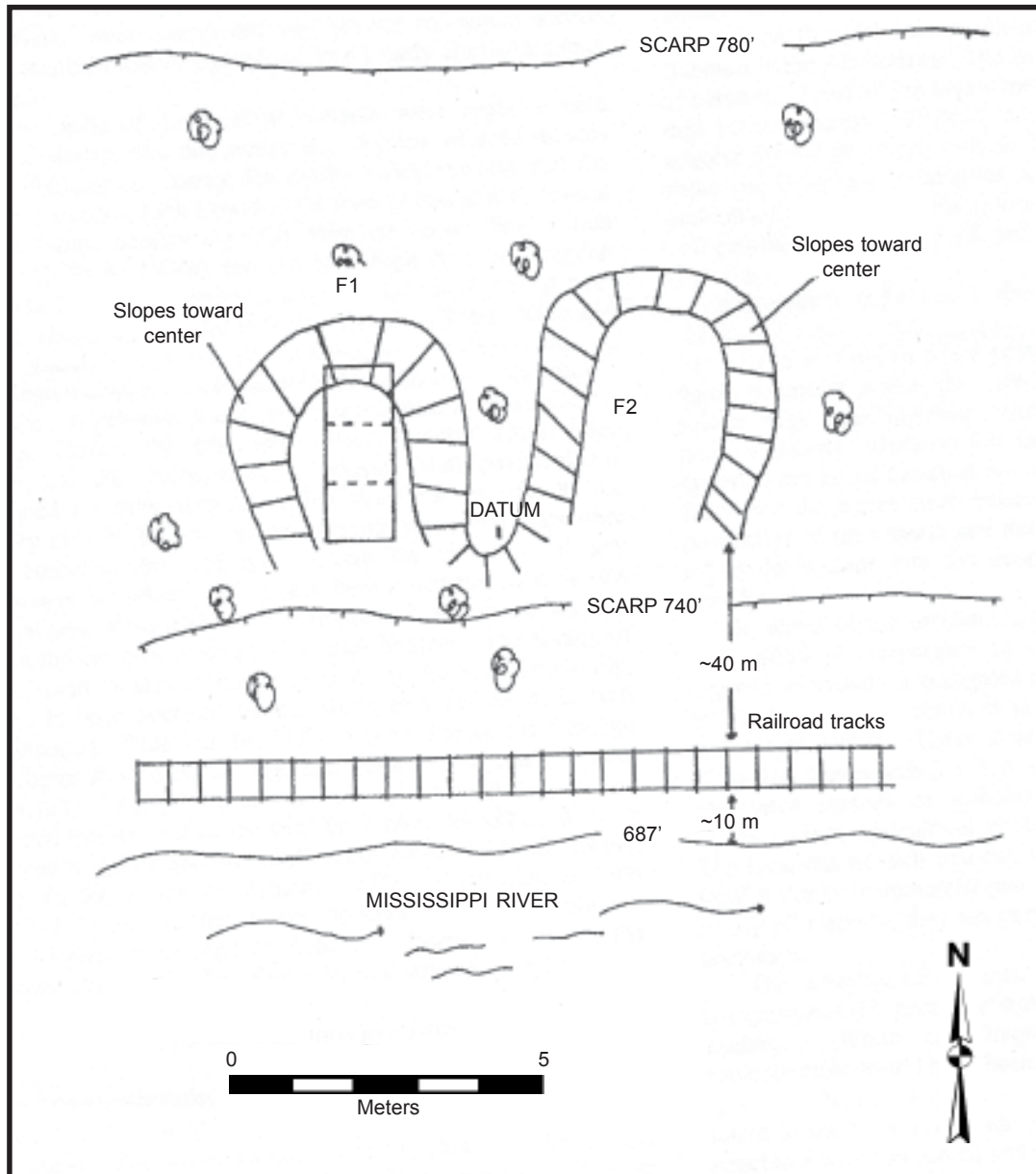


Figure 2.12. Site plan of the Rick Lewis dugout site (21WA55) (from Vogel and Stanley 1993:63).

The three U-shaped depressions open onto a bench or terrace above a steep escarpment along the river. Two of the dugouts measure approximately 15 x 13 ft. (4.5 x 4 m), and the other 18 x 13 ft. (5.5 x 4 m) (see Figure 2.12) (Vogel and Stanley 1993:61). Each is 6-7 ft. (2 m) deep and flat bottomed with steep side walls. Excavation of one of the depressions using a 1-x-3 m trench identified a strap hinge and several pieces of barbed wire, but no architectural or domestic debris. The hinge appeared to be an American made strap hinge of the type pictured in late nineteenth-century mail order catalogues, such as the 1895 Montgomery Ward catalogue (Vogel and Stanley 1993:64).

The authors note that the structure is similar to several early twentieth-century homestead dugouts that they had excavated in the Badlands of North Dakota (Borchert et al. 1982; Borchert, Montgomery, and Vogel 1982). They note that these sites were typically “shallow, elongated depressions” measuring 10-16 ft. (3-5 m) wide and 13-20 ft. (4-6 m) across with “associated scatters of artifacts, including household items, bricks, boards, agricultural implements, and building hardware” (Vogel and Stanley 1993:64). Although the strap hinge recovered from the site suggests some wood fabrication for the dugout structure, the lack of nails, etc. seems to indicate that it might have been torn down and removed or that it used relatively little wood framing. Unfortunately, extensive archival research failed to provide specific documentary details about the site occupants. The site was part of the Daly farm from the 1870s to 1900s and the Smallidge farm from the 1930s to 1970s, however, there was no specific records to tie the dugout site to either farm occupation (Vogel and Stanley 1993:64).

The Hoxie Rathbun dugout site (21JK22) was identified as a circular depression perched on a hillside above the Des Moines River in Jackson County (Kapler 1990) (Figure 2.13). The depression measures approximately 20 x 22 ft. (6 x 7 m) and is 6-7 ft. (2 m) deep; a smaller depression was found at the north end or bluff end

of the larger depression (Figure 2.14). Four trenches were excavated in the sides of the depression and a single test unit in the base.

The artifact assemblage is sparse and includes only a cut nail, two window glass fragments, two pieces of ironstone (likely post 1850), and several animals bones ((Kapler 1990:17-21). Little documentary evidence exists about the site occupants, however, oral tradition links it to the mail route stop run by Hoxie Rathbun in the mid-1850s (Kapler 1990:5-6). Kapler estimated the depth of the dugout to be approximately 7.5 ft. (2.24 m) below the present surface, and hypothesized that the “roof may have been constructed flat across the side walls” (Kapler 1990:22).

One of the more thoroughly excavated dugout sites is the Gibbs Farm dugout (21RA26) in Ramsey County (Blair and Forsberg 1996). This site consisted of a dugout cellar excavated into a slight hillside; the cellar measured approximately 10.5 x 12.5 ft. (3 x 4 m) and 4 ft. (1.2 m) deep, with a narrow entryway that ran to daylight (Figure 2.15). The site was home to Heman and Jane Gibbs, who built the structure on their 160-acre homestead ca. 1849. The Gibbs lived in the dugout until ca. 1854, when they abandoned it for an aboveground frame house.

The excavation of the Gibbs dugout produced several thousand artifacts. Architectural materials included over 100 cut nails and 18 sherds of window glass. Domestic and farm artifacts include a wide variety of ceramics, glass bottles, coins, eating utensils, watch parts, scissors, tools, and animal bones. However, after it was abandoned, the dugout depression was filled with a great deal of refuse representing the continued use of the property by the family; their new house was quite close to the initial dugout location and the cellar became a convenient disposal pit (Figure 2.16). The materials related to the actual occupation of the dugout were relatively few in comparison, including 18 ceramic sherds (shell-edged

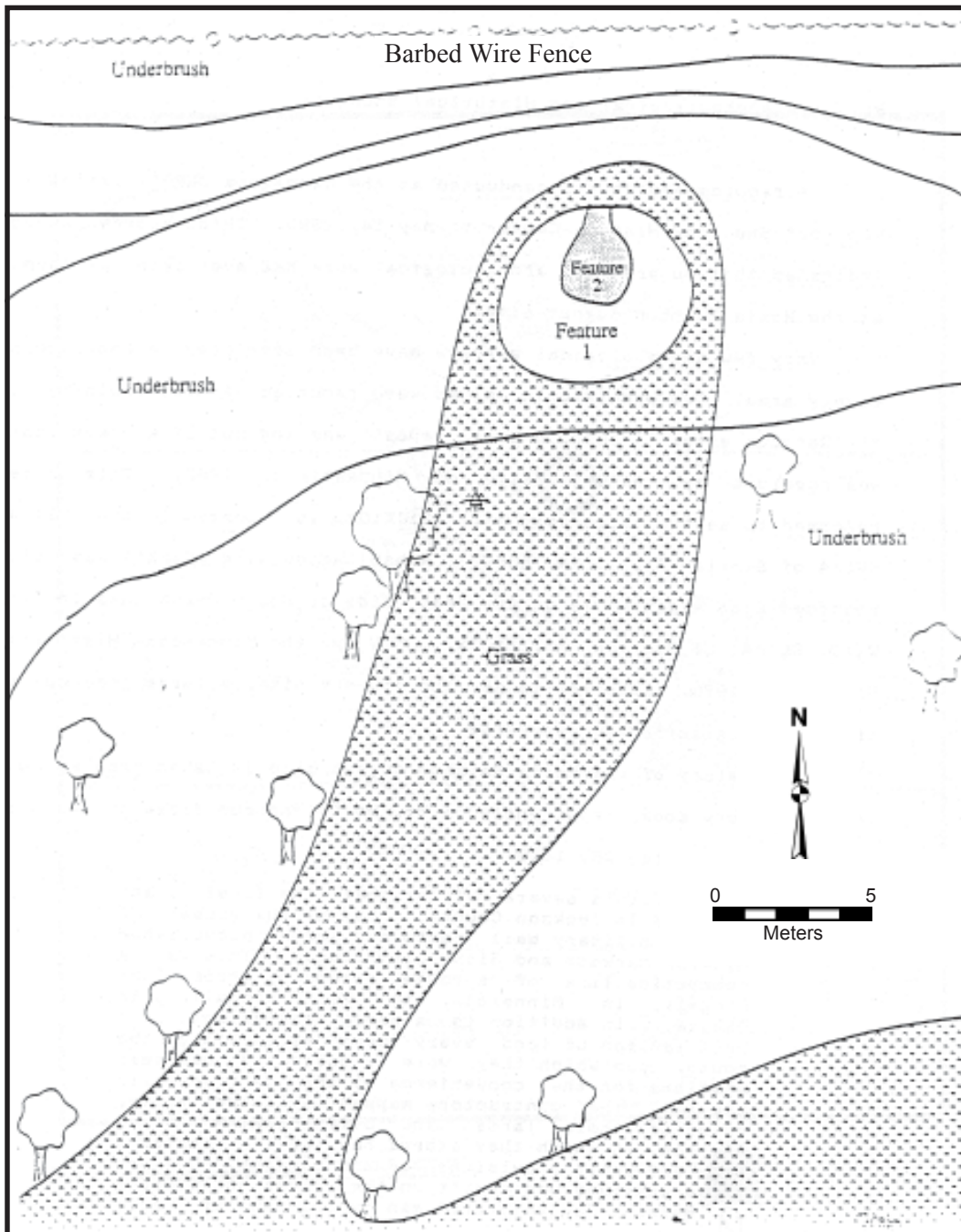


Figure 2.13. Site plan of the Hoxie Rathbun dugout site (21JK22) (from Kapler 1990:6).

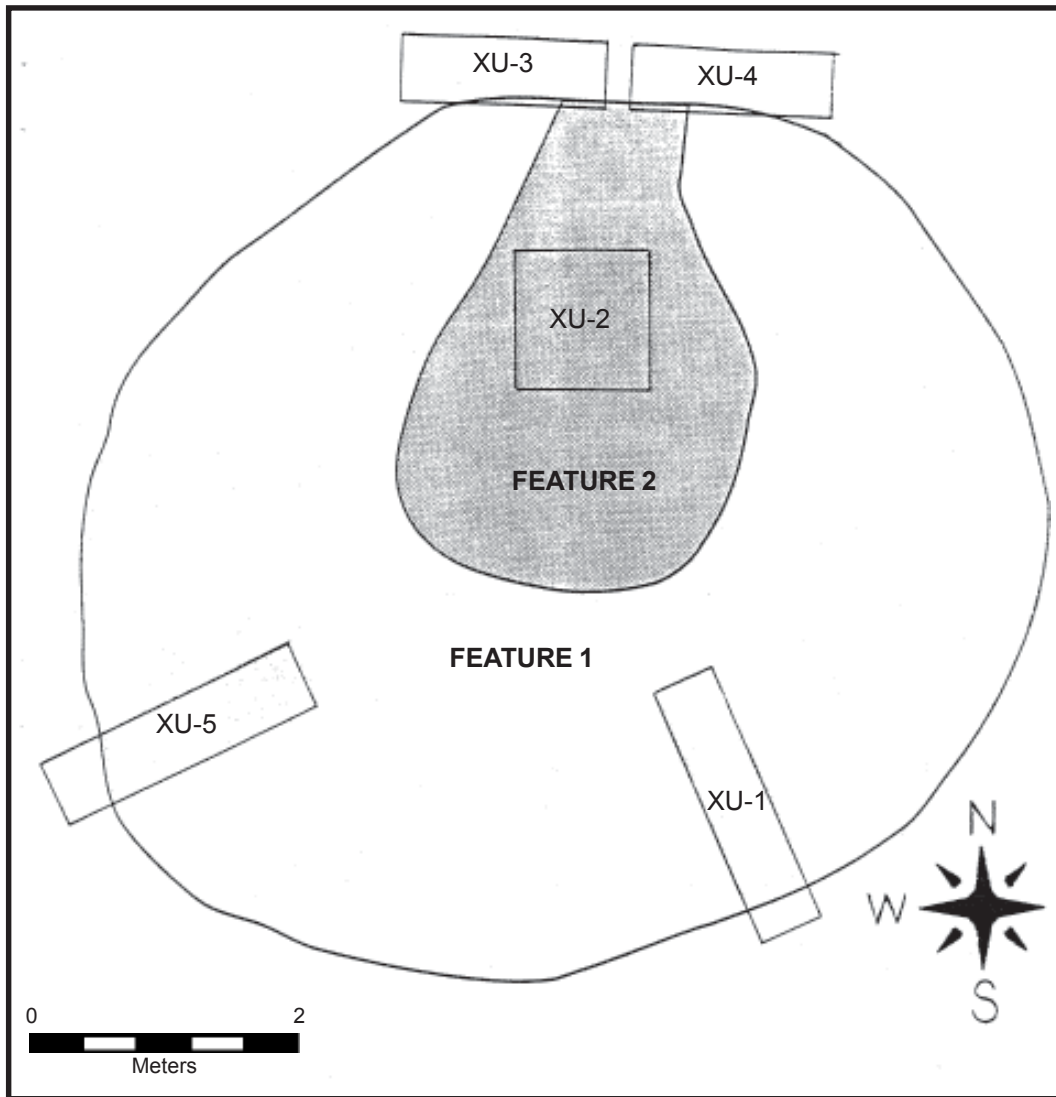


Figure 2.14. Detail plan of the Hoxie Rathbun dugout site (21JK22) (from Kapler 1990:11).

whiteware, painted [sprig] whiteware); 141 iron artifacts (118 cut nails and several tacks), 18 faunal remains (representing cow, pig, and fowl), several glass fragments including window glass, and 9 buttons.

Archaeological information indicates that the structure had a wood plank floor and wood

superstructure. Oral and documentary evidence, including a sketch by daughter Lillie Gibbs, indicates log side walls and a wood framed or log, gable roof (Figure 2.17). A single door was located in the northeastern corner, and the size of the dugout hole suggested to investigators that the internal height may have been 7-9 ft. (Blair and Forsberg 1996:42). Several fragments of window

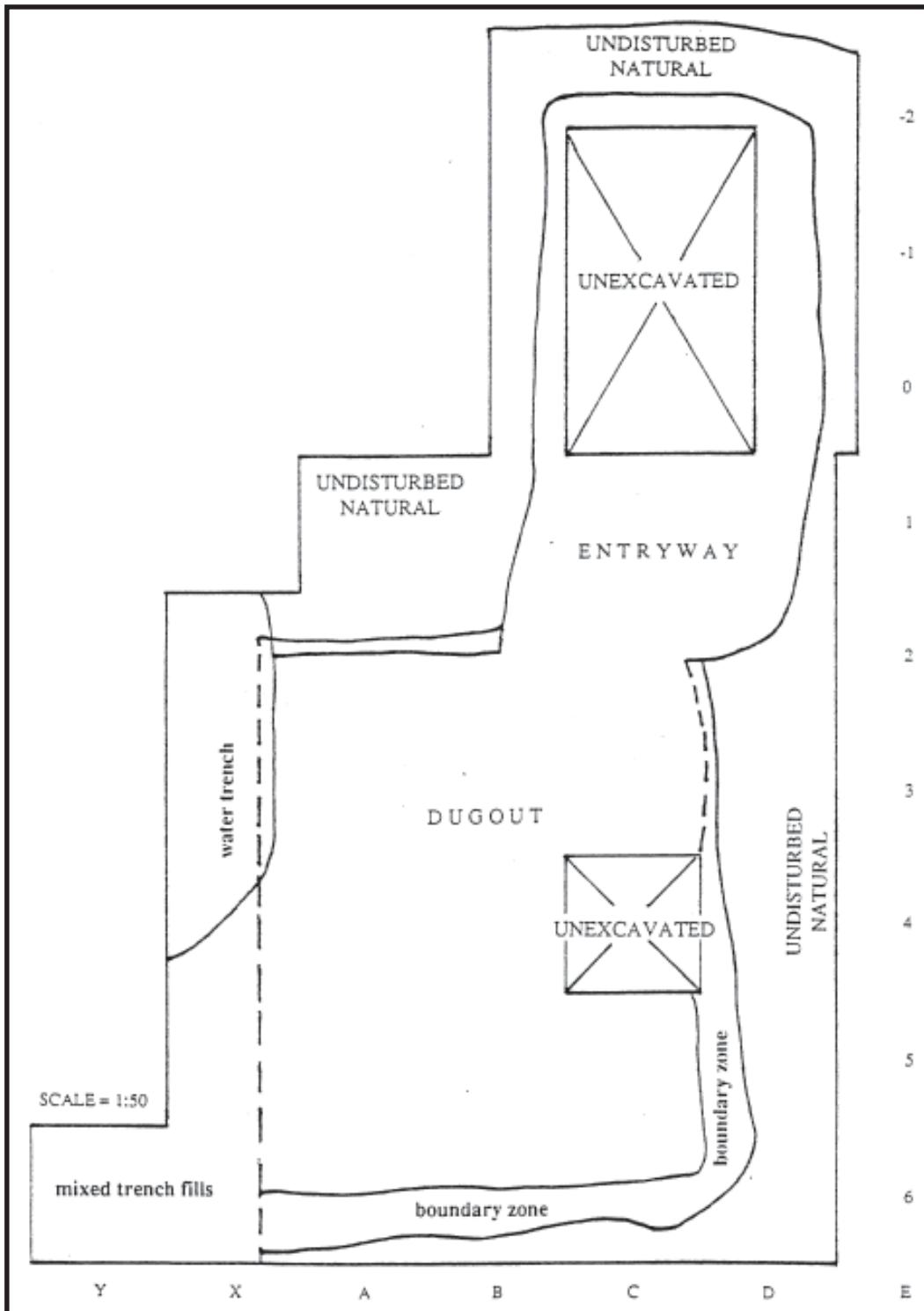


Figure 2.15. Detail plan of the Gibbs Farm dugout (21RA26) (from Blair and Forsberg 1996: Appendix B).

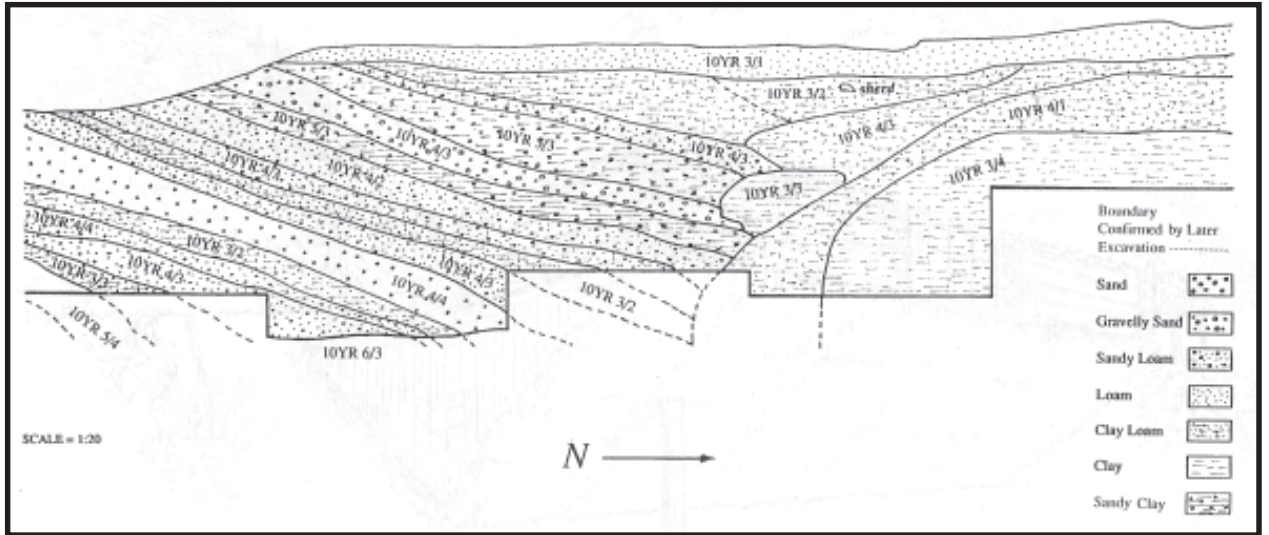


Figure 2.16. Profile of west wall of the Gibbs Farm dugout (21RA26) showing multiple fill layers (from Blair and Forsberg 1996:Appendix B).



Figure 2.17. Sketch of the Gibbs Farm dugout by Lillie Gibbs, youngest daughter of Heman and Jane Gibbs (from Blair and Forsberg 1996:43).

glass indicate that the structure had at least one window. The authors note that the “overriding characteristic of the dugout was its expedient design. No evidence of bracing, foundations, or post-holes was recovered...” (Blair and Forsberg 1996:44).

The Gibbs dugout was a fairly substantial structure with a wood floor and glass window(s) that was used for a period of about 5 years (Figure 2.18). While it is easy to picture the Gibbs’s life in the dugout as uncomfortable and miserable, the authors note that the archaeology suggests several mitigating factors. The loose sand and gravel layer at the base of the dugout depression provided excellent drainage. The house also had a raised wood plank floor that certainly improved living conditions. Finally, the presence of several tacks

may indicate that the floor or walls were lined with waterproof oil cloth, although the authors admit that this is speculative at best (Blair and Forsberg 1996:45).

Another well-documented and intensively investigated dugout is the Ole Palme site in Watonwan County, Minnesota (Broste 1995). The site is located in Long Lake Township along the Watonwan River. This site consists of two large depressions located on sloping ground along the Big Sioux-Mendota Trail and close to the river.

Ole Palme and his family initially emigrated from Totten or Tingerike, Norway, to Rock County, Wisconsin. In the summer of 1856, a group of Norwegians including several of Ole Palme’s relatives traveled from Rock Prairie, Wisconsin,

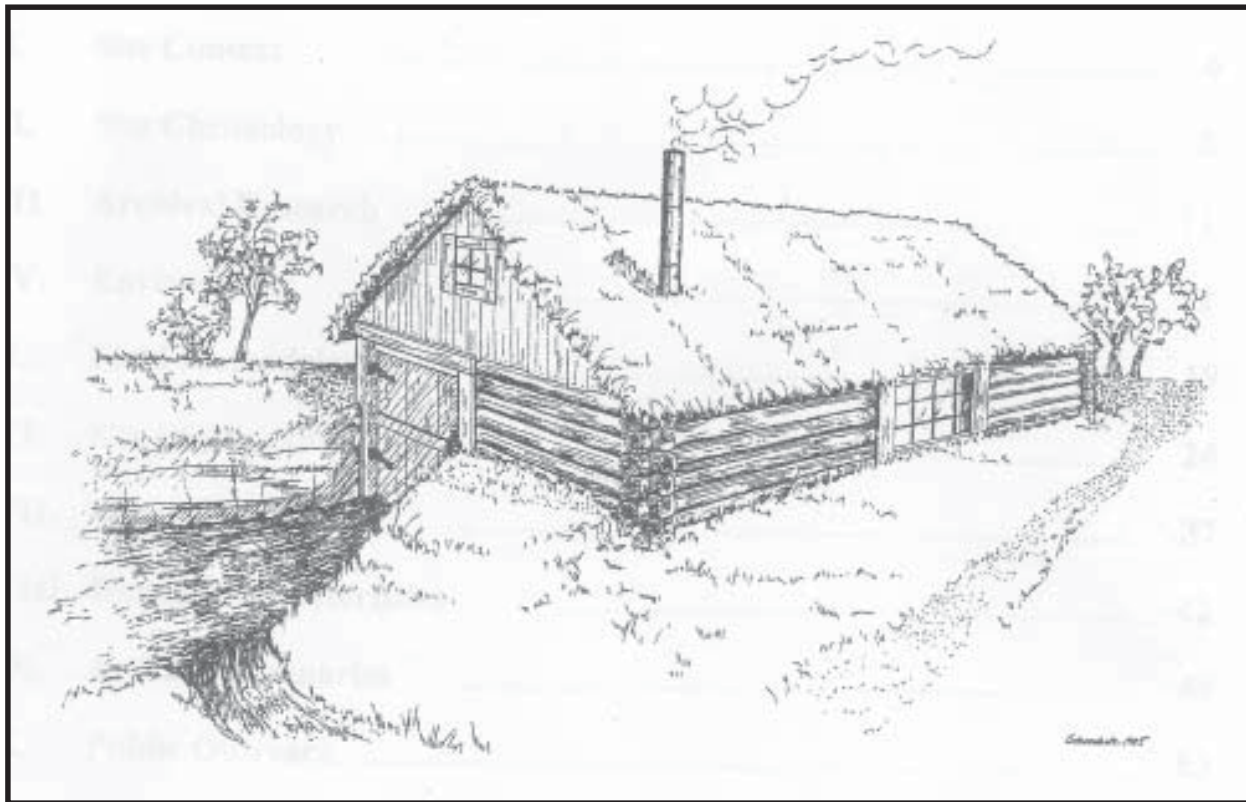


Figure 2.18. Artist’s conjectural reconstruction of the Gibbs Farm dugout (from Blair and Forsberg 1996:3).

to Long Lake Township in the central portion of Watonwan County, Minnesota. Sometime between 1858 and 1860, Ole Palme and his wife and children joined this group. Broste (1995:5) notes that the earliest settlers to the region chose land along the river “for the access to fresh water and river bottom timber, a rare prairie resource.” The Palme’s “selected land from different sections so as to straddle both sides of the river,” a strategy that maximized river access for both resource use and transportation (Broste 1995:5).

The 1860 census indicates that the 30-year-old Ole Palme (Palmer) and his wife Gury were living in the vicinity of what is now Madelia, Minnesota. Tax records show that the couple held two 10-acre parcels. Ole was listed in the census as a farmer, and the family was “engaged in wheat farming, fishing and trapping” (Broste 1995:10).

Gury Palme died in March 1861, and in June 1862, Ole married Maria Anders Datter from Filmore County, Minnesota. Ole was reportedly killed during an April 1863 Indian raid that claimed 5 lives in Long Lake Township, although questions remain about the exact events that led to his death (Broste 1995:39-40). In 1878, the heirs of Ole Palme were granted a 160-acre tract of land that likely included their smaller initial parcels (Broste 1995:14).

During the survey of the Palme property, two dugout locations were recorded (Figure 2.19). The first, Palme I, was a large depression “partially recessed into the valley of the South Branch Watonwan River” and facing west. The central basin or depression was about 6.5 ft. (2 m) deep; flanking the hole to the north and south were earthen ridges (Broste 1995:184). These ridges “were the deteriorated remnants of the upper portion of walls once made of sod” (Broste 1995:184). Conversely, Broste (1995:187) suggests that the lack of ridging on the west wall may indicate wood or log construction.

Excavation of the Palme I dugout was carried out using a series of three 1-x-1 m test units strung together across the west wall of the depression. A modern 22 cal. bullet and several animal bones were the only artifacts recovered during the excavation. Broste (1995:204) notes that the lack of construction materials suggests a roof “built of natural materials found locally...a likely combination would have been a framework of poles covered with brush, then sod or thatch.” “The floor,” he writes, “was made by excavating a level basin into a high clay content glacial till. Walls were composed of sod uppers and earthen profile lowers” (Figure 2.20) (Broste 1995:207). The author interprets this “Type II” structure, a dugout built on a slope and dug into a hillside with sod blocks or log walls, as the Palme barn, based on both oral history, the scant material remains, and total lack of domestic artifacts.

The Palme II dugout structure was identified during survey work about 40-50 m (150-165 ft.) south of the Palme I surface feature. This location was later verified by informants who said “that’s Ole Palmey’s house” (Broste 1995:210). This second structure, consisting of a very shallow depression, is likely a “Type I” dugout built on level ground with a floor recessed into the ground. Excavation of the Palme II dugout consisted of a series of three 1-x-1 m test units laid out in an “L” shape; one unit was wholly within the dugout depression. The excavation revealed the original dugout profile, allowing a calculation of the actual size of the structure (Figure 2.21). Based on these measurements the dugout was 7.5 x 10 ft. (2.3 x 3 m) or a living area of roughly 75 ft.² The structure had a stair entrance that led down to the floor level, possibly a wooden plank floor based on the artifact distribution. The roof extended out beyond the walls, as indicated by the drip line feature in the profile.

The artifact assemblage recovered during the excavation of the Palme II dugout is clearly much larger and more varied than that from the Palme I

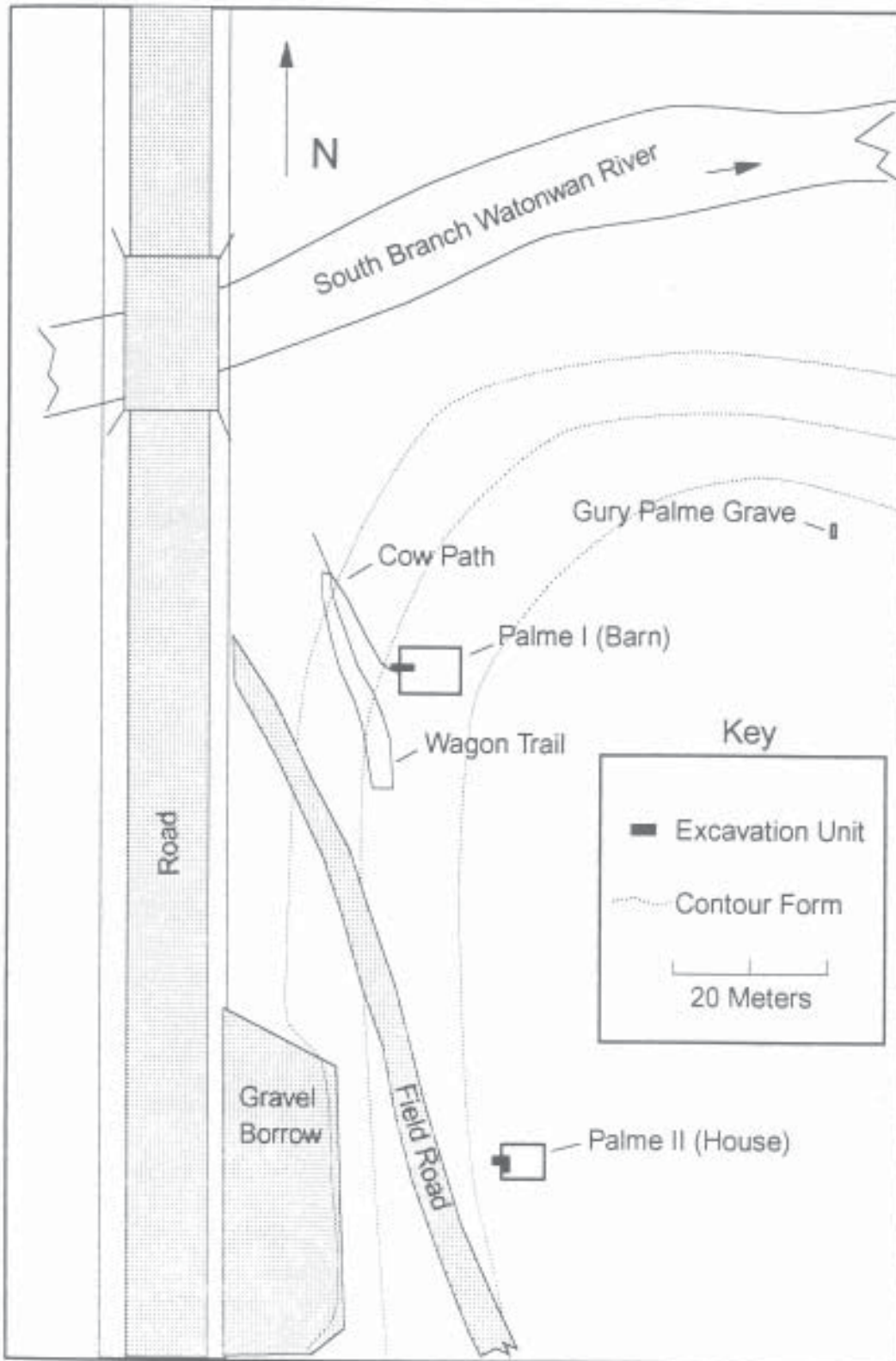


Figure 2.19. Site plan of the Ole Palme dugouts (from Broste 1995:188).

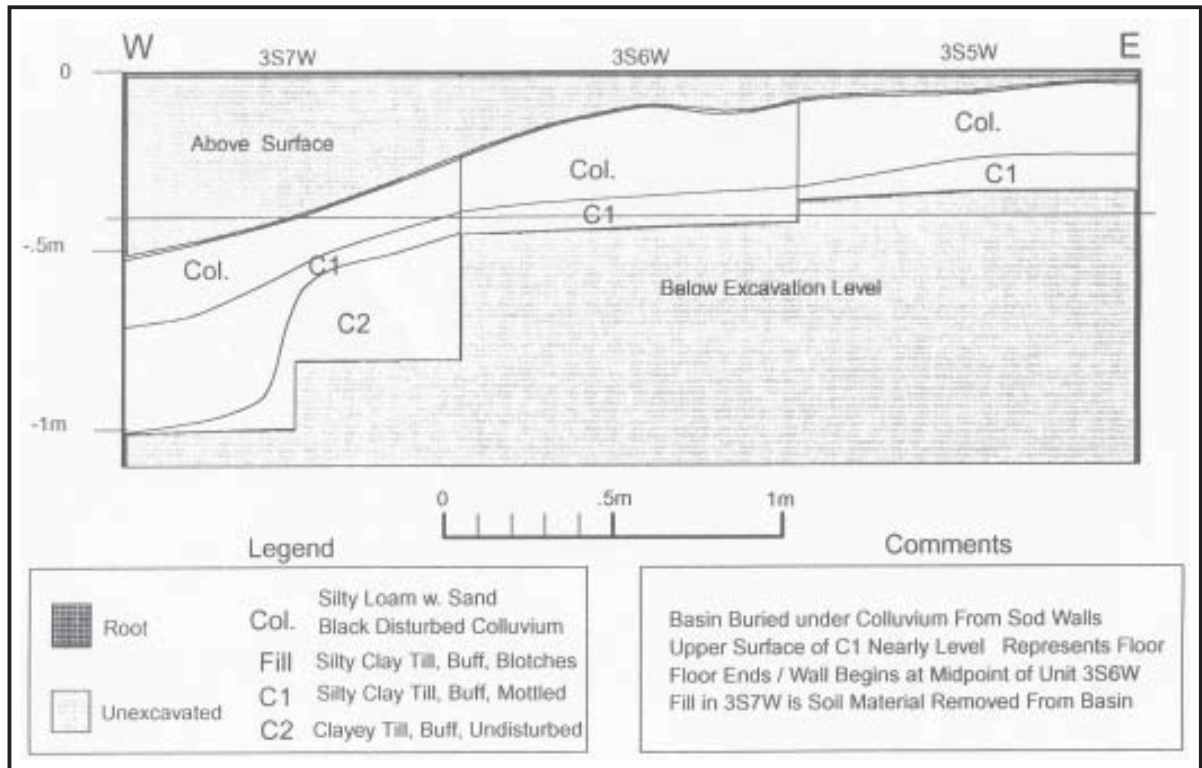


Figure 2.20. North profile of *Palme I* dugout (from Broste 1995:193).

structure, and includes 9 window glass shards, 6 cut nails and 19 fragments, 2 hinge fragments, 1 sherd of redware, 17 fragments of whiteware, a buckle, a brass button, and several animal remains. While many of the materials were located in the lower levels, Broste (1995:245) was uncertain if they represented primary or secondary deposition, for example, utilizing the abandoned dugout cellar for later trash disposal on the site.

The investigations at the four dugout houses in Minnesota correlate quite well with the documentary evidence for the construction and use of dugout structures, and confirm that dugouts functioned as both dwellings and farm buildings. In general, the structures ranged in size from about 7 x 10 ft. (2 x 3 m) to more than 18 x 24 ft. (5.5 x 7.3 m) (Broste 1995; Caspers 1980:41). Most of

the structures were excavated into a hillside overlooking a river valley setting (Type II), or on flatter land near the edge of the river valley (Type I) (see Figure 2.11). The archaeological evidence that survives suggests that these structures had log or earthen, sod block walls and were covered by gable or shed roofs constructed of either dimensional lumber or small pole rafters with a covering of woven saplings and grass. These one room structures were generally heated with wood stoves, and may have had a glazed window or two. A doorway, often on the south wall, was accessed via an earthen stair or entrance ramp. The material culture assemblage recovered from the various dugouts that have been investigated is generally quite sparse compared to typical dwelling sites of the period. In some cases, the dugout cellars have been filled with trash from later occupations of

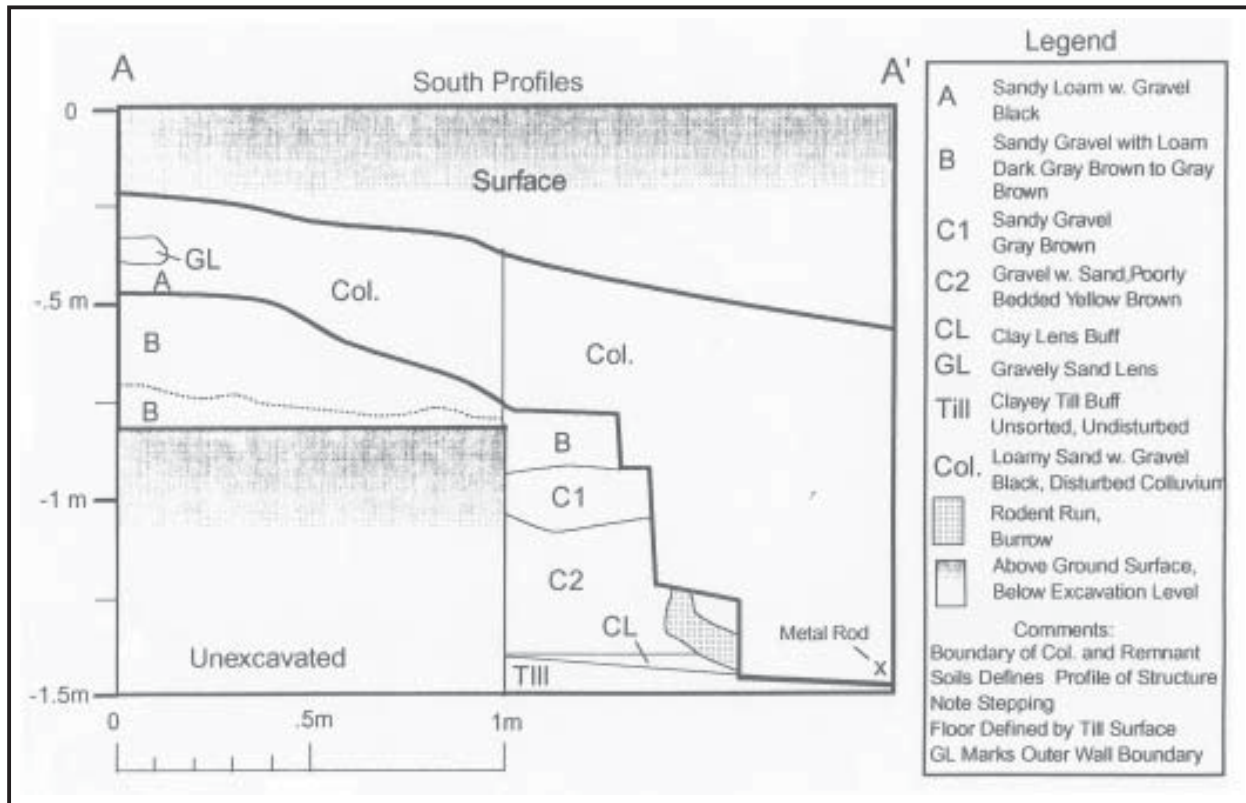


Figure 2.21. North profile of Palme II dugout (from Broste 1995:216).

the site, usually a later frame house located in close proximity to the dugout; this material would likely represent a post-dugout occupation.

Log and Frame Housing in the Upper Midwest

As noted above, Peterson (1992:47) suggests that “the log cabin was the kind of subsistence shelter that pioneers most frequently built in the Upper Midwest.” “Logs were favored as construction material,” he notes, “because they had customarily been used on the frontier” (Peterson 1992:47). The use of the log cabin was well established in the eastern U.S. and was well known to immigrant settlers, particularly those from Scandinavia and Germany. This building style was especially favored because of its extremely low cost: “except for some nails, metal hinges, and

glass for windows, it cost virtually nothing” (Peterson 1992:47). Norwegian immigrant Olaf Erickson (Erickson quoted in Peterson 1992:48), described the building of his family’s first log house in Wisconsin, writing that

...the first winter they lived with Bugbee’s son Moab.... Father worked at 50 cents a day whenever he could get work; days when he could not, he spent clearing ground and cutting logs for their first house. By spring he had the log house completed, 16 x 24 feet and about a story and one half in height. None of the material was bought except the windows, the hinges, and the nails; even shingles were hand split. In the spring of 1869 they moved into their own home.

What a day it was! How wonderful to be in their own house!

Peterson (1992:49) notes that one of the primary differences between the log cabins of the east and the midwestern U.S. was the shape and location of chimneys. With the introduction of iron stoves in the mid-nineteenth century, the typical end chimneys used for fireplaces in eastern log cabins were abandoned in favor of centrally placed chimneys for stoves. The central location of stoves and chimneys provided better heat to both stories.

As Peterson suggests, the log cabin has connections to both the settlement of the eastern U.S. and to the newly arriving immigrants. William Tischler's work in the Coon Valley of western Wisconsin, on the houses and farm buildings of early Norwegian settlers identifies a range of house types in this area, including the log structure. Tischler's house types consist of: "one-room cabin, modified single-bay house, two-bay house, log house with frame porch, and frame house" (Bakken 1994:76). Significantly, Tischler notes a similarity between several of the houses he studied in Wisconsin and the Akershus house type of Norway, the "most common floor plan in Gudbrandsdalen up to about 1850" (Bakken 1994:76) (Figure 2.22). It appears that this floor plan was brought from Norway and then underwent modifications based on the "influence of American building customs" (Bakken 1994:76).

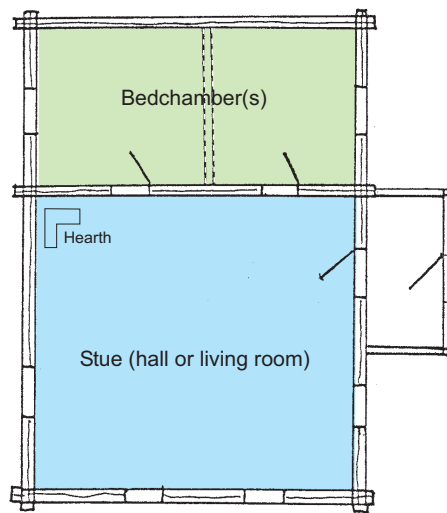
Tischler's study, focusing on the period 1863 to 1880, recorded house types by various attributes including elevation and fenestration. Thirty three of the houses in his study were one and a half stories, 16 were one room dwellings, 2 were two stories, and 1 was two and a half stories (Bakken 1994:77). Forty-five houses in the study had one door, 6 had two doors, and 4 had three doors; Bakken (1994:78) notes that before 1880 the "American custom of a front and back door was not adopted to any noticeable extent on the homesteads in Coon Valley." In terms of fenestration, 18 of the study houses had two

windows, 12 had three, nine had four or more, and seven had only one (Bakken 1994:78). According to Tischler (quoted in Bakken 1994:78), "the most common early house size on the homesteads was 14' x 16', or if of different dimensions, it enclosed from 200 to 249 square feet of space. Typically, it was one and a half stories in height, had a shingle roof, board floors, one outside door and two windows." Bakken (1994:78) notes that the house described by Tischler seems out of character with the single story cabin with low pitched room that would be typical in Norway, and hypothesizes that "the majority of settlers immediately adopted the building practices of the area to which they came. For example, the more typical slate and sod roofs of Norwegian homes, were not generally used in America. Slate was simply not as available to the settlers in America and the sod roof was a failure in the climate of the Upper Midwest (Bakken 1994:78). As noted earlier, while building technology was adapted to American systems, such as balloon framing, the plans of many of these early houses seem to be connected to Norwegian arrangements of space within the house.

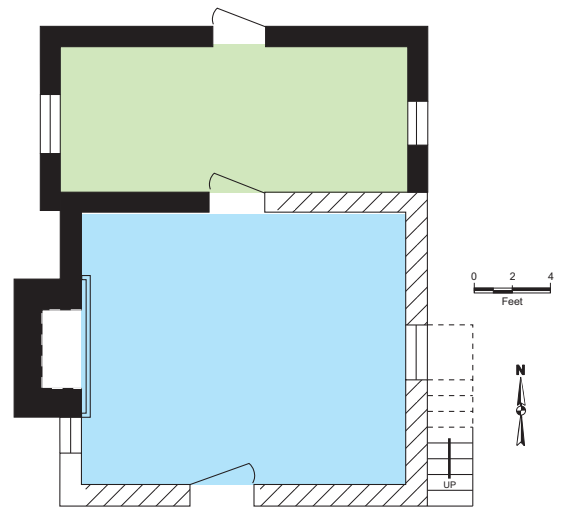
Like the houses identified by Tischler in Wisconsin, Kenneth Breisch (1994) has documented Norwegian dwellings in Bosque County, Texas, that appear to reflect Norwegian house plans. The A. Ilseng house, built at the foot of Jenson Mountain and in close proximity to St. Olaf's Lutheran Church, has a plan that seems based on the Akershus house (Figure 2.23). The principal room or stue is log with a limestone wall that incorporates the fireplace. The smaller shed room, likely bedchambers, to the rear is built of limestone and is unheated. The half story contains a room over the principal first floor room and is accessed by an exterior stair. The Jens and Kari Ringness House, built ca. 1860, is located several miles from the Ilseng House in Bosque County. Breisch (1994:109) notes the similarity of this structure and the Scandinavian dobbelthus or double house. The Ringness House contains a central passage and then identical room layouts on either side. The plan of the two sides, a large,



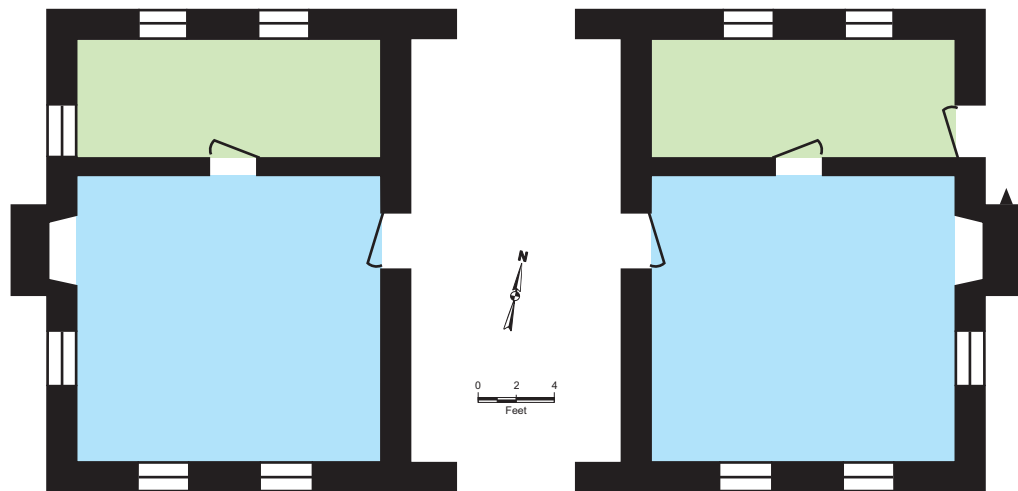
Figure 2.22. Floor plan of the Akershus house type and several examples of similar plans in Wisconsin (after Bakken 1994:77, 80).



Akershus house type from East Norway.



A. Ilseng house in Bosque County, Texas.



Jens and Kari Ringness house, Bosque County, Texas.

Figure 2.23. Floor plan of the Akershus house type and several examples of similar plans in Texas.

square principal space in front, and then a bedchamber space in the rear that is half as large as the front room, is virtually identical to the Ilseng plan and the Akershus house. Both the Ilseng and Ringness houses have plans and details almost identical to the Goulson House, except in the building material.

While log houses were initially popular in many areas as subsistence shelters, the balloon frame quickly became the norm with the arrival of the railroads that brought milled lumber to the region. The balloon frame had been invented in Chicago in the 1830s and became increasingly popular by mid-century, thus, it is not surprising that it fast became the predominate framing type in the Upper Midwest. Settlement to this region did not occur until the mid- to late nineteenth century, and as a result, settlers typically moved directly from their first “subsistence shelters of log, sod, or wood, directly to balloon frame dwellings...” (Peterson 1992:2). Although the frame houses differed from their predecessors, “the form and finish of the permanent dwellings were influenced by the practice of expedience and economy necessary to survive on the frontier” (Peterson 1992:40). Peterson (1992:5) notes that the gradual adoption of this framing system by Upper Midwestern farmers “parallels their gradual acceptance of mechanized and commercial agriculture.”

The balloon framing system is very flexible, utilizing various sized milled lumber fastened together with nails. This type of construction results from a “tightly integrated system of parts” that work together to provide a lightweight and rigid structural framework (Peterson 1992:8). As Peterson (1992:38) has noted, the balloon frame’s flexible system provided a means to adapt old house forms and types to “new industrially milled, standardized framing materials and method[s].” Agricultural journals of the period touted the balloon frame as perfect for building a “Cheap farm-House” (Peterson 1992:15), and along with

a host of plan books and texts disseminated this relatively simple and cheap construction method to farmers and settlers across the region (Figure 2.24). In 1846, Indiana farmer Solon Robinson offered a plan in the *American Agriculturist* that was

intended for the new settler, and to be built on the baloon [sic] plan, which has not a single tenon or mortise in the frame, except the sills; all the upright timber being very light, and held together by nails, it being sheeted under the clapboards, is very stiff, and just as good and far cheaper than ordinary frames (quoted in Peterson 1992:15).

While the balloon frame farmhouses of the Upper Midwest are found in a “bewildering” array of types and floorplans, Peterson has developed a typology that groups structures “according to basic shapes and similar division of interior spaces” (Peterson 1992:25). Based on extensive surveys across Wisconsin, Minnesota, Iowa, and North and South Dakota, Peterson arrived at ten major balloon frame types (Table 2.1).

The simplest of these structures, and that most like the Goulson’s frame farmhouse, is Farmhouse Type I. This “one- to one-and-a-half-story rectangular volume enclosed by exterior walls and covered by a saddle roof,” writes Peterson (1992:27), “usually lends itself to only two interior spaces on the first floor and the half story divided more or less equally at or near the middle of the longer side of the rectangle.” The Type I Farmhouse includes examples of the very smallest and simplest of the structures found in the region. Peterson (1992:62) notes that the “one- to one-and-a-half-story gabled rectangular farmhouse was frequently the kind of affordable structure built when circumstances permitted the family to move from the temporary subsistence shelter to a more permanent dwelling.” The change represented a significant move from the one room interior of a

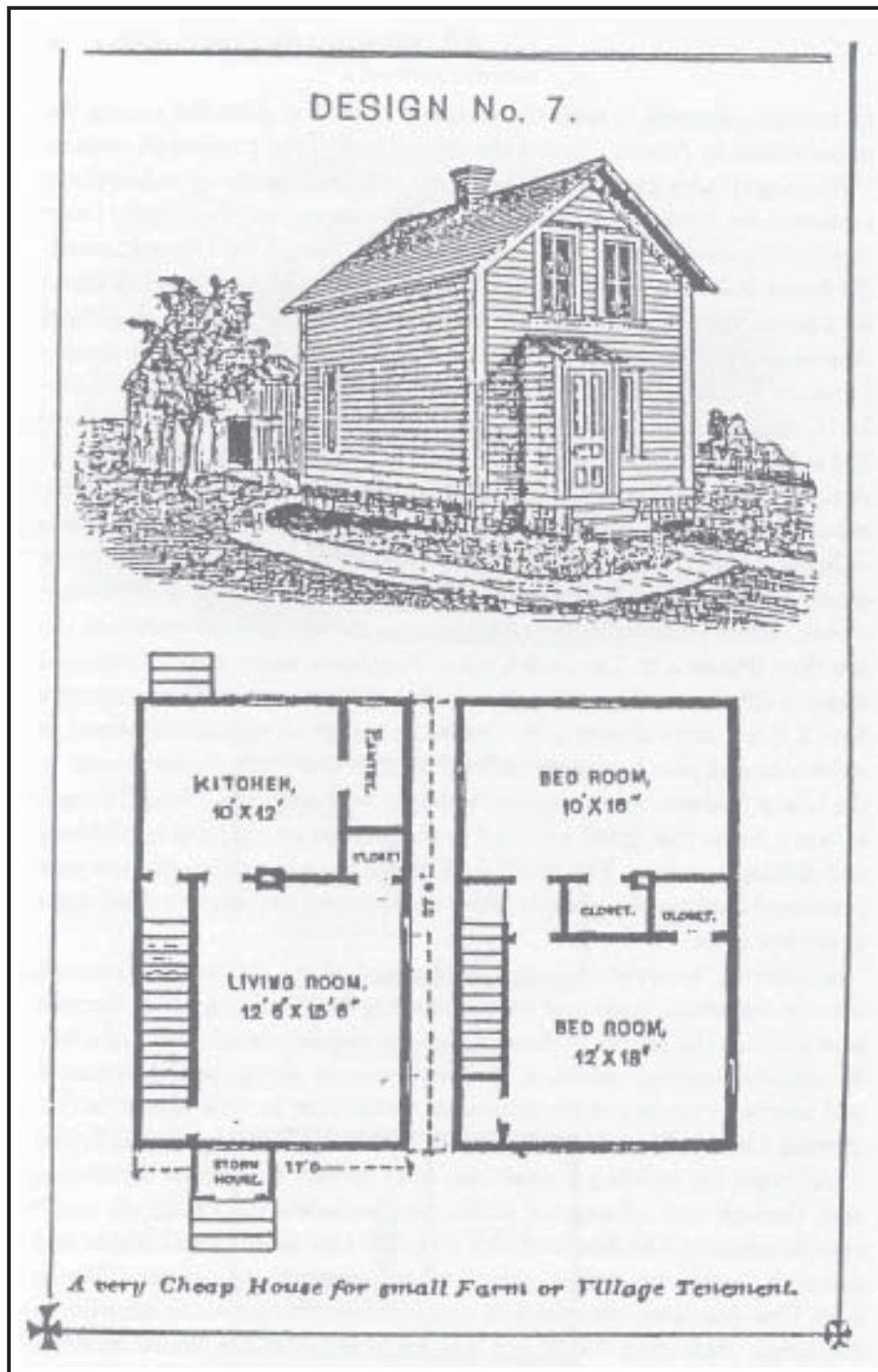












Figure 2.24. "Design No. 7: A very cheap house for small farm or village tenement" (from Adams-Horr Company, Rural Architecture [Chicago: Northwestern Lumberman Print, 1884]).

Table 2. Typology for Balloon Frame Farmhouses (after Peterson 1992:28-29).

Type	Description	Graphic
1	One- to one-and-a-half story gabled rectangle	
2	Two-story gabled rectangle	
3	Ell/T plan: one-and-a-half story with one- to one-and-a-half-story wing	
4	Ell/T plan: two story with one-and-a-half- to two-story	
5	Double wing: one-and-a-half story with one- to one-and-a-half-story wings	
6	Double wing: two story with two-story wings	
7	Double house	
8	One- to one-and-a-half-story foursquare	
9	Two-story foursquare	
10	Vernacular Villa	

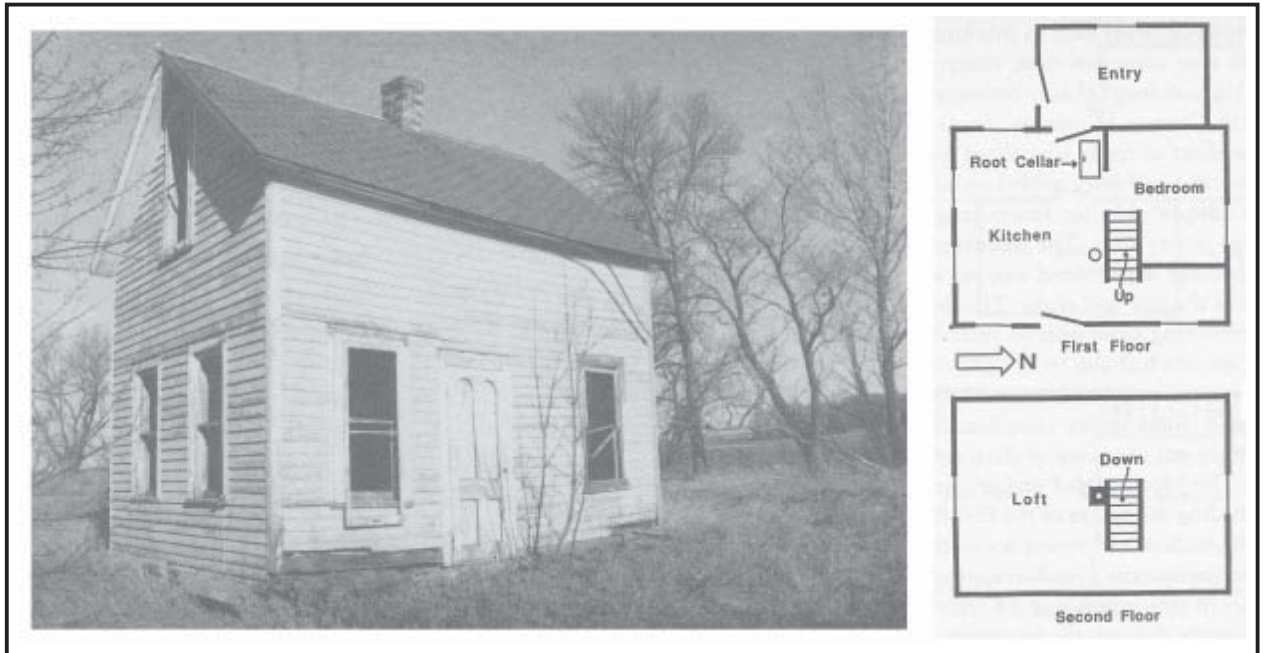


Figure 2.25. Farmhouse type I, Pope County, MN, ca. 1870 (Peterson 1992:65).

sod house or dugout to a structure that “enclosed a kitchen and living room-dining room on the first floor and an open sleeping loft under the low sloping roof on the half story” (Peterson 1992:64). Peterson (1992:64-65) reports that like the log cabin, the interior space of these frame dwellings was focused on the central hearth, and presents a small balloon frame farmhouse in western Minnesota (Pope County) that embodies the Type I Farmhouse (Figure 2.25). Peterson (1992:67-69) also illustrates slightly larger variants of the Type I Farmhouse from Pocahontas County, Iowa (Figure 2.26), and Swift County, Minnesota (Figure 2.27), the latter with a floorplan revealing the use of more specialized spaces within a squared version of the typical Type I plan.

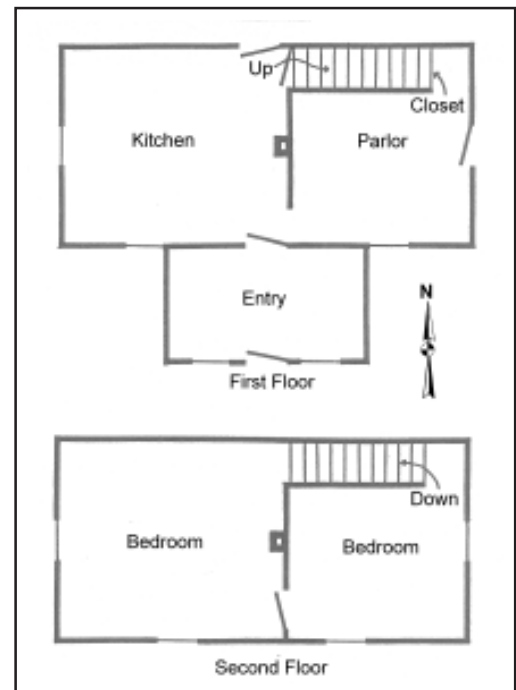


Figure 2.26. Farmhouse type I, Pocahontas County, MN, ca. 1880 (Peterson 1992:67).

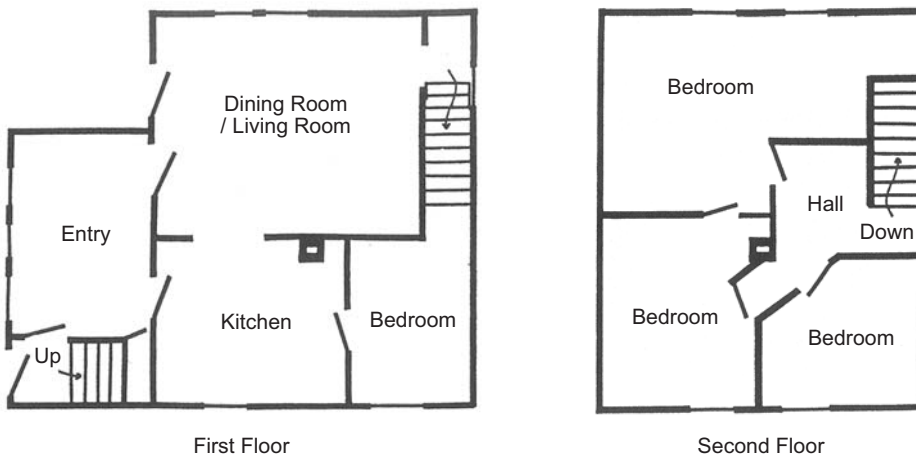
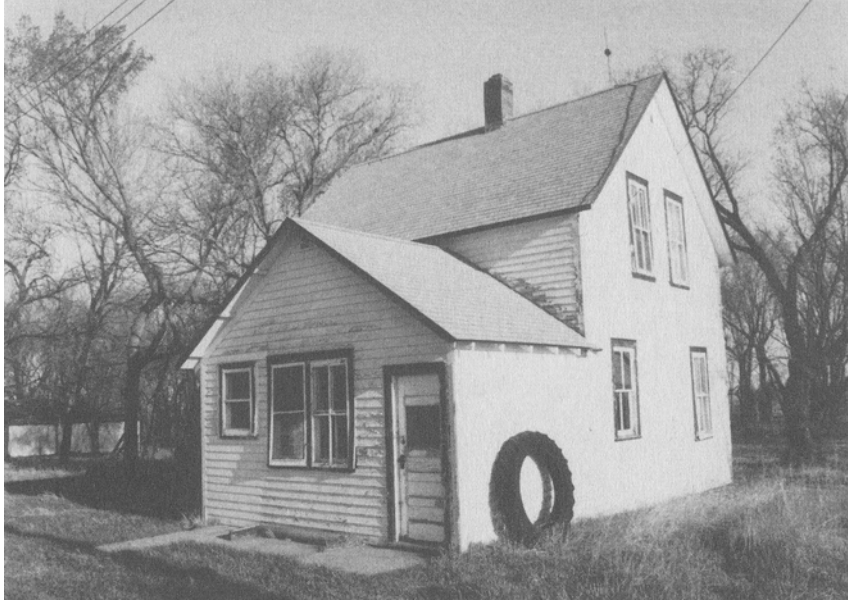


Figure 2.27. Farmhouse type I, Swift County, MN, ca. 1900 (Peterson 1992:68-69).

CHAPTER 3: Archaeological Methods and Results

Introduction

This chapter details the field methods used to explore the Christopherson/Goulson dugout site and the results of this work. The archaeological work at the site included the use of systematic shovel testing around the dugout depression and test unit and trench excavations within the dugout cellar to document the size and construction features of the structure. A limited pedestrian reconnaissance or surface collection was also conducted of the cultivated field to the east of the site, however, no surface artifacts were identified.

Survey and Testing Methods

The field survey employed both pedestrian reconnaissance/surface collection and systematic and judgmental shovel testing strategies. A site grid measuring 160 ft. north/south x 60 ft. east/west was established around the dugout depression, along the break of the bluff slope and extending down slope. Grid north was approximately 8° west of magnetic north. The grid was not extended to the east to avoid damage to the corn crop in the field; it was not extended further down hill to avoid the property owner's deer hunting stand. The initial shovel testing was conducted around the dugout depression along transects spaced at intervals of 20 ft. (6 m); this spacing was closed to 10 ft. (3 m) in some areas. Shovel tests measured approximately 1 ft. (30 cm) in diameter and were excavated to subsoil. All soils recovered in shovel tests were screened through 1/4-inch mesh to insure near-complete recovery of artifacts. Soils were described using Munsell color and U.S. Department of Agriculture

textural terminology (Kollmorgen Instruments Corporation 1988).

The site was mapped on a topographical quadrangle, a sketch map was made, and a temporary field site number was designated. Elevations were recorded at every 10 ft. interval across the grid in order to prepare a topographic map of the site. Black and white photographs and color slides were taken to document the survey work and property; digital photos were also taken by the volunteers. All artifacts were bagged according to provenience. Soil profiles were drawn for all positive shovel tests and for representative negative tests. A *Minnesota Archaeological Site Form* was completed for the site.

The testing strategy for the dugout earthwork included both test unit and trench excavation. Four test units were placed in the dugout depression, three in the deepest portion or floor of the depression and one in the earthen berm in the northwest corner of the structure. The unit in the berm was placed in a slight dip that was thought to represent a possible door or window opening.

All test units were hand excavated and measured between 1.0 and 2.0 ft. deep, although Test Unit 2 in the berm was significantly deeper. All vertical measurements were based on the site datum (N550 E500), which was assigned an arbitrary elevation of 100.00 ft. The actual elevation of the datum is approximately 1,020 ft. above mean sea level (amsl). Each unit was identified by an individual unit number and the Northing and Easting coordinate of its southwest corner. Test units were excavated by stratum and

level; strata represent separate and distinct soil classes (e.g., topsoil or subsoil) and levels represent arbitrary divisions of the respective stratum. In most cases, levels are .3-.4 ft. (10 cm) or less in thickness. All soils from test units were screened through 1/4-in. mesh to insure near-complete recovery of artifacts. Plan and profile drawings were made of each unit. Black and white photographs and color slides were also used to record each unit.

Three deep, narrow trenches were excavated into the berms or sides to record the stratigraphic development of the dugout house feature. Trench 1 was excavated into the east side of the depression and measured approximately 2 ft. wide x 9 ft. long; the trench was approximately 4 ft. deep at its eastern end. Trench 2 was excavated into the west side berm and measured approximately 2 ft. wide x 8.5 ft. long; the trench was approximately 2.8 ft. deep at its western end. Trench 3 was excavated into the north side berm and measured approximately 2 ft. wide x 8.5 ft. long; the trench was approximately 4 ft. deep at its northern end. All trenches were hand excavated and typically measured between 1 ft. deep in the base of the depression to 4 ft. deep on the outside edge. All vertical measurements were based on the site datum (N550 E500). Each trench was identified by an individual trench number and the Northing and Easting coordinate of its southwest corner. Trenches were excavated roughly by stratum; strata represent separate and distinct soil classes (e.g., topsoil or subsoil). Soils from trenches were initially screened through 1/4-in. mesh to insure near-complete recovery of artifacts, however, screening was abandoned in the interest of time when no artifacts were being recovered. Plan and profile drawings were made of each unit. Digital photography was used to record each trench profile.

A copy of this report and all field notes, artifacts, and photographs pertaining to this study will be temporarily stored for curation at the University of Kentucky's Program for

Archaeological Research in Lexington. Artifacts will be returned to the current property owners Byron and Vicki Olson following the completion of the project; the Olsons plan to donate the collection to the Swift County Historical Society.

Laboratory Methods

Artifacts were washed, catalogued, and analyzed at the facilities of the University of Kentucky's PAR in Lexington after completion of the fieldwork. Following analysis, an inventory was assembled using a standard descriptive typology for historic and prehistoric artifacts. All artifacts were prepared for temporary storage according to Federal curation standards and the guidelines of the University of Kentucky's Program for Archaeological Research in Lexington.

The UKPAR uses a hierarchical, codified system for artifact description across multiple dimensions, and this system was employed during the laboratory phase of the analysis. The codified descriptive information was entered into a project database using Paradox® software; from the resultant files, summary reports were generated for pattern analysis. For this assessment, the analysis focused on the periods, extent, distribution, and function of the archaeological components.

The hierarchical historic artifact coding scheme includes both functional and temporal dimensions. At the most general level, material is classified according to **Group**, which includes the Food Preparation/Consumption, Architectural, Furniture, Arms and Military, Clothing, Personal, Medicinal/Hygiene, Domestic Activities, Other Activities, Smoking, Industrial/ Commercial, and Unassigned categories. Subsumed within the Groups are artifact **Classes** including, for example, Ceramic Cooking/Storage, Ceramic Tableware, Glass Tableware, Window Glass, Nails, Firearm, Apparel, and Writing categories. The next level consists of **Objects** that describe specific artifact

forms such as Flatware, Jug, Jar, Bowl, Nail, Doorknob, Musket Ball, Button, and Auto Part. Temporally significant attributes are described as **Datable Attributes**, such as Creamware, Edged; Pearlware, Mocha; Whiteware, Flow Blue; Wrought [nail]; and Cut [nail]. An additional descriptive level is provided under the **Descriptor** category, which includes such information as coin date, pipestem bore diameter, glass color, and vessel part. Each artifact category is further recorded by count, and in the case of brick and shell also by weight.

Archaeological Survey Results

Systematic shovel testing was conducted around the dugout depression in order to delineate site boundaries and identify potential artifact concentrations (Figure 3.1). A total of 36 shovel tests were excavated around the dugout depression; shovel tests were placed at 20 ft. intervals and

closed to 10 ft. in the immediate vicinity of the depression feature (Figure 3.2). Three of these tests were positive; artifact densities were low, consisting of only three artifacts. Based on the dugout depression and berm features and the three positive tests, Site 21SW17 measures approximately 82 ft. (25 m) north/south \times 50 ft. (15.25 m) east/west, an area of approximately 4,100 ft.² (381.25 m²). The site is located on the U.S.G.S. 7.5' Gracelock NW topographic quadrangle (1958, photorevised 1977) (UTM coordinates: Zone 15T, Northing 5003885, Easting 0287105) at an elevation of 1,020 ft. amsl. The site is drained by the Chippewa River, located about 340 ft. to the west.

Soils at the site are Maddock sandy loams that are “deep, well drained soils that formed in sandy outwash partly shifted by wind” (Diedrick et al. 1973:27). The typical soil profile for the site area (Shovel Test 12) consisted of 1.2 ft. of black



Figure 3.1. Excavating a shovel test.

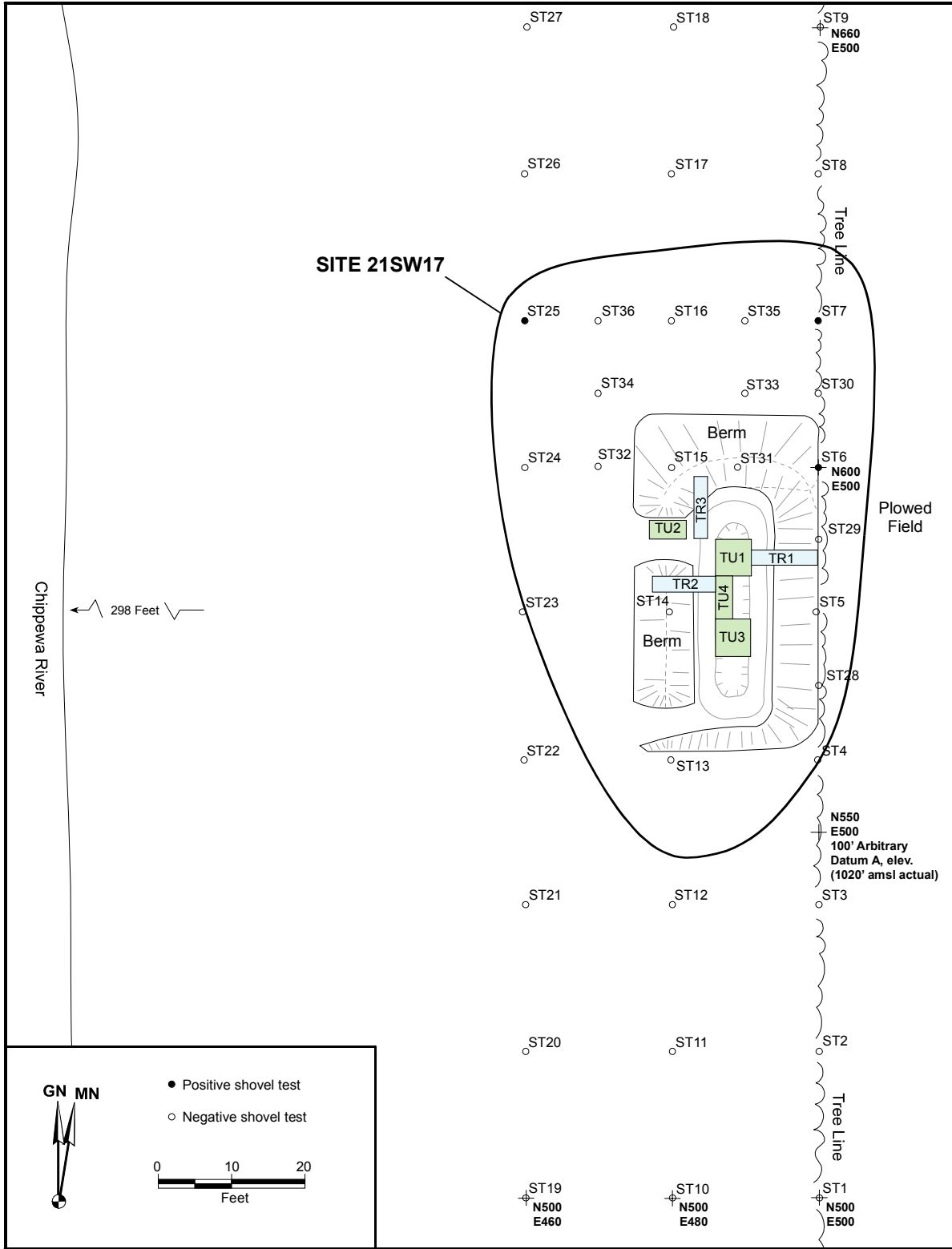
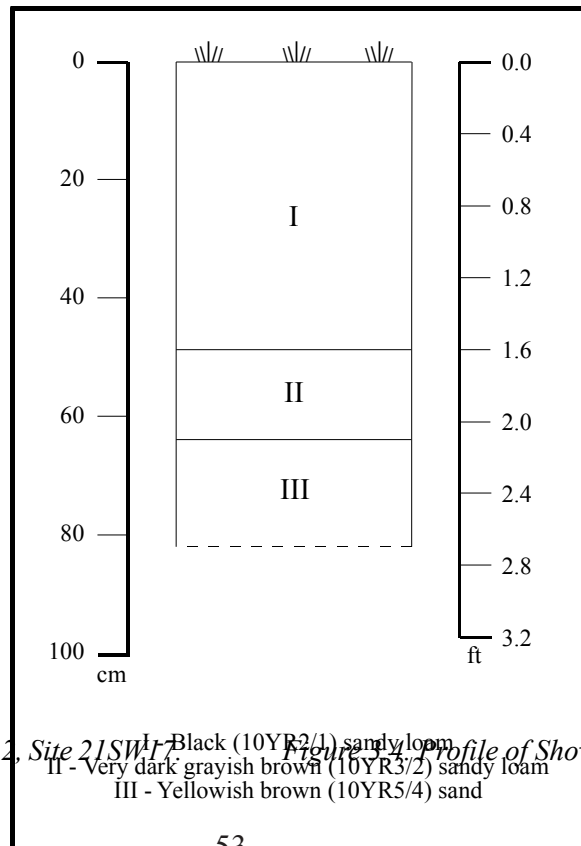
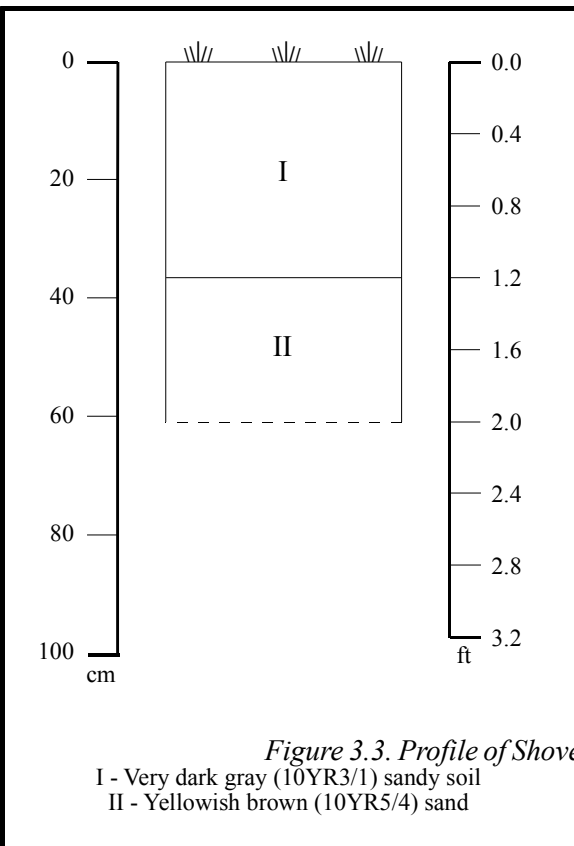


Figure 3.2. Plan of Site 21SW17 showing shovel test units.

(10YR2/1) to very dark gray (10YR3/1) sandy loam (Stratum I) underlain by a sterile yellowish brown (10YR5/4) sand subsoil (Figure 3.3) (Stratum II). The shovel tests located on the top of the bluff slope along the edge of the plowed field had a significantly different profile, represented by Shovel Test 6. The profile in this unit consisted of 1.6 ft. of black (10YR2/1) sandy loam (Stratum I), over a very dark grayish brown (10YR3/2) sandy loam (Stratum II) (Figure 3.4). Level III was a yellowish brown (10YR5/4) sand. Excavation was stopped due to the depth of the unit (2.7 ft.). The alternating loams of this profile seem to represent a fairly deep topsoil/plowzone layer. At the time of recording, there was little surface visibility across the site as it was covered in weeds and understory growth; the field to the east of the

site had 100% visibility with a 6 in. corn crop. This area was surface surveyed and no artifacts were found.

Only three artifacts were recovered during the shovel test survey. Shovel Test 7 contained a cut nail, Shovel Test 6 contained a ferrous metal knife handle, and Shovel Test 25 contained a possible fragment of mortar. None of these materials is extremely diagnostic, although the knife handle appears to be a late nineteenth-century type with wood handles and the cut nail would date generally between 1790 and 1880. The shovel testing work at the dugout site did not provide enough artifacts to suggest concentrations of materials that might reflect activity areas; all of the positive shovel tests were close to the dugout depression.



Archaeological Testing Results

Test unit and trench excavation was employed to more closely examine the dugout house depression feature (Figures 3.5 and 3.6). Four test units were excavated in the dugout floor area and three trenches were used to investigate the dugout walls in cross section (Figure 3.7). As expected, the units in the floor produced the bulk of the artifacts recovered during the project.

Test Unit Excavation

Test Unit 1. Test Unit 1 was a 5- \times -5-ft. excavation unit placed in the floor of the depression in the northern end (see Figure 3.7; Figure 3.8). The unit was located at grid coordinates N585 E486 (sw corner). As excavated, the unit consisted of five separate strata.

Stratum I was a .23-.39 ft. thick layer of very dark gray (10YR3/1) sandy loam with isolated lenses of sand (Stratum I) underlain by Stratum II, a .35-.39 ft. thick layer of black (10YR2/1) sandy loam mottled with yellowish brown (10YR5/4) loamy sand. Stratum III was a .12-.70 ft. layer of very dark gray (10YR3/1) sandy loam transitioning to a very dark grayish brown (10YR3/2) sandy loam mottled with brown (10YR5/3) loamy sand at the bottom. Due to a mass of large roots, this layer was slightly over dug into the next stratum. Stratum IV was a .12-.24 ft. layer of very dark gray (10YR3/1) sandy loam (Figures 3.9 and 3.10). Stratum V was a .19-.40 ft. layer that began as a very dark grayish brown with mottling and iron concretions and transitioned to a brown (10YR5/3) clayey sand with pebbles in the southwestern half and a light olive brown (2.5YR5/4) clayey silt mottled with grayish brown (2.5YR5/2) silt and yellowish brown (10YR5/6) clay in the



Figure 3.5. Excavation of test units (TU3 in foreground and TU1 to the rear).



Figure 3.6. Excavation of test units (TU3 in foreground, TU1 to the rear, and TU2 to the left).

northeastern half (Figure 3.11). All of the strata had pieces of charcoal or burned wood mixed into the soil matrix. At the bottom of Stratum V (approximately 1.7 ft. below surface), a very hard packed soil was identified, possibly indicating a floor surface (Figure 3.12). A total of 76 historic artifacts were recovered from Test Unit 1; over half (n=57) of these were fragments of charcoal or burned wood (Table 3.1).

A total of 21 artifacts were recovered from Stratum I, all historic (see Table 3.1). The assemblage from this stratum included materials from three functional groups: the architecture group included cut nails (n=3) (8d and <2d), the faunal group included unsorted animal bones (n=5), and the floral group included fragments of

charcoal or burned wood (n=13). The cut nails generally date this level from ca. 1790 to ca. 1880.

A total of 3 historic artifacts were recovered from Stratum II (see Table 3.1). The historic assemblage included materials from three functional groups: cut nails (n=1, 2d) from the architectural group, barbed wire (n=1) from the activities group/agriculture, and unsorted bone (n=1) from the faunal group. The barbed wire generally dated this stratum to post 1868.

Stratum III contained 11 historic artifacts (see Table 3.1). The assemblage from this stratum included materials from two functional groups: the architecture group included cut nails (n=2) (4d and <2d) and unidentified nail fragments (n=2), and

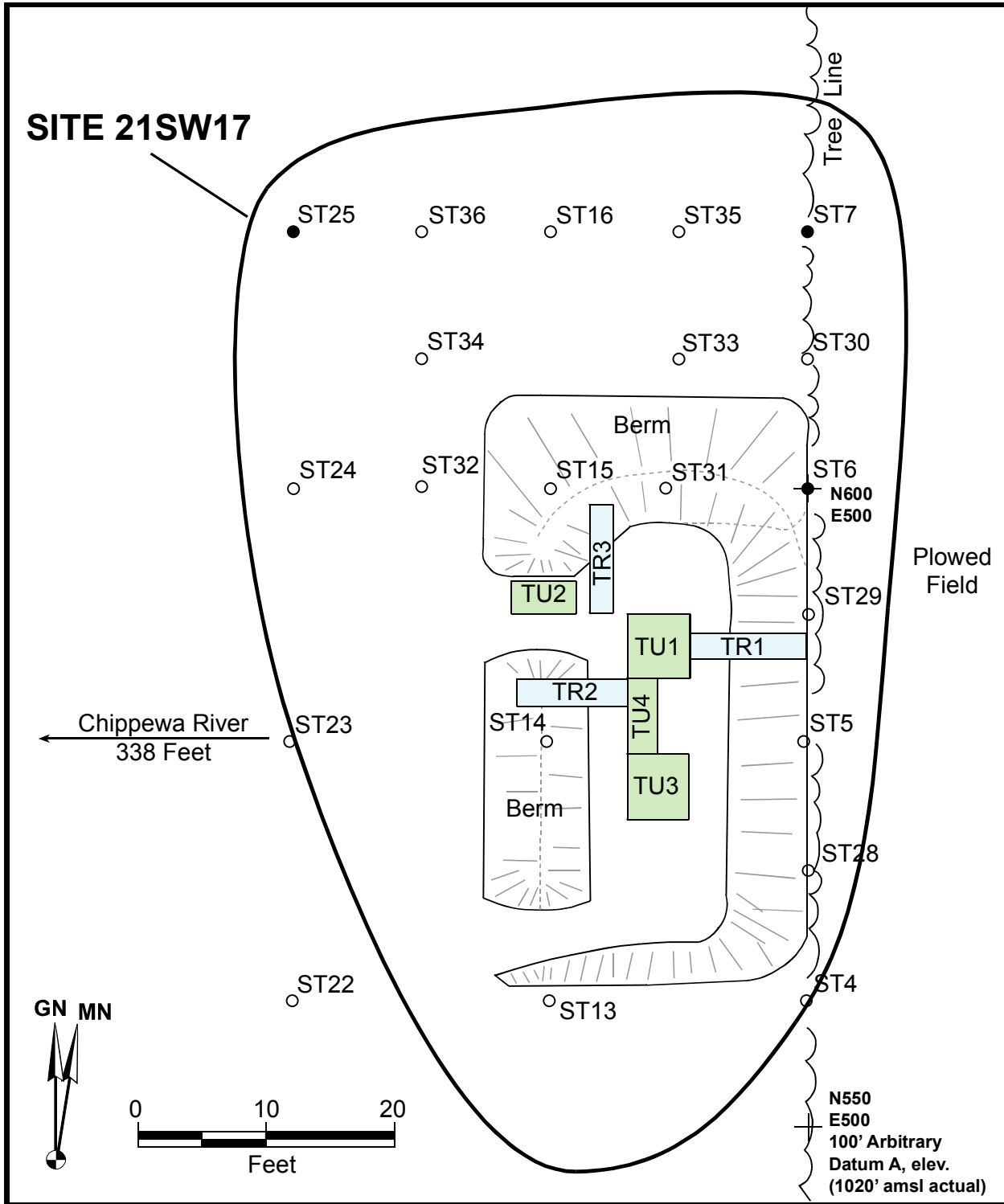


Figure 3.7. Detail plan of Site 21SW17 showing test units (TU) and trenches (TR).



Figure 3.8. Dr. Linebaugh excavating in Test Unit 1.

the floral group included fragments of charcoal or burned wood (n=7). The cut nails generally date this level from ca. 1790 to ca. 1880.

A total of 23 historic artifacts were recovered from Stratum IV (see Table 3.1). The historic assemblage included materials from two functional groups: cut nails (n=2) from the architectural group, and fragments of charcoal or burned wood (n=21) from the floral group. The cut nails generally date this level from ca. 1790 to ca. 1880.

Stratum V contained 18 historic artifacts (see Table 3.1). The historic assemblage included

materials from two functional groups: cut nails (n=2) from the architectural group, and fragments of charcoal or burned wood (n=16) from the floral group. The cut nails generally date this level from ca. 1790 to ca. 1880.

With the exception of fragments of charcoal/burned wood (n=57), this unit contained a small assemblage of historic materials. The assemblage (n=19) included 10 cut nails, 2 nail fragments, 6 fragments of unsorted animal bone, and 1 piece of barbed wire. The cut nails generally date this level from ca. 1790 to ca. 1880, while the barbed wire suggests a post 1868 occupation.

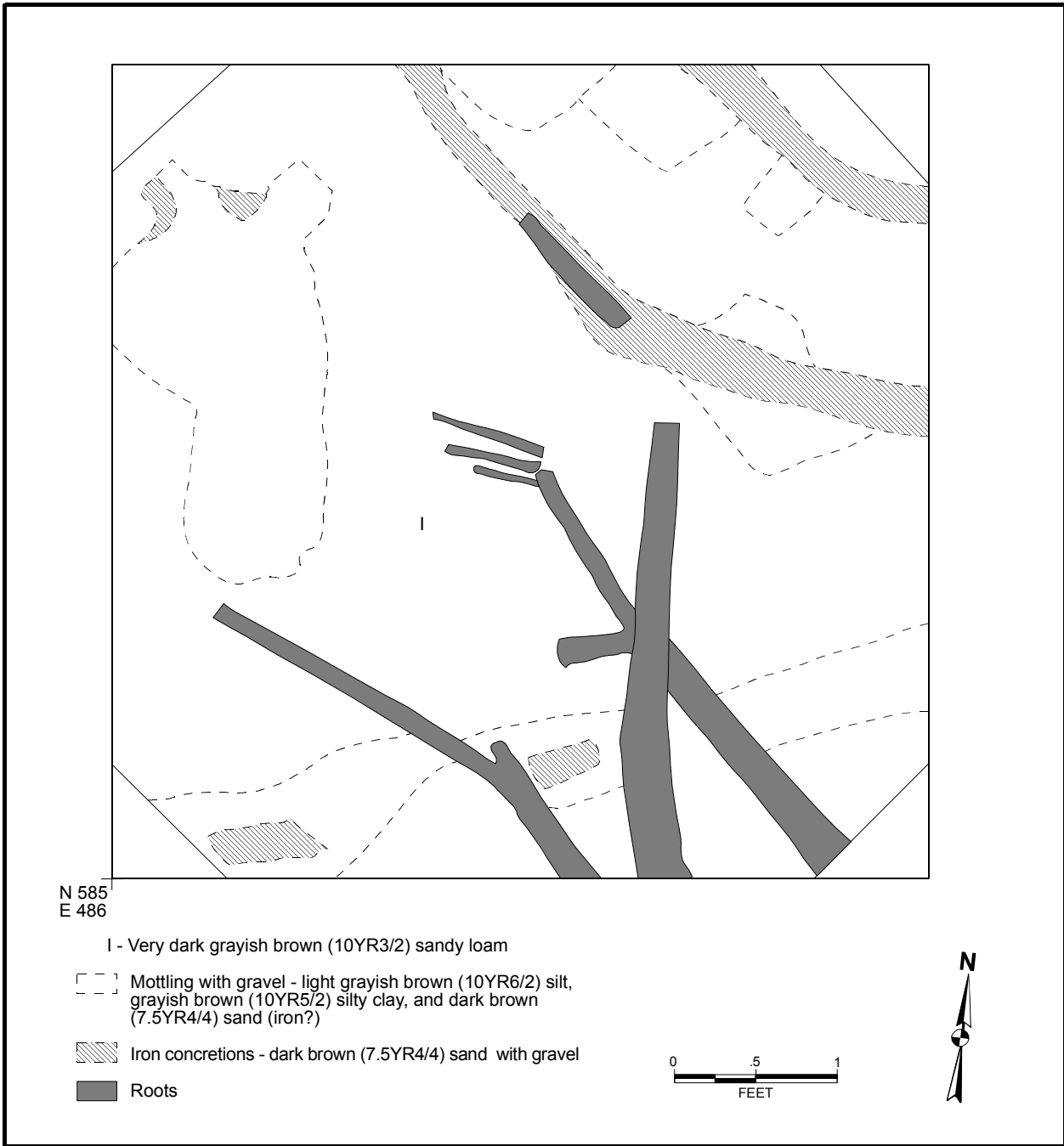


Figure 3.9. Plan of Test Unit 1, bottom of Level IV.



Figure 3.10. Test Unit 1, bottom of Level IV, note iron concretion staining.

Test Unit 2. Test Unit 2 was a 2.5- \times -5-ft. excavation unit placed in the northern corner of the western berm in a very slight dip that was thought to represent a possible doorway or window location (Figure 3.13). The unit was located at grid coordinates N590 E477 (sw corner) (see Figure 3.7). As excavated, the unit consisted of seven separate strata.

Stratum I was a .12-.26 ft. thick layer of very dark gray (10YR3/1) sandy loam underlain by Stratum II, a .13-.37 ft. thick layer of very dark gray (10YR3/1) sandy loam mottled with dark grayish brown (10YR4/2) sandy loam. Stratum III was a .26-.52 ft. layer of dark brown (10YR3/3)

sandy loam mottled with Strata I and II. Stratum IV was a .04-.63 ft. layer of brown (10YR4/3) loamy sand mixed with yellowish brown (10YR5/4) clayey sand with a significant concentration of gravel (Figure 3.14). Stratum V was a .55-.86 ft. layer of brown (10YR5/3) loamy sand, that overlaid a .02-.84 ft. layer of light yellowish brown (10YR6/4) sand (contained primarily in the west 2/3's of the unit) (Stratum VI). Stratum VII was a .37-.74 ft. layer of yellowish brown (10YR5/4) sand with gravel. The north profile of Test Unit 2 clearly indicates the base of the floor and west wall of the dugout cellar; note the thin silted layers marked VI, VII, and VIII in the profile (Figure 3.15). The south profile does not show the same

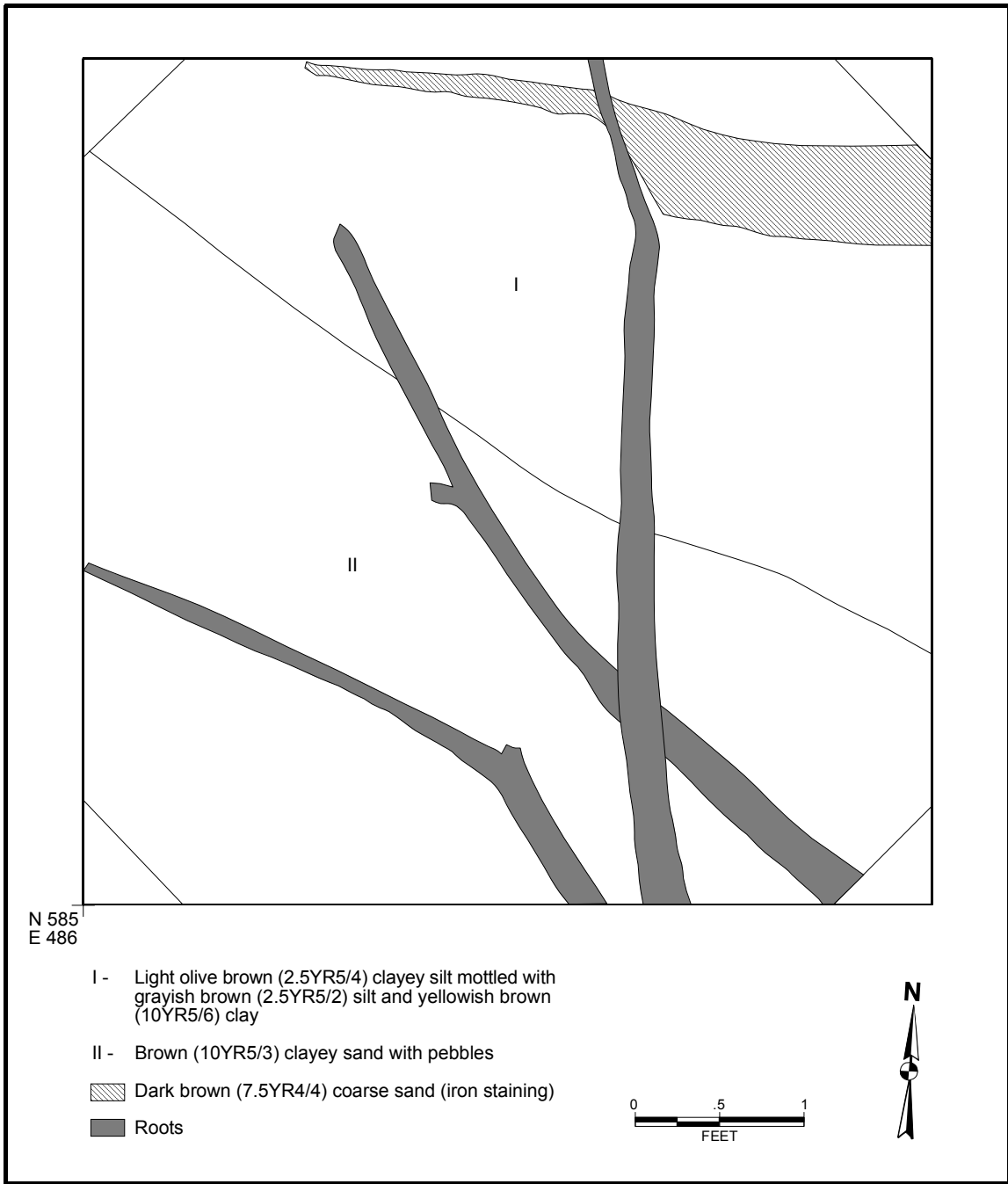


Figure 3.11. Plan of Test Unit 1, bottom of Level V.

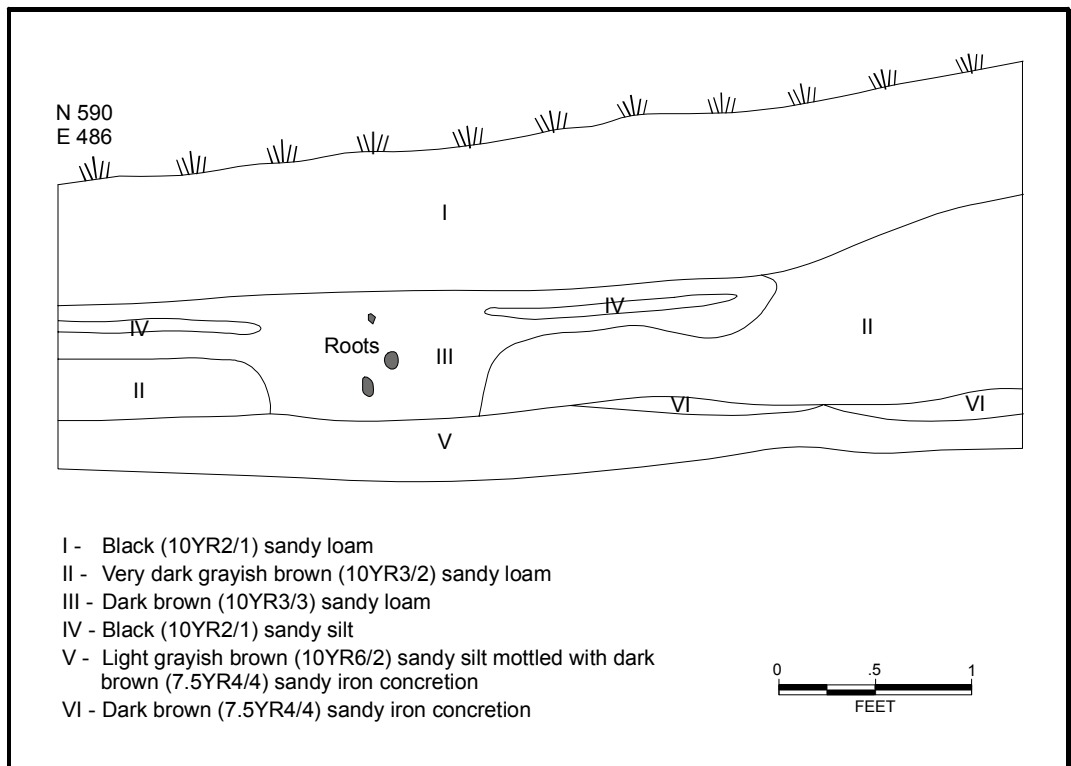


Figure 3.12. North profile of Test Unit 1.



Figure 3.13. Dan Goulson excavating in Test Unit 2.

Table 3.1. Artifacts recovered from Test Unit 1, Site 21SW17.

Provenience	Artifact Description	Quantity
TU1/I (Context 7)	Cut Nail, 8d Cut Nail, <2d Cut Nail Bone, unsorted Charcoal/burned wood (weight 3.04g)	1 1 1 5 13
TU1/I Total		21
TU1/II (Context 9)	Barbed Wire Cut Nail, 2d Bone, unsorted	1 1 1
TU1/II Total		3
TU1/III (Context 11)	Cut Nail, 4d Cut Nail, <2d Nail fragments, unidentified Charcoal/burned wood (weight 10.69g)	1 1 2 7
TU1/III Total		11
TU1/IV (Context 13)	Cut Nail Charcoal/burned wood (weight 22.47g)	2 21
TU1/IV Total		23
TU1/V (Context 17)	Cut Nail Charcoal/burned wood (weight 11.93g)	2 16
TU1/V Total		18
Test Unit 1, Total		76

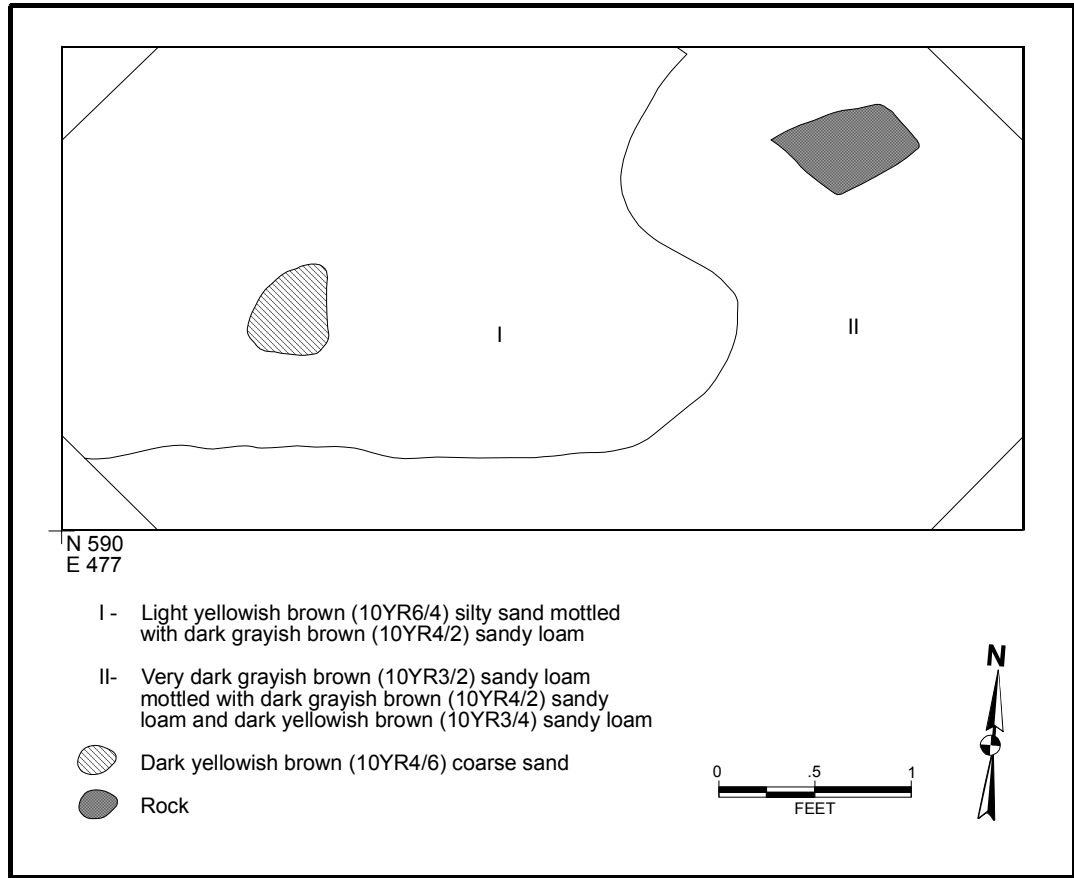


Figure 3.14. Plan of Test Unit 2, bottom of Level VI.

stratigraphic profile, however this profile reappears to the south in Trench 2 (Figure 3.16). This change in the south profile strata may indicate a door or window opening in this area. A total of 6 historic artifacts were recovered from Test Unit 1 (Table 3.2).

Stratum I did not contain any cultural artifacts. Stratum II contained 5 historic artifacts (see Table 3.2). The assemblage from this stratum included materials from four functional groups: the architecture group included cut nails (n=1), the floral group included fragments of charcoal or

burned wood (n=1). The faunal group includes two pieces of unsorted bone, while the unassigned group includes an aluminum tag (marked "Minn..s..off..npip..518560"). The cut nails generally date this level from ca. 1790 to ca. 1880, while aluminum suggests a mid-twentieth-century date.

Stratum III-VI did not contain any cultural artifacts. Stratum VII contained one historic artifact, a tooth. It is possible that this artifact fell from an upper level and is intrusive (probably Stratum II) or it may have been recovered in the

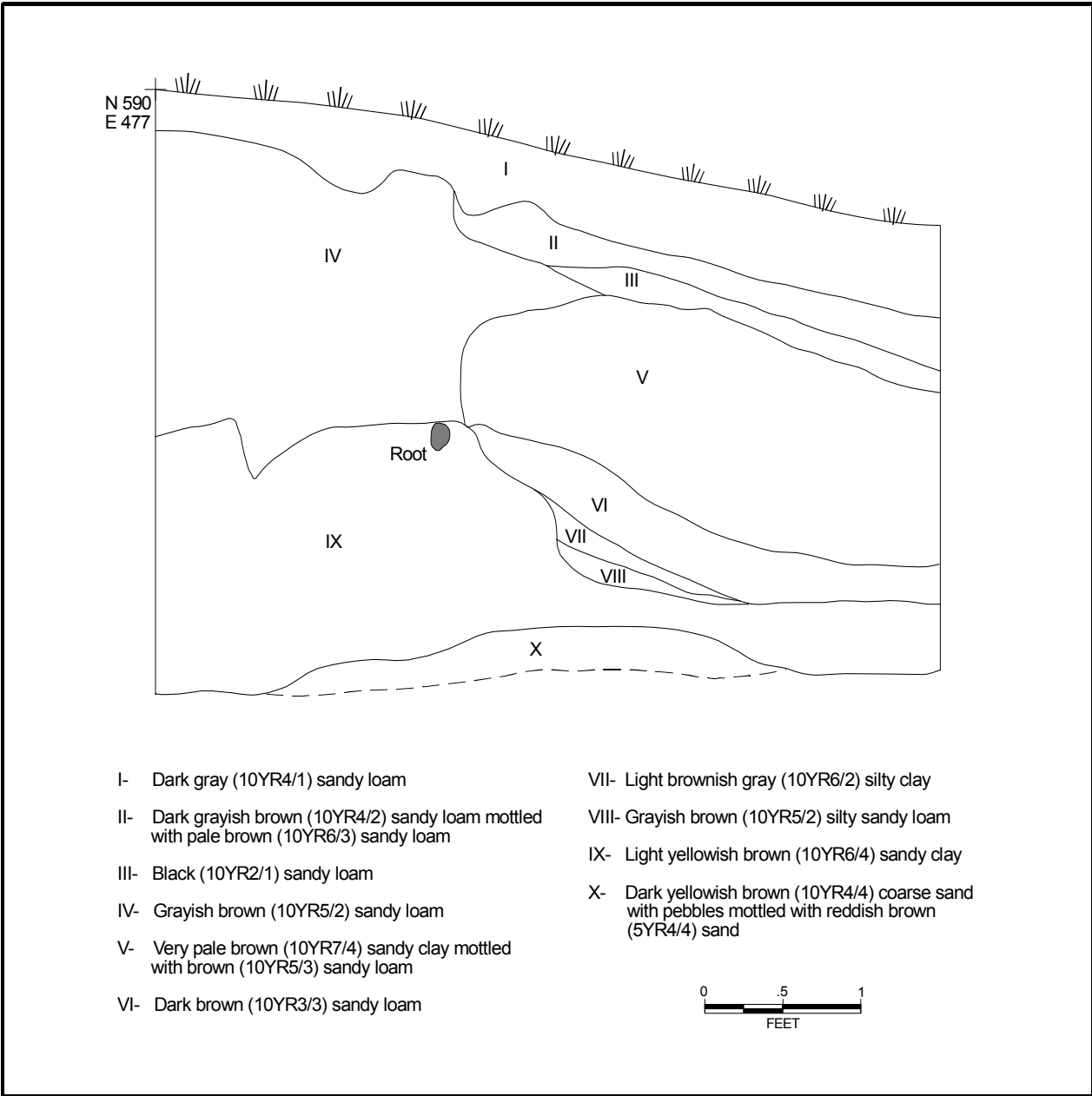


Figure 3.15. North profile of Test Unit 2.

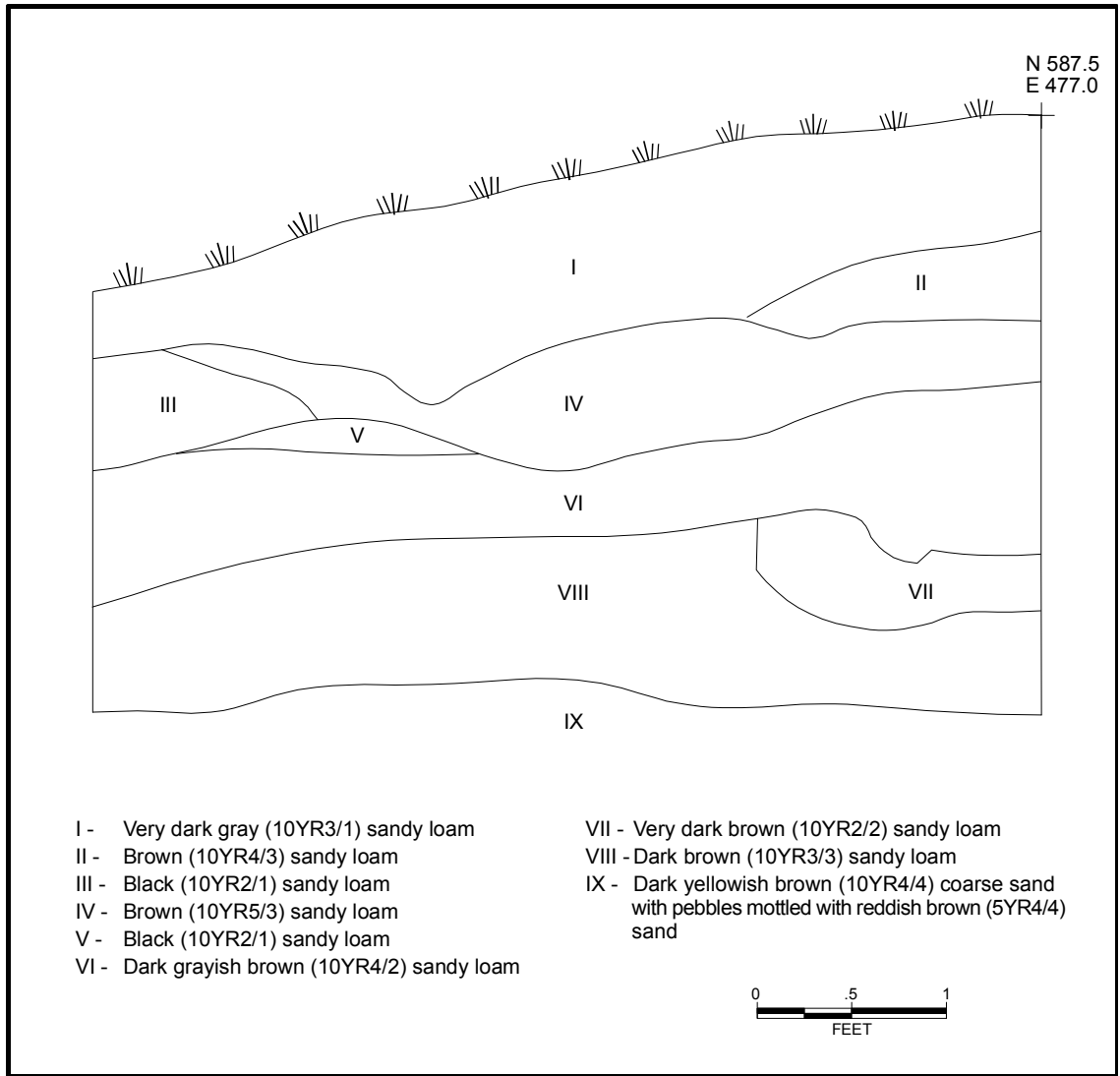


Figure 3.16. South profile of Test Unit 2.

Table 3.2. Artifacts recovered from Test Unit 2, Site 21SW17.

Provenience	Artifact Description	Quantity
TU2/II (Context 8)	Cut Nail	1
	Shell	2
	Charcoal/burned wood (weight 1.19g)	1
	Aluminum tag? "Minn..s..off..npip..518560"	1
TU2/II Total		5
TU2/VII (Context 19)	Bone, unsorted (tooth)	1
TU2/VII Total		1
Test Unit 2, Total		6

eastern end of the unit at the Stratum VII level, an area likely within the dugout cellar (see Figure 3.15).

Test Unit 3. Test Unit 3 was a 5- \times -5-ft. excavation unit placed in the floor of the depression at the southern end (see Figure 3.7; Figure 3.17). The unit was located at grid coordinates N574 E486 (sw corner). As excavated, the unit consisted of four separate strata.

Stratum I was a .03-.42 ft. thick layer of very dark grayish brown (10YR3/2) sandy loam; several rocks were noted in the matrix. Stratum II is a .0-.49 ft. thick layer of dark grayish brown (10YR4/2) sandy loam mottled with very pale brown (10YR7/3) silty sand. Stratum III was a .11-.40 ft. layer of black (10YR2/1) sandy loam. Stratum IV was a .14-.53 ft. layer of dark grayish brown (10YR4/2) sandy loam mottled with black (10YR2/1) sandy loam and light yellowish brown (10YR6/4) silty sand. The base of Stratum IV displayed two soil types divided roughly in the

north half and south half of the unit (Figure 3.18). The north half, a brown (10YR4/3) loamy coarse sand, was designated Feature 1 and excavated first. As excavation proceeded, it became apparent that this stratum ran under the pale brown (10YR6/3) silty clay in the southern portion of the unit. Thus, excavation was halted on the northern section and the southern section was removed first (Figure 3.19). Neither of these strata contained any artifacts and appeared to be natural deposits. The coarse sand and gravel layer in the base of this unit was similar to the base of Test Unit 1; it may represent a floor level. A total of 107 historic artifacts were recovered from Test Unit 3; over 95% (n=104) of these were fragments of unsorted bone (Table 3.3).

A total of 13 artifacts were recovered from Stratum I, all historic (see Table 3.3). The assemblage from this stratum included materials from one functional group: the faunal group included unsorted animal bones (n=13). These bones were not temporally diagnostic.



Figure 3.17. Ron Hanson excavating in Test Unit 3.

A total of 63 historic artifacts were recovered from Stratum II (see Table 3.3). The historic assemblage included materials from three functional groups: a copper alloy grommet from the clothing group, unsorted bone (n=61) from the faunal group; and fragments of charcoal or burned wood (n=1) from the floral group. None of the artifacts from this stratum are temporally diagnostic.

Stratum III contained 26 historic artifacts (see Table 3.3). The assemblage from this stratum included materials from one functional group: the faunal group included unsorted bone (n=26). These bones were not temporally diagnostic.

Stratum IV contained 5 historic artifacts (see Table 3.3). The assemblage from this stratum included materials from two functional groups: the architecture group included cut nails (n=1) and the faunal group included unsorted bone (n=4). The cut nails generally date this level from ca. 1790 to ca. 1880.

Test Unit 4. Test Unit 4 was a 2.5-x-6-ft. excavation unit placed in the floor of the depression between Test Units 1 and 3 (see Figure 3.7). The unit was located at grid coordinates N579 E486 (sw corner). As excavated, the unit consisted of three separate strata. Stratum I was a .45-.80 ft. thick layer of black (10YR2/1) sandy loam.

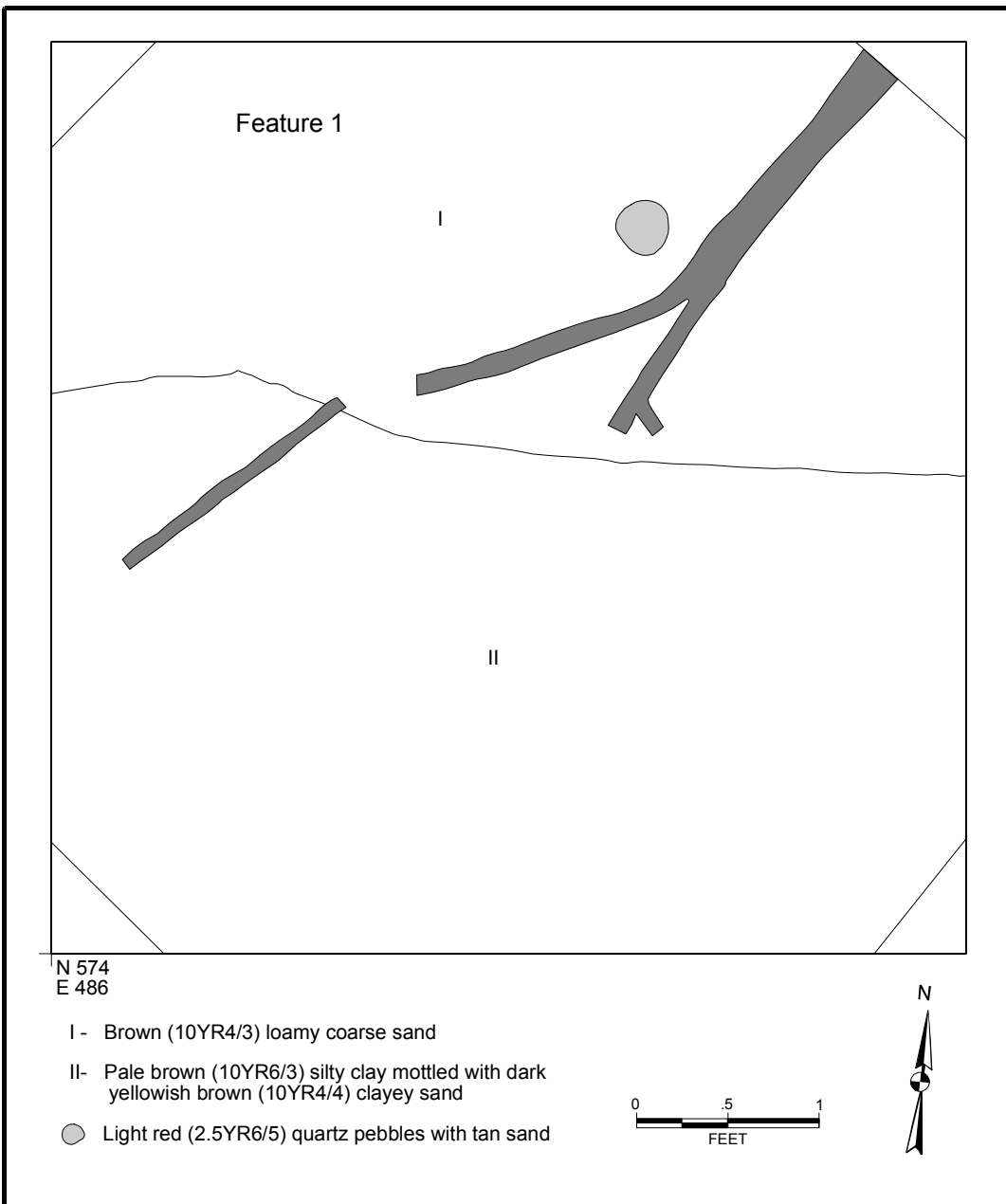


Figure 3.18. Plan of Test Unit 3, bottom of Level IV.

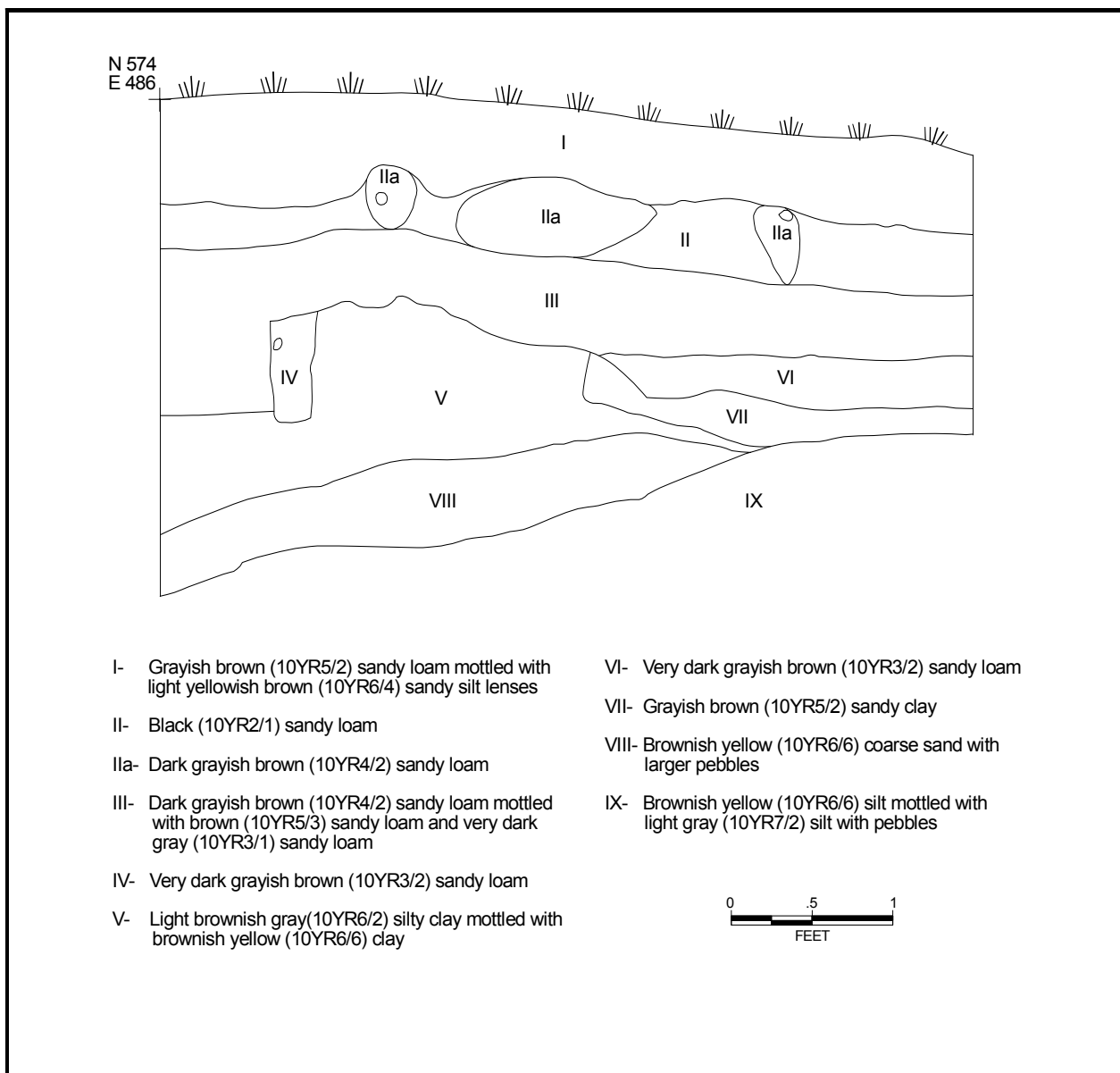


Figure 3.19. West profile of Test Unit 3.

<i>Table 3.3. Artifacts recovered from Test Unit 3, Site 21SW17.</i>		
Provenience	Artifact Description	Quantity
TU3/I (Context 12)	Bone, unsorted	14
TU3/I Total		14
TU3/II (Context 14)	Grommet, copper alloy Bone, unsorted Charcoal/burned wood (weight 28.33g)	1 63 1
TU3/II Total		65
TU3/III (Context 15)	Bone, unsorted	28
TU3/III Total		28
TU3/IV (Context 16)	Cut nail Bone, unsorted	1 4
TU3/IV Total		5
Test Unit 3, Total		112

Stratum II is a .30-.86 ft. thick layer of black (10YR2/1) sandy loam. Stratum III was a .11-.24 ft. layer of very dark grayish brown (10YR3/2) sandy loam. The base of this unit, a yellowish brown (10YR5/4) silty sand mottled with gray (10YR6/1) silt was similar to the base of Test Unit 1; it may represent a floor level (Figure 3.20). The west wall profile illustrates fill layers sloping gently to the north (Figure 3.21). A total of 22 historic artifacts were recovered from Test Unit 1; over 50% (n=17) of these were fragments of unsorted bone (Table 3.4).

A total of 20 artifacts were recovered from Stratum I, all historic (see Table 3.4). The

assemblage from this stratum included materials from three functional groups: a piece of wire, likely barbed wire (n=1) from the activities group/agriculture, a nut shell from the floral group, unsorted animal bones (n=4) from the faunal group, and a possible piece of plastic from the unassigned materials group. The barbed wire generally dated this stratum to post 1868, while the plastic dates to the twentieth century.

A total of 2 historic artifacts were recovered from Stratum II (see Table 3.4). The historic assemblage included materials from two functional groups: cut nails (n=1) from the architectural group and barbed wire (n=1) from the activities group/

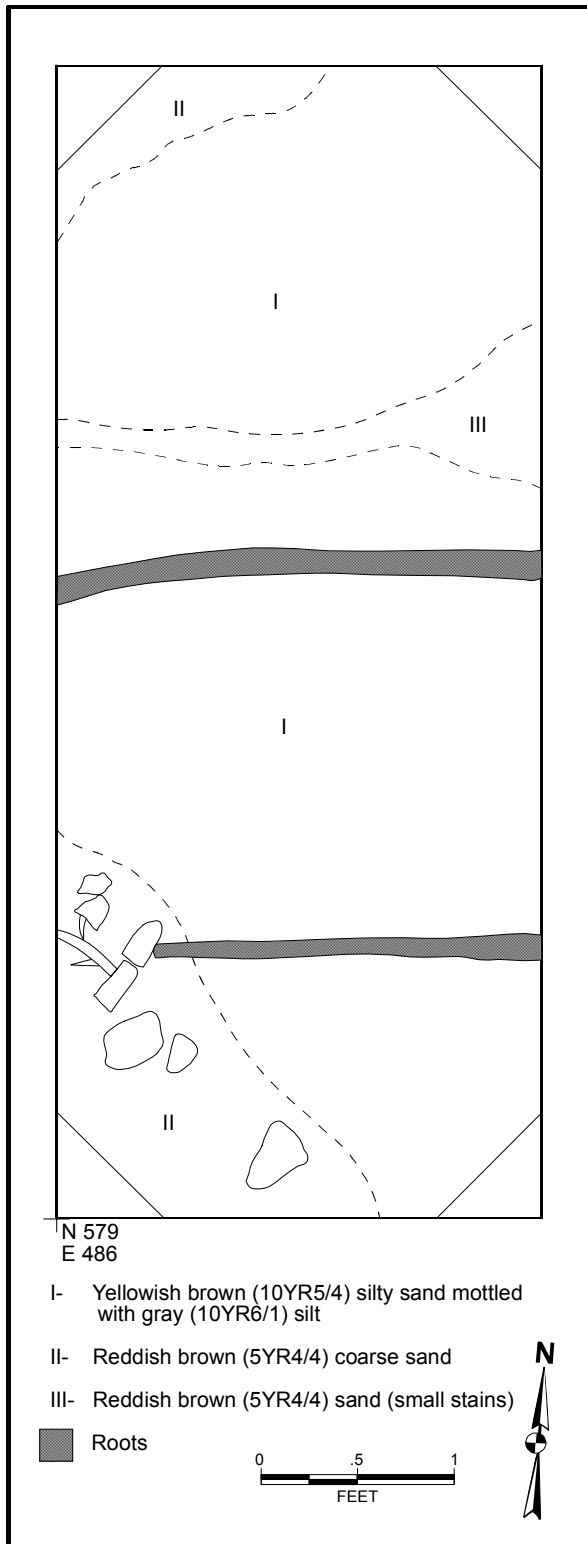


Figure 3.20. Plan of Test Unit 4, bottom of Level III.

agriculture. The cut nails generally date this level from ca. 1790 to ca. 1880, while the barbed wire generally dates this stratum to post 1868.

Trench Excavation

Three trenches were excavated into the dugout berms in order to better assess the stratigraphic profile and development of the structure (see Figure 3.7). Trench 1 was excavated into the east side of the depression and measured approximately 2 ft. wide x 9 ft. long; the trench was approximately 4 ft. deep at its eastern end. Trench 2 was excavated into the west side berm and measured approximately 2 ft. wide x 8.5 ft. long; the trench was approximately 2.8 ft. deep at its western end. Trench 3 was excavated into the north side berm and measured approximately 2 ft. wide x 8.5 ft. long; the trench was approximately 4 ft. deep at its northern end. The soil removed from the trenches was initially screened, however, screening was abandoned due to the lack of artifacts recovered. Only Trench 1 contained artifacts, and these were recovered from the lower, eastern end of the trench just below the surface.

Trench 1 revealed a complex series of fill layers that sloped from the cultivated field on the east into the bottom of the depression (Figure 3.22). The strata recorded in profile as I-VII all appear to be post occupation fill sequences that have gradually filled the original cellar. The base of Stratum VII appears to be a possible original surface, perhaps the floor level of the dugout. This interface steps up gradually from the floor at the west end of the trench toward the east. It is possible that the larger step in the middle of the profile represents the former east wall location of the dugout, however this is unclear. Trench 1 contained 2 historic artifacts, a nail fragment and a ferrous staple, in the upper layers (Table 3.5).

Trench 2 also revealed a complex series of fill layers that sloped from the top of the berm toward the base of the depression (Figure 3.23). The strata recorded in profile as I-X all appear to

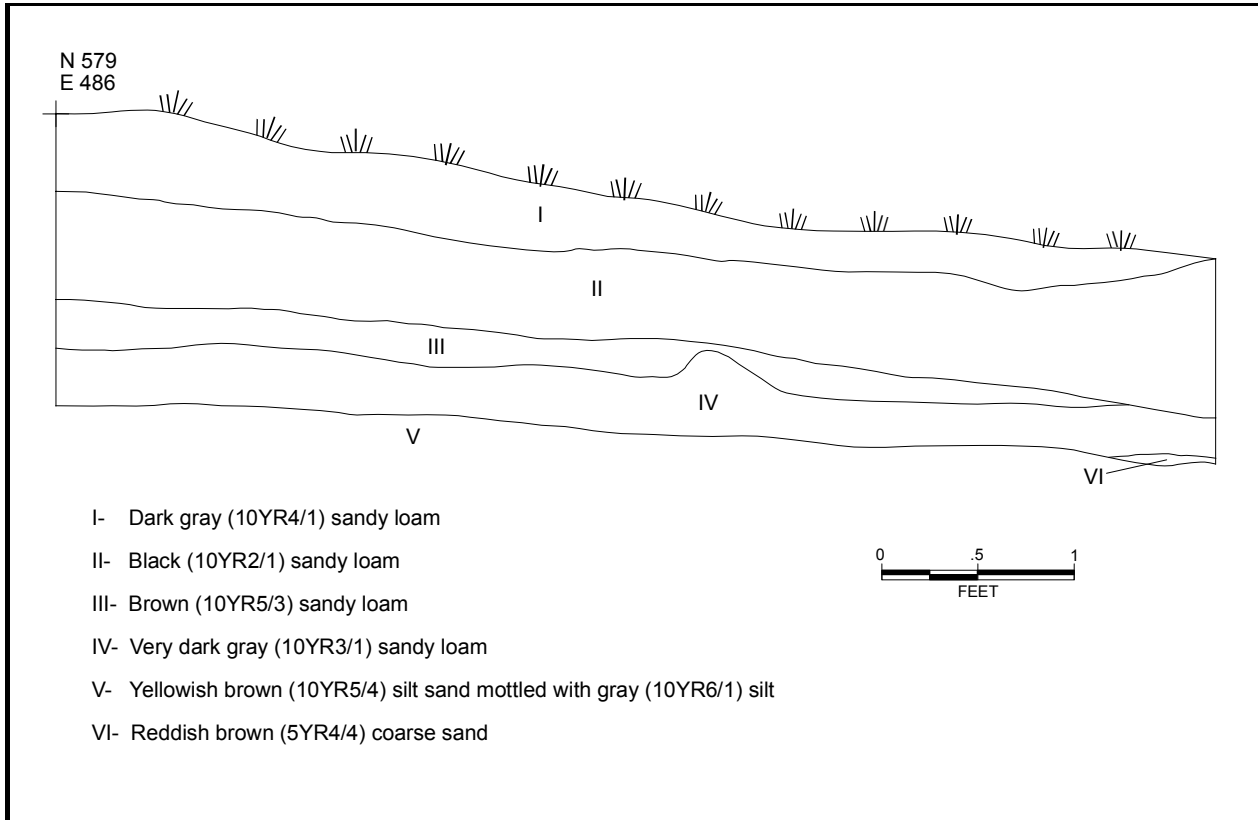


Figure 3.21. West profile of Test Unit 4.

Table 3.4. Artifacts recovered from Test Unit 4, Site 21SW17.

Provenience	Artifact Description	Quantity
TU4/I (Context 18)	Bone, unsorted Nut shell Unidentified material, plastic? Wire, ferrous (barbed wire?)	17 1 1 1
TU4/I Total		20
TU4/II (Context 20)	Barbed wire Cut nail	1 1
TU4/II Total		2
Test Unit 4, Total		22

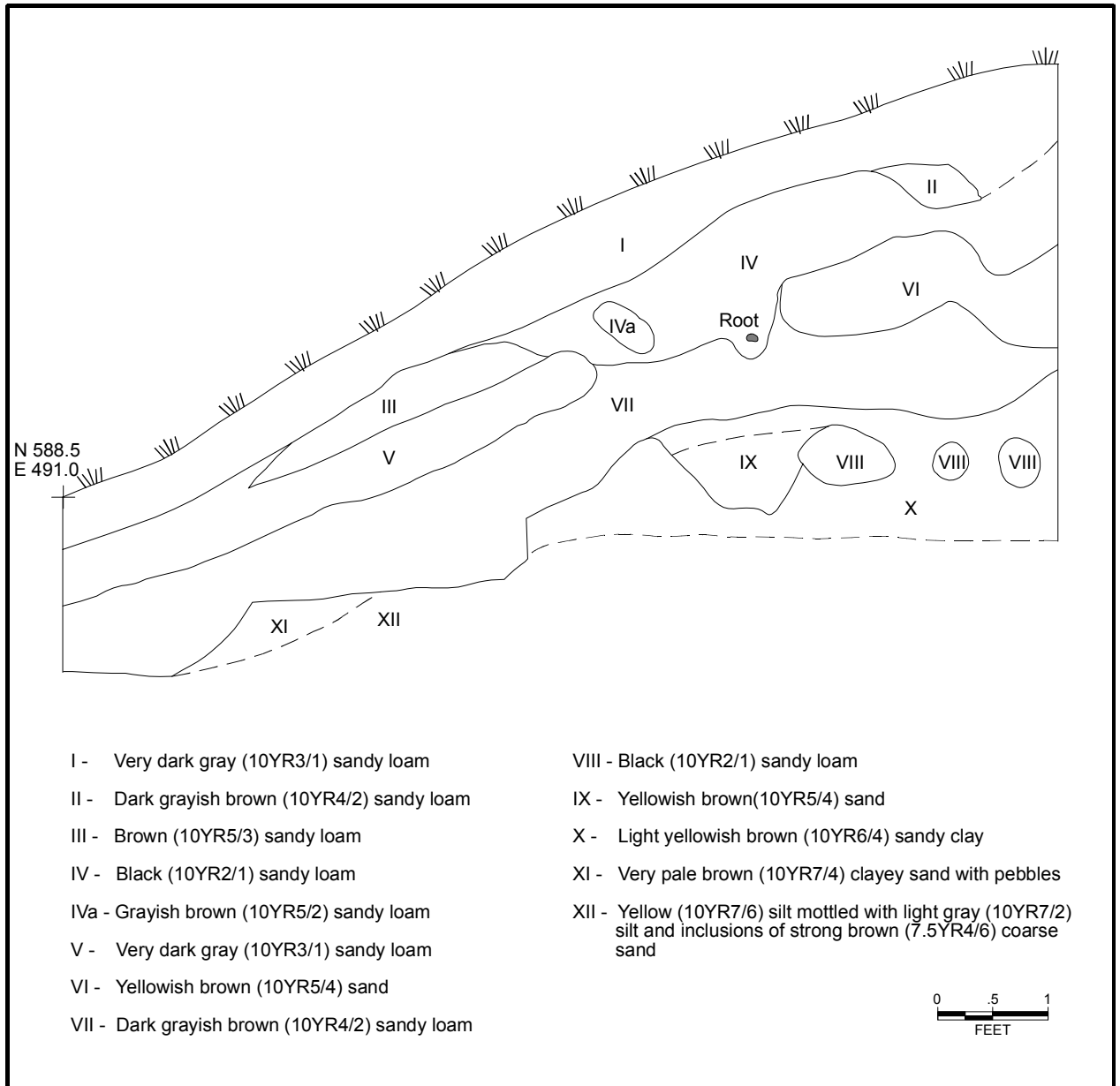


Figure 3.22. North profile of Trench 1.

Table 3.5. Artifacts recovered from Trench 1, Site 21SW17.

Provenience	Artifact Description	Quantity
Trench 1	Nails, unidentified fragments	1
	Staple, ferrous	1
Trench 1 Total		2

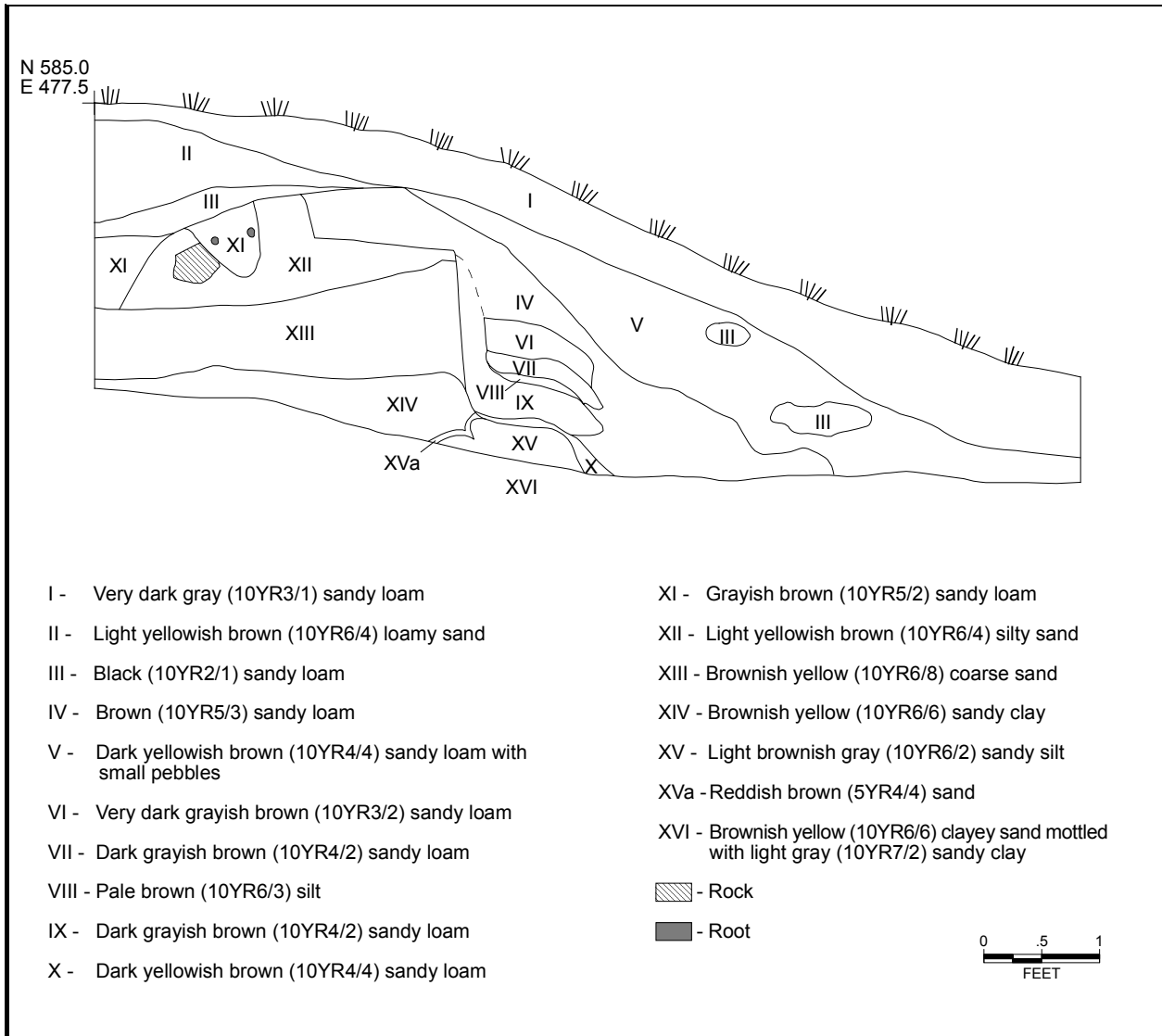


Figure 3.23. North profile of Trench 2.

be post occupation fill sequences that have gradually filled the original cellar. The western wall of the dugout appears as a completely vertical interface between Strata XIII and XIV and a series of thin silted layers (Strata IV-X) (see Figure 3.23; Figure 3.24). These thin strata clearly represent the slow filling of the dugout depression after abandonment. In addition, a series of large stones were recorded on the horizontal interface between Strata IV and XII (see Figure 3.23; Figure 3.25). Thus, these stones would have sat just above and outside the earthen wall of the dugout cellar. It seems likely that these stones were purposefully placed, perhaps to support a short log wall that rose above the berm. No artifacts were recovered from Trench 2.

Trench 3 contained a complex series of fill layers that sloped south from the top of the berm toward the base of the depression (Figure 3.26).

The strata recorded in profile as I-XII all appear to be post occupation fill sequences that have gradually filled the original cellar. The northern wall of the dugout appears as a nearly vertical interface between Strata XIII and a series of thin silted layers (Strata VIII-XII). These thin strata clearly represent the slow filling of the dugout depression after abandonment. The base of the trench below Stratum VII is almost identical to the base of Test Unit 1. No artifacts were recovered from Trench 3.

Material Culture Assemblage

The artifact assemblage from the Christopherson/Goulson dugout is relatively sparse compared to the Gibbs Farm site, however, most of the materials recovered from the fill at the Gibbs Farm site were secondarily deposited and related to a later house on the site. The



Figure 3.24. Detail of north profile of Trench 2 showing the vertical “wall” location and layers of silt.

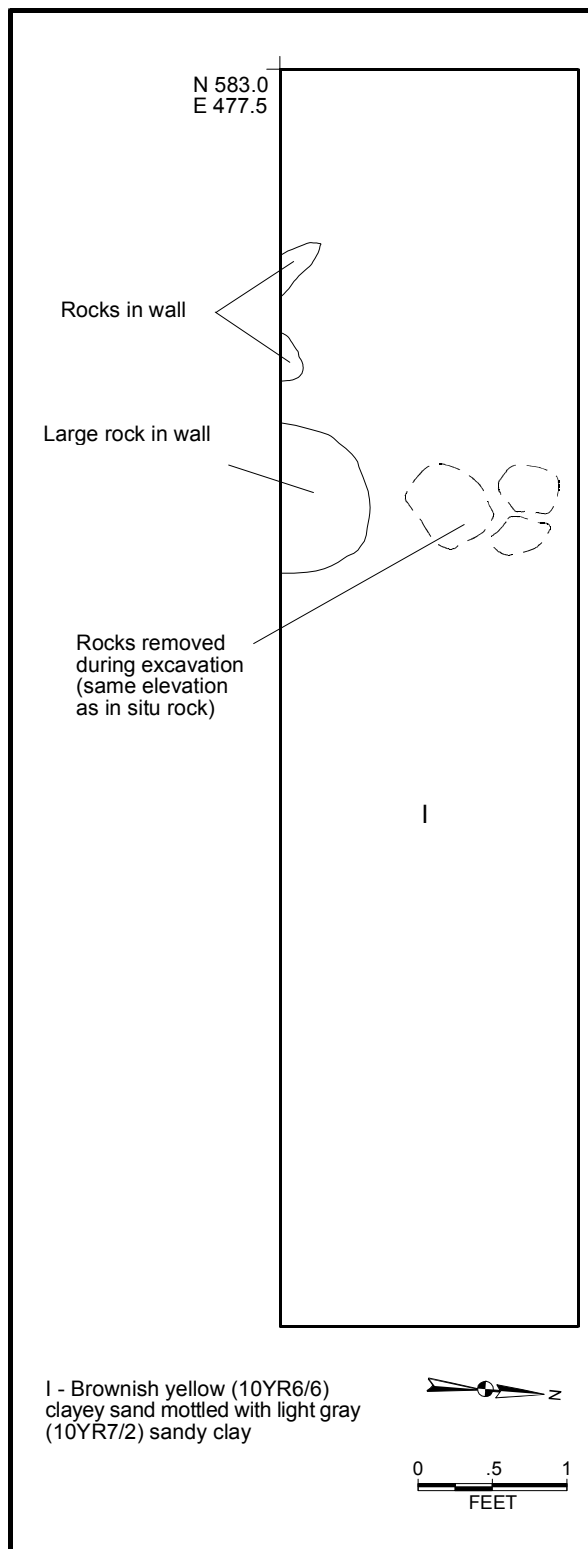


Figure 3.25. Plan of Trench 2.

Christopherson/ Goulson dugout assemblage is similar to the other three dugouts excavated in Minnesota.

The excavations yielded 216 artifacts related to the Christopherson/Goulson occupation; 59 of the artifacts (27.3%) are fragments of wood/charcoal that were retained for analysis. These artifacts fall into seven major functional categories including architectural, food preparation/consumption, activities-agricultural, clothing, faunal, floral, and unassigned materials (Table 3.6) (Appendix C).

The architectural group contains materials related to buildings and possibly furnishings (see Table 3.6). A total of 14 cut nails were recovered during the excavations (Figure 3.27). The various sizes of cut nails, ranging from <2d to 8d (several fragments may be as large as 20d), suggest that the dugout either had some wood framing, perhaps in the side walls, roof structure, or door, or that these nails might reflect the modest wood furniture in the house. The cut nails generally date the structure from ca. 1790 to ca. 1880. In addition to the cut nails, one ferrous staple and one possible mortar fragment were recovered. The staple could be related to the barbed wire that was also recovered during the excavations, while the possible mortar may actually reflect chinking for a log superstructure. The cut nails were recovered from all excavated contexts, with a marked concentration in Test Unit 1 in the base of the dugout depression. Based on the number of cut nails (n=17) recovered from the area excavated within the dugout (65 ft.²), the total number of nails within the dugout fill would be approximately 80-100. This seems low for a framed roof structure, lending support to the idea that the wooden structure above the dugout cellar was log with minimal framing of the door, window (?), and possibly gable end(s).

The food preparation/consumption group consists of a single artifact, a ferrous metal knife handle (Figure 3.28a). This object is the iron center

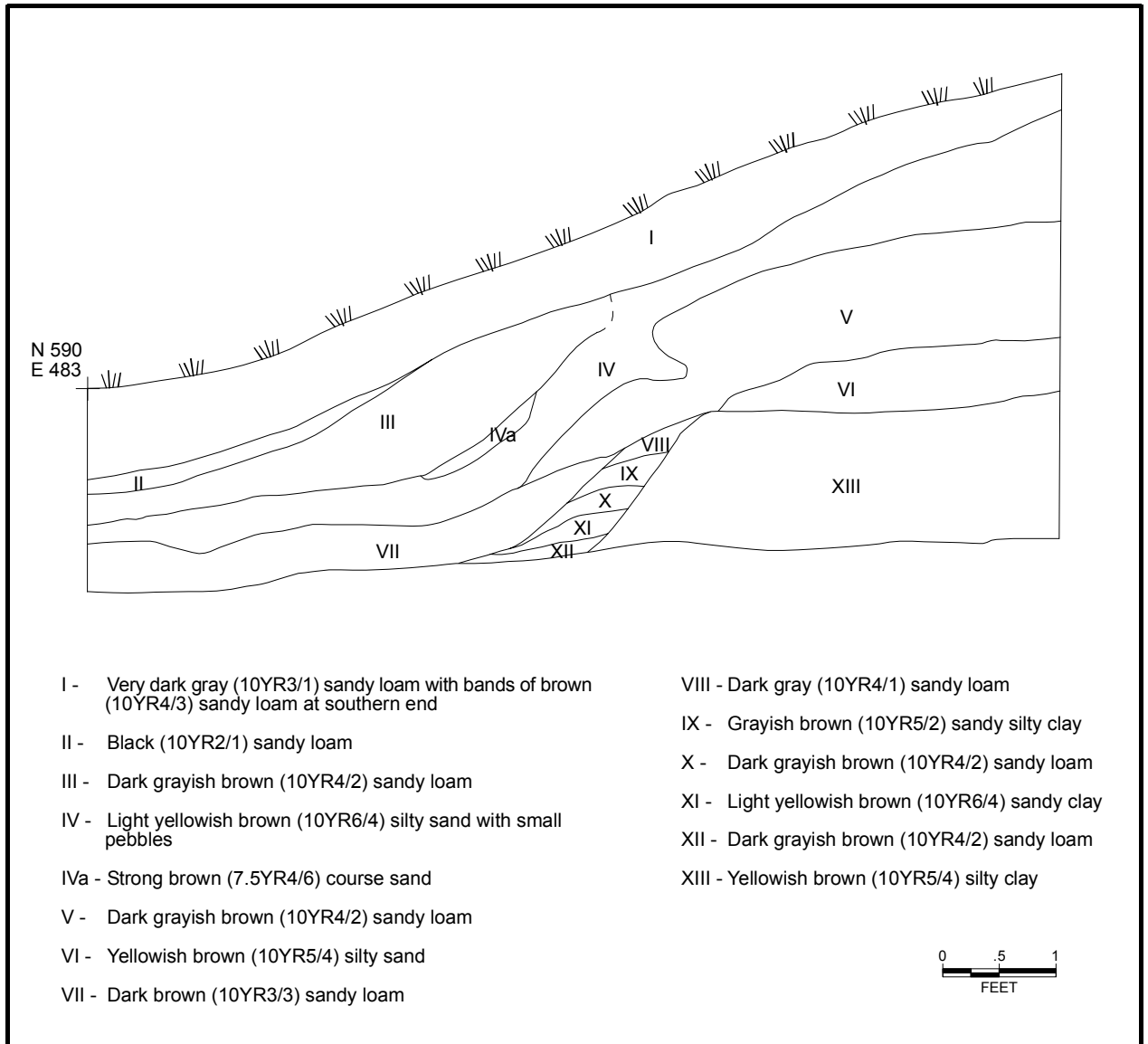


Figure 3.26. West profile of Trench 3.

Table 3.6. Artifacts recovered from Site 21SW17 by functional category.

Functional Group	Artifact Description	Quantity
Architectural	Cut Nail, <2d Cut Nail, 2d Cut Nail, 4d Cut Nail, 8d Cut Nail, fragment Nail fragments Staple Mortar?	2 1 1 1 9 3 1 1
Architecture		19
Food prep./ consumption	Knife handle, ferrous	1
Food prep./ Consumption		1
Activities - Agricultural	Barbed wire, ferrous, two point barb	3
Activities - Agricultural		3
Clothing	Copper alloy grommet	1
Clothing		1
Faunal	Unsorted bone	130
Faunal		130
Floral	Charcoal/burned wood (weight 22.47g) Nut shell	59 1
Floral		60
Unassigned materials	Aluminum tag (modern?) Unidentified plastic	1 1
Unassigned materials		2
Total		216



Figure 3.27. Cut nails recovered from the dugout excavation.



Figure 3.28. Iron knife handle (a) and copper alloy grommet (b) recovered from the dugout excavation.

of a wood knife handle that had two tangs to attach the wood; wood fragments are attached to the tangs. This knife appears to be a standard type for the period, similar to ones shown in the Montgomery Ward & Co. Catalogue of 1894-1895 (Schroeder 1970:433), and the Simmons Hardware Company Catalogue of 1881 (Barlow 1992:158) (Figures 3.29 and 3.30). The knife fragment was

recovered from Shovel Test 6 along the eastern edge of the dugout depression (see Figure 3.7).

The activities-agriculture group includes three artifacts, and all are barbed wire. Two of the pieces retain the barbs, while the third piece has obvious attachment marks representing the barbs (Figure 3.31). Barbed wire in general was invented ca. 1868, so the fragments from the Goulson site obviously must post date 1868. These fragments appear to be Glidden Round Single Strand barbed wire, patented in 1876 (barbwiremuseum .com). Thus, they would suggest a post-1876 date for the use. It is possible that these fragments represent fence lines that post dated the occupation of the Christopherson/Goulson dugout. A single ferrous staple hints that a barbed wire fence may have been used in this area either during or after the



Figure 3.29. Table cutlery in the Montgomery Ward and Co. Catalogue (1894-95).

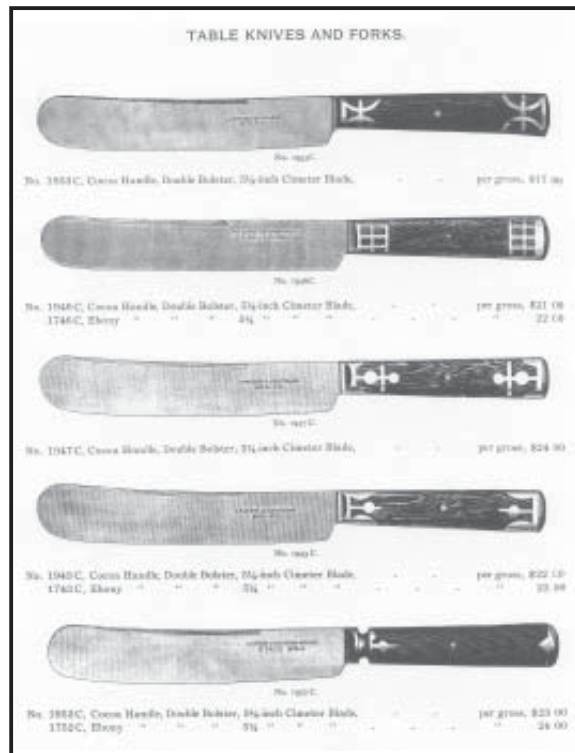


Figure 3.30. Table knives from the Simmons Hardware Company Catalogue (1881).

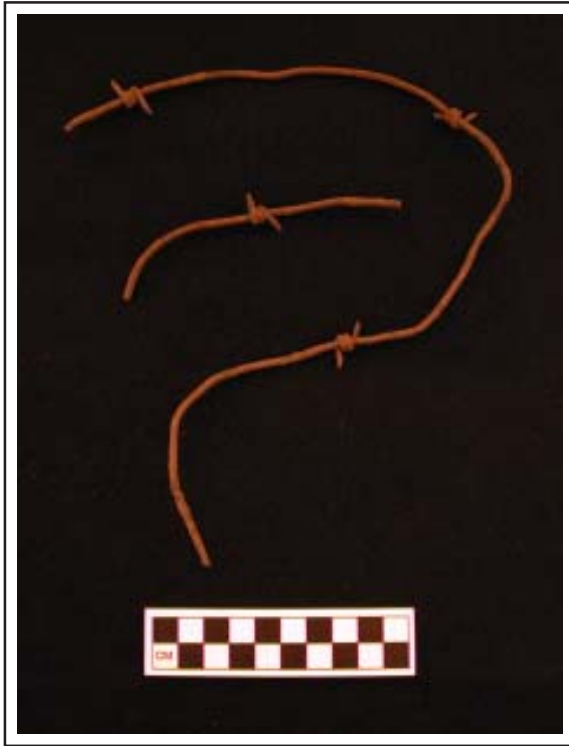


Figure 3.31. Barbed wire recovered from the dugout excavation.

Christopherson/Goulson occupation. The barbed wire fragments were all recovered in the units in the base of the dugout depression. Hilton Goulson recalls that the river valley was fenced as pasture, so the barbed wire could possibly represent the early twentieth-century fencing of the Thomas Goulson farm.

The clothing group contains a single copper alloy grommet (Figure 3.28b). This small grommet is typical of those that might be found on shoes or clothing. Grommets of this type are not temporally diagnostic.

The faunal group includes animal bones that represent the remains of meals or of livestock kept by the Christopherson/Goulson family. A total of 130 faunal remains were recovered during the excavations; these materials were analyzed in the

UKPAR zooarchaeology laboratory and a full report is contained in Appendix D. The vertebrate faunal remains consist of 127 specimens, while the invertebrate remains consist of 3 specimens. The assemblage represents both domesticated and non-domesticated animals, not unusual for a collection from an early pioneer site. The list of identified species include Mammalia (mammals), Cricetidae (mice, rates, voles), *Odocoileus virginianus* (white tailed deer), Bovidae (cow, ox, bison, sheep, goat), *Sylvilagus foridanus* (eastern cottontail rabbit), Aves (birds), *Gallus gallus*, (chicken), Bivalvia (bivalves), and Polygyridae (polygyrid snails). The majority of the faunal materials were recovered from Test Units 1, 3, and 4 in the base of the dugout depression. A single tooth, possibly human, was recovered from the base levels of Test Unit 2, likely an area within the original dugout cellar.

The floral group consists of 59 fragments of charcoal/burned wood (22.47 g) and 1 nut shell. Analysis of the charcoal/burned wood sample resulted in the identification of 55 of the fragments. The wood remains identified were all hardwood and includes cottonwood or aspen, elm, oak, basswood, walnut, black ash, and buckeye (Appendix E). Cottonwood or aspen formed the largest part of the sample (45%), followed by elm (18%), buckeye (18%), oak (5%), basswood, (5%), and walnut and black ash (6%). These findings are generally in line with tree species recorded in early land surveys and the geological survey of the county, particularly for basswood, ash, elm, oak, and cottonwood (Winchell and Upham 1888[2]:210). The fragments from the Christopherson/Goulson site likely represent the wooden structure of the dugout or possibly wood that was burned for firewood.

The unassigned materials group consisted of 2 artifacts. A small aluminum tag marked "Minn..s..off..npip..518560" was recovered from the upper strata of Test Unit 2. This seems to be a modern artifact, perhaps related to hunting. In

addition to this tag, one small piece of unidentified plastic was recovered from the upper strata in Test Unit 4.

While the nails testify to the dugout structure itself, the brass grommet, knife handle, animal bones, and perhaps the barbed wire are mute testament to the family's multiple years in the dugout. Like the Christopherson/Goulson dugout, neither the Hoxie Rathbun, Ole Palme, or Rick Lewis dugout sites contained many artifacts; most of the Gibbs site artifacts date to the period after the use of the dugout itself. While also sparse, the Palme II assemblage did contain some domestic ceramics and glass, as well as other personal items that might be associated with a domestic occupation. The lack of artifacts from dugout excavations is not completely surprising in that the small dugout space would likely have been kept clean of debris, with trash disposed of at the base of the slope or hill. In the case of the Christopherson/Goulson dugout, later trash disposal did not affect the dugout as the family's new house was located almost a half mile to the south.

Summary

The dugout depression measured approximately 40 ft. north/south x 20 ft. east/west and 4-5 ft. deep prior to excavation (see Figure 3.7). The north and west, or downhill sides, of the dugout are mounded with dirt, while the south side gradually slopes to the north to the deepest part of the cellar depression. Based on the excavation data from test units and trenches, it is estimated that the Christopherson/Goulson dugout measured approximately 18-20 ft. north/south x 13-15 ft. east/west, an area of approximately 200-300 ft.². Based on the trench and test unit profiles the north and west sides of the original dugout are the most clearly defined, but the others can be estimated.

Trench 2, Test Unit 1, and Trench 1, provide a full profile across the dugout from west to east

(Figure 3.32). Trench 2 clearly illustrates the west wall of the cellar below a complex series of fill layers that sloped from the top of the berm toward the base of the depression (see Figure 3.32). The western wall of the dugout appears as a completely vertical interface between Strata XIII and XIV and a series of thin silted layers (Strata IV-X). These thin strata clearly represent the slow filling of the dugout depression after abandonment. In addition, a series of large stones were recorded on the horizontal interface between Strata IV and XII (see Figure 3.25). Thus, these stones would have sat just above and outside the earthen wall of the dugout. It seems likely that these stones were purposefully placed, perhaps to support a short log wall that rose above the berm. The base levels (Stratum V) of Test Unit 1 seem to indicate the original level of the dugout floor. In Trench 1, a complex series of fill layers slope from the cultivated field to the east into the bottom of the depression (see Figure 3.32). The base of Stratum VII appears to be a possible original surface, perhaps the original floor level of the dugout. This interface steps gradually from the floor at the west to the east. It is possible that the larger step in the middle of the profile represents the former wall location of the dugout, however this is unclear. The distance from the clearly delineated west wall to the less well defined east wall is approximately 13-15 ft.

Test Unit 3, Test Unit 4, Test Unit 1, and Trench 3 provide a full profile across the dugout from south to north (Figure 3.33). An approximately 2 ft. wide raised block (Stratum V) in Test Unit 3, may represent the south wall of the dugout (see Figure 3.33). The base of this unit (north of Stratum V) as well as the base of Test Unit 4 (Stratum V), and the base of Test Unit 1 (multiple strata), suggest the original floor level of the dugout. While these units are generally level, there is a slight pitch from south to north (see Figure 3.33). Trench 3 contained a complex series of fill layers that sloped south from the top of the berm toward the base of the depression (see Figure

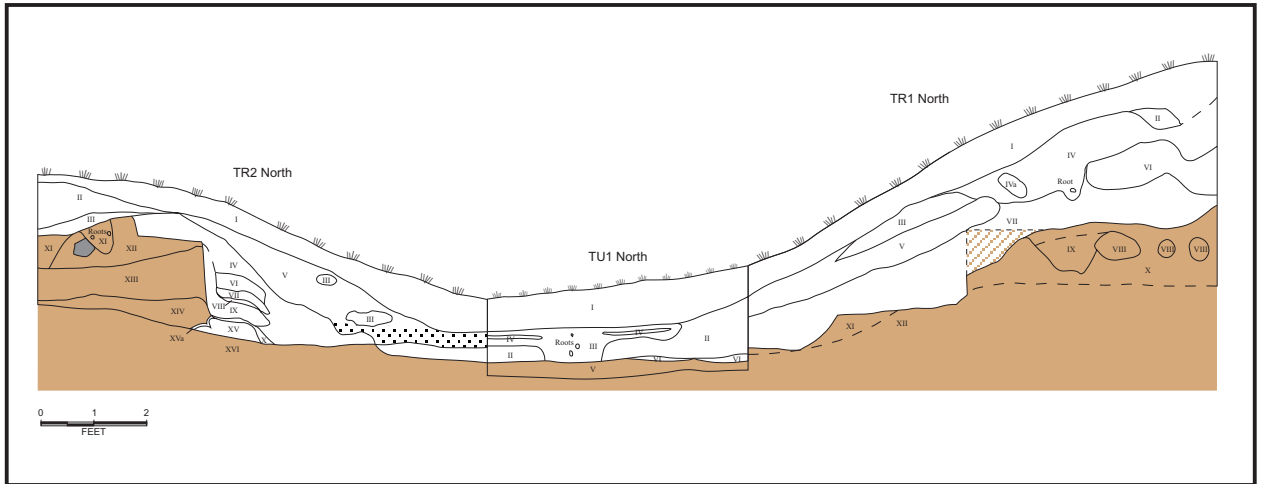


Figure 3.32. North profile of Trench 2, Test Unit 1, and Trench 1 showing the dugout cellar.

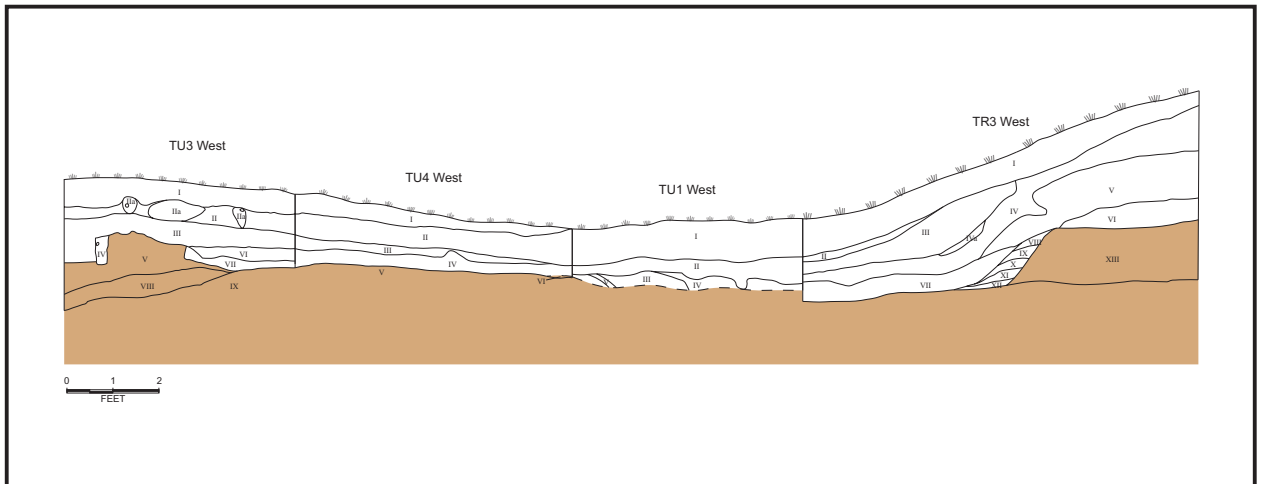


Figure 3.33. West profile of Test Unit 3, Test Unit 4, Test Unit 1, and Trench 3 showing the dugout cellar.

3.33). The northern wall of the dugout appears to be a nearly vertical interface between Strata XIII and a series of thin silted layers (Strata VIII-XII) (see Figure 3.33). These thin strata clearly represent the slow filling of the dugout depression after abandonment. The base of the trench below Stratum VII is almost identical to the base of Test Unit 1; these levels likely represent the floor. The distance from the more clearly delineated north wall to the less clear south wall is approximately 18-20 ft.

Based on the excavation data, it is likely that the structure had low side walls and a wooden roof. This hypothesis seems to be reinforced by the location of the large stones in Trench 2, just above the west wall. These stones may have provided a base or support for the short log wall above the dugout berms. It seems probable, due the fairly small quantity of cut nails, that the side walls were either log (Figures 3.34 and 3.35); “stakes...driven into the ground around the hole, willow branches woven on them, and this lattice work given a coat of mud plaster,” as described by Anonson (1929:27); or made of sod blocks (Figures 3.36 and 3.37) as noted by Broste (1985:173). Broste argues that the earthen berms of the Palme dugout reflect “melted” sod walls. The south wall may have been primarily constructed of sod blocks with a doorway entry in the center. It is possible that the gentle slope from south to north is the result of the “melting” of the sod block south wall of the dugout. At the Palme site, Broste (1985) has suggested that the lack of a berm on the south wall may argue for a wooden, possibly log or framed wall. This may also be the case at the Christopherson/Goulson dugout, accounting for the lack of a berm on the south facade of the structure.

Regardless of the exact wall configuration, the roof of the Christopherson/Goulson dugout was probably of pole rafter construction, either using a shed roof (see Figures 3.35 and 3.37) or gable form (see Figures 3.34 and 3.36); it is possible that it was also framed with dimensional lumber,

although the quantity of cut nails argues against this idea. It seems more likely that the roof structure, whether shed or gable, was of pole rafter construction with a woven latticework of smaller branches with a covering of hay or reeds, dirt, and sod. If the Christopherson/Goulson dugout had a gable type roof, it is possible that the gable ends were covered with boards using cut nails, much like the Gibbs farm dugout. However, the more likely use of the nails would have been in framing and construction of the south wall, a door on the gable end, or perhaps a window, possibly located on the western wall. The recovery of burned wood fragments during the excavation suggests that the wood was a combination of basswood, ash, elm, oak, and cottonwood, all woods that were documented in the area in early records (Winchell and Upham 1888[2]:210) (Appendix E). The absence of pine, the predominant type of lumber being shipped from the Great Lakes states to the prairie, suggests that dimensional lumber was not used in the dugout.

The size of the Christopherson/Goulson dugout, at 18-20 ft. north/south x 13-15 ft. east/west, is within the typical range of dugouts in the Upper Midwest. In general dugouts could vary in size from 7 x 10 ft. to more than 18 x 24 ft. (Broste 1995; Caspers 1980:41). Thus, the Christopherson/Goulson dugout is at the larger end of the range in terms of size. While this size more closely approximates the dugout barn at the Palme site than the dwelling, it is still within the size range of dugouts used as dwellings. It seems likely that the Christopherson/Goulson dugout was typical in its other construction methods. The interior space of dugouts was usually one room, but could be divided into two rooms on occasion. Interiors walls could be bare earth, whitewashed with lime, or lined with stone or wood; the Christopherson/Goulson dugout seems to have been one room with interior walls of bare earth below and log, woven branches, or sod blocks above (Figure 3.38). The evidence from excavation suggests that the floor of the Christopherson/Goulson dugout was packed earth. The rather small number of nails recovered

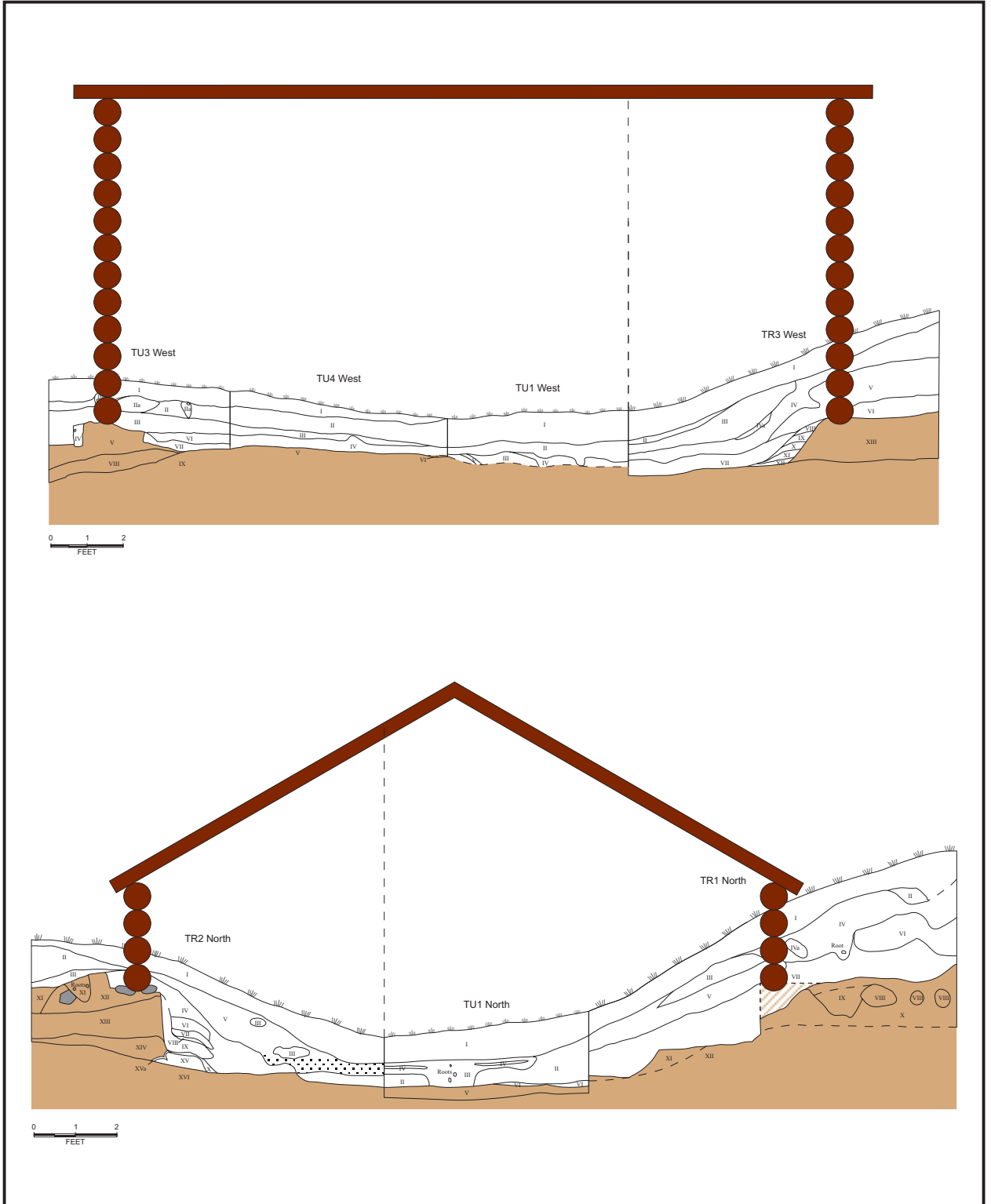


Figure 3.34. Conjectural reconstruction of Christopherson/Goulson dugout using log upper walls and gable roof.



Figure 3.35. Conjectural reconstruction of Christopherson/Goulson dugout using log upper walls and shed roof.

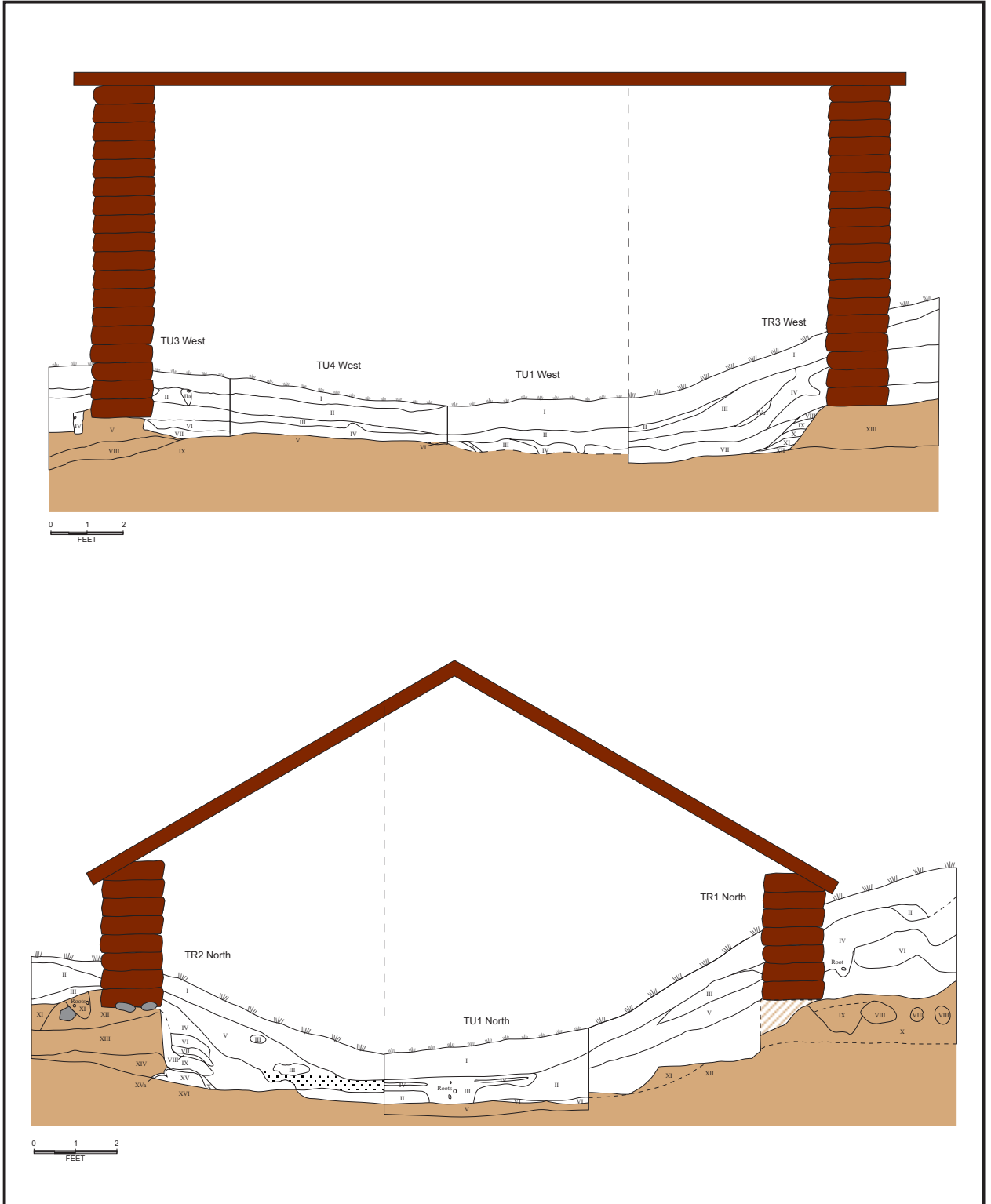


Figure 3.36. Conjectural reconstruction of Christopherson/Goulson dugout using sod block upper walls and gable roof.

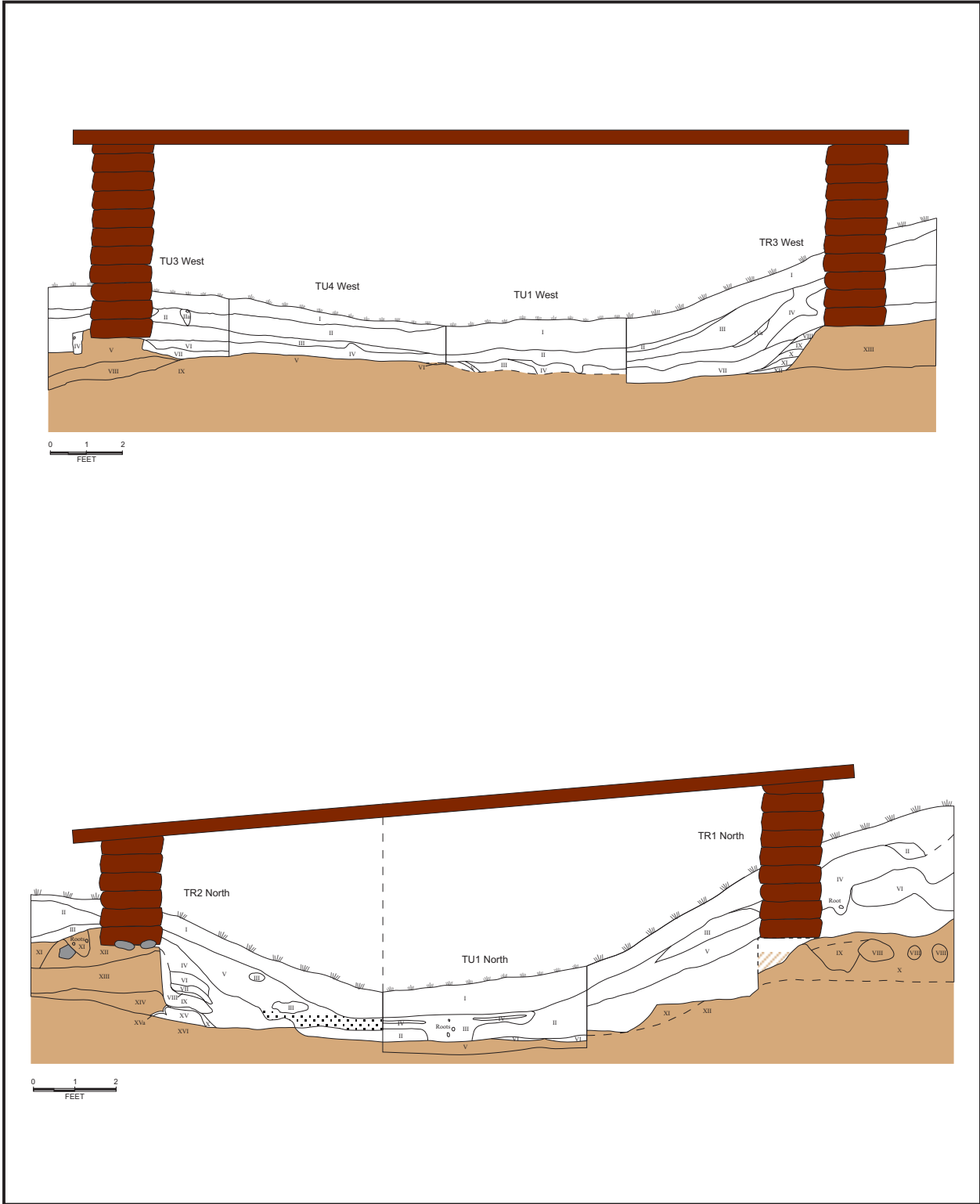


Figure 3.37. Conjectural reconstruction of Christopherson/Goulson dugout using sod block upper walls and shed roof.

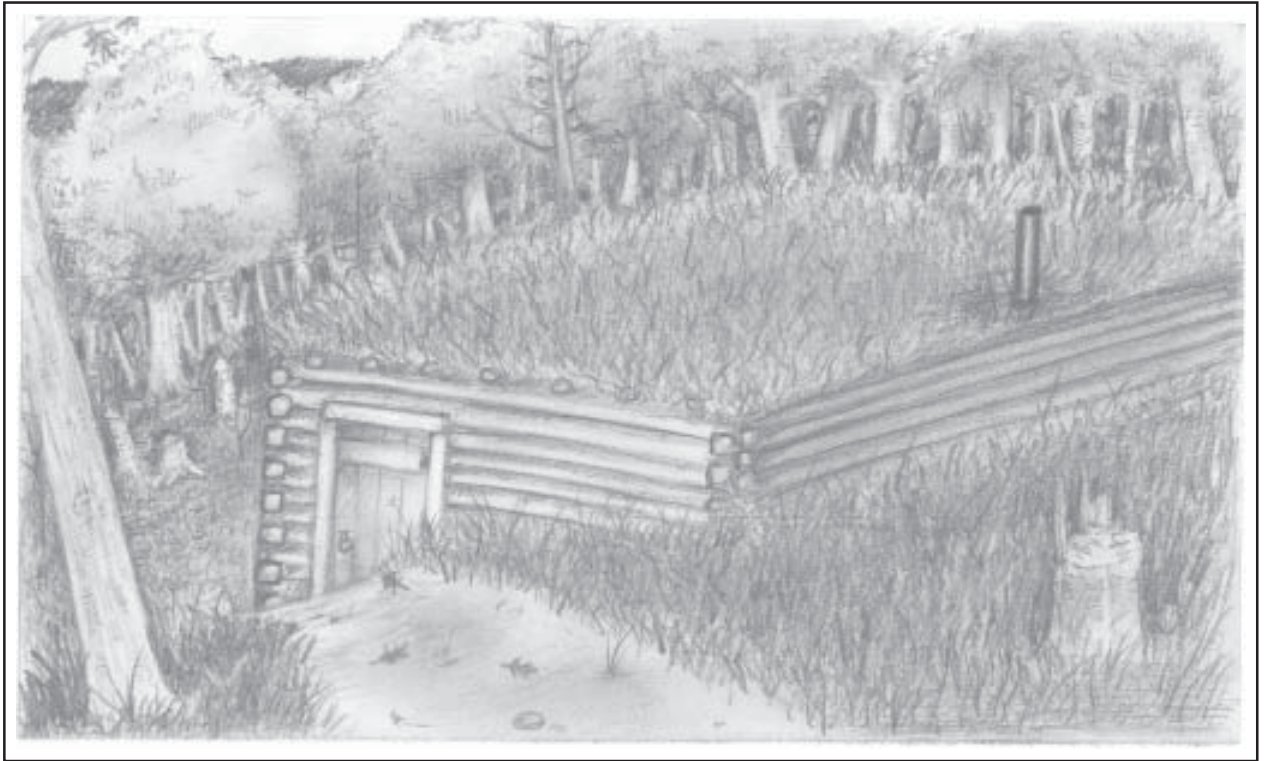


Figure 3.38. Conjectural drawing of Christopherson/Goulson dugout (Steve Culler).

during the excavation seems to support construction methods other than standard framing techniques; it seems likely that the nails recovered represent the door and door framing and possibly window and window framing, and minimal use of nails for the superstructure of the dwelling, except perhaps for the south wall or gable ends of the dwelling as described above.

Unfortunately, the non-architectural artifacts recovered from the dwelling tell us relatively little about life in the dugout, except that the material possessions of the family were few and likely moved along to their new house. The knife handle, grommet, and animal bones, and lack of other materials like ceramics and glass, seem to suggest a sparse existence. Yet, the lack of artifacts is not

completely surprising in that the small dugout space would have been kept clean of debris, with trash disposed of at the base of the hill. Later trash disposal, i.e., filling the abandoned dugout cellar, did not affect the Christopherson/Goulson dugout, as the family's new house was located almost a half mile to the south. Both Caspers and Anonsen note that oral testimony suggested a very sparse material culture in the early dugouts. We might also speculate about the cleanliness of the house's Norwegian owners; Laura Ingalls Wilder (1953:5-6) writes, "I think you'll find it [the dugout] very clean,' Pa told her [Ma]. 'Norwegians are clean people.'" An 1860s description of a dugout interior in Renville County, Minnesota, may provide a hint about the Christopherson/Goulson furnishings:

[they] had brought a wooden chest, flat top (from Norway) and in it they kept clothing, bedding, dishes, cooking equipment, her sewing and knitting. When they lived in the cave [dugout] this chest held all these things and when Grandma wanted to make a meal she opened the chest, took out the things she needed, closed the chest and it was then the table. Grandpa made benches of logs, split in half and used four sticks for legs (Bernice Boyum quoted in Caspers 1980:39).

the construction of their barn when they could easily have built it without nails. The quantity of faunal remains and the several personal artifacts also argue for the structure as the family's dwelling.

The animal bones recovered during the excavation, species including Mammalia (mammals), Cricetidae (mice, rates, voles), *Odocoileus virginianus* (white tailed deer), Bovidae (cow, ox, bison, sheep, goat), *Sylvilagus foridanus* (eastern cottontail rabbit), Aves (birds), *Gallus gallus*, (chicken), Bivalvia (bivalves), and Polygyridae (polygyrid snails), correlate to the types of farm animals kept by the Christopherson and Goulson families and are typical for pioneer families in the region (Appendix D). As mentioned in Chapter 2, the 1870 agricultural census data lists the Christopherson family owning 1 milk cow, 2 working oxen, and 1 other cattle, while the 1880 census lists the Goulsons as having 4 milk cows, 5 "other" cattle, and 55 poultry [40 chickens]. The large percentage of chicken bones recovered from the site, between 50 and 75% of the total remains recovered, is particularly interesting in light of the census data and family tradition that reports Anna regularly selling eggs.

It is possible that the structure under investigation was the Christopherson/Goulson barn rather than the family's dwelling house, but the evidence seems to favor interpreting the structure as a dwelling. While the Palme barn structure contained only a couple of artifacts, the Christopherson/Goulson dugout contained over 200 objects. Given the limited availability and difficulty of transporting cut nails, it seems unlikely that the family would have used them in

CHAPTER 4: Architectural Methods and Results

Architectural Survey Methods

During the course of the dugout excavation, the frame house of Hans and Anna Goulson, located on the Swift County property of Gregg and Joann Goulson, was also examined (Figure 4.1). The structure was visually inspected during the survey, and documented with measured floor plans and print and slide photography. Floor plans were prepared for the first and second floor of the dwelling. Extensive notes were taken on the structure in order to identify details and building materials that could aid in the interpretation of the structure and help in developing a chronology for the building. Floor plans were digitized in the laboratory. Photographic documentation was completed on both the exterior and interior using 35 mm print and slide film.

Survey of the Goulson Frame House

The Goulson house is a 1½-story side gable, containing a single principal room and a small 1-story shed room at the rear (Figures 4.2 and 4.3). The frame is constructed of circular sawn, dimensional lumber fastened with cut nails. The frame is clad with planks and then covered with beaded weatherboard siding and simple beaded trim attached with cut nails (Figures 4.4 and 4.5); the roof is clad with wooden shingles. The name "HANS" is inscribed into a weatherboard to the left of the front window (Figure 4.6). The doors are all hung with factory made, decorative hinges suggestive of the last few decades of the nineteenth century (Figure 4.7).

The front, principal room on the first floor measures approximately 13 ft. square, is entered directly from the front door, and is lighted with 3 double-hung, sash windows (Figure 4.8). A stove pipe piercing the ceiling indicates the placement of the wood stove in this room. The walls of the front room have painted tongue and groove paneling extending from the floor to a height of about 2 ft., and this paneling is capped by a decorative chair rail (Figures 4.9 and 4.10). A door at the rear of the front room enters the small back room that measures approximately 13 ft. wide and 6 ft. deep (see Figure 4.8).

A steep, narrow stair appears to have gone from the back room to the second floor room (see Figure 4.8). The upstairs room measures approximately 13 ft. square and is lighted with a double-hung, sash window in each gable.

The construction and plan of the Goulson farmhouse seems typical of balloon frame housing in this region of the U.S., although the single bay floor plan may have some Norwegian influence. Based on extensive surveys across Wisconsin, Minnesota, Iowa, and North and South Dakota, Peterson (1992) arrived at ten major balloon frame types (see Table 2.1). The simplest of these structures, and that most like the Goulson's frame farmhouse, is Farmhouse Type I. This "one- to one-and-a-half-story rectangular volume enclosed by exterior walls and covered by a saddle roof," writes Peterson (1992:27), "usually lends itself to only two interior spaces on the first floor and the half story divided more or less equally at or near the middle of the longer side of the rectangle."

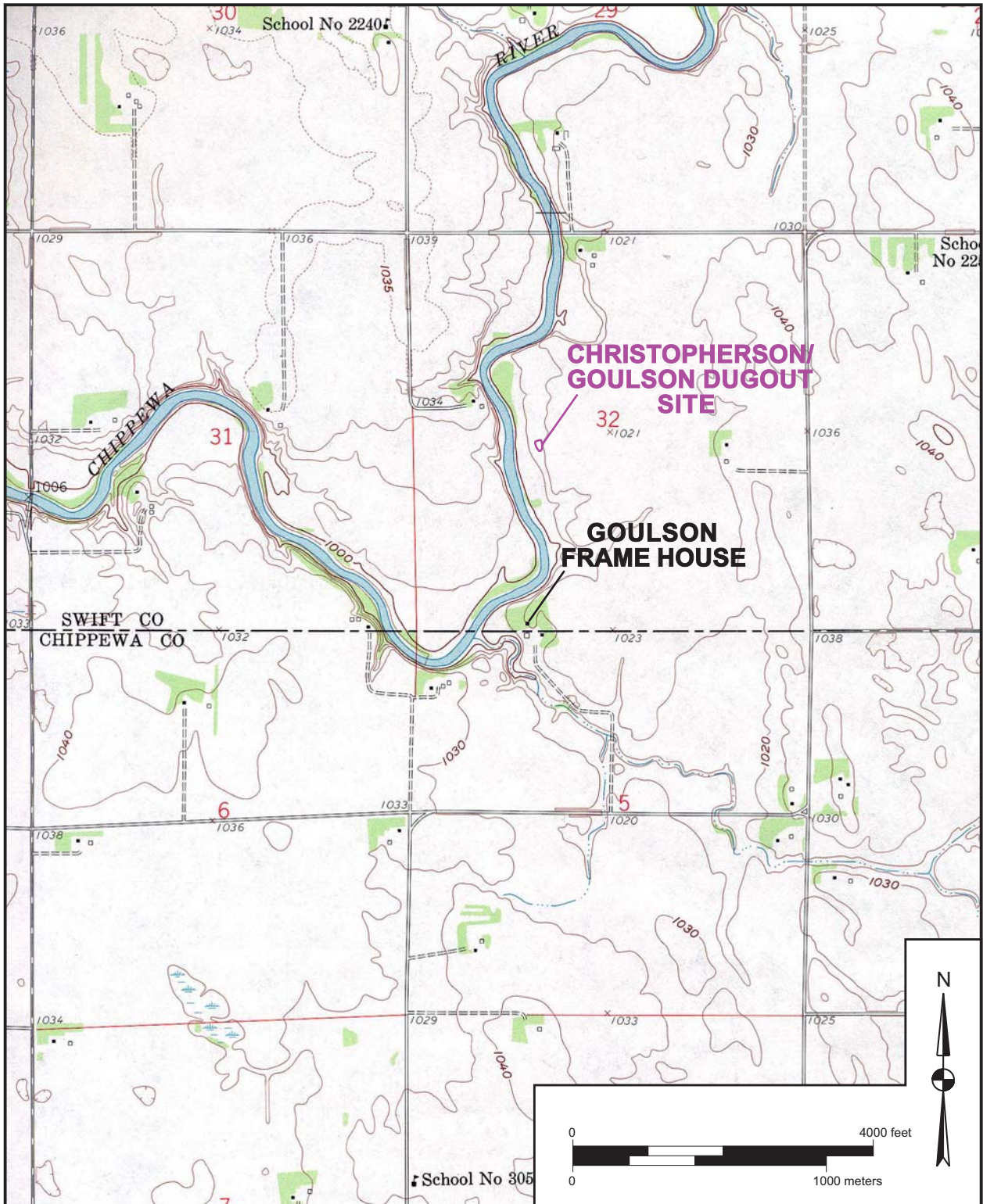


Figure 4.1. Location of the ca. 1880 Goulson frame house and Christopherson/Goulson dugout (U.S.G.S. 7.5' Gracelock, NW topographic quadrangle, 1958 [photorevised 1977]).



Figure 4.2. Front and east side facade, Goulson frame house, ca. 1880.



Figure 4.3. Front and west side facade, Goulson frame house, ca. 1880.



Figure 4.4. Detail of the front door trim, Goulson frame house, ca. 1880.

The Type I Farmhouse includes examples of the very smallest and simplest of the structures found in the region. Peterson (1992:62) notes that the “one- to one-and-a-half-story gabled rectangular farmhouse was frequently the kind of affordable structure built when circumstances permitted the family to move from the temporary subsistence shelter to a more permanent dwelling.” The change represented a significant move from the one room interior of a sod house or dugout to a structure that “enclosed a kitchen and living room-dining room on the first floor and an open sleeping loft under the low sloping roof on the half story” (Peterson 1992:64).

The Akershus house type from East Norway has a plan that is similar in size and shape to the Goulson farmhouse, although with a slightly different orientation (Bakken 1994:776-77; Kavli 1958:82). In general, the Akershus house contains

a large square stue or living room that was heated and an unheated bedchamber space approximately half the size of the living room (Figure 4.11).

William Tischler’s work in the Coon Valley of western Wisconsin, on the houses and farm buildings of early Norwegian settlers identifies a range of house types in this area. Tischler notes a similarity between several of the houses he studied in Wisconsin and the Akershus house type of Norway, the “most common floor plan in Gudbrandsdalen up to about 1850” (Bakken 1994:76) (see Figure 2.22; see Figure 4.11). It appears that this modified single-bay floor plan was brought from Norway and then underwent modifications based on the “influence of American building customs” (Bakken 1994:76).

Tischler’s study, focusing on the period 1863 to 1880, also recorded the house types by elevation



Figure 4.5. Detail of the front window trim, Goulson frame house, ca. 1880.

and fenestration. According to Tischler (quoted in Bakken 1994:78), “the most common early house size on the homesteads was 14' x 16', or if of different dimensions, it enclosed from 200 to 249 square feet of space. Typically, it was one and a half stories in height, had a shingle roof, board floors, one outside door and two windows.” Bakken (1994:78) notes that the typical house described by Tischler is out of character with the

single story cabin with low pitched roof that would be typical in Norway, and hypothesizes that “the majority of settlers immediately adopted the building practices of the area to which they came. For example, the more typical slate and sod roofs of Norwegian homes, were not generally used in America. Slate was simply not as available to the settlers in America and the sod roof was a failure in the climate of the Upper Midwest” (Bakken



Figure 4.6. "Hans" inscribed into weatherboard on west side of front facade, Goulson frame house, ca. 1880.

1994:78). As noted earlier, while building technology was adapted to American systems, such as balloon framing, the plans of many of these early houses seem to be connected to Norwegian arrangements of space within the house.

Like the houses identified by Tischler in Wisconsin, Kenneth Breisch (1994) has documented Norwegian dwellings in Bosque County, Texas, that seem to reflect Norwegian house plans. The A. Ilseng house, built at the foot of Jenson Mountain and in close proximity to St. Olaf's Lutheran Church, has a plan that seems based on the Akershus house (see Figure 2.23). The Jens and Kari Ringness House, built ca. 1860, is located several miles from the Ilseng House in Bosque County. Breisch (1994:109) notes the

similarity of this structure and the Scandinavian *dobbelthus* or double house. Both the Ilseng House and Ringness House have plans and details almost identical to the Goulson House, except in the building material (see Figures 2.22, 2.23, and 4.11).

The typical homestead described by Tischler and the Goulson house plan are also similar to the house described by Laura Ingalls Wilder, that became her family's home when they moved out of their dugout (1953:110-113):

Pa and Mr. Nelson covered the skeleton walls with slanting boards nailed on. They shingled the roof with boughten shingles. Then Pa laid the



Figure 4.7. Decorative hinge, front door, Goulson frame house, ca. 1880.

floor.... Over head he laid another floor for the upstairs.... Across the downstairs, Pa put up a partition. That house was going to have two rooms! He put two shining-clear glass windows in that room. Pa nailed black tar-paper all over the outside of the house walls. Then he nailed more boards over that paper. They were long, smooth boards, one lapping over the other all up the sides of the house.

While a Norwegian influence for the house plan might be debated, the interior treatment of the Goulson house is clearly reflective of the Norwegian ancestry of the family. As discussed above, the main first floor room has painted tongue and groove paneling capped by a decorative chair rail (see Figures 4.9 and 4.10). The striking paint scheme is certainly Scandinavian in origin; Guthorm Kavli (1958:81) writes in *Norwegian Architecture* that the concept of decorating walls

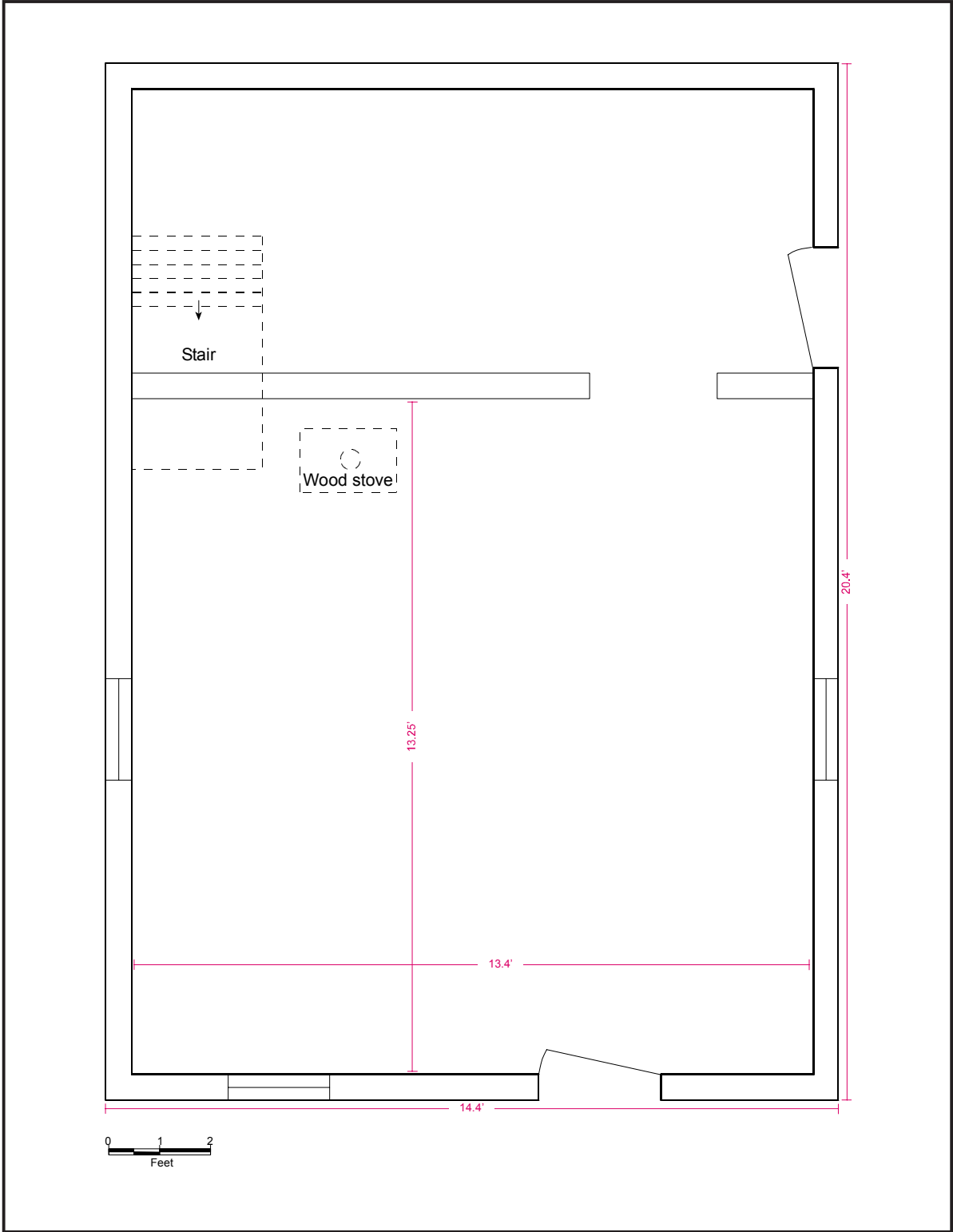


Figure 4.8. First floor plan of Goulson frame house, ca. 1880.



Figure 4.9. Wainscoting and chair rail in front room, Goulson frame house, ca. 1880.

and ceilings...spread from the towns,” and was characterized by “a love of pure bright colors, and employed to produce an effect of vivid contrast.” Interestingly, both of the Bosque County, Texas, homes (Ilseng and Ringness) retain bright blue paint on the interior woodwork that is identical to the Goulson color scheme (Figures 4.12 and 4.13). Another example of this paint color was found on the tool box of local Bosque County builder Karl

Questad (Figure 4.14) and a piece of furniture that was reportedly of Norwegian origin. One wonders if Anna Goulson, who had spent the first 20 years of her life in Norway, wasn’t responsible for this important detail.

By 1880 or 1881, when they moved into their new wood frame dwelling, the Goulson family had spent 5 to 10 years living underground. The move

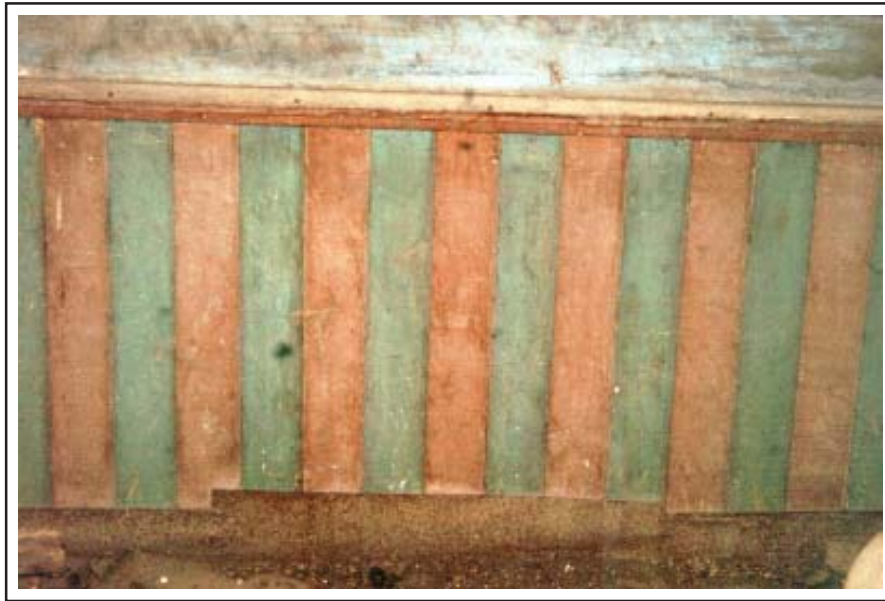


Figure 4.10. Detail of wainscoting and chair rail in front room, Goulson frame house, ca. 1880.

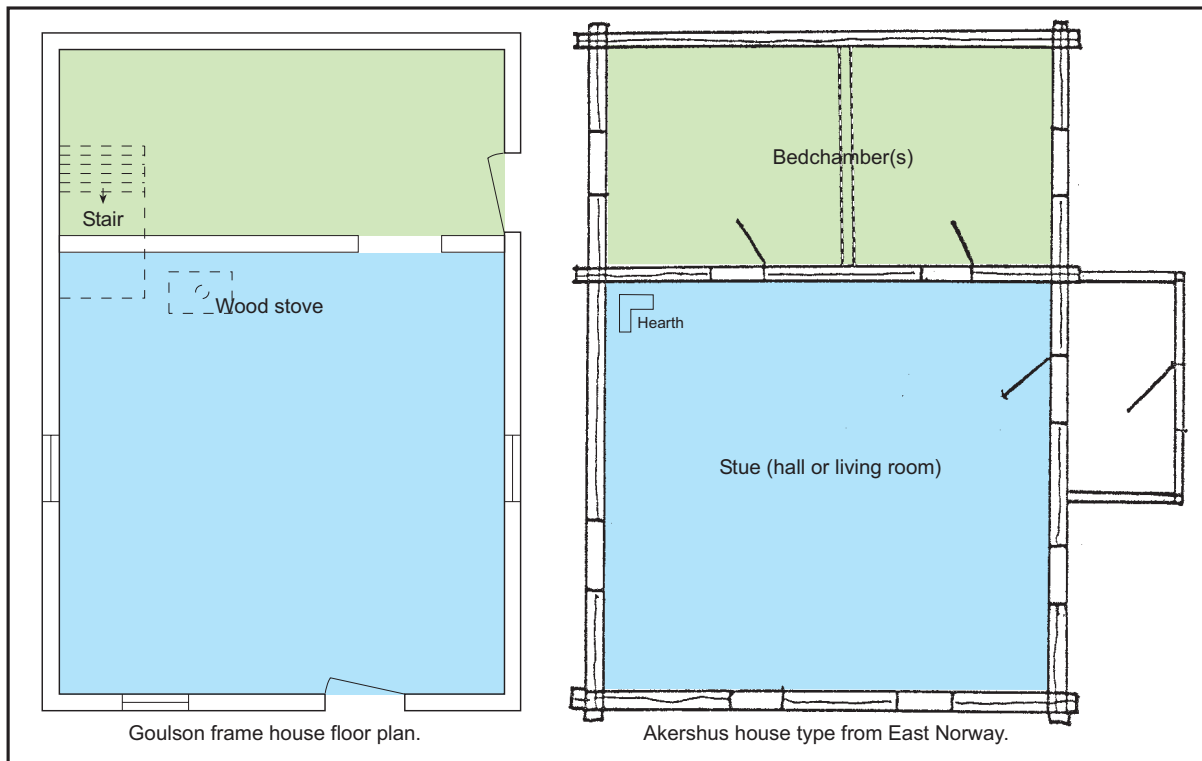


Figure 4.11. Goulson frame house floor plan, ca. 1880 and Akershus house floor plan (after Bakken 1994:77, 80).



Figure 4.12. Light blue paint on interior door of the Jens and Kari Ringness House, Bosque County, Texas.

from the dugout into the frame house was a transition made by most settlers of the period and in this region, and was remarked on by many contemporaries, including Laura Ingalls Wilder. The move to the one and a half story frame house was certainly an important, even monumental moment for the family. The new house at least doubled the domestic living space, and marks a significant refinement in the family's daily lives.

The homes of the Christopherson/Goulson family suggest a fairly typical progression for pioneer families in the region. The family's continued use of the dugout past the first or second winter departs from the norm, suggesting that the dwelling was either satisfying their basic needs or that they were not yet able, either due to finances or availability of building supplies, to construct a new frame house. While Benson was clearly



Figure 4.13. Light blue paint on interior window trim of the A. Ilseng House, Bosque County, Texas.

prospering by the mid-1870s, it was still a 15-mile journey from the Christopherson/Goulson homestead. The transformation that occurred in the lives of Anna and her remaining 3 children in 1879 must have been extraordinary. In the space of 1-2 years, she lost her husband and two children, remarried, had another baby, and moved from the dugout to a new frame dwelling house. The structure had much to offer, it contained at least 2 times the space of the dugout and it was above

ground. It was an accomplishment that Hans was proud to put his name on. One can speculate that the house's six "shining clear" windows cast a new light on the family's outlook after multiple years in the dugout. The lightness and open feel of the new house, built with the increasingly popular balloon frame, was celebrated with a vivid Norwegian decorative treatment and served to remind the family of both their rich Scandinavian traditions and new life in America.



Figure 4.14. Blue paint on tool box of Bosque County builder Karl Questad (top-front; bottom-back).

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APPENDIX A:
Dedicating and Marking the Goulson Dugout (*Dr. Hilton Goulson*)

DEDICATING AND MARKING THE GOULSON DUGOUT

Hilton Goulson

Since we had played around the dugout site in the pasture as children, I had retained a clear vision in my mind of its location. However, by the mid-1990s things had changed. All tillable pastureland had been placed into cultivation and many landmarks were gone. Also, the pastures had changed. With no cattle around, the area was overgrown with a variety of vegetation, including trees and bushes. The dugout site was not clearly visible or easily recognizable.

I was mindful of all of these changes and was encouraged by friends to try to re-locate the site. During October 1997 Libby Read and I were in Minnesota for a wedding in St. Paul. We drove to Benson and Montevideo to visit family, and this became my opportunity to search and find the dugout. In the late afternoon we found Gregg harvesting corn in the fields leading to the dugout site. He offered us a ride on the corn harvester as he went in that direction. We rode to the end of the corn rows and then set out on foot to try to locate the site.

We inspected a large area that might contain the site. Searching was difficult because of the dense undergrowth. Finally, just a few feet beyond the edge of the cornfield we came upon a large depression in the ground. It looked considerably different than I had remembered. Several large trees had grown up in and around the depression. One tree had sprouted in the deepest part of the depression. After further examination I became hopeful that this was the site of the Anna Byberg Christopherson Goulson dugout site.

We returned to the site the next day accompanied by Lawrence Larson, my brother-in-law. We walked the whole area again and landmarks, such as large cottonwood trees along the river, were sighted that strengthened our thinking. We agreed that this was the site of the dugout. It was a depression about 20 ft. x 40 ft. and 6 ft. deep that was located on the bluff overlooking the river about 100 yds. to the west. Interestingly, at one corner of the depression and closest to the cornfield lay a large granite boulder. Lawrence and I agreed that it was probably from the adjoining field and had been discarded into the depression. I was interested in it because it had a relatively flat surface facing upwards. The flat surface measured approximately 1 sq. ft. and it appeared that a plaque could be fastened on that spot. At that moment, I decided that this site must be permanently marked.

With assistance from my close friend, Bill Basnight, at S.H. Basnight & Sons, a bronze plaque was fabricated by Matthews Bronze and sent to Benson, Minnesota, for placement at the site. The inscription on the plaque reads as follows:

**SITE OF HOMESTEAD "DUGOUT" USED DURING THE 1870'S
BY
ANNA BYBERG CHRISTOPHERSON GOULSON
FIVE CHILDREN WERE BORN TO THE UNION OF ANNA AND LARS CHRISTOPHERSON:
LUDWIG, OLENA, AARON, SOPHIE AND JULIUS**

**LARS CHRISTOPHERSON DIED IN 1878 AND ANNA AND HANS GOULSON MARRIED IN 1879
SEVEN CHILDREN WERE THEN BORN TO ANNA AND HANS:
GUSTAV, CARL, CLARA, JULIA, OSCAR, THOMAS AND HENRY**

**HILTON T. GOULSON
GRANDSON OF ANNA AND HANS
JULY 1998**

The date of the dedication ceremony was set for August 1, 1998, in the afternoon. This would coincide with the 125th anniversary of Mandt Lutheran Church, which would be held on Sunday, August 2, 1998. Transportation from the farmyard of Gregg and Joann Goulson was provided by a tractor-drawn haywagon to the site located approximately 1/2 mile from the yard. Invitations were issued to family and close friends.

Those who attended the ceremony including the grandchildren and greatgrandchildren of Anna Goulson: Dan & Preston Goulson, Dick & Dawn Goulson, Gregg & Joann Goulson, Hilton Goulson & Libby Read, Lawrence & Mary Ann Larson, David & Carol Nitz; and close friends of the Goulson family: Idella & Herb Erickson, Gaye & Harry Klyve, Olaf Nelson, Jane McKeown (staff writer for the *Montevideo American News*), Carol & Leland Otterholt, Sylvia & Ray Retrum, Marie Stehn, Teddy Swenson.

After the group assembled at the site, Hilton Goulson led the group by offering the following prayer:

As we gather at this historic site, we pause to give thanks for our many blessings – the farms, the fields, our friends, and especially our families. On this lovely summer day, we feel especially blessed.

Dear Lord, we are here today to pay homage to the pioneers who came to this land more than 100 years ago and established homes, churches, and schools. Without their determination, fortitude, and faith in God, all that we enjoy today would not have been possible.

The matriarch of the Christopherson-Goulson clan, Anna Byberg Christopherson Goulson, came to this very spot in 1869/1870 to start her home in Minnesota. We stand in awe of her fortitude, strength, and her many accomplishments.

With the back drop of Anna Byberg behind us, we pray that that pioneer spirit will be re-kindled in each of us so that all of these opportunities will continue to be available to us as we move into the 21st century.

In your name we pray. Amen.

After reminiscing remarks from many of the assembled group of family and friends, a box lunch containing rosettes, fattedmand, flatbread and cheese was distributed to all. Lemonade and wine were also available. This Norwegian lunch was followed with a toast of aquavit, a Norwegian liquor distilled from fermented potato mash. A good time was had by all!

On Thursday, August 6, 1998, the following story by staff writer Jane McKeown was published in the *Montevideo American News*:

BRONZE PLAQUE PLACED AT SITE OF 1868 DUGOUT

North Carolina Man Brings Toast of Aquavit to Honor Grandma

A toast with aquavit, the imported Norwegian drink, topped the dedication Saturday of a bronze plaque honoring Anna Byberg Christopherson Goulson, at the site of the dugout she lived in for 10 years after emigrating from Norway in 1868.

This was the place, in an underground home 100 feet above the Chippewa River banks, where she gave birth to five of her 12 children – and where her first husband and two children died of scarlet fever.

A few years ago one of her grandsons, Hilton Goulson, a retired professor in the School of Public Health – Microbiology at Chapel Hill, NC tried to locate the dugout where he played as a boy in what was once a cattle pasture on the home farm located 13 ½ miles north of Montevideo on Highway 29 and one-half east. ‘But it was so overgrown I had a hard time finding it.’ ‘It needed to be marked so people behind us would know about it and think about that pioneer spirit which made us all what we are today.’

Goulson had a bronze plaque made, set a date and made rather elaborate preparations for the gathering at what is now the Gregg and Joann Goulson farm, half in Mandt Township, Chippewa County, and the other half in Swenoda Township, Swift County.

A 1935 Case tractor with a Norwegian flag at its prow and a newer tractor pulled hayracks of people (22 in all) from the farmsite, passed a tall granary, half of which was part of Anna’s first wooden house built around 1880, on a winding path about one-half mile toward the dugout.

The path wound past a 1938 Ford rusting in the overgrowth, bumped over gopher mounds in an area usually thick with deer, and past lush green beanfields and cornfields where grasshoppers had chewed some leaves into lace.

It went past another relic, an MT John Deere dating back 60 years or more, brushed against hackberry trees, willows and weeds, and past a 45-year-old Allis Chalmers combine which had literally been put out to pasture.

The dugout itself is now only a 6-8 foot depression, washing in over the years. In recent days it had been carefully groomed for the dedication, the overgrowth of weeds and trees cut down, even steps cut into the sod “wall” of the dugout, rising to the place where the bronze plaque had been solidly cemented into place.

The plaque was backed by a large framed photo of the woman being honored, and pots of red geraniums. Sunshine, bouncing off green leaves of the cornfield, formed a background for the shady scene

Hopes pioneer spirit will be rekindled in 21st century

Here, Hilton Goulson, among ‘farms, fields, friends, and family’ gave homage to the family matriarch who came to start a new home.

‘We stand in awe of the fortitude and strength of this woman and pray her pioneer spirit will be rekindled as we go into the 21st century,’ he said.

The river, actually a creek leading to it, could not be seen at this time of the year. Prairie grass covered the land when the settlers, some of the first to locate in Swenoda Township, came 130 years ago. After the hole for the dugout was completed, timbers were laid across the top and a sod roof was added.

Anna was said to have carried baskets of eggs on foot to New London, returning with staples.

Mary Ann Goulson Larson, now of Benson, remembered Saturday how her grandmother and a neighbor woman went for long walks for recreation, crocheting and knitting as they walked along.

A story was told about a severe blizzard in those early days. A neighbor to the south, making his way home with an oxen team through the heavy snow, fell through the timbers and into the Christopherson dugout, where ‘man and beast remained together until the storm was over.’

Olaf Nelson, who formerly lived in the neighborhood, brought records from Mandt Church which he translated from Norwegian. Hans Goulson, Anna’s second husband, became a member there in 1879, he said.

Among those present at the dedication was Preston Goulson, 7, of Lexington, Ky., a great-great-grandson of Anna. He flew in with his father, Dan Goulson, especially for the event.

His sitting at the base of the bronze plaque, fingering the letters and looking up at the

photo of Anna made a poignant scene. Could Anna ever have dreamed, sitting in the dark dugout in this very place, that her progeny would be flying from thousands of miles away to honor her on this day?

Others present included the families of Anna and Hans Goulson's son Thomas, including Mary Ann Larson, Hilton Goulson, Richard Goulson, and Constance Hanson, and a descendant of Clara Goulson Johnson.

Toast symbolizes strong character, strong spirit of family

When all the stories were told, individual boxes containing Norwegian rosettes, fattigmand, flatbread, and squares of cheese on picks were handed out.

The boxes were tied with blue and red ribbons, had small Norwegian flags on the top and came with a bright Norwegian-flag paper napkin. There was wine and lemonade, and finally, the Aquavit.

The significance of the drink at this time cannot be dismissed. A product of Norway, it has a humble beginning (made of potatoes), but over the years takes on strong character and an unmistakably strong spirit.”

APPENDIX B:
Life of the Goulson Farm for the 1940s to the Present (*Dr. Hilton Goulson*)

LIFE OF THE GOULSON FARM FOR THE 1940S TO THE PRESENT

Hilton Goulson

Farm Life in the 1940s

Thomas and Mathilda Goulson (my parents) were one of the few farm families in Mandt Township who had succeeded in maintaining ownership of their farm following the Depression and the dust storms of the early 1930s. I really have no idea how they did it, but obviously it was done by being frugal. By 1940, they had a family of four children: Mary Ann (1924), Hilton (1930), Richard (1935) and Constance (1940).

It was a simple but wholesome life. We always had food and warmth, but we did not have electricity until 1946 when the Rural Electric Administration (REA) built electric lines and electrified all of the neighborhood farmsteads. Dad farmed the 160 acres using draft horses to do the farm work (his first John Deere tractor was purchased in 1944) and we raised cattle, hogs and chickens. Naturally, brother Dick and I had farm chores that were our daily responsibility, including milking the cows and feeding the pigs and chickens.

The Chippewa River runs through the farm. The non-tillable acres along both sides of the river were fenced with barbed wire so the farm had pastureland for the cattle. The cattle grazed the banks and were amply supplied with water from the river. As a result of the grazing, the river banks were kept trimmed by the cattle; and my recollection of the pastures was that they appeared as parks. One of the jobs that Dick and I had as boys was to bring the cows in for milking each evening. So, oftentimes, we would walk in the late afternoon to the area where the dugout was located to find the cows and bring them home to the barn. That's how I remember Grandma's dug-out.

Farm Life in the 1950s and 1960s

Generally speaking, there were significant changes in farming operations during this time. With the advent of tractors and many new- and larger- farm implements, farms became larger. Also there was a shift in the types of crops grown. Small grains (oats, wheat and barley) gave way to soybeans. Thus, there was a preponderance of two main crops: corn and soybeans.

Milking cows manually twice a day is very labor intensive. Traditionally, milk from the cows would be put through a separator, with skim milk and cream becoming end products. Cream was transported to the local creamery or buying station for the production of butter and the skim milk was fed to the hogs. Cream was one of the cash crops for the small farm family. However, the profits were meager because of the small scale and the work was overwhelming so the milking of cows became an early casualty.

Such changes occurred on the Thomas Goulson Farm. Even before his death in 1958, my Dad had decided to quit milking cows. The milk cows were sent to market and only a few head of beef cattle remained to graze the river pastures.

With my parents' encouragement, I had gone off to Luther College in 1948 and had graduated in 1952. I then matriculated at the University of North Carolina in a one-year Master's Program intending to be in North Carolina for one year. I have remained in NC serving on the faculty of the University for 34+ years until retirement. North Carolina has been good to me!

So upon my Dad's death, brother Dick assumed responsibility for running the farm. My mother moved to a small house in Benson, Minnesota, and Dick and his wife, Dawn, returned to the family farm along with their two sons, Gregg and Todd. As they grew up, Gregg and Todd became good farmers and a partnership between them and their dad flourished.

Farm Life in the 1990s

After Dick and Dawn moved to Montevideo, the farm buildings stood vacant and the land was farmed by the partnership. Gregg, however, yearned to move back to the country. Gregg assumed ownership of the land containing the farm buildings so he could pursue his other interest of diesel engine repair. A large shop building was built for his automotive repair shop. The farmhouse was remodeled and completely renovated. Gregg and his bride, Joann, moved to the country; the farmstead was occupied again. Also, the farm partnership was now expanded to include 700+ acres. Thus, a new chapter for the Goulson Farm was underway!

APPENDIX C:
Artifact Inventory

Provenience	North East	Group	Class	Object	Datable Attribute	Comment	Descriptor	Weight (g)	Quantity
ST 06	600	500	Food prep./consumption	Handle	Iron				1
								Provenience Total:	1
ST 07	620	500	Architectural	Nail(s)	Cut				1
								Provenience Total:	1
ST 25	620	460	Architectural	Mortar				7.52	1
								Provenience Total:	1
TU 1/I	585	486	Architectural	Nail(s)	Cut				1
TU 1/II	585	486	Architectural	Nail(s)	Cut		8d		1
TU 1/III	585	486	Architectural	Nail(s)	Cut		<2d		1
TU 1/IV	585	486	Faunal					5.12	5
TU 1/V	585	486	Floral	Charcoal				3.04	13
								Provenience Total:	1
TU 1/VI	585	486	Activities	Barbed wire					1
TU 1/VII	595	486	Architectural	Nail(s)	Cut		2d		1
TU 1/VIII	585	486	Faunal					0.95	1
								Provenience Total:	21
TU 1/IX	585	486	Architectural	Nail(s)	Cut		4d		1
TU 1/X	585	486	Architectural	Nail(s)	Cut		<2d		1
TU 1/XI	585	486	Architectural	Nail(s)	Unidentified fragments				2
TU 1/XII	585	486	Floral	Charcoal				10.69	7
								Provenience Total:	3
TU 1/XIII	585	486	Architectural	Nail(s)	Cut				11
TU 1/IV	585	486	Architectural	Nail(s)	Cut				2
TU 1/V	585	486	Floral	Charcoal				22.47	21
								Provenience Total:	23

Provenience	North	East	Group	Class	Object	Datable Attribute	Comment	Descriptor	Weight (g)	Quantity
TU 1/V	585	486	Architectural	Nails	Nail(s)	Cut				2
TU 1/V	585	486	Floral		Charcoal				11.93	16
Provenience Total: 18										
TU 2/II	590	477	Architectural	Nails	Nail(s)	Cut				1
TU 2/II	590	477	Faunal		Charcoal				1.29	2
TU 2/II	590	477	Floral		Strapping		Tag-"Minn" *s" *off" *mpip"		1.19	1
TU 2/II	590	477	Unassigned material	Misc. material		Aluminum	"-518560"			1
Provenience Total: 5										
TU 2/VI	590	477	Faunal						0.59	1
Provenience Total: 1										
TU 3/I	574	486	Faunal						2.58	13
Provenience Total: 13										
TU 3/II	574	486	Clothing	Fasteners	Grommet/sglet	Copper-alloy			46.94	1
TU 3/II	574	486	Faunal						28.33	61
TU 3/II	574	486	Floral		Charcoal					1
Provenience Total: 63										
TU 3/III	574	486	Faunal						11.37	26
Provenience Total: 26										
TU 3/IV	574	486	Architectural	Nails	Nail(s)	Cut			3.39	1
TU 3/IV	574	486	Faunal							4
Provenience Total: 5										
TU 4/I	579	486	Faunal						5.74	17
TU 4/I	579	486	Floral		Nut					1
TU 4/I	579	486	Unassigned material	Misc. material	Unidentified	Plastic				1

Provenience	North East	Group	Class	Object	Datable Attribute	Comment	Descriptor	Weight (g)	Quantity
TU 4/I	579	486	Unassigned material	Wire	Ferrous	Poss. barbed wire			1
TU 4/II	579	486	Activities	Barbed wire				Provenience Total:	20
TU 4/III	579	486	Agriculture/horticulture Nails	Nail(s)	Cut				1
									1
Trench I								Provenience Total:	2
Trench I			Nails	Nail(s)	Unidentified fragments				1
			Other hardware	Architectural staple					1
								Provenience Total:	2
Total Historic Artifacts Goulson Dugout Site:									216

APPENDIX D:
Zooarchaeological Analysis (*Dr. Tanya Peres*)

Zooarchaeological Remains from Anna Christopherson/Goulson Site, Minnesota

Tanya M. Peres

University of Kentucky
November 2002

Introduction

This report discusses animal remains recovered during excavations at the Christopherson/Goulson Site, located in Minnesota. A total of 9 contexts, all from quarter-inch screening efforts, were analyzed. A variety of animal remains were recovered, terrestrial and aquatic, domesticated and non-domesticated (Table 1). These remains are undoubtedly affiliated with historic deposits, and reflect the historic animal taxa that were used by the inhabitants of the Goulson site, primarily for subsistence.

Dr. Tanya M. Peres performed the zooarchaeological analysis and data entry, and prepared the final report. The identification, analysis, and data entry portion of the study required a total of approximately 6 person-hours to complete, 4 for the identification, analysis and data entry; 2 for the report and table preparation.

Methods

Faunal remains include both vertebrates and invertebrates, and preservation of the remains was good. Faunal remains were recovered using quarter-inch screening. Several studies (Gordon 1993; Shaffer 1992; Wing and Quitmyer 1985) have shown that soils screened with larger mesh sizes ($\frac{1}{2}$ in. or $\frac{1}{4}$ in.) are biased towards large animals (i.e., mammals), and give a skewed picture of the relative abundance and importance of one class of animals compared to another. The use of $\frac{1}{8}$ in. and $\frac{1}{16}$ in. meshes allows for a more complete recovery of delicate plant and animal remains (i.e., small invertebrates) while using finer sieves insures the recovery of many types of seeds.

The analysis of the faunal assemblage was performed using the Zooarchaeological Comparative Collection housed at the University of Kentucky's William S. Webb Museum of Anthropology (WSWMA). Standard zooarchaeological procedures were used in this analysis following Reitz and Wing (1999). All remains were initially rough sorted into broad taxonomic categories. All specimens were identified to genus and species when possible. Identified elements were sided (i.e., left, right, axial) where appropriate. The taxonomy of higher vertebrates and birds follows the Zooarchaeological Comparative Collection at the WSWMA; fish taxonomy follows Robins et al. (1991); and invertebrate taxonomy follows Turgeon et al. (1998). Any evidence of use-wear, thermal alteration, or butchering was noted. Weights and Number of Individual Specimens (NISP) were recorded for all specimens. All primary and secondary data were entered into an EXCEL® spreadsheet and are presented in Table 2.

The Minimum Number of Individuals (MNI) was determined using the standard accepted procedure: the most abundant diagnostic element of each taxon was counted as the MNI (Grayson 1984; Reitz and Wing 1999). If this element was a paired element (left and right), then the higher count of the two was used. Size differences were also taken into account when appropriate. MNI was determined for each taxon within each context, and then recalculated by provenience (i.e., feature).

Preservation

Archaeofaunal preservation varies greatly between sites for reasons that are only partially understood. Two factors that influence preservation are soil drainage and chemical composition of midden deposits (such as soil pH and ash content). The circumstances surrounding bone carbonization, including firing temperature and the amount of oxygen reduction present, also influence preservation.

Preservation of faunal remains at the Christopherson/Goulson site is good to excellent. Few of the remains were heavily carbonized or weathered. The lack of weathering suggests that remains were deposited rapidly and recovered from primary contexts.

Faunal Assemblage

The total recovered faunal assemblage from the Christopherson/Goulson Site consists of 130 specimens weighing 77.97 g (Table 2). The vertebrate faunal remains consist of 127 specimens weighing 48.48 g. The invertebrate faunal remains consist of 3 specimens weighing 29.49 g. Within the vertebrate assemblage, 3 taxa are represented, including 2 species of mammals, and 1 bird species. In the invertebrate assemblage there is at least 1 bivalve species represented.

Vertebrate Remains

Mammals. A total of 6 specimens, weighing 3.47 g, are identified as mammals. Specimens placed in the general category of Mammalia were both too small and fragmented, or lacked diagnostic landmarks to secure a positive identification. Other mammals are represented in this assemblage by eastern cottontail rabbit (*Sylvilagus floridanus*) and white-tailed deer (*Odocoileus virginianus*).

The eastern cottontail rabbit is represented by 1 specimen, weighing 0.17 g. The identified element is a proximal, left, scapula. The MNI of the rabbit is 1. There was no evidence of thermal alteration, butchering/cut marks, and/or other modification. The specimen was from an adult individual.

The white-tailed deer is represented by 1 specimen, weighing 0.59 g. The identified element is the first mandibular incisor. The MNI of the white-tailed deer is 1. There was no evidence of

thermal alteration, butchering/cut marks, and/or other modification. The specimen was from an adult individual.

Birds. A total of 112 specimens, weighing 42.98 g, were identified as bird. There is at least one species in this assemblage—chicken (*Gallus gallus*). The general category of Aves (n=81, 19.64 g) was used when specimens were both too small and fragmented, or lacked diagnostic landmarks to secure a positive identification.

The chicken is represented by 31 specimens, weighing 23.34 g. The identified elements are exclusively postcranial. The MNI of the chicken is 3, based on the frequency of the left ulna. There was no evidence of thermal alteration, butchering/cut marks, and/or other modification. The specimens were from adult individuals.

Invertebrate Remains

A total of 3 invertebrate specimens, weighing 29.49 g, all bivalves, were recovered from the Christopherson/Goulson site (see Tables 1 and 2). The general category of bivalve was used because specimens were both too small and fragmented, or lacked diagnostic landmarks to secure a positive identification.

Summary

The faunal assemblage recovered during the 2002 excavations at the Christopherson/Goulson site is in excellent condition, however, it is too small to be used for significant interpretations. As would be expected from an assemblage of this time period and from this location, there are both domesticated and non-domesticated animals present. The sample included animals such as rabbit, chicken, white-tailed deer, and some type of bivalve. This shows that the diet was based on both terrestrial and aquatic animals, and wild and domesticated species. A larger assemblage from this type of site is needed to make conclusive statements about the inhabitant's foodways.

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Table 1. List of Identified Species from the Goulson Site, Minnesota.

Taxa	Common Name
Mammalia	mammals
<i>Odocoileus virginianus</i>	white-tailed deer
<i>Sylvilagus floridanus</i>	eastern cottontail rabbit
Aves	birds
<i>Gallus gallus</i>	chicken
Bivalvia	bivalves

Table 2. Primary Zooarchaeological Data.

Context	Taxon	Element	Side	Thermal Alteration	Modification	Immature	Count	Weight (g)	Comments
7	Mammalia	vert frag			0	0	1	0.62	
7	Mammalia	proximal ulna			0	0	1	0.24	small/medium
7	Mammalia	indet. frag.			0	0	1	0.31	
7	Aves	distal tibiotarsus			0	0	1	1.97	medium/large
7	<i>Gallus gallus</i>	distal femur	right		0	0	1	1.98	
8	Bivalvia	shell frags.			0	0	2	1.29	
9	Aves	indet. Frag.			0	0	1	0.95	
12	Aves	indet. Frag.			0	0	8	0.43	
12	<i>Gallus gallus</i>	proximal coracoid	left		0	0	2	0.73	mni=2
12	<i>Gallus gallus</i>	scapula, partial	left		0	0	1	0.53	
12	<i>Gallus gallus</i>	ulna, partial	left		0	0	1	0.72	
12	<i>Sylvilagus floridanus</i>	proximal scapula	left		0	0	1	0.17	mni=1
14	Vertebrata	fragments			0	0	7	1.27	
14	Aves	fragments			0	0	39	7.9	
14	<i>Gallus gallus</i>	humerus, distal	right		0	0	1	1.12	
14	<i>Gallus gallus</i>	humerus, proximal	left		0	0	1	1.86	
14	<i>Gallus gallus</i>	furculum, fragment			0	0	1	0.19	
14	<i>Gallus gallus</i>	carpometacarpus, partial	left		0	0	2	0.8	mni=2
14	<i>Gallus gallus</i>	ulna, complete	left		0	0	1	1.2	
14	<i>Gallus gallus</i>	ulna, proximal	right		0	0	2	1.49	mni=2
14	<i>Gallus gallus</i>	ulna, distal	right		0	0	1	0.43	
14	<i>Gallus gallus</i>	radius, complete	right		0	0	1	0.54	
14	<i>Gallus gallus</i>	radius, incomplete	left		0	0	1	0.38	
14	<i>Gallus gallus</i>	radius, proximal	indet		0	0	1	0.1	
14	<i>Gallus gallus</i>	coracoid, incomplete	right		0	0	1	0.89	
14	<i>Gallus gallus</i>	coracoid, proximal	right		0	0	1	0.57	

Table 2. Primary Zooarchaeological Data

Context	Taxon	Element	Side	Thermal Alteration	Modification	Immature	Count	Weight (g)	Comments
14	Bivalvia	valve	left		0	0	1	28.2	
15	Aves	maxilla (beak), incomplete			0	0	1	0.28	
15	Aves	vert, incomplete			0	0	1	0.34	
15	Aves	coracoid, distal			0	0	2	0.43	
15	Aves	fragments			0	0	11	2.61	
15	<i>Gallus gallus</i>	humerus, distal	right		0	0	1	1.02	
15	<i>Gallus gallus</i>	humerus, distal	left		0	0	1	0.69	
15	<i>Gallus gallus</i>	ulna, complete	left		0	0	1	0.78	
15	<i>Gallus gallus</i>	coracoid, proximal	right		0	0	1	0.43	
15	<i>Gallus gallus</i>	coracoid, proximal	left		0	0	1	0.34	
15	<i>Gallus gallus</i>	humerus, proximal	left		0	0	1	0.77	
15	<i>Gallus gallus</i>	humerus, proximal	right		0	0	1	0.78	
15	<i>Gallus gallus</i>	radius, complete	left		0	0	1	0.32	
15	<i>Gallus gallus</i>	radius, proximal	indet		0	0	1	0.12	
15	<i>Gallus gallus</i>	carpometacarpus, complete	left		0	0	1	0.72	
15	<i>Gallus gallus</i>	tibiotarsus, distal	right		0	0	1	1.74	mni=1
16	Aves	fragments			0	0	3	1.29	
16	<i>Gallus gallus</i>	humerus, incomplete	right		0	0	1	2.1	mni=1
18	Mammalia	verts, incomplete			0	0	2	2.01	mni=1; weathered
18	Mammalia	radius, proximal	indet		0	0	1	0.29	
18	Aves	fragments			0	0	14	3.44	
19	<i>Odocoileus virginianus</i>	incisor, 1, mandibular	left		0	0	1	0.59	mni=1
	TOTALS				0	0	130	77.97	

APPENDIX E:
Wood Analysis (*Dr. Renee M. Bonzani*)

Wood Analysis for the Christopherson/Goulson Dugout

Renee M. Bonzani, Ph.D.

This report describes and discusses the carbonized wood remains recovered from five historic period contexts of the Christopherson/Goulson dugout. The total number of wood fragments analyzed was 55 (30.3 grams).

Laboratory Procedures

Prior to identification, the samples to be analyzed are weighted. All wood fragments that are greater than 2 mm are analyzed. The number and weight of the fragments that are greater than 2 mm is recorded. The wood fragments are snapped in two to obtain a clear cross section of the wood. The morphology of the cross section is utilized to determine wood identification. The arrangement of earlywood and latewood pores, the number and size of multiseriate rays, and the presence or absence of parenchyma serve as the basis for the hardwood identifications. The texture of tracheids, transition from earlywood to latewood, and presence or absence of resin canals and the frequency of resin canals, if present, serve as the basis for the softwood identifications. Wood color and odor are also utilized for both hardwoods and softwoods in identification when the remains are uncarbonized. Identification of plant remains is done by using an Olympus binocular microscope at magnifications of 10x to 20x for materials. Identifications are substantiated with use of the reference collection in possession of the analyst. Secondary sources include various identification manuals (Core et al. 1979; Minnis 1987; Panshin and de Zeeuw 1980; Rossen 1991; Rossen and Olson 1985; Young and Young 1992).

Results

Five contexts (7, 8, 11, 13, and 17) consisting of carbonized wood fragments were analyzed from the Christopherson/Goulson dugout. Fifty-five wood fragments (30.3 grams) were recovered (Table 1). Three soil or rock fragments included in Context 17 were not wood. Of the wood recovered, seven families, seven genera, and two species were identified. One fragment from context 17 was unidentifiable. These remains are all of hardwoods and include cottonwood or aspen (*Populus* spp.) (n=25), elm (*Ulmus* spp. and *Ulmus Americana*) (n=10), oak (*Quercus* sp., probably of the red oak group) (n=3), basswood (*Tilia* sp.) (n=3), walnut (*Juglans* sp.) (n=2), black ash (*Fraxinus nigra*) (n=1), and tentatively identified samples of buckeye (cf. *Aesculus* sp.) (n=10). The use of different taxa of woods at the site was diverse (diversity index of 0.75, 1 being the most diverse, see Magurran 1988 for the formula used to calculate the diversity index).

Cottonwood or aspen (*Populus* spp.) was recovered in the highest frequency (45% of the wood analyzed) and it occurred in all of the samples except for Context 8. Cottonwood is a grayish white to light grayish brown, medium-light to light, and

moderately soft to soft wood. It is not durable and it is frequently used for pulp, lumber, boxes (berry boxes), crates, furniture (interior parts), poultry coops and laundry appliances such as ironing boards (Panshin and de Zeeuw 1980:543-547). Cottonwoods and aspens can grow rapidly and are considered pioneer trees in that they quickly establish themselves in opened or burned-over forests and abandoned fields. Aspens can occur across the continent from Newfoundland to Alaska, south to Delaware, Pennsylvania and Minnesota and southward along the Appalachian Mountains. Cottonwoods generally extend from Quebec to northern Florida west to the Rocky Mountains (Grimm 1983:91-102).

The next most common type of wood recovered was elm (*Ulmus* spp.) and American elm (*Ulmus americana*) (18% of wood analyzed) and elm occurred in all samples analyzed except for Context 11. Tentative identifications of elm occurred for one specimen in Context 17 and for the only specimen from Context 8. Elms are generally light brown to brown, moderately heavy, and moderately hard to hard woods. American elm is used for slack cooperage, boxes, crates, veneer for fruit containers, furniture especially bent parts such as for rockers or arms (currently found as upholstery frames and dinettes for "Danish-type" furniture), poultry and dairy supplies, and agricultural implements. The hard elms (*Ulmus* spp.) are used for the same things except that they are preferred when hardness and ability to resist shock are required (Panshin and de Zeeuw 1980: 572-576). American elm prefers deep, rich soils of bottomlands and it is a common tree along stream banks. The American elm ranges from southern Newfoundland to eastern Saskatchewan south to Florida and eastern Texas (Grimm 1983:214).

The next most common type of wood recovered was tentatively identified as buckeye (cf. *Aesculus* sp.) (18% of wood analyzed). The wood structure of buckeye is very similar to that of *Populus* with pores decreasing in size slightly from the early to late wood in *Populus* and remaining the same in *Aesculus*. The pore size appeared to remain the same throughout the growth ring in the specimens identified as buckeye. Buckeye is a white to pale yellowish white, light, and soft wood. It is used for furniture, boxes, crates, cigar and tobacco boxes, flooring, musical instruments, woodenware, toys, furniture and trunks and valises (Panshin and de Zeeuw 1980:609-610). It is also noted that pioneers carried a buckeye in their pockets to ward off rheumatism (Little 1980:584). The Ohio buckeye ranges from southwestern Pennsylvania west to Iowa and south to northern Alabama and northeastern Texas (Grimm 1983: 353). It has also been successfully introduced in Minnesota, eastern Kansas and eastern Massachusetts (U.S.D.A. 1948:69).

The next most common type of wood recovered was oak (*Quercus* sp., probably of the red oak group) (5% of the wood analyzed). Oak occurred only in Contexts 7 and 13. Oak is a brown to reddish brown, heavy to very heavy and hard to very hard wood. It is used for tight and slack cooperage, fence posts, poles, piling, timber, firewood, lumber for flooring, furniture, boxes, crates, boat building and agricultural implements (Panshin and de Zeeuw 1980:564-571). Oaks grow well on well-drained soils in bottomlands but are also found on upland ridges. Oaks can range from Nova Scotia to Minnesota south to

northern Georgia and Oklahoma, with some of the southern oak types ranges as far south as northern Florida and Texas (Grimm 1983:159-210).

The next most common type of wood recovered was basswood (*Tilia* sp.) (5% of the wood analyzed). Basswood occurred in Contexts 11, 13 and 17. Basswood is a pale brown (often with a reddish tinge), light and soft wood. It is used as veneer, slack cooperage, excelsior, lumber for boxes and crates, dairy and poultry supplies, trunks and valises, caskets and coffins, novelties, handles and furniture (Panshin and de Zeeuw 1980: 611-613). The preferred habitat for basswood is in bottomlands on deep, moist fertile soils, but it is also found on slopes of hills and rocky locations. The American basswood (*Tilia americana*) ranges from New Brunswick to Manitoba south to eastern Kansas and along the Appalachian Mountains to North Carolina. White basswood (*Tilia heterophylla*) can range as far south as northwestern Florida and northern Arkansas (Grimm 1983: 361-364).

The next most common type of wood recovered was walnut (*Juglans* sp.) (4% of the wood analyzed). Specimens of walnut occurred in Contexts 11 and 13. Walnut is a light brown to chestnut or purplish brown wood. Species range from moderately light and moderately soft (*J. cinerea*) to heavy and hard woods (*J. nigra*). Walnut is used as a dye and food (the hulls and nuts) and sugar and syrup can be made from the sap. The wood of black walnut (*J. nigra*) is considered the finest domestic cabinet wood. The wood is also used for veneer, lumber for furniture, especially tables and desks, fixtures, caskets and coffins, millwork (doors, sash, frames and interior finish), sewing machines, boxes and crates, and woodenware and novelties (Panshin and de Zeeuw 1980:537-540). Walnut is most common on bottomlands but it is also frequently found on hillsides with fairly rich soils. The black walnut ranges from Massachusetts to Minnesota south to northern Florida and Texas (Grimm 1983: 116-120).

The last taxon identified from the Goulson Dugout is black ash (*Fraxinus nigra*) (2% of the wood analyzed). It occurred only in Context 7. Black ash is a grayish-brown to brown, medium heavy, and medium hard wood. It is used for handles like shovels, spades and rakes, furniture, planing-mill products (interior trim), dairy and poultry supplies, boxes, pallets and crates, woodenware and novelties, and basketmaking because the wood splits easily through the early wood zones when pounded (Panshin and de Zeeuw 1980:625-626). Black ash only grows in wet places such as low wet woods, cold swamps and river bottomlands that undergo periodic inundation. It ranges from Newfoundland to Manitoba, south to Delaware, Virginia and Iowa (Grimm 1983:405-406).

Conclusions

Five contexts (7, 8, 11, 13, and 17) consisting of carbonized wood fragments were analyzed from the Christopherson/Goulson dugout site. Fifty-five wood fragments (30.3 grams) were recovered (Table 1). Of the wood recovered, seven families, seven genera,

and two species were identified. These remains are all of hardwoods and include cottonwood or aspen (*Populus* sp.), elm (*Ulmus* spp. and *Ulmus americana*), oak (*Quercus* sp. probably of the red oak group), basswood (*Tilia* sp.), walnut (*Juglans* sp.), black ash (*Fraxinus nigra*), and tentatively identified samples of buckeye (cf. *Aesculus* sp.). The use of different types of wood at the site is quite diverse. The woods range from light to heavy woods that are soft to hard in strength. Uses are also quite variable including for lumber, furniture, boxes, crates, handles, food and basketmaking.

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Context No.		7	8	11	13	17	Total
Number of Wood Fragments		13	1	7	21	16	58
Weight of Wood Fragments (g)		1.7	0.6	6	14.2	7.8	30.3
Fagaceae <i>Quercus</i> sp.	Oak	1			2		3
Hippocastanaceae cf. <i>Aesculus</i> sp.	Buckeye	1		2	5	2	10
Juglandaceae <i>Juglans</i> sp.	Walnut			1	1		2
Oleaceae <i>Fraxinus nigra</i>	Black ash	1					1
Salicaceae <i>Populus</i> spp.	Cottonwood or aspen	8		3	11	3	25
Tiliaceae <i>Tilia</i> sp.	Basswood			1	1	1	3
Ulmaceae <i>Ulmus</i> spp.	Elm	2	1*	3	1	2*	10
<i>Ulmus americana</i>	American elm					4	4
Unidentifiable						1	1
Non-wood material						3	3
Total		13	1	7	21	16	55**

* Tentative identification of one sample.

** Total does not include non-wood material.