

Helter Shelter: Structural Data from Feature 6, 49NOA217, Cape Krusenstern National Monument, Northwest Alaska

Christopher E. Young
Washington State University/NPS, Western Arctic National Parklands



Site 49NOA217 (*Agiagruat*) is located along the Chukchi Sea coast approximately 75 km northwest of Kotzebue, Alaska. The excavation of Feature 6 in 1997 revealed the remains of a semisubterranean single room dwelling with an entry tunnel perpendicular to the long axis of the house. Dendrochronological and radiocarbon analyses place the construction and occupation of Feature 6 to around A.D. 1412.

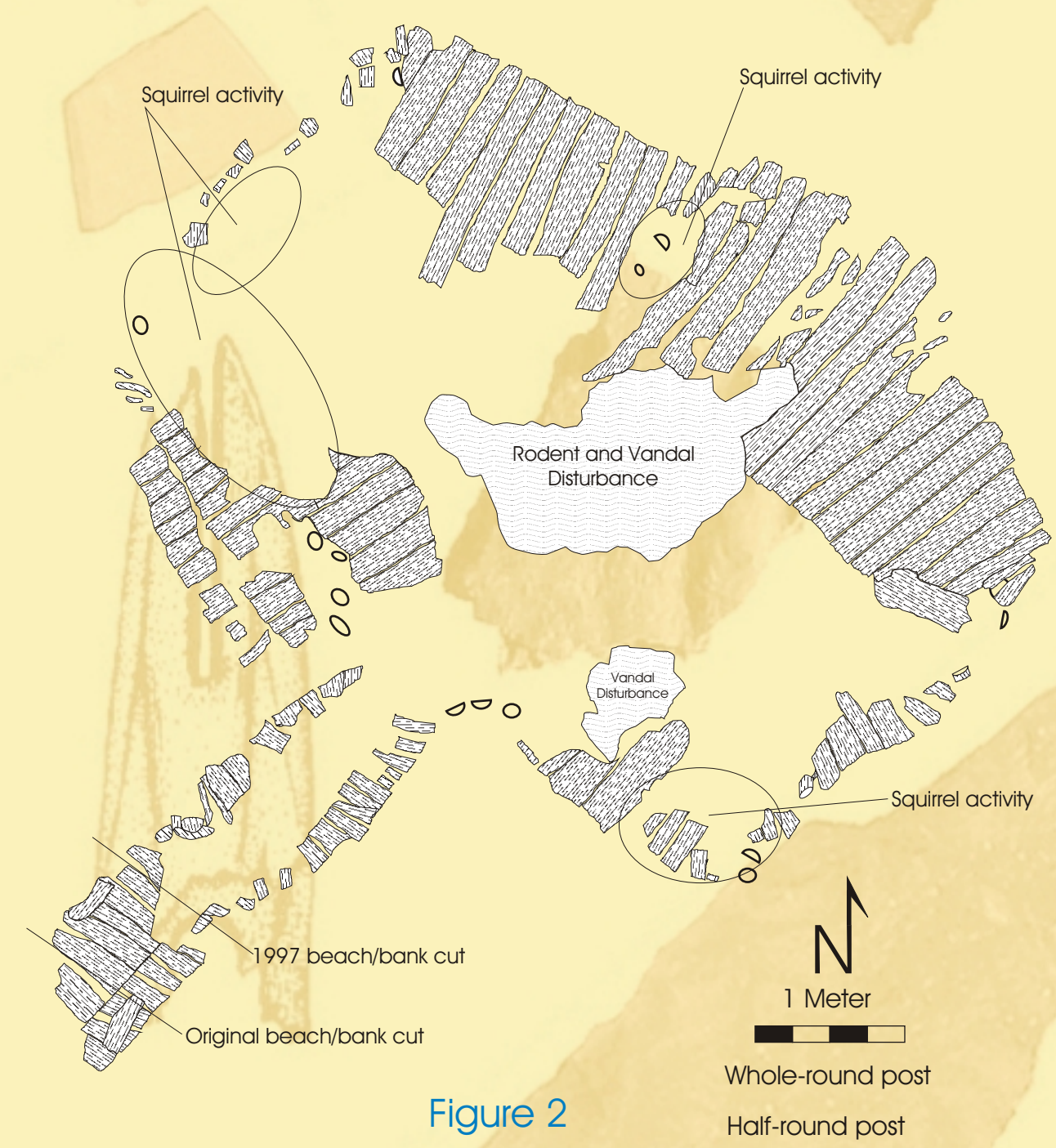
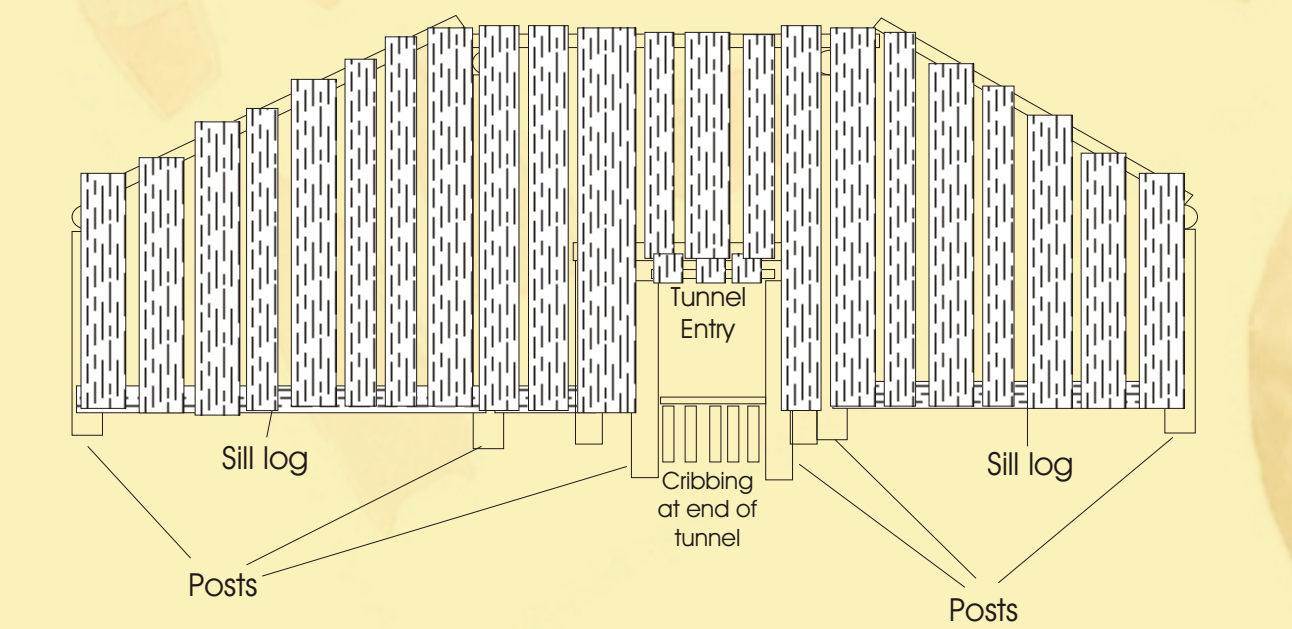
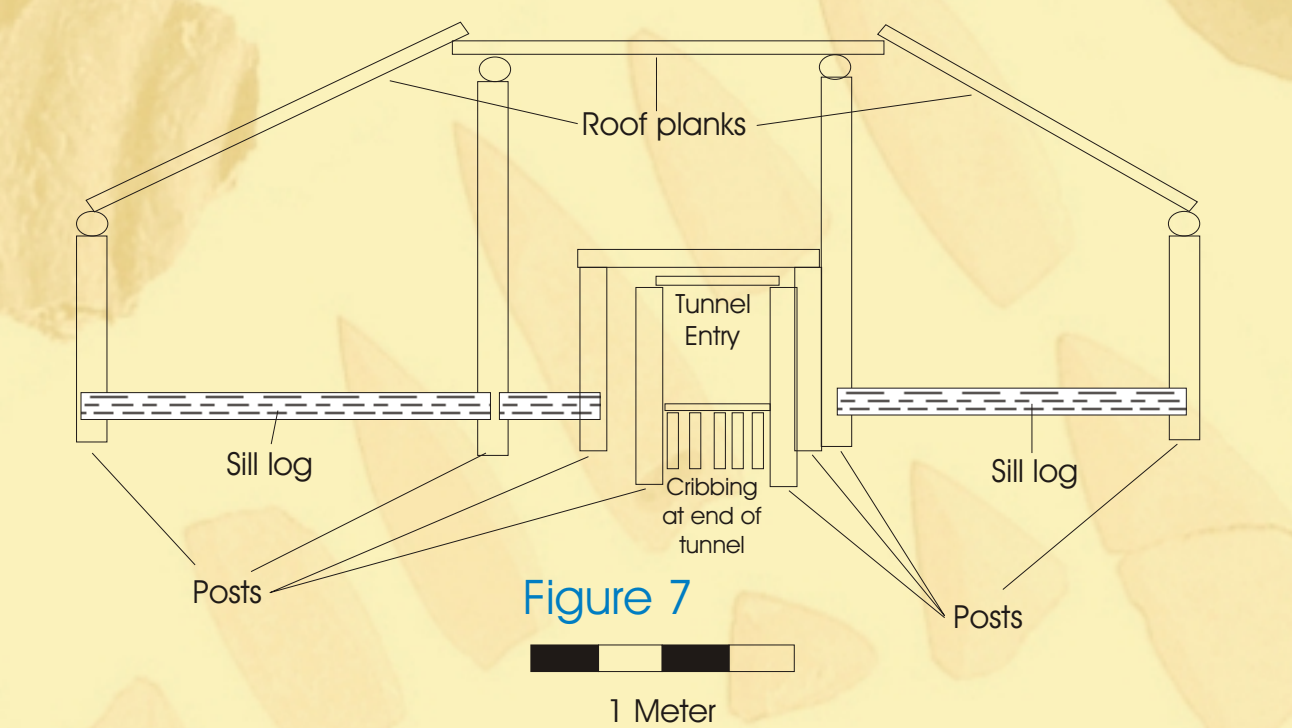
The excavation revealed that the Feature 6 dwelling was still present nearly in its entirety, albeit in a highly compressed state (Figure 1). The compaction of the wood, vandalism, rodent activity, and accelerated decomposition of softer non-spruce woods originally presented a less than clear depiction of the structure's design.

House Structure

Maximum dimensions for the house floor were 5.7 x 4.1 m. Nearly every wall member either in full or as a basal remnant was present (Figure 2). The walls of the main room were composed of vertically oriented half-rounds and planks placed side by side. The wall members ranged in width from 8 to 25 cm with an average width of 17 cm. The back wall provided the best evidence of what the walls of the house were like. The continuous section of wall members present along the southeast half of the back wall demonstrated a graduated increase in the height of wall members from 1 m at the sidewall to as much as 1.7 m near the center of the house.

Figure 3 illustrates the wood associated with the roof structure. In general the roof members are longer, wider, and thinner than the wall members. Those members deemed complete ranged in size between 1.7 to 2.0 m in length. Widths range from 9 to 30 cm and average 20 cm. Those elements identified with a black line in Figure 3 were substantially thicker than other roof related elements and were likely whole-rounds that supported the roof. All but five roof members are oriented parallel to the long axis of the house. There are some short to medium length members askew near the center of the house and these may have been associated with a smoke hole/sky light.

The floor of the house was gravel throughout with a large central hearth area (Figure 4). The only planking on the floor of the house was placed where the tunnel joins the house. A transition from shorter to longer planks demonstrates the presence of a short "hallway" between the tunnel and house floor. The planking served to provide a solid footing when entering or exiting the tunnel and prevented the back wall of the tunnel from collapsing.



Sill logs were placed on the floor along the back and front walls (Figure 4). No sill logs were used along the sidewalls. Sill logs would have been employed to anchor the basal ends of the wall members preventing them from collapsing inward when the surrounding pit was backfilled. How the sill logs were kept in place is uncertain as no evidence of back posting was identified. The sill log may have been back posted by the primary structural corner posts. There is some evidence to suggest that the wall members may have been immobilized by placing the butt end in a groove carved into the sill log.

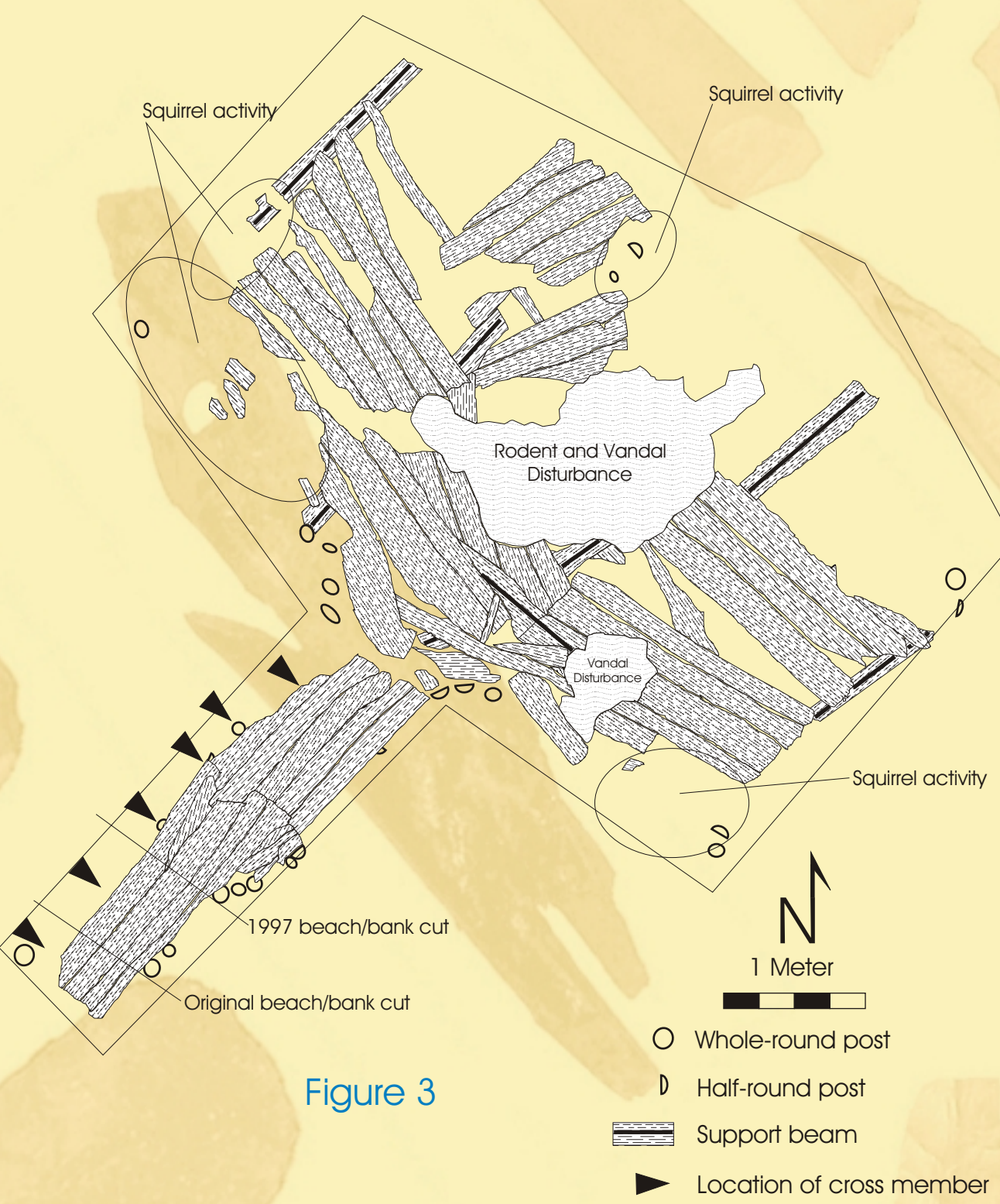
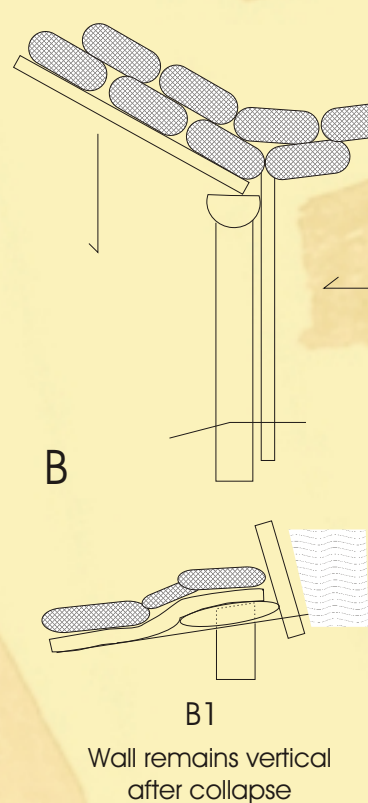
Tunnel

The tunnel from the outermost post to the house threshold is 3 m long. Feature 6 is in direct contact with the beach and at least 52 cm of tunnel structure extended beyond the bank on to the beach at the time of construction.

The floor of the tunnel was bi-level and gravel throughout both levels. The first level entered from beach level as much as 1.5 m below the present surface and continued 2.25 m toward the house floor. At this point a horizontally oriented whole-round log, or step log was situated across the tunnel floor (Figure 4). The area behind the step log or "stoop" terminated in a 35 - 40 cm step upward onto the threshold planks in the house.

Preservation of the tunnel structure was good to excellent throughout. Except for the wall members near the entry of the tunnel, only the basal segments are illustrated in Figure 2. The entire length of tunnel was lined on both sides by vertically oriented whole and half-round timbers and planks ranging in width or diameter between 4 and 20 cm and averaging 15 cm. The wall members were kept vertical using back posted sill logs.

Tunnel roof construction consisted of longitudinally oriented split wood planks and half-rounds placed side by side supported by lateral members (Figure 3). The shorter section was comprised of half-rounds and planks ranging in width between 15 and 21 cm and 1.7 m in length. The longer section was comprised of four half-round logs 13 to 20 cm wide and each between 2 and 2.2 m in length. The longitudinal roof members were supported by 12 - 15 cm wide cross members spaced about every 40 - 60 cm.



Reconstruction

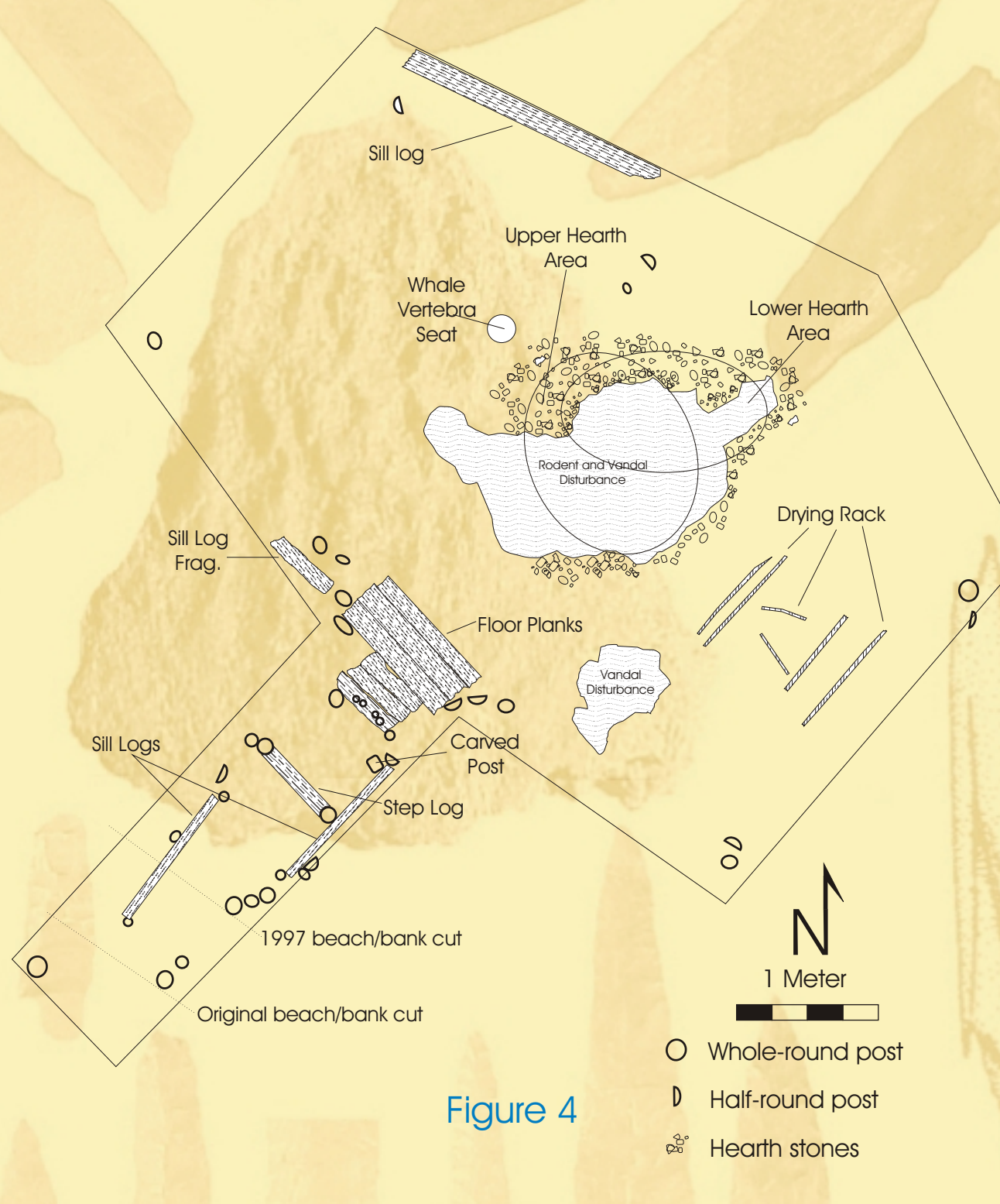
A reconstruction of the roof assembly as suggested by the data is illustrated in Figure 5. The dark lines highlight primary support beam locations. The main room roof is a composite of three nearly equal segments. Primary structural posts are located in each of the four corners of the house and on both sides of the tunnel along the front and back walls. In examining Figure 6 we have evidence of all of these posts except for one. Support beams were placed atop the center posts and sidewall posts perpendicular to the long axis of the house (Figure 6). Traditionally, a smoke hole/skylight was located in the roof above the hearth. In the northern corner there is a series of short planks situated perpendicular to the parallel planking. I believe this represents that the builders ran out of prepared wood of sufficient length.

Based on the wall data we know the center section of the roof was at least 1.7 m high and would have readily accommodated the upright posture of its Eskimo occupants. The slope of the floor toward the center of the house further accentuated the overall height of the central roof section. From the center section, the roof slopes approximately 25° down toward the sidewalls which were about 1 m high (Figure 7). Since there are no complete sidewall elements, the sidewall height is based on the dimension of the back wall member present at the junction of the back wall and sidewall. This results in what can be described as a double-pitched flat center roof.

The front and back walls mimic each other in appearance, except for the tunnel entry in the front wall (Figure 7). The entry from the tunnel into the house is slightly off center between the two house center posts. A primary support beam runs above the house threshold. This is where the structural members for the tunnel roof are supported as well as the wall members for the hanging front wall above the house entry.

Figure 8 illustrates the design of the sidewalls employed in the construction of Feature 6 and how it was encountered during the 1997 excavation. This design is indicated by the presence of only one horizontal member along each side wall, the presence of corner posts to support a header beam, and most importantly direct articulation of roof members with headers and the burial of the butt ends of the walls.

Figure 9 illustrates how the southeastern wall of the tunnel looks reconstructed. The wall elements of the tunnel mirror vertical changes in overall floor depth.

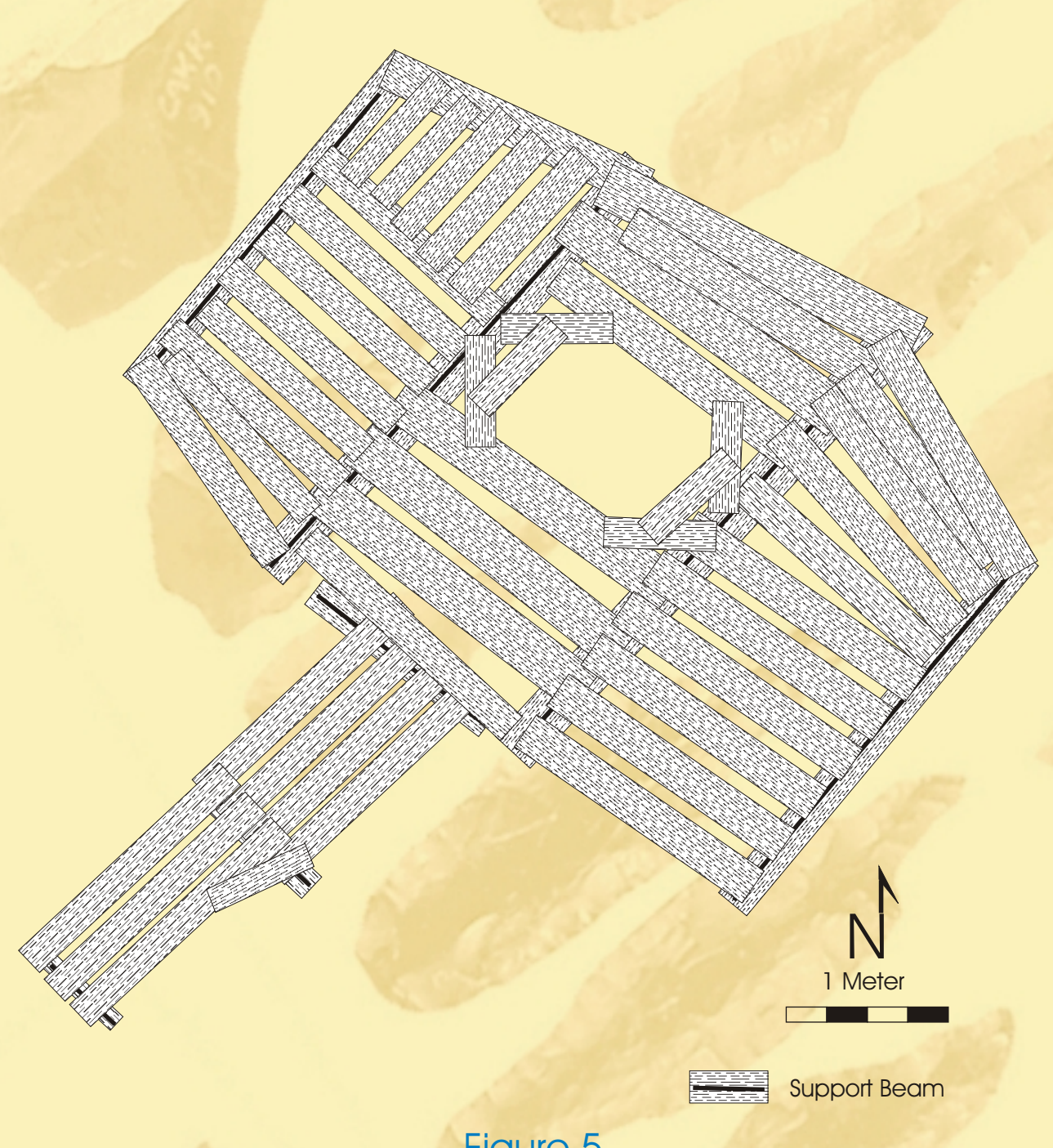
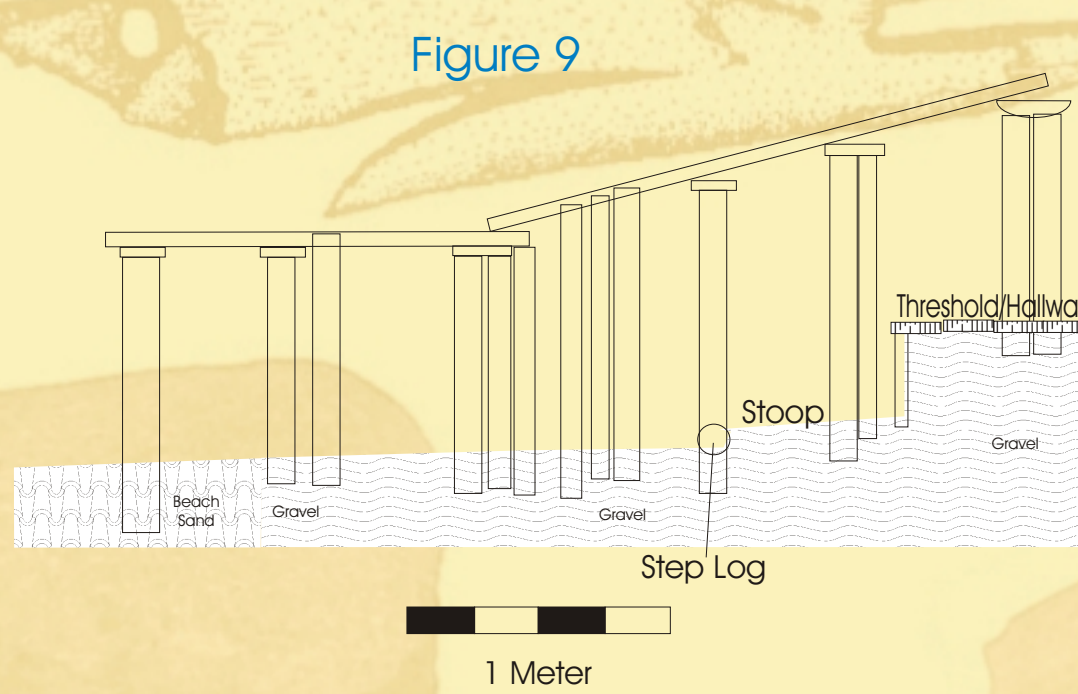
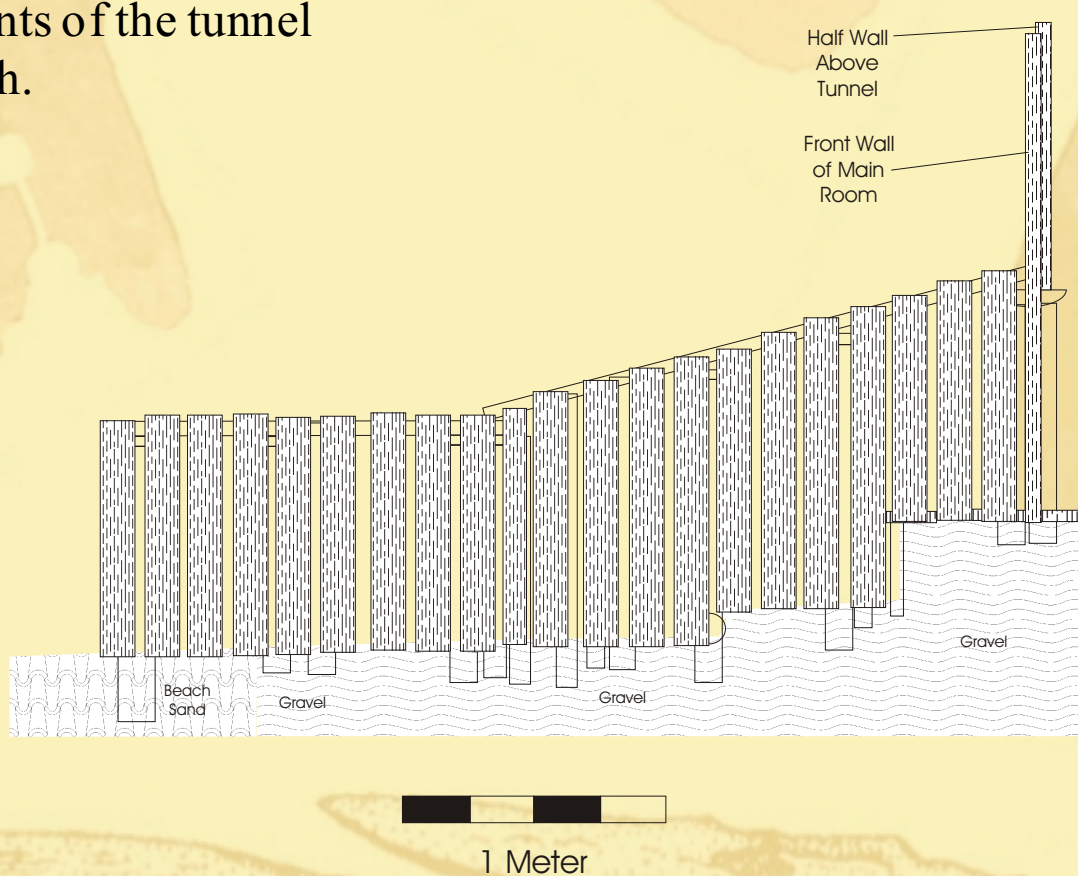


The final step in the reconstruction of the Feature 6 is applying the insulation. Traditional Eskimo dwellings are insulated by covering the structure with sod blocks and/or moss. Interstitial areas were filled with dirt or moss. Based on the depth of the original excavation, the tunnel structure would have been almost entirely below the surrounding ground level. The side walls of the house would be nearly at ground level leaving the center of the house rising above the ground about 1 m forming a gently sloping mound (Figure 10).

House Type Reevaluation

Nomenclature clarification is important because the use of terms is inconsistent within and between regions. Several terms appear in the literature when describing the type of design used to support the roofs of semisubterranean dwellings from Alaska. "Central post" and "four-post central" construction are used mostly by northern researchers to describe various construction styles (Giddings 1952, 1964; Giddings and Anderson 1986; VanStone 1955). In central and southern areas the terms "twin or dual ridge pole" and "parallel ridge pole" are used (De Laguna 1947; McFadyen Clark 1996; Osgood 1937).

Giddings (1952:32-34) was the first to use "four-post central construction" in describing houses he excavated from the Kobuk River and Kotzebue as well as the Ipiutak houses Larsen and Ramey (1948) excavated at Point Hope. The use of this term is borne out of Giddings' (1952:34) dismissal of the corner posts as being structurally unimportant because "little roof support falls upon corner posts". The data I have provided above for Feature 6 clearly illustrate the importance of all posts in maintaining structural integrity. Additionally, the presence of bench or platform areas in the houses from Ambler Island further serve to segment a house. Here, the only open "floor" area existed in the center section of the house bounded on all four corners by the vertical posts supporting the center section of a double-pitched flat center roof. This center hearth and the use of posts around it became a device with which to lump western Arctic houses together (Giddings 1952:33; Larsen and Ramey 1948:50; VanStone 1955:91), thus deflecting any further consideration of superstructure design as a diagnostic marker.



For semisubterranean structures from Alaska, I propose that the following nomenclature be adopted to describe the construction design for the primary interior room of any feature utilizing a free standing superstructure to support a roof. 1) Perimeter post construction; this term correctly describes the design configuration utilized in the construction of Feature 6, as well as those structures conforming to the designs illustrated in Figures 11 A, C, D, and E. Houses following this design can be referred to as the "Kobuk Type" house. 2) Central post construction; this should be limited to structures conforming to the general design portrayed in Figure 11 F. 3) Corner post construction; this term is best suited to describe structures based on a design like that shown in Figure 11 B. When looking deeper into the way these various forms manifest themselves in ground plan and more uniquely in roof design, the terms create a better understanding of the structure as a whole.

Seven characteristics define the Kobuk Type house. 1) The roof superstructure is supported in its entirety by posts located along the edge or within 1 m of the edge of the house floor. The floor area includes all true floor area and all bench or platform areas. "Bump outs" or niches like those found in Ekseavik House 8 and Ivisahpat House 8 (Giddings 1952:Fig.17; Hickey 1977 Fig.6) are considered non-livable areas under this scheme. 2) This design will ordinarily utilize eight support posts, occasionally six, and ten or more in a few instances. A pair of posts will be located on each side of the tunnel/entry along the front and back walls. They will usually not be spaced the same width as the tunnel. Four more posts will be located in each corner on both sides of the house. 3) The posts along the long axis of the house will be nearly linear from corner to corner. 4) This design will result in a rectangular structure. The "MacKenzie Type" house is the exception (Figure 11 G). 5) These houses will have distinct vertical to near vertical walls, not combination roof/walls as seen in some Tena houses (de Laguna 1947; McFadyen-Clark 1996). 6) These houses have hearths located in the middle section of the house. The location of the hearth may serve to radiate heat equally throughout the structure, but I contend that hearth location is more a function of roof height which substantially reduces the risk of igniting the structural wood. 7) A 3-5 m long entry tunnel is oriented perpendicular to the long axis of the house.

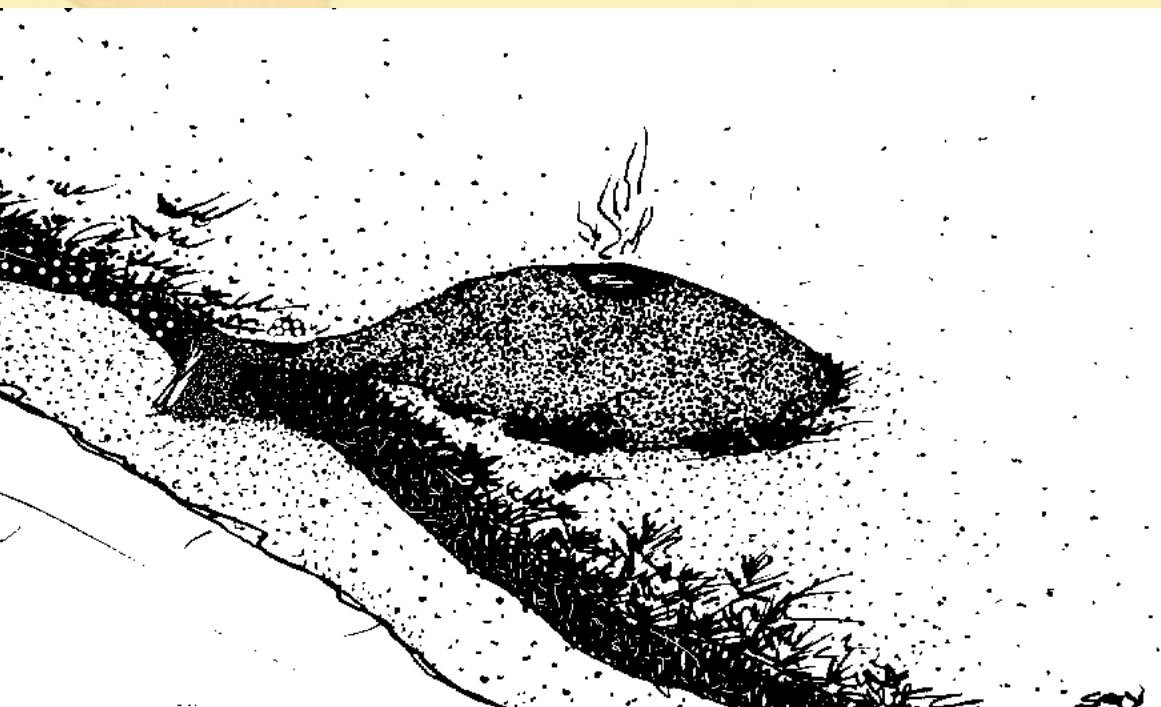
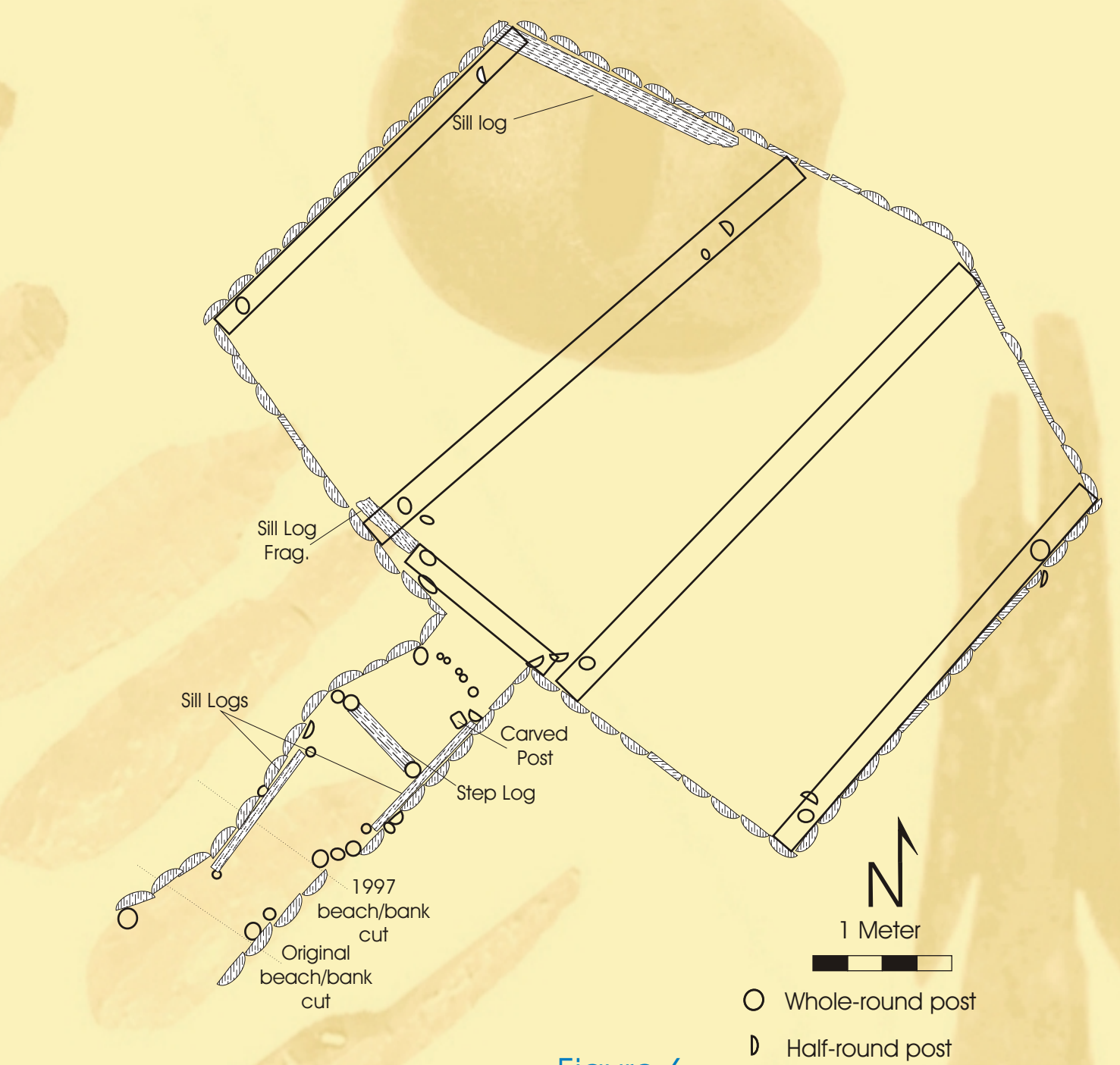


Figure 10



In a perimeter post design roof elements will conform with the long or short axis of the house eliminating any significant diagonal orientations or the need for cribbing. Possible roof outcomes are likely to be either flat all the way across, double-pitched sides with a flat center as with Feature 6, or a single-pitched side with a flat center and opposite side. This design allows a structure to be larger than the longest piece of material available to build it, and facilitates the use of shorter structural elements of a more uniform length. This is a most useful adaptation in treeless or driftwood impoverished coastal and inland areas. In wooded inland areas this design would still be desired because of its economical nature. This type of structure can be easily altered to add additional floor space (Figure 11 D, E).

Temporally, the Ahteut houses on the middle Kobuk River are the oldest at A.D. 1250. In general, perimeter post construction is most prevalent between A.D. 1400 and prior to intensive Euro-American contact (~1850). Geographically, these structures are found from the Mackenzie River Delta to the confluence of the Koyukuk River with Yukon River. No such structure has been reported from Point Hope to Point Barrow. It should be additionally noted that there are no *qargich* or community houses that conform to this type of design.

BIBLIOGRAPHY

- Giddings, J. L.
1952. *The Arctic Woodland Culture of the Kobuk River*. University Museum Monograph, University of Pennsylvania, Philadelphia.
1964. *The Archaeology of Cape Denigh*. Brown University Press, Providence.
1967. *Ancient Men of the Arctic*. Knopf, New York.
- Giddings, J. L. and D. D. Anderson
1986. *Beach Ridge Archaeology of Cape Krusenstern: Eskimo and Pre-Eskimo Settlements Around Kotzebue Sound, Alaska*. Publications in Archaeology 20. National Park Service, U.S. Department of the Interior, Washington, D.C.
- Hickey, C. G.
1977. *Process in Prehistory: A Structural Analysis of Change in an Eskimo Culture*. Ph. D. Dissertation, Department of Anthropology, Brown University, Providence, Rhode Island.
- De Laguna, F.
1947. *The Prehistory of North America as Seen From the Yukon*. Society for American Archaeology Memoir No. 3. Menasha, Wisconsin.
- Larsen, H. and F.G. Ramey
1948. *Ipiutak and the Arctic: Whale Hunting Culture*. Anthropological Papers of the American Museum of Natural History 42. New York.
- McFadyen Clark, A.
1996. *Who Lived in This House? A Study of Koyukuk River Semisubterranean Houses*. Mercury Series Paper No. 153. Canadian Museum of Civilization, Archaeological Survey of Canada, Ottawa, Ontario.
- Osgood, C.
1937. *The Ethnography of the Taimina*. Yale University Publications in Anthropology No.16. Yale University Press, New Haven.
- VanStone, J. W.
1955. *Archaeological Excavations at Kotzebue Alaska*. Anthropological Papers of the University of Alaska 3(2):75-155.

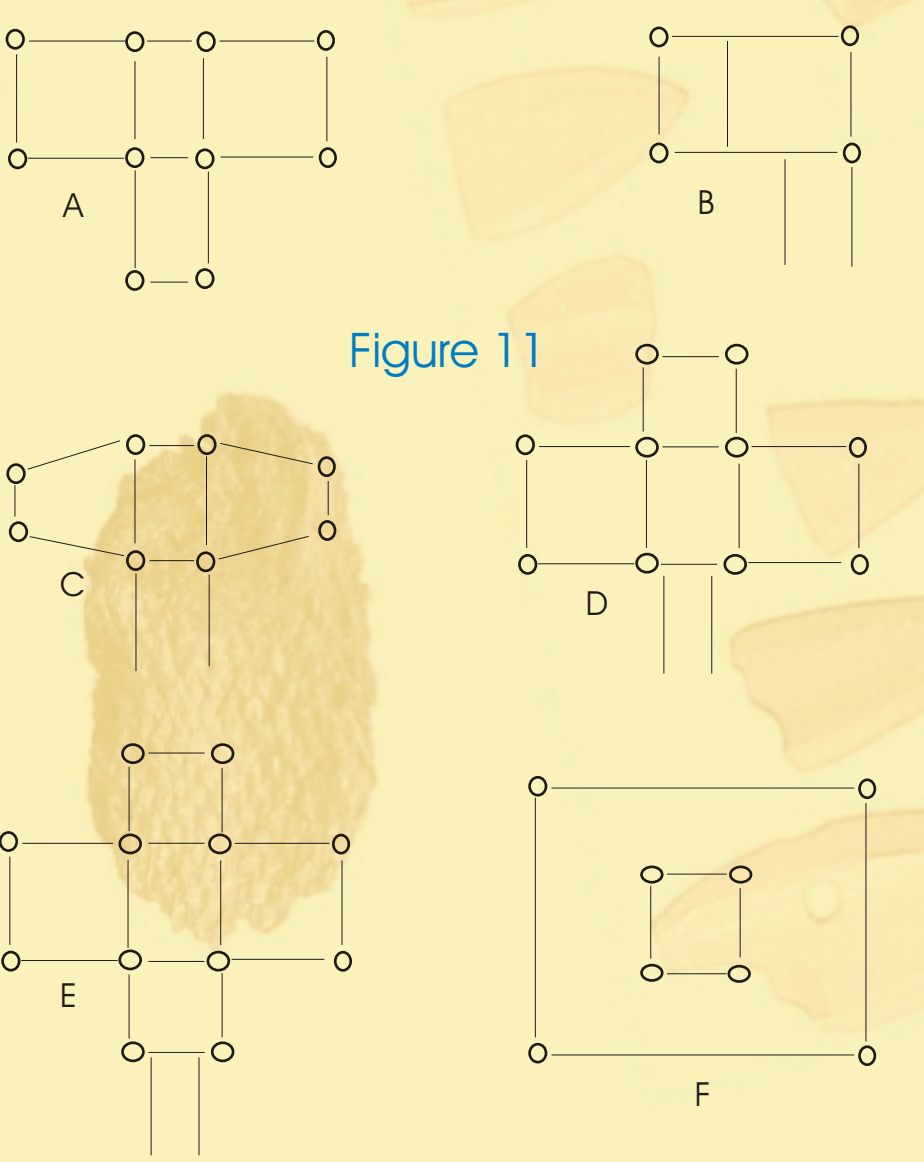


Figure 11

Acknowledgments: Bob Gal (National Park Service, Western Arctic National Parklands), Steve Klingler, Bob Ackerman, Sabra Gilbert-Young, Jeff Rasie, Ann Biddle and everyone else who made the excavations and reporting of Agiagruat a success.