

COMMUNITY MAP BUCKLAND

65°59' N 161°08' W Elevation 30'

Prepared by the Arctic Environmental Information and Data Center, University of Alaska, for the Alaska Department of Community and Regional Affairs

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Land Use

- Residential
- Public
- Commercial

Electricity

- Power cable
- Service cable
- Power pedestal
- Generator
- Phone (RCA)
- Water line (PHS)
- Sewage disposal bunker (PHS)
- Townsite boundary (BLM)
- Survey line (BLM)
- Active erosion
- Direction of flow

Flood Data

U.S. Army Corps of Engineers. Preliminary draft 1975. Compiled from aerial photos dated 9-8-66 by the Bureau of Land Management, Division of Engineering, Branch of Photogrammetry, 1-20-67. Assumed grid. Assumed elevation.

Area that would be inundated by a flood with a frequency of approximately 100 years.

- Flood hazard work was performed by the Alaska District Corps of Engineers at the request of and funded by the Federal Insurance Administration.
- The flood hazard area shown hereon is based on meager data, plus a minimum of historical flooding information and should be considered as preliminary.
- The major flooding that occurs at this location is the result of spring ice jams.
- Any levees or dikes were considered in delineating the approximate 100 year flood.

MAXSON AVIATION-BOX 33, KOTZEBUE
 NORLUM EQUIPMENT-BOX 179, KOTZEBUE
 LEE'S SEA AIR-BOX 75, KANIA
 AMBLER AIR SERVICE-AMBLER
 WILSON AIR ALASKA
 Service-Turn One Air
 WAINZ NORTHERN AIRLINES INC-BOX 790 NOME
 DEERING AIR SERVICE-DEERING

NOTE: ALL VILLAGES CAN BE SERVED BY THE FOLLOWING:
 Baker Aviation Inc.
 Box 116, Kotzebue
 Don't Sidel Flying Service
 Box 83, Kotzebue
 Shubelanger Flying Service
 Box 1, Kotzebue
 Wainz Air Service
 Box 57, Kotzebue
 Barrow Air Service
 Kotik

Topography and Soils

Site selection and foundation design of buildings are directly affected by the strength or bearing capacity of soils, presence of permafrost, topography, drainage, erosion, and flooding. Buckland stands on an ancient floodplain of the Buckland River. The river has eroded a new deeper channel and deposited a modern floodplain at the foot of a bluff about 20 feet below the village. Limited quantities of gravel are available along the river beaches and may also exist along the abandoned channels of the ancient floodplain. The margin of the bluff along the river is slightly higher than the remainder of the village, creating the need to channel drainage away from inhabited areas. Most of the homes have been built on high ground above abandoned river channels that are now partially occupied by lakes.

Permafrost

Permafrost (permanently frozen ground) is continuous under most of the area. Ice-rich sandy silt underlies the village and polygonal ground is visible wherever the surface remains unchanged by development. These soils will become unstable and collapse if thawed.

Permafrost should be protected from thawing whenever new structures and utilities are built in the village. The most common methods of protecting permafrost are to place a thick gravel pad between the structure and the frozen ground to limit heat transfer or to raise buildings on pilings to allow air circulation under the structure. Utility pipes should be properly insulated or placed in utilidor so that a minimum of heat transfers from the pipes to the adjacent ground.

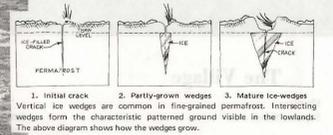
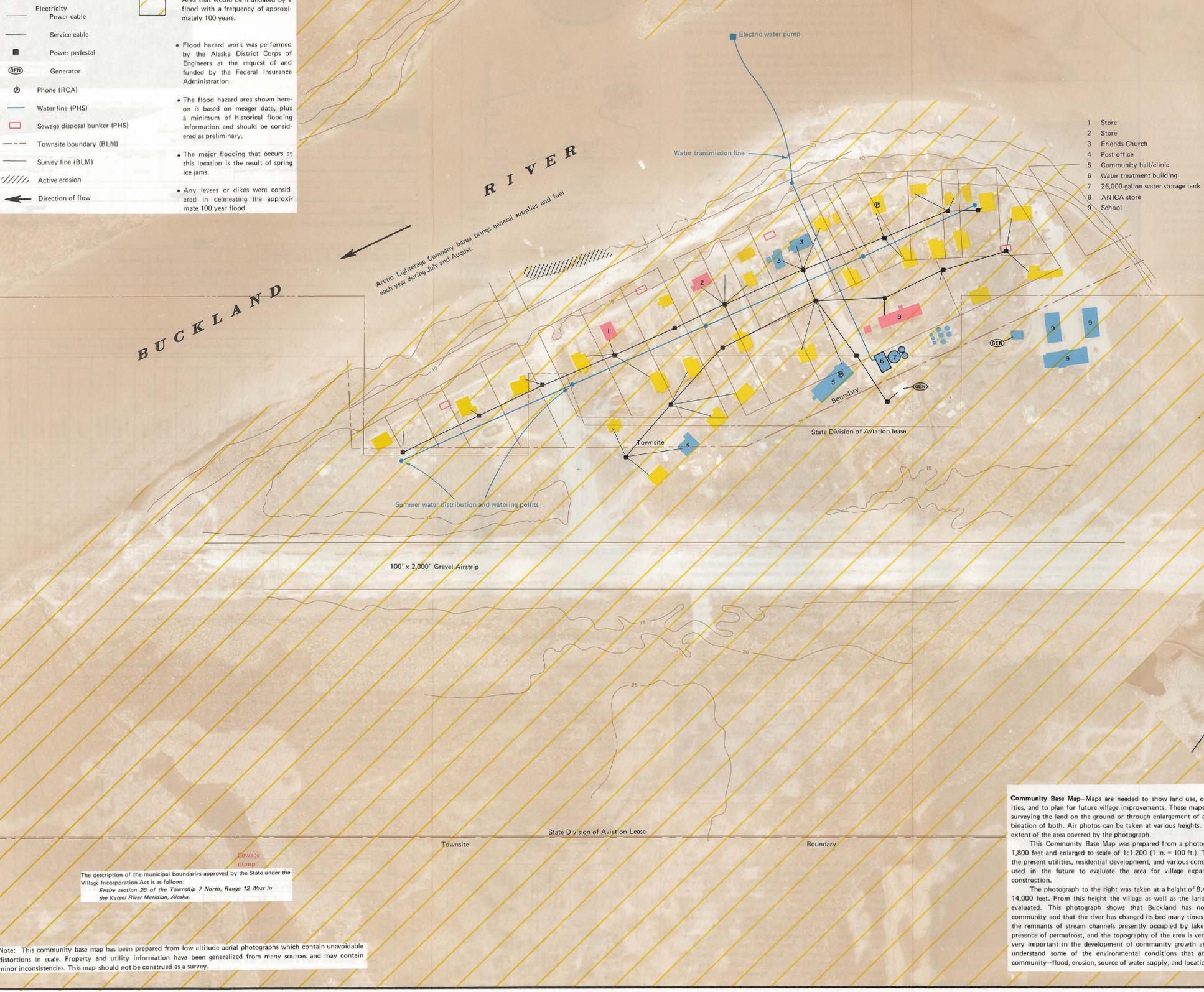
Erosion and Flooding

Buckland is located in an area which is frequently flooded during spring breakup as a result of ice jamming. In 1971 the residents were evacuated by Air Force helicopter to higher ground on the opposite riverbank. The newly built homes were not damaged by the flood, but 70 percent of the airstrip was under water. In 1972 much of Buckland was again flooded due to ice jamming.

Abandoned channels of the Buckland River occur in the modern floodplain east and north of the presently occupied channel. During a large flood the river could change channel, again causing flooding and erosion in the village. A headland across the river restricts the river channel below the old school site and deflects strong currents against the village bluff. Excavation of the headland to widen the river channel and shift the main current away from the bluff might reduce erosion along the bank.

Permafrost

The most important thing to remember when building in the Arctic is that successful design requires site investigation and the advice of competent engineers because of the special conditions in the North. Neglecting these considerations can lead to complete failure of structures.



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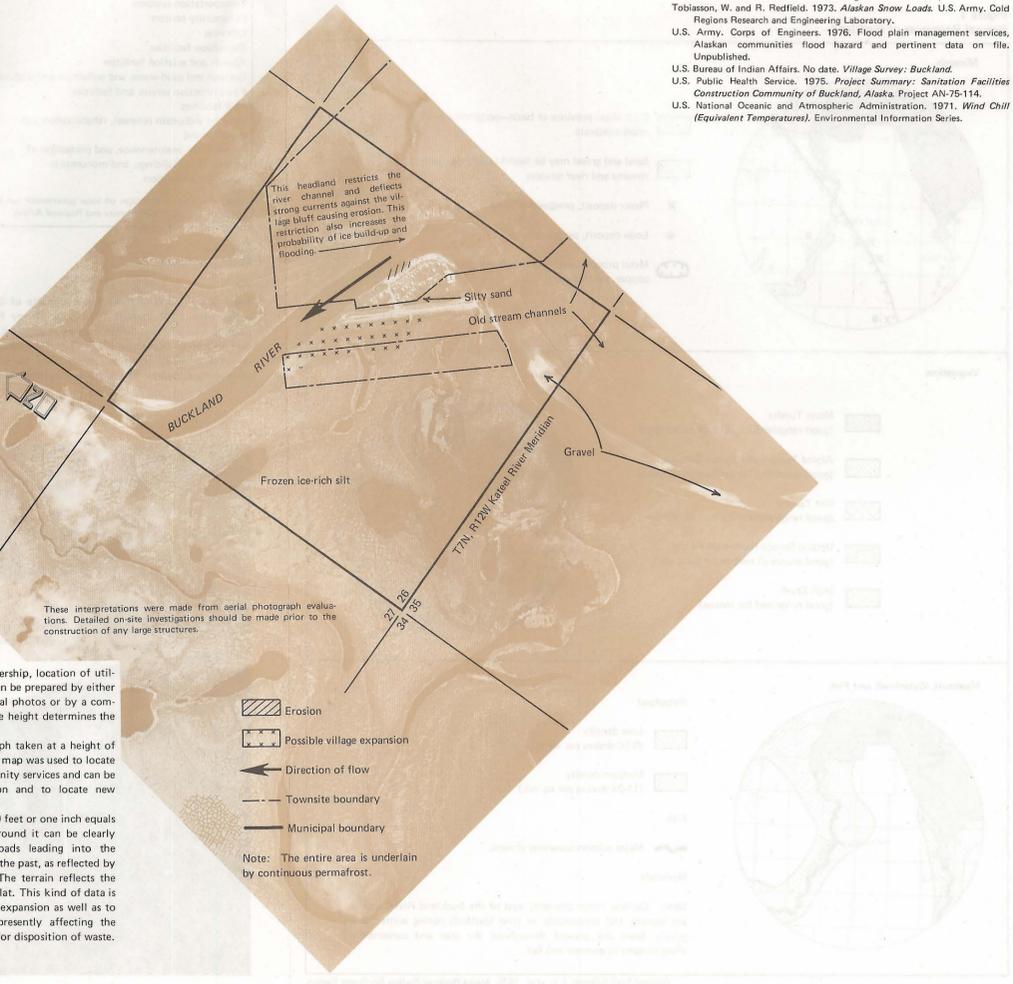
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Community Base Map

Maps are needed to show land use, ownership, location of utilities, and to plan for future village improvements. These maps can be prepared by either surveying the land on the ground or through enlargement of aerial photos or by a combination of both. Air photos can be taken at various heights. The height determines the extent of the area covered by the photograph.

This Community Base Map was prepared from a photograph taken at a height of 1,800 feet and enlarged to scale of 1:1,200 (1 in. = 100 ft.). The map was used to locate the present utilities, residential development, and various community services and can be used in the future to evaluate the area for village expansion and to locate new construction.

The photograph to the right was taken at a height of 8,400 feet or one inch equals 14,000 feet. From this height the village as well as the land around it can be clearly evaluated. This photograph shows that Buckland has no roads leading into the community and that the river has changed its bed many times in the past, as reflected by the remnants of stream channels presently occupied by lakes. The terrain reflects the presence of permafrost, and the topography of the area is very flat. This kind of data is very important in the development of community growth and expansion as well as to understand some of the environmental conditions that are presently affecting the community—flood, erosion, source of water supply, and location for disposition of waste.