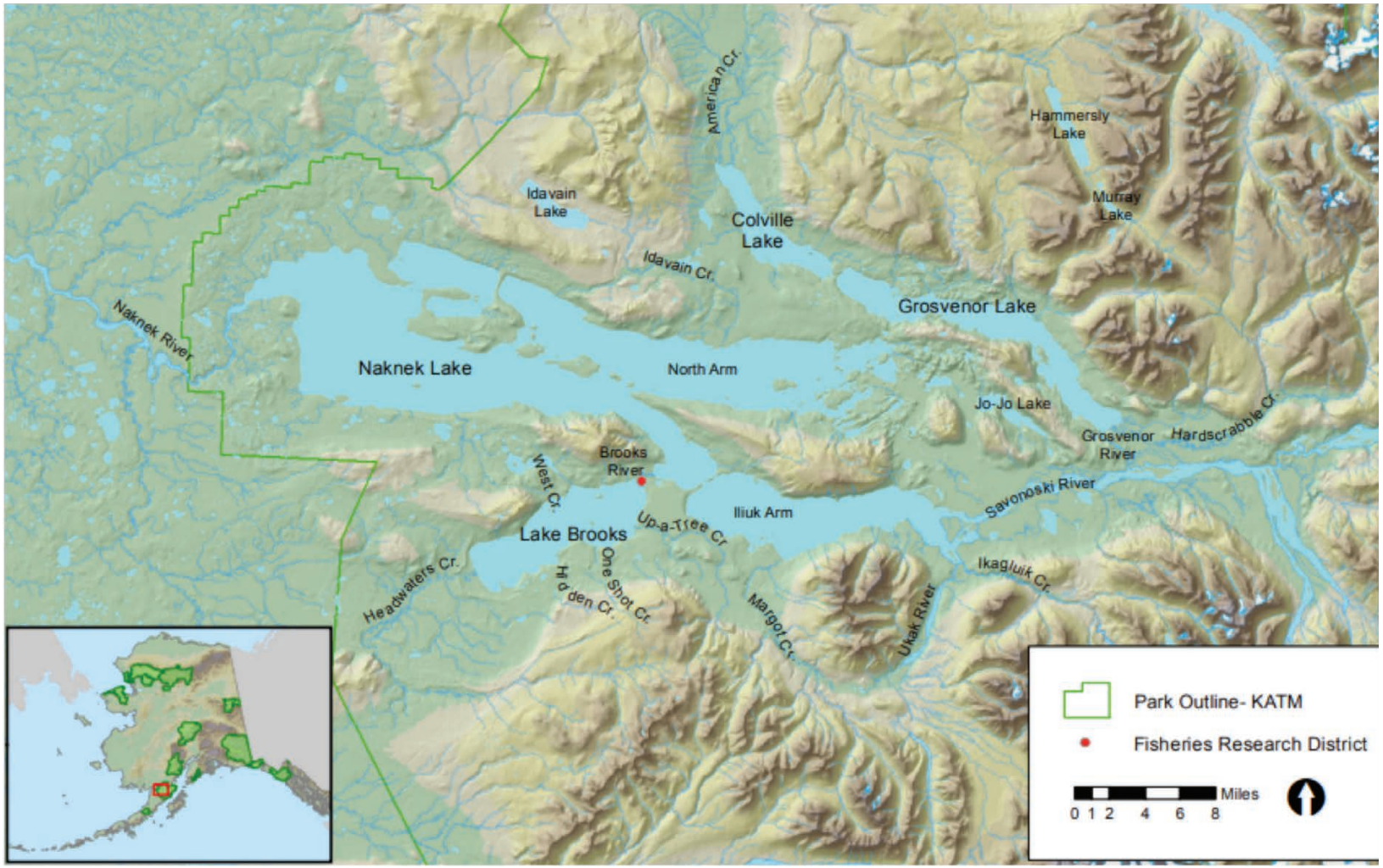
Field Laboratory – Brooks Lake, Alaska

Historic Structure Report





Context Map, from Lake Brooks Fisheries Research District Cultural Landscape Inventory, 2013.

Field Laboratory – Brooks Lake, Alaska

Historic Structure Report

Katmai National Park and Preserve

2018

Kathleen Wackrow

National Park Service
Alaska Regional Office
240 W 5th Avenue

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Acknowledgements

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MAP OF AREA

REVISIONS

FIELD LABORATORY
BROOKS LAKE
ALASKA

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF CONSTRUCTION
AND C.C.C. OPERATIONS

DRAWN BY
F. A. RELLY

CHECKED BY

DATE
3-14-41

DIRECTOR

CHIEF OF DIVISION

CHIEF DIV. CONST. & C.C.C. OPERATIONS

DWG. No. 1065

1

SHEET No. 1 OF 2

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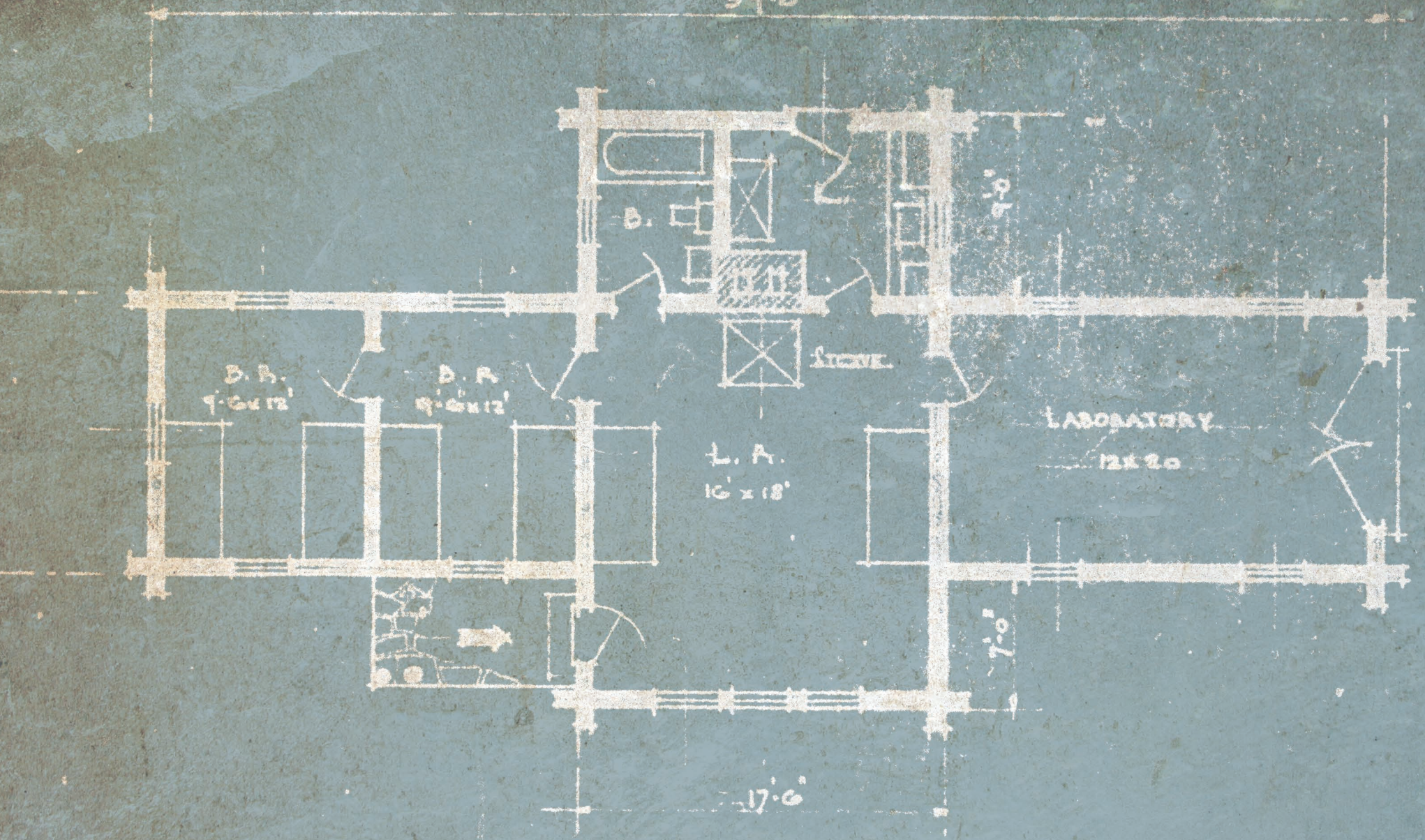
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FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"



Figure 1. Field Laboratory, west elevation.

Executive Summary

This Historic Structure Report (HSR) was completed to support the rehabilitation and reuse of a log building historically identified as the "Field Laboratory, Brooks Lake, Alaska" (AHRS #XMK-00124) and commonly identified by its contemporary building number, "BL-3" (Figure 1).[1] Between 1941 and 1972, the United States Fish and Wildlife Service (USFWS) used this building as a laboratory, bunkhouse, and headquarters for the Bristol Bay Investigation, a fisheries management and research program established to study salmon associated with major rivers and lakes in the area.[2] In 1940, the USFWS received permission from the National Park Service (NPS) to construct their building within the boundaries of Katmai National Monument. From 1941 to 1950, the Field Laboratory and its fisheries staff served as the only permanent federal building and represented the only regular federal presence in the national monument. The NPS acquired the building in June of 1978, and has since used it for employee housing.[3] Park managers intend to perform treatment on the historic building and prepare it for reuse as a visitor center which will feature exhibits on local fisheries research, early settlements, and archeology.

The Field Laboratory is part of a 42-acre USFWS fisheries research complex on the northeast shore of Lake Brooks, approximately 16 miles east of the west border of Katmai National Park and Preserve. The building is located 0.81 miles south of Brooks Camp and 0.28 miles northwest of the park's main thoroughfare, the Valley of Ten Thousand Smokes Road. It can be accessed by a float plane on Lake Brooks or from an unnamed dirt road that leads from Brooks Camp. The Field Laboratory is situated at the north end of the fisheries research district, set back

60' east from the lake's shoreline and 105' southeast of where the lake feeds Brooks River (Figure 2). Facing west towards the lake, the building sits on a relatively flat, cleared lot surrounded by a white spruce *(Picea glauca)* boreal forest. It is a one-story, cross gabled, log and wood-framed building constructed in the rustic style of architecture.

Using a set of plans drafted by USFWS Division of Construction and Civilian Conservation Corps Operations in 1940, USFWS biologists initiated construction of their field laboratory in 1941. With the help of local carpenters and USFWS staff, it took 17 years to complete the construction project. In 1941-1943, the crew constructed the 17'-6" x 30' central gable-front massing. In 1942-1943, the crew built a portion of the stone chimney, piercing the roof just east of center. With the onset of World War II, construction halted, and resumed in 1947 with continued work on the chimney until supervisory Bristol Bay Investigation (BBI) staff completed the work in 1953. In 1956, crews constructed the 20'-6" x 13'-10"

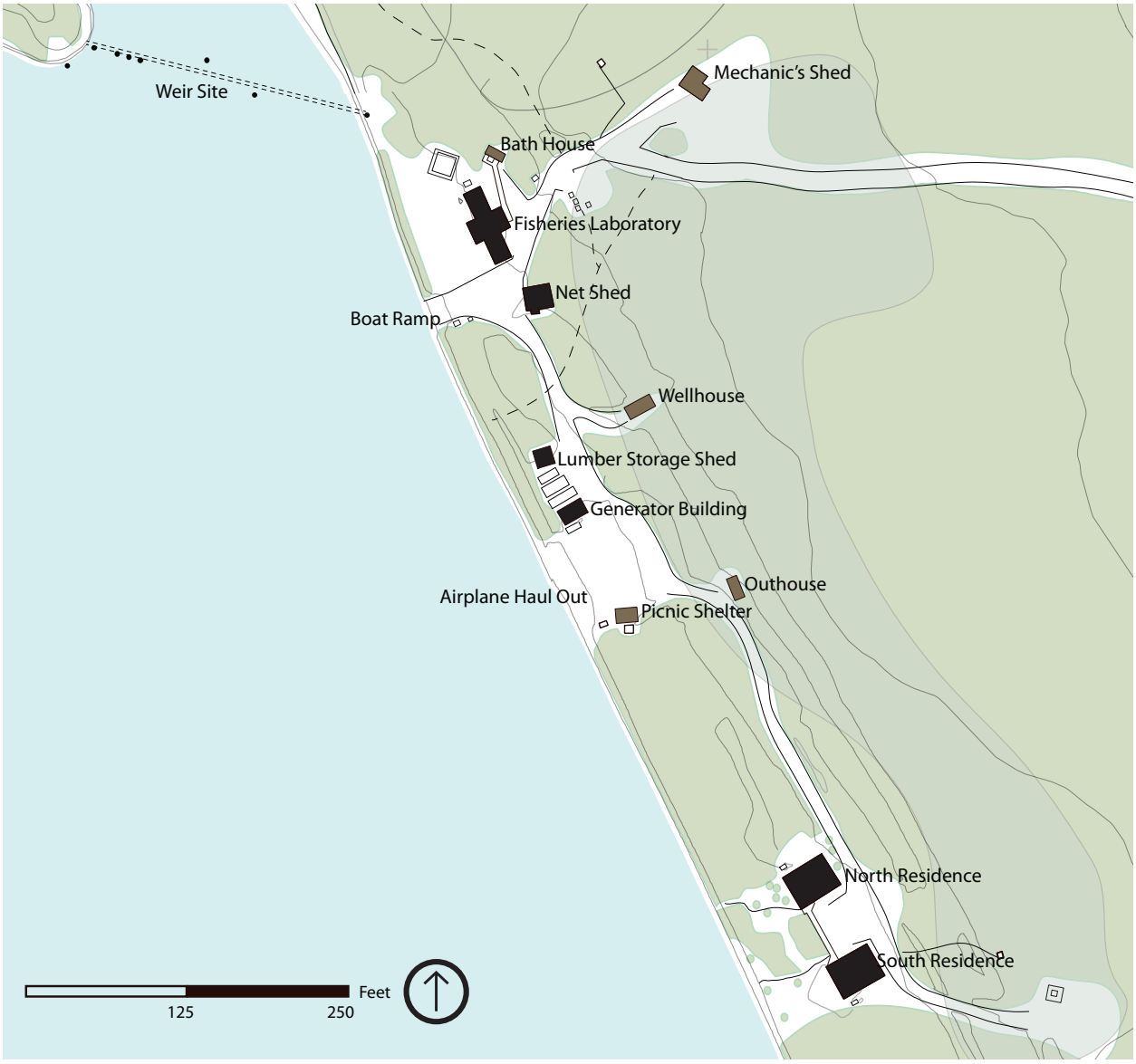


Figure 2. Site map, created by Corinna Welzenbach, 2013, edited by John Wachtel, 2018.

gabled south wing, and in 1957-1958, they constructed the 21'-8" x 14'-1" gabled north wing.

On July 1, 1999, the Alaska State Historic Preservation Officer (SHPO) determined the Field Laboratory eligible for individual listing in the National Register of Historic Places Determination of Eligibility (DOE). The SHPO determined the building eligible at the state level under Criterion A for its association with fisheries research. On January 9, 2013, the SHPO determined the building eligible as a contributing resource to the Brooks Lake Fisheries Research Historic District. The period of significance for the Field Laboratory begins in 1941, when the building was constructed, and ends in 1972, when the USFWS abandoned their fisheries research and subsequently left the building unmanned.

The information included in this report stems from extensive research of primary and secondary source material and comprehensive on-site observations of the building. NPS staff conducted primary and secondary research at the Katmai National Park and Preserve Museum Collections and the NPS Alaska Regional Office in Anchorage.

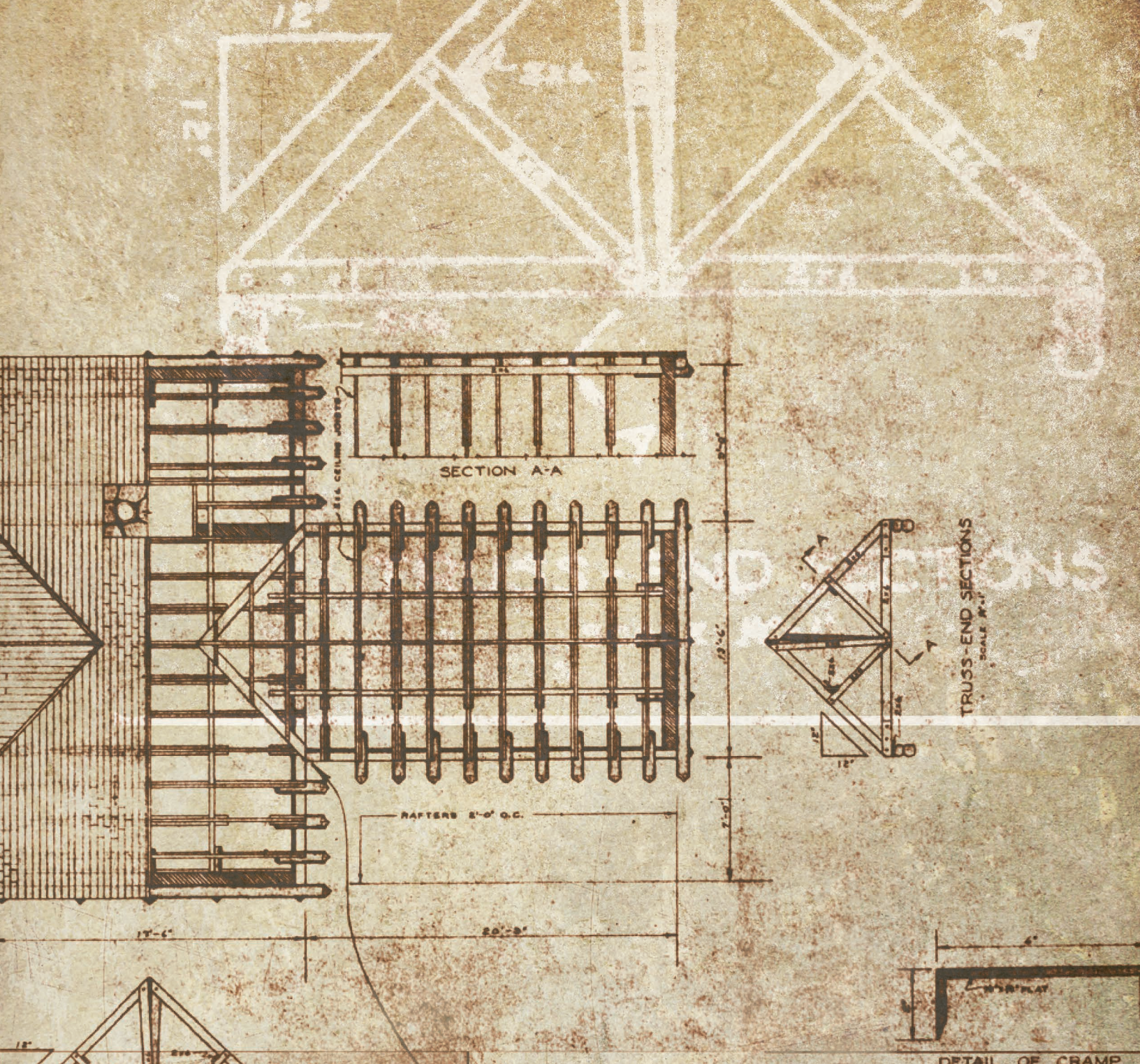
It is recommended that the exterior of the Field Laboratory is restored to the period between 1959, when the building was completed, and 1976, prior to NPS modifications and that the interior of the building is rehabilitated for use as a visitor center (Figure 3). It is also recommended that site drainage issues are addressed, in accordance with "BL3 Site Drainage Recommendations"

Park managers intend to perform treatment on the historic building and prepare it for reuse as a visitor center which will feature exhibits on local fisheries research, early settlements, and archeology.

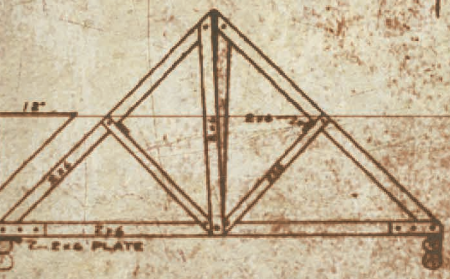


Figure 3. Field Laboratory, photographed by Theodore Merrell, 1959.

(2014), available in Appendix B of this report. These recommendations are based on (1) an effort to retain identified character defining features of the building; (2) the mitigation of noted active conditions and threats to the building; and (3) the general recommendations for long-term treatment of historic buildings at Katmai National Park and Preserve. Please refer to "Part I: Developmental History -- Physical Description & Character Defining Features" for more information on character-defining features and "Part II: Treatment and Use" for an elaboration on the recommended treatments of this property. It is also recommended that an updated DOE is completed to update the resource's historic name and period of significance. Historically, the building was identified as the "Field Laboratory, Brooks Lake, Alaska," not the "Lake Brooks Field Laboratory." The end date for the period of significance is 1972, the year it was no longer associated with fisheries research. The 1999 DOE lists the end date of the period of significance as ending in 1957, when USFWS biologists completed the construction of the building.



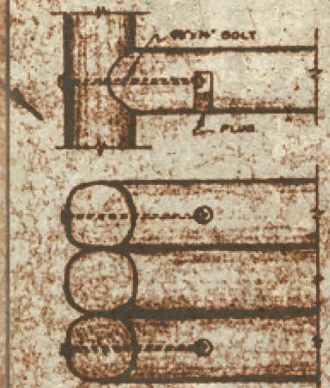
TRUSS-END SECTIONS
SCALE 1/4"=1'



TRUSS-CENTER SECTION
SCALE 1/4"=1'

ROOF FRAMING DETAILS
SCALE 1/8"=1'

DETAIL OF CRAMP
SCALE 1 1/2"=1'



METHOD OF ANCHORING WINGS TO MAIN BUILDING IF BUILT AT A LATER DATE
SCALE 1"=1'

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Administrative Data

The Field Laboratory is owned outright on a fee simple basis by the NPS.

List of Classified Structures (LCS) Information

The LCS is a web-based, evaluated inventory of all prehistoric and historic resources under jurisdiction of the NPS.

Listed below are critical data elements pertaining to the building as listed on the LCS. Several sections, such as the preferred structure name and period of significance are out of date. When an updated DOE for the Field Laboratory is completed, the information in the LCS will be updated to reflect the information presented in the remainder of this report.

Preferred Structure Name:	Fish & Wildlife Service Biological Station
Other Names:	National Marine Fisheries Research Station, BL-3
AHRS Number:	XMK-00124
Park:	Katmai National Park and Preserve
Structure County:	Bristol Bay Borough
Structure State:	Alaska
LCS ID/FMSS[10] Location Number:	035634
National Register Status:	Determined Eligible - SHPO
Short Significance Description:	Eligible under Criterion A at the state level for its association with the development of fisheries research in Bristol Bay on Brooks River.
Area of Significance:	Science, Lake Brooks Field Laboratory
Period of Significance:	1941-1957





Figure 4. Biologist Wil Hartman working at the fish weir by the Field Laboratory, Merrell, August 1958.

Introduction

Statement of Significance

The Field Laboratory at Brooks Lake is eligible for listing in the National Register of Historic Places (National Register) at the state level under Criterion A (it is associated with events that have made a significant contribution to the broad patterns of our history) in the area of Science for its association with fisheries research. Between 1941 and 1972, the USFWS used the building as a laboratory, bunkhouse, and headquarters for the Bristol Bay Investigation, a fisheries management and research program established to study salmon associated with the area's major rivers and lakes (Figure 4).[4] The period of significance begins in 1941, the year construction initiated, and ends in 1972, the year the USFWS abandoned their research and subsequently left the building unmanned.

Methodology

The USFWS officially transferred ownership of the Field Laboratory, along with the remainder of the buildings in the fisheries research district, to the NPS on June 22, 1978.[5] The park subsequently used it for employee housing.

In May of 1993, AKRO Restoration Specialist H. David Evans completed a HSR for the Field Laboratory to guide park managers in rehabilitating the building for continued use as employee housing. The HSR included information based on historical research and on-site field investigations conducted in part by KATM Cultural Resource Specialist, Patricia McClenahan, and AKRO Historical Architect, Steve Peterson. Evans identified a severe bat infestation, which caused damage to the historic building fabric and posed

"The project includes several challenges including a high likelihood of archeological impact... and the relatively level site which will make the required slope for drainage a challenge"

danger to the NPS employees who resided in the building. Roof and ceiling surfaces were covered with guano, and the bats caused damage to the roof, insulation, and ceiling panels. The building also had moisture damage, which caused wood rot to compromise six logs of the building's south wing.[6]

At the time Evans wrote the HSR, the SHPO had not yet evaluated the Field Laboratory for National Register eligibility; however, park staff managed the building as if it were historic. McClenahan initiated a draft DOE as early as March 4, 1993, though it was not until the summer of 1999 when a DOE was drafted by AKRO Historian Janet Clemens and approved by the SHPO.[7] In the SHPO concurrence letter, Judith E. Bittner, the Alaska State Historic Preservation Officer, suggested that since the properties surrounding the Field Laboratory are also associated with fisheries research, the area could be evaluated as a historic district. By December 16, 2004, AKRO and KATM staff initiated planning for developing a DOE for a fisheries research district at Lake Brooks, and a draft was completed in 2008. Two years later, on November 15, 2010, the draft DOE was incorporated into a draft National Register nomination for "The Brooks Lake Fisheries Research and Management District," completed by NPS contractor, Katherine Ringsmuth, and KATM Archeologist, Dale Vinson. On March 22, 2011, the SHPO drafted a letter to Vinson concurring with the NPS that the Brooks Lake Fisheries Research Historic District is eligible under Criterion A in the areas of Science and Conservation, with a period of significance from 1940 to 1961. The number of resources in the district total to 6 contributing buildings (lab, shed, generator shed, 2 residences, and a cabin); 1 contributing site (weir); 1 contributing structure (fish ladder).[8] Although the nomination was approved by the SHPO, due to a lack of funding, KATM staff did not have the means to submit the National Register documentation to the Federal Preservation Officer (FPO) at the Washington Support Office (WASO). If the FPO approved the nomination, it would be signed by the Keeper of the National Register and formally listed on the National Register. In the meantime, AKRO Historical Landscape Architect, Corinna Welzenbach drafted a Cultural Landscape Inventory for the "Lake Brooks Fisheries Research District," which was concurred by the SHPO on January 9, 2013. The SHPO noted that the AKRO provided two different names for this property: "The Brooks Lake Fisheries and Management District" in the 2010 draft National Register nomination and the "Lake Brooks Fisheries Research District" in the 2013 CLI. All historical documentation associated with this property, including the National Register nomination and CLI, should refer to this property by its historic name, or the name it held during its period of significance. Historically, this area was identified by the common name associated with the lake, "Brooks Lake," not the lake's scientific name, "Lake Brooks." It is recommended that further research is conducted to determine the precise historic name of the district, and whether it should be called "Brooks Lake Fisheries Research and Management District" or the "Brooks Lake Fisheries Research District."

On July 21-22, 2014, AKRO Historical Architect Grant Crosby conducted a site visit to Brooks Lake to assess drainage issues associated with the Field Laboratory. After conferring with KATM and AKRO staff, the group identified several challenges. In his site visit report, Crosby writes:

> *"The design intent of this property is to improve the perimeter drainage of BL3, much of which comes from roof runoff. The project includes several challenges including a high likelihood of archeological impact… and the relatively level site which will make the required slope for drainage a challenge (typically ⅛" per foot)."*[9]

Overall, Crosby recommends improving the grading of the site and applying certain operational management solutions.[10] For additional details, refer to Appendix B of this report.

This Historic Structure Report was produced as part of the List of Classified Structures (LCS) Inventory Management Project, enabled by the NPS Cultural Resources Fund Source.

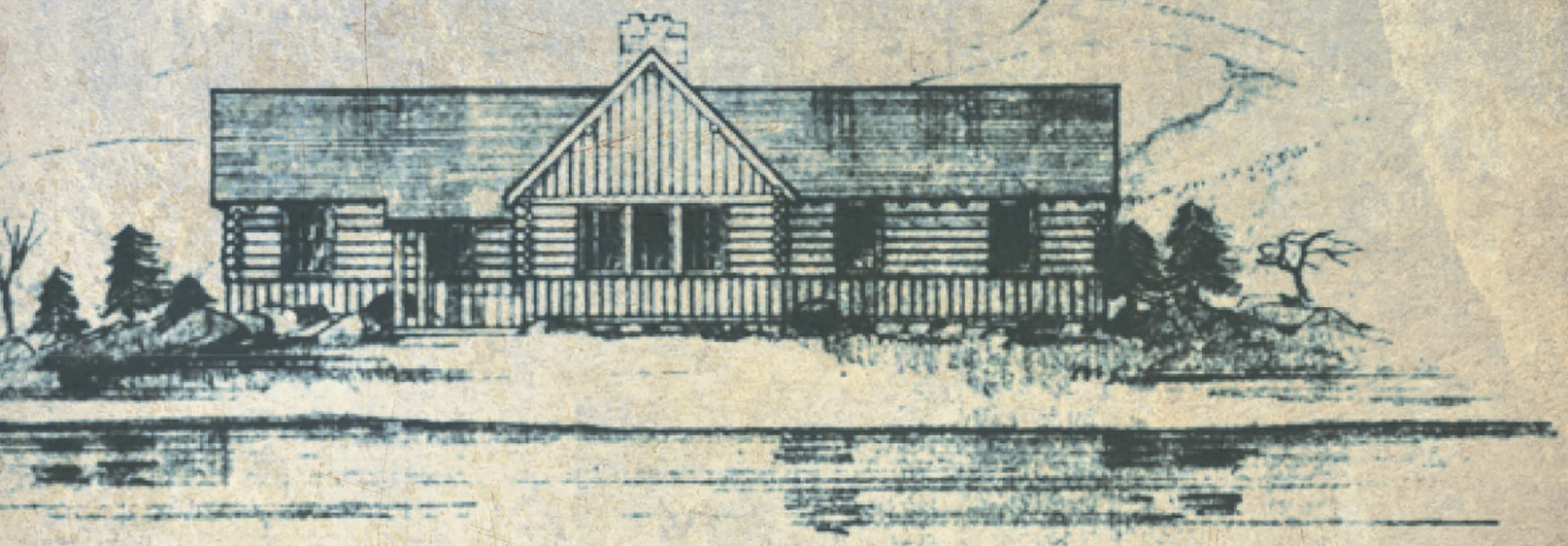
Recommended Areas of Future Study

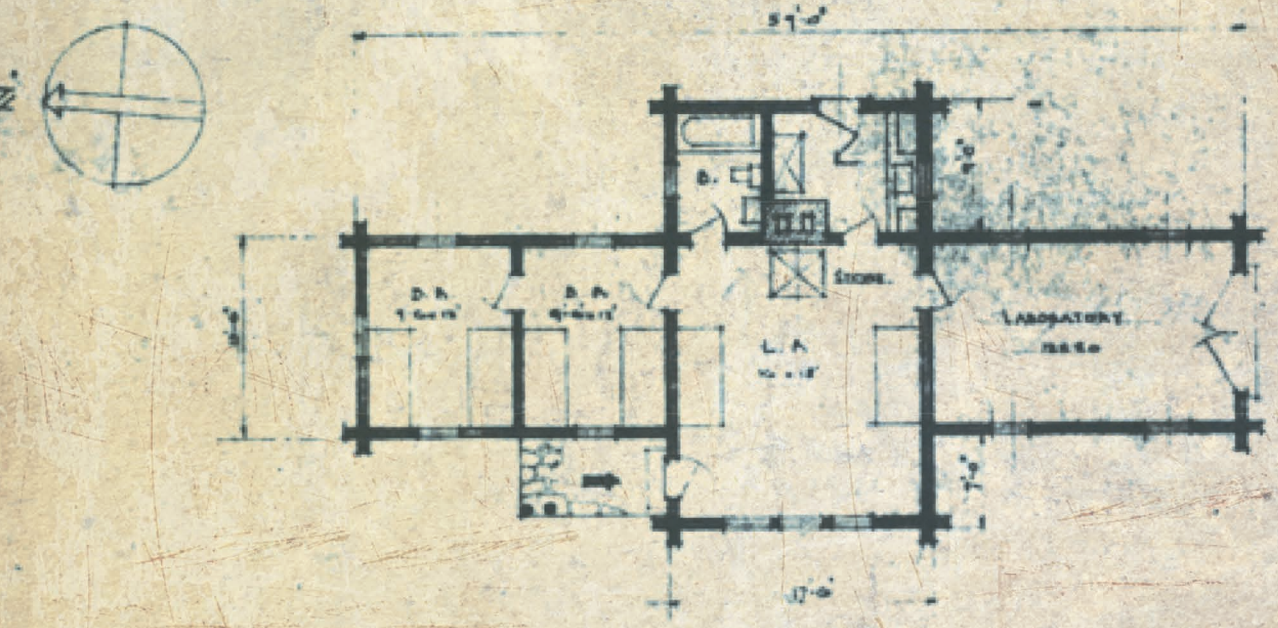
The park management staff intend to re-use this building as a visitor contact station for the Brooks Lake Area, with exhibit space. For recommendations on actions associated with the re-use of this property, refer to "Part II: Treatment and Use," located at the end of this report. This report focuses on one building within the Brooks Lake Fisheries Research Historic District, the Field Laboratory. Over time, as the park plans for the treatment of other resources in the Brooks Lake area, it is recommended that HSRs are completed for the remaining historic buildings and structures that are contributing to this district.

Organization of the Document

The formatting and organization of this report was prepared in accordance with two NPS publications, the Denver Service Center's *Editorial Style Guide* (2014) and the Technical Preservation Service's *Preservation Brief 43: The Preparation and Use of Historic Structure Reports* (2004) by Deborah Slaton. This report is organized into two parts: "Part I: Developmental History" and "Part II: Treatment and Use." Part I contains a historic background and context, chronology of development and use, physical description, character-defining features, and condition assessment for the cabin. Part II states the recommendations for treatment, treatment alternatives, preferred treatment, and treatment plan. The original plans for BL-3 are located within the appendices of this report.







FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

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Associate Director

Developmental History

Historic Background and Context

During a 15-year archeological study (1960-1975) of Alaska's Naknek region, University of Oregon Archeology Professor Don E. Dumond and his research teams uncovered evidence that humans have fished in the lakes and streams of Katmai National Park and Preserve for at least 3,500 years.[11] Predominantly rich with sockeye salmon *(Oncorhynchus nerka)* and rainbow trout *(Oncorhynchus mykiss)*, waterbodies associated with Lake Brooks and Naknek Lake are also home to chum salmon *(Oncorhynchus keta)*, coho salmon *(Oncorhynchus kisutch)*, pink salmon *(Oncorhynchus gorbuscha)*, chinook salmon *(Oncorhynchus tshawytscha)*, Arctic grayling *(Thymallus arcticus)*, Dolly Varden trout *(Salvelinus malma)*, Arctic char *(Salvelinus alpinus)*, lake trout *(Salvelinus namaycush)*, and northern pike *(Esox lucius).* For over 2,000 years, locals and visitors used these fisheries for subsistence, sport fishing, and off-shore commercial fishing.[12]

By the late-nineteenth century, two salmon canneries were constructed within a 50-mile radius of the present-day national park. In 1882, a cannery was constructed on Kodiak Island's Karluk Spit, approximately 30 miles southeast of the mouth of the Katmai River from Shelikof Strait. In 1883, a second cannery was constructed in Nushagak, 50 miles northwest of the mouth of the Naknek River from Bristol Bay. By the 1920s, two additional salmon canneries were constructed on what would become the park boundary: in Kamishak Bay (1922), along the northeast boundary, and in Kukak Bay (1925), along the southeast boundary.[13] The growing local canning industry came with an increasing number of commercial fisherman combing Bristol Bay, Shelikof Strait, and the rivers, streams, and lakes across the base of the Alaska Peninsula.

In support of the growing canning industry, in 1919, the Alaska Legislature established the Alaska Territorial Fish Commission to ensure the vitality of its salmon populations by removing any natural disturbances to streams and eliminate predatory fish. One year later, in the summer of 1920, the United States Bureau of Fisheries (USBF), the precursor to the USFWS, "cooperated with salmon packers in the Bristol Bay region" by organizing a special task force to eradicate predatory fish such as rainbow trout, lake trout, and Dolly Varden trout in Naknek River, Brooks River, Lake Brooks, and other local waterbodies.[14] Local canning companies, including the Naknek Canning Co. and the Alaska-Portland Packer's Association, in collaboration with the Governor of Alaska Territory, Thomas Riggs, Jr., funded the project. The USBF set up camps at the mouth of the Brooks River and at the south end of Lake Brooks. Brooks River and Lake Brooks were commonly referred to by locals and prospectors as "Kidawik Creek" and "Tom's Lake," respectively, until September 1921, when Botanist Robert Fiske Griggs renamed the waterbodies after Geologist Alfred Hulse Brooks by way of an article on the exploration of the Valley of Ten-Thousand Smokes, published in *National Geographic Magazine*.[15] The USBF project ran for five years, until 1925, and culminated with the removal of 13,000 predatory fish.[16]

In addition to removing predatory fish, the USBF also set up fisheries research stations and weirs in an effort to record the numbers of salmon. In 1928, the USBF constructed and managed a fisheries research station and weir five miles upriver from Naknek Lake; by 1932, biologists abandoned the weir.[17]

USBF biologists returned to the Bristol Bay region in 1938 after it was confirmed that the *Taiyo Maru*, a Japanese fishing vessel and three auxiliary ships was fishing for sockeye salmon in Bristol Bay, approximately 20 miles west of the mouth of the Naknek River. Fishermen on the *Taiyo Maru* used gill nets nine times larger than the U.S. Government-approved equipment. The United States Government maintained that the individuals manning the *Taiyo Maru* were responsible for threatening U.S. fisheries populations with aggressive fishing techniques, and subsequently Congress requested that the agency establish the Bristol Bay Investigation (BBI) to manage and conduct fisheries research in five major rivers: Egegik, Kvichak, Naknek, Nushagak, and Ugashik.[18] Two USBF representatives, George B. Kelez, who would become the first BBI Director, and biologist Thomas Barnaby, conduct a preliminary reconnaissance survey of spawning areas in the Bristol Bay region in 1938. The agency determined

that an ideal location for a field laboratory would be at Brooks Lake, within the boundaries of Katmai National Monument.

On April 16, 1940, F.A. Davidson, Director of the USBF Seattle unit, drafted a letter to the NPS Washington, D.C. office to request that a small field station and fish counting weir be established at the outlet of Brooks Lake for the purpose of studying the survival of sockeye salmon eggs and young. In his letter, Davidson asked about the NPS policy for permitting trappers to maintain buildings and structures within Katmai National Monument., as Kelez and Barnaby had noted cabins within the vicinity of the proposed field station, at the head of Iliuk Arm of Naknek Lake, and on the northeastern shore of Grosvenor Lake.[19] Ten days later, Hillory A. Tolson, the Acting Associate Director of the NPS, forwarded Davidson's letter to the Acting Commissioner of the USBF to ensure that the USBF headquarters approved of the request. In his cover letter, Tolson writes that because there was no federal presence within the national monument, it was impossible to ensure federal regulations were followed, and that Frank T. Been, the Superintendent of Mount McKinley National Park, and NPS Biologist Victor Cahalane would be visiting the site in September of 1940 to investigate illegal trapping. Tolson also writes that he expected the USBF presence to be minimal; he wrote "it is understood that the structures contemplated will be restricted to the weir and to a small frame building or tent frame for shelter for the men who would be temporarily stationed there during the salmon run."[20] The NPS (and USBF) approved of the project, with the understanding that "the building for housing the men and equipment will not be more pretentious than a small frame cabin." NPS Acting Director, A.E. Demaray asked the USBF Commissioner to "instruct Mr. Davidson's field crew to carry out their construction work with as little interference and damage to the surroundings as possible."[21]

On June 30, 1940, the USBF was combined with another federal agency, the Division of Biological Survey, to create the United States Fish and Wildlife Service (USFWS). That year, Congressional appropriations for BBI were cut and the project focused on 1.5-mile-long Brooks River. In 1940, George Kelez and his crew of biologists—Albert Collier, Fred Cleaver, George Eicher, Paul



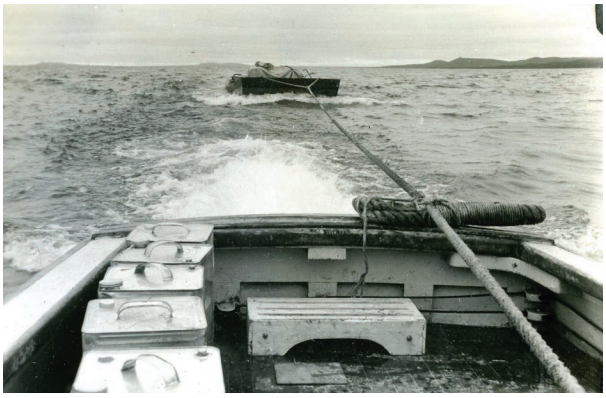
Figure 5. View toward future Field Laboratory location from weir, photographed by Howard Baltzo, 1941.

Ferrier, Robert Hacker, Gomer Hilsinger—focused on the construction a seasonal weir on the outlet of Brooks Lake. The following season would focus on the construction of the Field Laboratory. The biologists, their equipment, and construction materials for the weir and Field Laboratory traveled to South Naknek, Alaska, by steamships owned and operated by salmon canning companies in the Bristol Bay region. In South Naknek the biologists collected wood pickets and 20'-long 4"x 4" from the 1928-1942 Naknek weir, and the materials were freighted up the Naknek River to a landing site below the rapids. Items for the weir were loaded onto a Cletrac (a Cleveland Tractor), which transported the materials 15 miles to the edge of Naknek Lake. Materials were attached to the power dory, which towed the raft of materials to the mouth of the Brooks River, where the items were separated into one-person rafts and floated to the outlet of Brooks Lake. This process was determined to be too time-consuming, and the USFWS paid Woodley Airways to fly any remaining materials from South Naknek to Brooks Lake.[22]

The biologists completed the weir hastily just before the first sockeye salmon run of the 1940 season (Figure 5). The following year, a group of seasonal workers reinstalled the weir, counted fish during the first salmon run, and initiated construction on the Field Laboratory. The building materials for the Field Laboratory were stockpiled at the landing site after the Naknek River rapids, and like the year prior, the materials were hauled with a Cletrac to Naknek Lake. The first item transported was a deconstructed scow (a flat-bottomed boat often used for freight), which took ten days to set up. From June 2 to 22, Robert Hill and George Eicher transported all construction materials and equipment between the rapids and the lake. From late June until July 12, the construction materials were transported from the new stockpile at Naknek Lake via scow across the lake, through Brooks River to Brooks Lake (Figures 6-9). After July 12, the crew simultaneously conducted fisheries research while constructing the foundation of the Field Laboratory. At this time, the crew collected samples of fish scales and reconnaissance surveys of the major systems were conducted by foot.

Over the crew's off-season, the United States joined the World War II effort. While most of the BBI crew members were deployed, Eicher and a minimal staff traveled to









Figures 6-9: Transportation of construction materials, Baltzo, 1941.



Figure 10. Biologist conducting electronic salmon counting, Merrell, 1958.



Figure 11. Seasonal crew of biologists on the weir, Merrell, July 1959.

Brooks Lake to replace the weir and count fish. In 1943, a ten-person temporary staff returned to the field station to complete the construction of the Field Laboratory and erected small sheds nearby. Until the war concluded in September of 1945, very little fisheries research and development was completed at Brooks Lake.[23] During the war, the high-demand for canned salmon had an enormous effect on the sockeye populations of Bristol Bay. In addition, the cost of canned salmon during wartime nearly doubled, from $9.57 to $15.33 per case between 1940 and 1942, and rose to $23.38 by 1947. More and more fishermen traveled to Bristol Bay to take advantage of the rising price of salmon, and as a result of overharvesting, by 1949, the sockeye population was listed as less than 7 million.[24]

From 1946 onward, the BBI crew was directed to perform more intensive field research on the salmon associated with the Naknek drainage system by tagging fish, and then using aerial photography to track the fish. By 1947, Eicher replaced Kelez as Director of the BBI, and with biologist Willis Rich, established a system of fish counting by way of a series of towers along the stream. In 1957, the University of Washington's Fisheries Research Institute incorporated Eicher and Rich's system into their own program. The BBI continued this project through the end of the 1948 season.

In 1949, the crew constructed a new, small fish weir at the mouth of Hidden Creek, a tributary of Brooks Lake. At Hidden Creek, the biologists discovered that tagging a fish does not negatively compromise its life-span, and was therefore a reliable means to study salmon. From 1949-1950, the biologists removed a 1920 fish ladder that crossed the falls of Brooks River, and replaced it with a poured concrete ladder cut into the south bank of Brooks Falls.[25] This ladder was considered to be unique, for fish ascended by swimming through holes through the steps instead of jumping from step-to-step. Eicher ultimately discovered that salmon numbers plummeted after the construction of the ladder, however it was unknown whether the lower counts were attributed to the ladder or the fish populations.[26]

In 1950 and 1951, the Washington, D.C. USFWS office limited all funds and research efforts in Alaska to the pink salmon *(Oncorhynchus gorbuscha)* of the southeast. Eicher was relocated to the southeast to conduct projects there, and the staff at Brooks Lake were on "standby basis, merely maintaining a continuity of records." At this time, Dick Weaver, Eicher's assistant, was placed in charge, and he led the crews through the completion of the Brooks Lake fish ladder, counting fish at the Brooks Lake weir, scale sampling, spawning surveys, and aerial photography.[27]

This year, with the help of available BBI staff, the NPS constructed their first ranger station, a cabin, on Naknek Lake. The Northern Consolidated Airlines announced that they would establish a fishing camp at the mouth of the Brooks River. The NPS subsequently hired a ranger, and planned to construct the cabin in an effort to monitor the commercial activity.[28]

In 1952, the Washington, D.C., office expressed a new interest in studying the sockeye salmon of the Bristol Bay



Figure 12. Crew installing a lampara net in Brooks Lake, Merrell, August 1959.



Figure 13. Biologist conducting chemical testing of Brooks Lake, Merrell, 1962.

region. According to Eicher, in his *History of the Bristol Bay Investigation,* in 1952, the United States, Canada, and Japan used research conducted by the BBI to support the International Convention for the High Seas Fisheries of the North Pacific Ocean (often referred to as the "North Pacific Fisheries Treaty"), an agreement between the three countries to promote fish conservation.[29] At Brooks Lake, the BBI constructed a permanent fish weir, composed of "aluminum pickets in bipods fitted on jackhammer bits sunk in the rock at the bottom of the [Brooks] river."[30] This year, the BBI conducted a predatory fish survey in the Wood River system and installed Leupold & Stevens temperature recorders at various locations for a nine-month duration.[31] Later, in 1963, Eicher produced a report on this findings associated with the effects of water temperature on sockeye salmon out-migration in the Naknek and Kvichak Rivers. Eicher found that higher water temperatures fostered growth and early migration. He also found that temperature dictated how many years sockeye salmon remained at sea.[32]

In 1953, the funding allocations from the Washington, D.C., office were cut to a bare minimum. Only two men, Charles Hunter and Robert Eckwall, were assigned to fisheries studies in Brooks Lake, which included operating the weir and collecting fingerlings. This year, the chimney was completed on the Field Laboratory. In 1954 and 1955, funding greatly expanded for BBI, and the crew continued projects, including a predatory fish study at Lake Alegnanik, fingerling and scale collection, weir operation, and aerial photography studies. In 1955, the BBI expanded their work to include a large-scale tagging operation in Bristol Bay in order to track fish travel from related rivers. The tagging was conducted at the Brooks Lake weir and along the Ugashik River. Permanent living quarters were established at a variety of areas, except at Brooks Lake. Foot surveys were conducted to retrieve tagged fish at Brooks Lake.[33]

The following year, on August 8, the Fish and Wildlife Act of 1956 divided federal-level fisheries management into two separate agencies: the Bureau of Commercial Fisheries (BCF) and the Bureau of Sport Fisheries and Wildlife (BSFW). Under this act, the BBI was transferred to the BCF. As a result, the team at Brooks Lake had a substantial turnover in staff, which resulted in the loss of Eicher and many of the regularly returning biologists. Despite a low number of staff, the south wing of the Field Laboratory was completed, under the direction of Richard Straty.

In 1957, Theodore Merrell was hired as supervisor of the BCF work on Brooks Lake. From 1957 onward, Brooks Lake research began in late May. Each year, the crews were comprised of permanent and temporary employees, composed of biological technicians, maintenance staff, a cook, and other staff as needed. Each morning at breakfast, the staff would report their assignments for the day, and at the end of the summer would submit a report on their accomplishments.[34] Yearly tasks included installing the weir on a yearly basis; fish counting, sampling, and tagging; recovering tagged fish; conducting spawning surveys; performing chemical analyses of Brooks Lake;

operating a weather station; and building construction (Figures 10-13).[35] Merrell oversaw the construction of the north wing between the fall of 1957 and 1958.

The studies conducted in 1957 by BCF staff at Brooks Lake resulted in a few discoveries. The group determined that the female sockeye salmon in Brooks Lake were more fertile than Kodiak Island's Karluk Lake and most spawning grounds in British Columbia, and as a result, the biologists hypothesized that Bristol Bay fisheries were more likely to spawn a higher number of fish than any other streams in the northern Pacific. The biologists also discovered that fish spawned from Hidden Creek were more likely to avoid predators due to their migratory behaviors. Finally, the group discovered that the salmon of Bristol Bay were threatened more by humans, rather than by predatory fish or bears.[36]

In 1959, Alaska achieved statehood, and one year later, established the Department of Fish & Game with the intention of taking over management of the Bristol Bay fisheries.

In 1960, Merrell who hired a group from the University of Oregon, led by graduate student Don E. Dumond, to conduct an archeological investigation near the Brooks River, hoping the results would yield information about the prehistoric salmon runs of the area. In 1961, the BCF expanded their range of research to include the entire Naknek drainage system. Sockeye salmon research would be conducted year-round. To accommodate attract year-round biologists and their families, the BCF constructed two four-room Pan-Abode cottages just south of the laboratory.[37] Between 1960 and 1965, BCF conducted two experiments that ultimately threatened local salmon populations. Staff dammed the Brooks Lake tributary, West Creek, to determine whether or not salmon migrating would spawn in another location. The crew also chemically altered the waters of Hidden Creek to encourage the salmon to migrate to and spawn in West Creek.[38]

By 1967, NPS regional staff initiated a discussion with BCF on the possibility of preparing the fish ladder at Brooks Falls as an interpretive site.[39] In 1970, aware of the intentions of the Department of Fish & Game to take over management of the Bristol Bay tributaries, signed a Memorandum of Agreement with the USFWS to allow research in Katmai National Monument until 1980.[40]

However, in 1970, the BCF was renamed National Marine Fisheries Service (NMFS) and relocated to a new agency, the National Oceanic and Atmospheric Administration (NOAA). The last season NMFS staff were stationed at Brook Lake was in 1972 due to "continued funding restraints and changing agency roles."[41]

The complex of NMFS buildings and structures at Brooks Lake sat vacant for one season. In 1976, while the Field Laboratory continued to remain vacant, the NMFS permitted the NPS to use one of the Pan-Abode houses for employee housing.[42] The NPS staff at Brooks Camp was determined to be overcrowded, and as a result three seasonal staff were relocated to the NMFS property. That summer, park maintenance staff made repairs to the building in which the NPS staff resided, as it had been damaged by bears.[43]

In August of 1975, Denver Service Center employee Robert Carper conducted an inventory of potential historic resources in the park to determine what should be listed on the List of Classified Structure (LCS). Caper photographed the Field Laboratory, but ultimately decided to table the property for LCS listing.[44]

The Alaska Regional Director of the NMFS, Harry L. Reitze, offered to transfer ownership of the Field Laboratory to the NPS on March 20, 1978. On April 5, the Director of the Pacific Northwest Regional Office, Edward Kurtz, responded that the NPS would be interested in acquiring the property for "the purposes of park management."[45] The transfer of property form, dated to May 25, 1978, lists the Field Laboratory as being in "poor condition." The NMFS documentation identifies the property as "B1;" however, when the NPS acquired the property, the building was re-identified as "BL-3."[46]

the group discovered that the salmon of Bristol Bay were threatened more by humans, rather than by predatory fish or bears



Figure 14. Biologists initiating work on Field Laboratory foundation, Baltzo, 1941.

Immediately upon acquiring the property, KATM Superintendent Gilbert E. Blinn (prior to June 1979, when he left his position) and Maintenance Mechanic Carl Yoss oversaw a project to update the Field Laboratory for use as employee housing in accordance with NPS and OSHA standards. AKRO staff were also involved in the project, including Fisheries Biologist Ross C. Kavanaugh and Chief of Operations, Paul Haertel. Unwanted fisheries research materials were removed from the Field Laboratory by September 30, 1978. Kavanaugh was hired by the AKRO in 1979, and his first duty was to address the bat infestation in the building. The work involved the replacement of the ceiling in the central massing of the building, the installation of concrete piers in the basement, updated kitchen facilities, and the establishment of a living room and four bedrooms. NPS staff completed the work by 1982.[47] From that point until at least 2018, the year this report was completed, NPS maintenance staff resided in the Field Laboratory on a seasonal basis.

Chronology of Development

The chronology of development described below is a culmination of extensive research of primary source material, drawings, plans, historical photographs, oral histories, and on-site physical observations. While its historical context is largely described in the preceding paragraphs, the following illustrates the known and documented constructions and changes made under two periods of use: USFWS (1941-1972) and the NPS (1978-Present).

USFWS Field Laboratory Construction (1941-1962)

In the summer of 1941, just after the first salmon run of the season, a team of BBI biological technicians initiated construction on the Field Laboratory 60' south of the Brooks River.

To construct the building, the crew transported equipment and certain materials, such as dimensional

lumber, lime, and cement, to Brooks Lake. In his "History of the Bristol Bay Investigation" (1967), George Eicher states, in 1941, equipment and construction materials for the Field Laboratory were transported from a stockpile of materials located at a landing site between South Naknek and Brooks Lake, just after the rapids of the Naknek River.[48] There is no documentation as to where these materials were acquired. Other construction materials, such as spruce logs, stones for the foundation, and sand for mortar, were procured from the vicinity of Brooks Lake.[49]

The BBI crew constructed the Field Laboratory's stone and mortar foundation during the second half of the 1941 field season. The team, composed of George Eicher, Norman Gunderson, Howard Baltzo, Robert Hacker, Robert Hill, Gomer Hilsinger, Fred Cleaver, Phil Nelson, and Paul Ferrier, was led by supervisory biologist George Kelez. It took the crew nearly 1.5 months, from June 2 to July 12, 1941, to haul construction materials for the building from the Naknek River. The foundation and sill logs were installed between September 5 and an unknown date before October 9, 1941.

On September 3-4, Baltzo and Hill searched the beach of Brooks Lake for pockets of fine black sand to use for the foundation mortar. Black sand is preferred over white sand as it is considered to be more stable. The biologists screened the black sand to remove debris and coarse gravel and washed out fine particles of grass rootlets and moss by floatation.[50] On September 5, the crew began constructing the foundation, digging trenches, and infilling with rock and mortar. The biologists mixed a mortar consisting of 1 part lime, 4 parts cement, and 10 parts beach sand. In his journal, Baltzo writes, "[this is] slow and tedious work for inexperienced hands, but showing progress." The following day, the crew worked on the foundation sections above ground-level. Baltzo describes this work as being much different from the day before, as the stones had to be "attractively arranged." Later, Baltzo goes on to say "[the] work [is] very slow, tedious and discouraging and seemingly rather unnecessary. A concrete foundation would serve better and would be much easier and quicker to install." From September 13-16, the crew constructed and filled forms for the foundation's cap, which he described as having a sloped concrete front ("outward and downward") and an "irregular rock and mortar" rear (Figure 14).[51]

At this time, the crew turned to preparing the sill logs procured in close proximity to the weir by debarking them with shovels, cutting off limbs and burls with an



Figure 15. Biologists installing and preparing Field Laboratory sill logs, Baltzo, 1941.

axe, and hewing.[52] From September 23-26, the crew became very ill, as they had very little to eat. Their lead, Kelez, and colleague, Hacker, who were in charge of replenishing the crew's provisions, were grounded in Naknek due to engine trouble. Between the lack of nutrition and low morale, progress on the cabin completion slowed.[53] At this point, the crew deviates from the approved construction drawings for the building. Instead of installing vertical logs across the bottom 1/3 of the building, the crew prepared horizontal sill logs. It is unknown why the crew deviated from the plans. The alteration could have been 1) intentionally directed by Kelez prior to his flight to Naknek; 2) conducted by the remaining crew members, who were, at the time, ill and interested in applying an easier construction method while their supervisor was stuck in Naknek; or 3) attributed to another unknown reason. After the sill logs were prepared, the crew cut and fit iron anchoring straps to the foundation, which would later be affixed to the sill logs, and poured concrete around strap holes. On September 27, the crew poured "hot marine pitch" to the top of the foundation and set the sill logs on top of the pitch, cutting saddle notches for the logs that crossed at the building corners. The crew experienced difficulty in getting the pitch to stick to the foundation, due to the low temperatures. Baltzo and his crewmates heated the foundation by pouring "several doses" of gasoline over it. This act in 1941 might have partially attributed to the contamination of the underlying soil, which negatively impacted a project to install an underground well beneath the north wing in 1957.[54] At the log crowns of the sill logs, where there were openings and "imperfections" in the saddle notches, Baltzo manufactured wood plugs to infill gaps. The staff installed a second layer of logs over the sill logs. At an unknown date between September 29 and October 9, the crew also installed logs on the south wing; however, Eicher notes in his "History of the Bristol Bay Investigation," these were "later removed because they became unsound before they could be added to."[55] As the logs set in the anchored straps, the staff flanked the logs with temporary wood stakes to hold the logs in place as the cement dried (Figure 15).

The years of following the installation of the foundation and log sills is documented in historical photographs, Eicher's reports and oral histories, and as a result, is not as comprehensive as the 1941, when every day was documented in the journal of biologist Howard Baltzo. In 1942, a portion of the building's central massing was completed by a short-staffed



Figure 16. Field Laboratory, central massing, in construction, photographed by Dick Mallineaux, 1943.





Figures 17-18. Field Laboratory, central massing, in construction, Mallineaux, 1943.

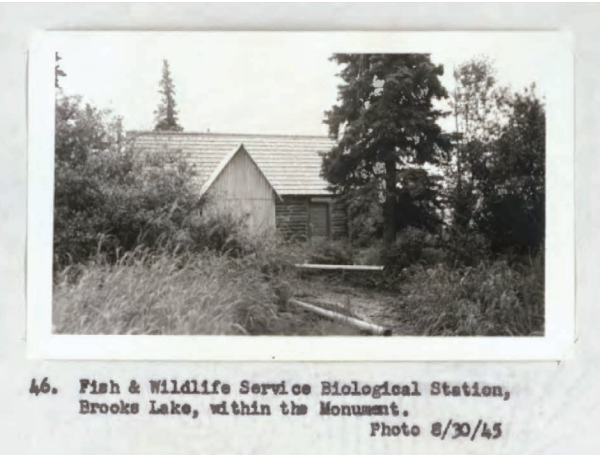


Figure 19. Field Laboratory, photographed by Alfred C. Kuehl, August 1945.



Figure 20. Aerial photograph, Field Laboratory, unknown photographer, 1947.

crew composed of Gomer Hilsinger, Willard Hilsinger, Bob Parker, William Peck, Judd Nelson, Dick Mullineaux, Arva Joula, Larry Witt, Ray Reed, Art Zyllstra, and Gene Matlzeff. The following year, a smaller crew completed the majority of the central massing (Figures 16-18).

At an unknown date before August 30, 1945, when NPS Landscape Architect Alfred C. Kuehl visited Katmai National Monument, the BBI constructed an approximately 9' x 12' gabled corrugated galvanized metal shed against the north elevation of the Field Laboratory (Figures 19-21).[56]

The fireplace that pierces the roof of the central massing was constructed over a ten-year period, from 1942 to 1953. In his history of the BBI, George Eicher writes:

> *"This particular part of the building was constructed by supervisory personnel working in odd moments of bad weather and other opportune times. It was started in 1942 and continued at a fairly reasonable pace until it reached a stage wherein the fireplace could be operated, after which interest in its completion to the design stage lagged."*[57]

The chimney was finally completed in 1953, and the last stone on the top was installed by Dick Weaver.

In 1956, during a period of what George Eicher described as a year of "complete turnover of personnel, objectives, [and] field operations, and general Alaska Investigations [of] headquarters," one of the biologists, Richard Straty, led the construction of the south wing of the Field Laboratory (Figure 20). According to a conversation between local historian, Katie Ringsmuth, and Geraldine Straty, Richard's wife, Straty intentionally re-oriented the logs from horizontal, as planned, to vertical on the first floor of the south wing in protest to the directions of one of his supervisors.[58]

The following year, in 1957, Theodore Merrell was brought on as field supervisor. Merrell prioritized construction of the north wing with the intention to use the space as a laboratory. To ensure the work was completed by experienced workmen, Merrell hired two local carpenters, Joe Simeon and Raphael Kupanouk of Aniak, to conduct the work. The crew removed the shed on the north side of the Field Laboratory, and discovered that some of the logs showed signs of rot. Merrell applied



Figure 21. Field Laboratory, unknown photographer, 1956.

a coat of pentachlorphenal to the lower logs. Merrell and BBI biologist Jim Harbour, began logging by September. A NPS staff member who lived in the vicinity advised Merrell to avoid cutting trees in close proximity to the Field Laboratory. Merrell received approval from the NPS to log trees from "up above the lake."[59] Merrell and Harbour dragged the trees with the Cle-trac "without making a permanent trail back to the cabin" and left the logs to dry over the winter of 1957-1958.[60] Some men gathered sand from the lake shore to use for the mortared foundation, while others debarked and prepared the logs for the following season. In 1957 and 1958, the crew oriented the logs of the north wing to match the central massing, constructed in 1941 and 1942. The men installed a concrete well, shipped from Seattle, beneath the north wing for winter water. According to Merrell in a 2009 interview, the underground well was not successful as the soil was contaminated with diesel fuel. Prior to 1957 when Merrell arrived, two 55-gallon drums of fuel spilled in this area. In 1958, local carpenter, Frank Cutter of Aniak, joined the crew. The staff installed a temporary chimney, which pieced the northwest corner of the north wing roof. At an unknown date between 1959 and 1962, a permanent concrete chimney clad in brick with a rounded metal cap replaced the temporary structure, and at an unknown date between 1975 and 1985, the chimney was removed (Figures 21-46).

Transition to NPS Housing (1978-1988)

In 1978, upon acquiring the property, NPS staff began to take steps to prepare the Field Laboratory for employee housing in compliance with NPS and OSHA standards. The work was overseen by KATM Superintendent Gilbert E. Blinn (prior to June 1979, when he left his position), Maintenance Mechanic Carl Yoss, and AKRO Chief of Operations, Paul Haertel. By September 30, 1978, USFWS-related materials were removed from the building. In 1979, staff, including AKRO Biologist Ross C. Kavanaugh, began to address the bat infestation in the building by replacing the ceiling in the central massing of the building, and installing concrete piers in the basement against the mortar and stone foundation. In 1981, the original cedar shake roof was removed and replaced in-kind. The work continued through 1982, and involved the establishment of a living room, four bedrooms, and updated kitchen facilities (Figures 47-52).[61] The work performed on the building during this period is largely retained in 2018.

The staff prepared the main massing of the building for use as a living room and kitchen area. The crew removed the loft ceiling above the kitchen area, including a central beam running the length of the interior of the central massing, from east to west. With cathedral ceilings, the crew installed full-height cabinets sheathed in molded wood paneling in the northeast corner of the central massing. They lined the underside of the gabled roof with V-notched tongue-and-groove boards, which have been described as "knotty pine board panels, lining a cathedral ceiling."[62]

The maintenance staff transitioned the north and south wings into four bedrooms. For the purpose of this report, the bedrooms will be identified as rooms 1-4. The

According to Merrell in a 2009 interview, the underground well was not successful as the soil was contaminated with diesel fuel. Prior to 1957 when Merrell arrived, two 55-gallon drums of fuel spilled in this area.



Figure 22. Field Laboratory, south wing, Merrell, 1957.



Figure 23. Biologist Jim Harbour towing local logged spruce to Field Laboratory, Merrell, 1957.



Figure 24. Harbour towing local logged spruce to Field Laboratory, Merrell, 1957.



Figure 25. Carpenter Joe Simeon collecting sand from Brooks Lake for mortar, Merrell, 1957.



Figure 26. Simeon collecting sand from Brooks Lake for mortar, Merrell, 1957.



Figure 27. Carpenter Raphael Kupanouk pouring mortar in north wing foundation, Merrell, 1957.



Figure 28. Simeon and Kupanouk pouring mortar in north wing foundation, Merrell, 1957.



Figure 29. Simeon peeling logs for north wing, Merrell, 1957.



Figure 30. Kupanouk, with his wife and son, peeling logs for north wing, Merrell, 1957.



Figure 31. Simeon and Kupanouk installing sill logs for north wing, Merrell, 1957.



Figure 32. Carpenter Frank Cutter peeling logs for north wing, Merrell, 1958.



Figure 33. Carpenters constructing north wing, Merrell, 1958.



Figure 34. Cutter and north wing in-construction, Merrell, 1958.



Figure 35. Frame of north wing roof, Merrell, 1958.



Figure 36. North wing in-construction, Merrell, 1958.



Figure 37. North wing in-construction, Merrell, 1958.



Figure 38. Cutter installing cedar shakes on north wing, Merrell, 1958.



Figure 39. Cutter applying pentachlorphenal to the logs to prevent rot, Merrell, 1958.



Figure 40. Cutter installing concrete well casing beneath north wing, Merrell, 1958.



Figure 41. Field Laboratory, temporary chimney on north wing, Merrell, 1959.

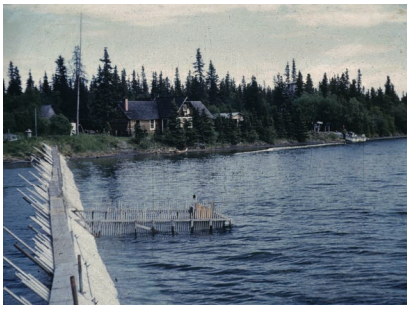


Figure 42. Field Laboratory, north wing metal chimney replaced with brick, Merrell, 1962.



Figure 43. Field Laboratory, view looking southeast, National Park Service, 1975.



Figure 44. Field Laboratory, view looking northeast, National Park Service, 1975.



Figure 45. Field Laboratory, view looking west, National Park Service, 1975.



Figure 46. Field Laboratory fireplace,National Park Service, 1975.



Figure 47. Field Laboratory, view looking northeast, photographed by K. Jope, 1985.



Figure 48. Field Laboratory, view looking north, photographed by K. Jope, 1985.



Figure 49. Field Laboratory, view looking southwest, photographed by K. Jope, 1985.



Figure 50. Field Laboratory, view looking northwest, photographed by K. Jope, 1985.

south wing contains bedrooms 1 and 2, with bedroom 1 being the southernmost room. The north wing contains bedrooms 3 and 4, with bedroom 4 being the northernmost room. Each wing was divided into two equally sized bedrooms. The crew installed dividing walls clad in molded wood paneling, to match the material covering the kitchen cabinets. They installed doors within the walls, covered in the same material, to provide a connection between bedrooms 1 and 2, and 3 and 4. The molded wood paneling was also installed on the ceiling of each bedroom.

The staff also lined all exterior doors with matching paneling: the main entrance door (both exterior and interior) and rear entrance door (both exterior and interior) of the main massing; south wing door (exterior only); and the north wing door (exterior side only). At this time, the maintenance staff replaced the north wing door with a simple wood door with no adornments, except for the exterior wood panel sheathing.

Modifications to Address Bat Infestations (1989-Present)

In 1989, the shakes were removed and replaced with a Klip-Rib® standing-seam metal roof (Figure 53).[63] At an unknown date after 1989, the linoleum tile floor in the kitchen was replaced with wood flooring.

By 1993, the Field Laboratory was in generally good condition, except that a severe bat infestation in the roof was determined to be hazardous to the NPS staff residing in the building. AKRO Restoration Specialist, H. David Evans, produced a Historic Structure Report for the property in May of 1993. Over the course of the 1993 and 1994 summer seasons, NPS maintenance staff rehabilitated the property in correspondence with Evans' treatment recommendations.

Staff installed reinforcements to the rafters in the central massing of the building as needed. The existing Klip-Rib® roof was temporarily removed and the staff removed "roof nailers" and bat-damaged fiberglass insulation. The insulation was replaced, and "board nailers" were replaced with plywood. Metal screening was installed as needed to keep bats out of the building. Maintenance staff replaced the Klip-Rib® roof and sealed all holes in roof and eaves. The log walls were cleaned and all missing or loose oakum chinking was replaced in-kind. Four vertical logs on the south wing and four horizontal logs on the west portion of the central massing were replaced in-kind, as these were compromised due to rot. On the interior, the staff removed the v-notched tongue-and-groove ceiling boards and installed 6-mill vapor barriers. The former ceiling panels were replaced in-kind. A clear, water-based polyurethane finish was applied to the ceiling. Three new electrical outlets were

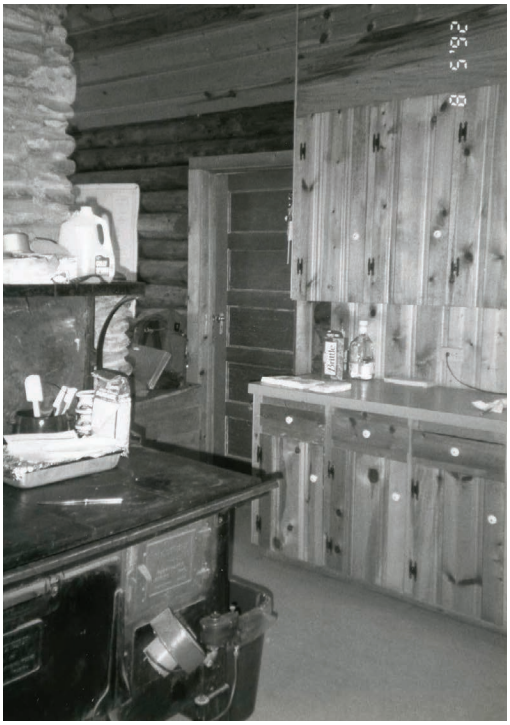


Figure 51. Kitchen cabinets, photographed by Steve Peterson, 1992.



Figure 52. Ceiling and door lined with molded wood paneling, photographed by Steve Peterson, 1992.



Figure 53. Metal standing-seam roof, photographed by Steve Peterson, 1992.



Figure 54. Windows in gable-peak wings replaced with wood vents, National Park Service, 2001.

installed "in the apex" of the ceiling in the central main massing of the building.[64] All windows were removed and sent to Klondike Gold Rush National Historical Park in Skagway, AK, where historic window specialist Don Corwin completed minor repairs to the 6/6 double hung wood sash windows and reconstructed one window, which was not original to the building.[65]

At an unknown date between March of 1993 and 2001, the fixed windows in the gable peaks of the north and south wings were replaced with vents backed with screens to prevent bats from entering the building (Figure 54).[66]

By 2013, bats returned to the Field Laboratory building, and had compromised three other buildings in the park: the ranger station, the visitor contact station, and the visitor auditorium. In August of 2013, park maintenance staff took actions to exclude the bats, clean up their roosts, and repaired damage to the buildings. Staff removed and replaced the tongue-and-groove ceilings to remove bat guano and roosts, and replace damaged insulation and seal cracks and openings. Staff also mounted bat houses in close proximity to the Field Laboratory in an effort to provide an alternate roosting spot for bats.[67] From 2014 to 2018, no substantial work has been completed on the building.

Staff also mounted bat houses in close proximity to the Field Laboratory in an effort to provide an alternate roosting spot for bats.

Physical Description and Character-Defining Features

The Field Laboratory is a one-story, cross-gabled, predominantly log building (Figures 55). It has a 17'-6" x 30' central massing, with two wings to the north and south, each measuring approximately 21'-8" x 14'-1" and 20'-6" x 13'-10", respectively. Although the main entrance to the building is on the east elevation, the west elevation is regarded as the façade, as it faces Brooks Lake. The building has a stone and mortar foundation, horizontal saddle-notched log walls (except for the south wing, which has vertical logs) with oakum chinking, and moderately pitched 12/12 roofs sheathed in a non-historic Klip-Rib® standing-seam metal. While the roofs are wood-framed, each gable has log ridge poles, 2-4 log purlins, 2 log rafters, and log rafter tails. The gable peaks are infilled with 2"x 4" boards clad with vertical de-barked, split-log siding (except for the south wing, which has horizontal split-log siding). The focus of the building is a cluster of three painted 6/6 wood sash double hung windows at the center of the west elevation. Fenestration is regular, with 6/6 wood sash windows throughout the building and small rectangular window openings in the gable peaks. There are four exterior doors to the building: two to the central massing and one to each wing. The interior is divided into a central



Figure 55. Field Laboratory, view looking southeast.



Figure 56. Field Laboratory, east elevation, entrance.

kitchen/living room and each wing contains two enclosed bedrooms. The bedrooms are identified as 1-4, with bedroom 1 being the southernmost room and bedroom 4 being the northernmost room.

Summary of Character-Defining Features

- Cross-gabled building
  - Central massing, measuring 17'-6" x 30' (approximate)
  - South wing, measuring 20'-6" x 13'-10"
  - North wing, measuring 21'-8" x 14'-1" (approximate)
- Stone foundation, with
  - Mortar comprised of:
    - 1 part lime
    - 4 parts cement
    - 10 parts cleaned and strained fine black sand from Brooks Lake beach
  - Cast-in-place mortar cap
    - Sloping, outward and downward front of cap
    - Rock and mortar rear of cap
- Walls of horizontal and vertically oriented unpainted debarked logs, with extended saddle-notched crowns
  - Horizontally oriented first floor logs on main massing and north wing
  - Vertically oriented first floor logs on south wing
  - Gable peak walls of 2"x4 " boards clad with de-barked, split-log siding
- Chinking
  - Oakum insulation
- Moderately pitched, 12/12 gabled roofs
  - Wood-framed, with log ridge pole, log rafter tails, 2 log rafters, and
    - 2 log purlins (wings only)
    - 4 log purlins (central massing only)
- Regular fenestration
  - 3'x 6'-8" wood paneled doors
    - North wing, west elevation
    - South wing, south elevation
    - Central massing
      - East elevation
      - North elevation, west end of massing
  - Tripled, centered 6/6 double hung wood sash windows on west elevation, central massing
  - 6/6 double hung wood sash windows on east and west elevations
  - 2'-10" x 3'-5½" window openings in gable peaks, including:
    - Fixed 6-pane wood window on the east elevation
    - Fixed 2-pane wood window on the west elevation
- Interior doors
  - Two 3'x 6'-8" wood, 5-paneled doors
    - Door between living room/kitchen and bedroom #2
    - Door between living room/kitchen and bedroom #3



Figure 57. Door, east elevation.



Figure 58. Screen door, east elevation.



Figure 60. Door, central massing, west end, north elevation.



Figure 61. Screen door, central massing, west end, north elevation.



Figure 62. Door, north wing, west elevation.



Figure 63. Screen door, north wing, west elevation.

- Central coursed rubble chimney piercing the ridgeline of the central massing
  - Thick base on interior of building, with
    - Wood mantel
    - Horizontally oriented rectangular metal vent above fireplace
    - Brick-lined fireplace
    - Coursed rubble hearth
- Western brand wood burning iron stove affixed to east side of chimney
- Unpainted, exposed log walls on interior

Physical Description: Exterior

The Field Laboratory is situated on the northeast corner of Brooks Lake, approximately 105' southeast of the Brooks River. The building is part of a 42-acre USFWS fisheries research complex, generally composed of a research and housing camp along Brooks Lake and a historic road trace running adjacent to the Brooks River north to the remnants of a fish ladder at Brooks Falls. The Field Laboratory is situated at the north end of the fisheries research district, set back 60' east from the lake's shoreline. Facing west towards the lake, the building sits on a relatively flat, cleared lot surrounded by a white spruce *(Picea glauca)* boreal forest. A gravel road runs adjacent to the southeast corner of the building. An above-ground water pipe, with a squared wood cover, runs from the northeast corner of the central main massing of the building to a non-historic bath house northeast of the Field Laboratory. A concrete septic tank,



Figure 59. Field Laboratory, west elevation, central tripled windows.

One or more bears have scratched the corners of the building, particularly the southeast corner of the south wing

surrounded by an electrical fence, is partially exposed just east of the north wing.

The east elevation of the Field Laboratory encompasses the main entrance to the building (Figure 56). The front door is on the east elevation of the gabled main central massing, located just south of center (Figures 57 & 58). It is clad in a non-historic molded wood paneling, and surrounded by a simple, painted wood frame. Hinged to the frame is a non-historic metal screen door with a plywood kick plate and plywood corners. The wood stoop in front of the door is also non-historic. In the gable peak, there is a fixed, wood, 2-pane, 2'-10" x 3'-5½" window. A pair of gas tanks are affixed to the south wing, at the intersection between the south wing and the main central massing.

Facing Brooks Lake, the west elevation is largely considered the façade of the building (Figure 59). It contains two entrances: one on the north elevation of the main central massing, and a second on the northern end of the north wing, leading to bedroom 4 (Figures 60-63). These doors are identical to the door on the east elevation, except the central massing door contains a wood screened door with two panels at the bottom, and the north wing door has a wood screened door with a wood kick plate. Each door is accessed by a wood stoop. The gable peak of the main central massing contains a fixed, 2/2 wood window measuring 2'-10" x 3'-5½".

The south elevation features the entrance to bedroom 1, which is identical to the remaining doors on the building, except that it contains a wood-framed screened door with a plywood bottom and is accessed by a two-step concrete staircase (Figures 64-66). There is a wood vent, measuring 2'-10" x 3'-5½" in the gable peak.

The north elevation features a wood vent in the gable peak to mimic the south elevation (Figure 67).



Figure 64. Field Laboratory, south elevation.



Figure 67. Field Laboratory, north elevation.



Figure 65. Door, south elevation.



Figure 66. Screen door, south elevation.



Figure 68. Interior of central massing, view looking east.



Figure 69. Interior of central massing, view looking north.



Figure 70. Interior of central massing, view looking north.



Figure 71. Interior of bedroom 1, view looking northeast.



Figure 72. Interior of bedroom 2, view looking northeast.



Figure 73. Interior of bedroom 3, view looking northeast.

Physical Description: Interior

Throughout the building, there are finished 4"-wide wood boards, exposed log walls (with two exceptions), and ceilings clad in non-historic, molded wood paneling. The interior of the Field Laboratory features an open, central 17'-6" x 30' room with a kitchen comprising the east half of the room and a living room in the west half of the room. Kitchen cabinets, installed at an unknown date between 1979 and 1982, line the northeast corner of the kitchen. These cabinets are covered with molded wood paneling that matches the ceiling. A coursed rubble chimney with an attached "Western" brand wood-burning, iron stove are just east of the room's center. The chimney fireplace contains a wood mantel, brick-lined fireplace, and a flush, coursed rubble hearth. A rectangular metal vent, horizontally oriented, is located just above the fireplace. Bedroom 2 is accessible from the south wall and bedroom 3 is accessible to the north wall of the living room. The historic bedroom doors are wood, 5-paneled, and measure 3'x 6'-8" (Figures 68-70).

The bedroom wings are mirror images of one-another. Each wing is divided into two bedrooms with a non-historic wall clad in molded wood paneling. Doors of molded wood paneling measuring 3'x 6'-8" pierce each wall between bedrooms 1 and 2 and between bedrooms 3 and 4 (Figures 71-74).

Condition Assessment

Site

Rain water run-off of the standing-seam metal roof, first installed in 1989, is responsible for a collection of water surrounding the perimeter of the Field Laboratory. At times, this water enters the crawlspace beneath the building through round metal foundation vents (Figures 75 & 76).

Structure

The north wing of the building is out-of-plumb, and it is highly recommended that a certified structural engineer performs an evaluation of the property. The cause of the potential structural issues is unknown, however it may be associated with the sewage system in close proximity to



Figure 74. Interior of bedroom 4, view looking southwest.



Figure 75. Poor site drainage.

the building, just east of the north wing, and/or associated with the well installed under the north wing in 1957l.

Foundation

Overall, the foundation of the building is affected by moisture in the form of rising damp, biological growth, and cracks due to poor drainage surrounding the building. From the crawlspace beneath the building, rising damp is evident on the foundation walls. Moss is growing on the exposed top edges of the foundation (Figures 77 & 78).

Walls

The wood materials that comprise the Field Laboratory, including its log walls and log veneer gables are generally in sound condition. These materials, however, have been affected by animals, moisture, and ultraviolet (UV) light.

Bat and bird guano is covering the exterior walls of the building, with a large concentration on the east elevation of the main massing. According to the tenants of the property, the bats have not entered the interior living spaces. One or more bears have scratched the corners of the building, particularly the southeast corner of the south wing. Park maintenance staff installed mesh nets over several openings to deter bats and electrical wires to the south elevation and northeast corner of the building to deter bears (Figures 79-81). Bat boxes are also affixed to the west elevation gable peak.

Due to its proximity to an open landscape facing the lake, the west elevation of the building, particularly the north wing, has been affected by UV damage. As a result, the logs have greyed and lost a significant amount of moisture. Many of the logs are so dry that a moisture meter is unable to register the moisture content (Figure 82).

Biological growth is located sparingly on the exterior wood surfaces of the building. Lichen has grown behind the gas tanks affixed to the northeast corner of the south wing (Figure 83). In some areas, the stain has blistered due to the entrapment of moisture (Figure 84).

Roof

The Klip-Rib® metal roof and its support system is in good condition, except for the southeast corner of the south wing, which was struck by a vehicle (Figure 85).

Fenestration

Repaired by NPS conservation staff in 1993-1994, the historic wood windows throughout the building remain in good condition. Paint on the windows, screen doors, vents, and frames has cracked, chipped, and/or has evidence of alligatoring. Two glass panes on the west elevation window (south wing, bedroom 1) are cracked (Figures 86 & 87).

Interior

Overall, the interior of the building is in good condition, with the exception of potential structural issues associated with the north wing. The wall within the north wing, which divides bedrooms 3 and 4, appears to be slightly out-of-plumb. The remainder of the interior contains only minor cosmetic damages, such as scuffed floors, and worn paint on those window and door frames that are painted.



Figure 76. Rising damp on foundation wall and vent, photographed by Grant Crosby, July 2014.



Figure 77. Cracks in foundation.



Figure 78. Moss growing on the top edge of the foundation.



Figure 79. Bird guano on logs.



Figure 80. Metal netting to prevent bat access.



Figure 81. Electrical wires to deter bears.



Figure 82. UV damage to log walls on west elevation of north wing.



Figure 83. Lichen on logs adjacent to gas tanks.
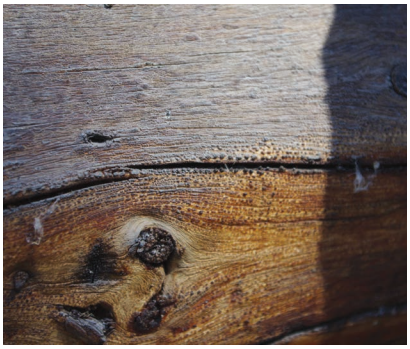


Figure 84. Blistered stain on logs.



Figure 85. Dented metal roof.



Figure 86. Cracked paint on window sill.



Figure 87. Cracked window panes.

FIELD LABORATORY
BROOKS LAKE
ALASKA

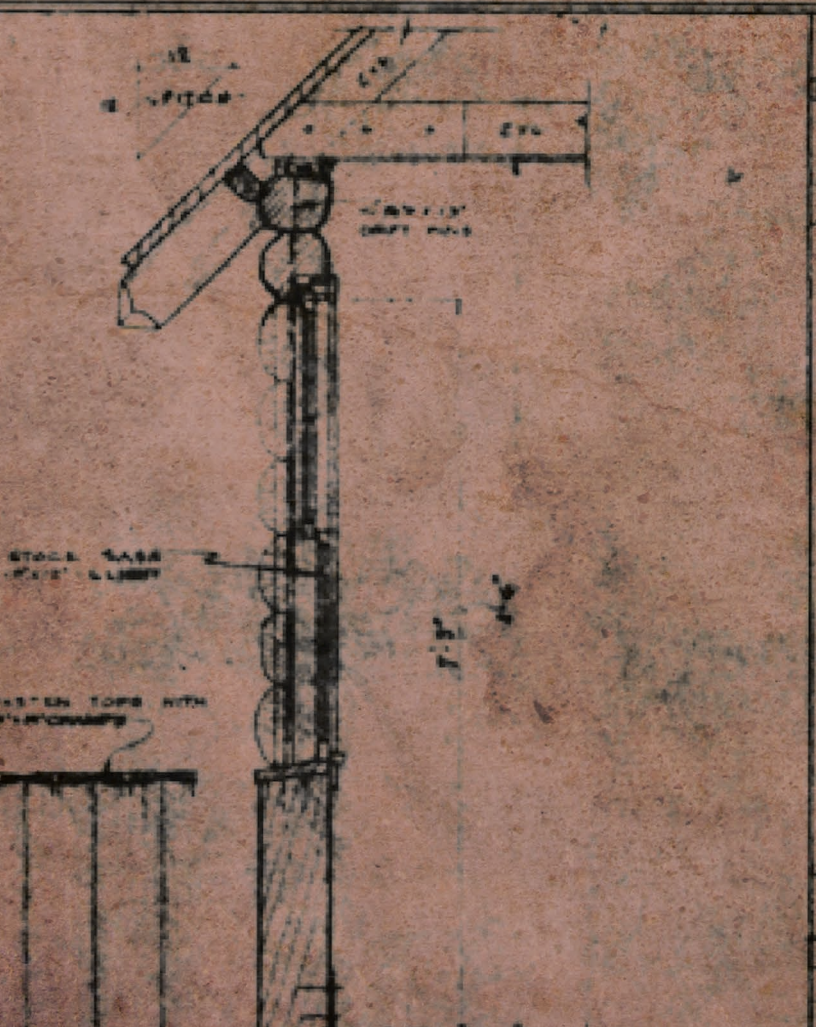
U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF CONSTRUCTION
AND C.C.C. OPERATIONS

DRAWN BY	DIRECTOR	DWG. NO.
CHECKED BY	CHIEF OF DIVISION	2 FIELD LABORATORY
DATE 3-10-41	CHIEF DIV. CONST. & C.C.C. OPERATIONS	SHEET NO. 2 OF

DEN OF WOODS

BROOKS LAKE

LOCATION MAP
SCALE 1" = 1.0





MAP OF AREA

ALTITUDE

FIELD LABORATORY
BROOKS LAKE



Figure 88. West elevation, Merrell, 1959.

Treatment and Use

Recommendations for Treatment

The treatment recommended in this report is intended to address the condition of the property, while ensuring that the NPS preserves the qualities that make this property historically significant. It is recommended that the exterior of the Field Laboratory is restored to the period between 1959, when the building was completed, and 1976, prior to NPS modifications (Figures 88-90). The recommendation for restoration does not include the north wing chimney, which was in place at some point between 1959 and 1985. It is also recommended that the interior of the building is rehabilitated for its intended use as a visitor center with exhibits on archeology and fisheries management history associated with the Brooks Lake area. All historic materials will be retained to maintain historic integrity.

The following recommendations are in accordance with the *NPS Management Policies--NPS-28: Cultural Resource Management Guideline*, the National Historic Preservation Act of 1966 (36 CFR 800) and *The Secretary of the Interior's Standards for the Treatment of Historic Properties.*

The Secretary of the Interior's Standards for Restoration defines restoration as:

> *"the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project."*[68]

The Secretary of the Interior further identifies standards for restoration as follows:

- A property will be used as it was historically or be given a new use which reflects the property's restoration period.
- Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
- Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
- Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
- Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
- Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

The Secretary of the Interior's Standards for Rehabilitation define rehabilitation as:



Figure 89. South elevation, Merrell, 1959.

"the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."[69]

The Secretary of the Interior further identifies standards for rehabilitation as follows:

- A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
- Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
- New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
- New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.[70]

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used



Figure 90. East elevation, National Park Service, 1975.

In order to adhere to the standards listed above, this report recommends retaining as many character-defining features as possible. The treatments recommended in this report are in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties.*

Pre-Construction Planning: Re-use, Visitor Center & Exhibits

Park management staff intend to re-use the Field Laboratory as a visitor contact station for the Brooks Lake Area, with exhibits on archeology and fisheries management history related to the vicinity. As the building will be accessed by members of the public and will require interior alterations to facilitate exhibit space, it is recommended that park staff prepare associated plans and studies, and comply with related federal laws and regulations prior to construction.

Confirm that the property is structurally sound.

- Hire a qualified structural engineer to conduct an assessment of the property, as the north wing appears to be out-of-plumb.

Prepare the building to be re-used by members of the public.

- Conduct a code study to determine occupancy limits.
- Prepare a plan for life safety improvements.
- Consider public restroom access.
  - It is recommended that restrooms are located away from the Field Laboratory, in a location that would not compromise the integrity of the historic district.
- Prepare an operations plan for the visitor contact station.
- Ensure that the property is in compliance with the Americans with Disabilities Act of 1990 (ADA) and the Architectural Barriers Act of 1968 (ABA).

Prepare the interior of the building for the installation of exhibits.

- Ensure the Long Range Interpretive Plan is up-to-date.
- Conduct visitor surveys.
- Establish an interdisciplinary team to develop an exhibit plan made up of:
  - KATM Superintendent,
  - KATM Interpretation Staff,
  - KATM Cultural Resources Staff,
  - KATM Museum Staff,
  - KATM Maintenance Staff,
  - AKRO Historic Architecture Program Staff, and
  - Park Partners: Concessioners (DNC).
- Conduct a site visit with the interdisciplinary team.
- Initiate the design process.
  - Conduct a Public Scoping Meeting.
  - Hold a design meeting with the interdisciplinary team.
    - It is recommended that the bedroom wings are restored to the period of significance, when each wing was one open room.
      - In each wing, remove the non-historic molded, wood-paneled wall.
    - It is also recommended that the non-historic kitchen cabinets in the northeast corner of the main central massing are removed.
    - It is recommended that the exhibits are self-standing, as to not damage historic building fabric such as walls, door and window frames, etc.
    - Prepare a set of exhibit plans, ensuring a wide range of staff and interested parties review the plans.



Figure 91. Cedar shake roof, Merrell, 1957.

Prepare a site plan for the property; it is recommended that park staff:

- Retain the wooded environment of the proposed site; avoid excessive clearing of vegetation;
- Ensure that any parking is in an inconspicuous location, as to not detract from the façade of the building;
- Avoid the construction of additional buildings, structures, or objects within close proximity to the building, as this would compromise the historic integrity of the building;
- Ensure that there is minimal signage. If signage is required, situate signage away from building;
- Ensure that any solar panels (if selected) are out-of-sight as to not compromise the historic integrity of the building;
  - Avoid installing solar panels on the east, west, or south elevations of the building, which are most visible to the public.
- Retain structural elements of concrete septic tank in-situ, as its removal may present complications in association with the building's stability and potential archeological sites; and
  - It is recommended that the concrete tank is in-filled with gravel.
- Prepare a site drainage plan based on recommendations from a qualified civil engineer and/or landscape architect.

Prepare a cyclical maintenance plan for cleaning, repairing and/or replacing building materials.

Ensure all plans are in compliance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (2017).[71]





Figure 92. (left) Historic south elevation gable peak window, National Park Service, 1985.

Figure 93. (above) Historic north elevation gable peak window, Merrell, 1959.

Section 106, National Historic Preservation Act, Compliance

Any project conducted within the boundaries of Katmai National Park and Preserve, whether it is the construction or modification of a road or path, new construction, the replacement of a fence, the alteration to an existing building or structure, etc., is to be processed through the Section 106 process of the 1966 National Historic Preservation Act (NHPA), as amended, (54 U.S.C. 306108). Proposed changes to the landscape or buildings materials associated with the Field Laboratory at Brooks Lake will require consultation well in advance of project activities, including prior to purchase of materials, beginning with the park's Section 106 Coordinator and the appropriate specialists of the park's Cultural Resources Management Team as defined in the NPS Programmatic Agreement.[72]

Recommended Treatment Plan

Pre-Construction Analysis and Compliance

- Prepare current as-built architectural drawings to record the existing property prior to any work.
- Complete Section 106 of the NHPA compliance requirements.
  - Submit proposed changes per the park's process for consideration and review.
  - Contact the park's Section 106 Coordinator for process submittal information.

Restoration

- Roof
  - Alternative A: Restore the historic cedar shake roof (recommended alternative).
    - Replace non-historic metal roof with cedar shake roof (Figure 91).
      - Install ½" CDX plywood over existing sub-roofing.
      - Install Grace Ice and Water Shield over plywood.
      - Install Benjamin Obdyke Cedar Breather (¼" product).
      - Install hand split Cedar shakes, 12" weather exposure.[73]
  - Alternative B: If park management staff is unable to approve the restoration of the original cedar shake roof due to bat-related issues, replace non-historic metal roof with alternative roofing materials visually identical to cedar shakes, such as synthetic molded tiles.





Figure 94. (left) Historic wood paneled door on south elevation, south wing, Merrell, 1957.

Figure 95. (above) Historic wood paneled door on central massing, west end, north elevation, Merrell, 1957.

- Alternative C: Retain Klip-Rib® standing-seam metal roof, which was installed to prevent the infestation of bats in the building.
  - Please note: the retention of the standing-seam metal roof may compromise the formal listing of the Field Laboratory in the National Register of Historic Places, as stated by the SHPO in a letter dated July 1, 1999.[74]

■ Windows
- Restore the fixed wood windows in the gable peaks of the north and south wings.
  - Remove the wood vents, and replace with:
    - 6-pane window, south elevation (Figure 92).
    - 2-pane window, north elevation (Figure 93).

■ Doors
- Restore the exterior doors of the building.
  - Determine if historic doors are extant/beneath non-historic wood paneling and can be salvaged; historic doors include:
  - Wood 5-paneled doors to match existing historic interior doors.
    - South wing, south elevation (Figure 94).
    - Central massing, west end, north elevation (Figure 95).
    - Central massing, east end, east elevation (Figure 96).
  - Wood plank door with a central single-pane glass window
    - North wing, west elevation (Figures 97 & 98).



Figure 96. In the background, a historic wood paneled door on central massing, east end, east elevation, Merrell, 1958.





Figure 97 and 98. Historic wood plank door on west elevation, north wing, Merrell, 1959.

- Interior
  - Wings
    - Carefully remove the two non-historic molded, wood-paneled walls that divide the wings into bedrooms as to not damage the historic log walls.
  - Central Massing
    - Carefully remove the non-historic kitchen cabinets in the northeast corner of the kitchen as to not damage the historic log walls.

Rehabilitation

- Foundation
  - Install a reinforced 6-mil plastic ground cloth on the ground of the crawlspace to prevent rising damp.
  - Install plain fiberglass insulation batts (R-25 to R-30) beneath the first floor.
    - After installation of insulation, staple hardware cloth (¼" square) to the underside of floor joists.
  - Clean biological growth from the foundation with a low-pressure application of water using a natural or synthetic-bristled scrub brush.
  - Repoint cracks and deteriorated portions of the foundation with a mortar mixture of 1 part lime, 4 parts cement, and 10 parts cleaned and strained fine black sand from Brooks Lake beach to match the historic mortar.[75]
  - Cover foundation vents with metal netting to prevent pest access.
- Floors (Interior)
  - Sand and re-finish floors with a two-component waterborne, urethane/acrylic polymer finish.
  - Install walk-off floor mats throughout the building; visitor contact stations are high-traffic areas.
- Kitchen (Interior)
  - Carefully remove non-historic kitchen cabinets as to not damage the interior surface of the log walls.

- Walls (Exterior and Interior)
  - Repair/replace deteriorated logs and log crowns with locally sourced spruce, using a Dutchman splice (where appropriate).
  - Clean log walls with a low-pressure application of water using a natural or synthetic-bristled scrub brush and, if necessary, a non-abrasive water-based cleaner.
    - Ensure that the historic hand-writing are preserved; do not remove or compromise writing material (see Figure 99).
  - Apply borate-based log preservative to the interior and exterior faces of the logs.
  - Replace damaged or missing oakum chinking, in-kind.
    - For oakum installed from the interior, use the lightly oiled variety.
    - For oakum installed from the exterior, use the regularly oiled variety.
- Fenestration (Exterior and Interior)
  - Replace glass window panes for the west elevation window, south wing, bedroom 1 to match existing.
  - Prepare windows, screen doors, and frames with cracked, chipped, or alligatoring paint for re-painting.
    - Carefully remove existing paint as to not damage any historic material or existing profiles.
    - Paint windows and window frames.
    - Do not remove or paint over historic hand-writing (see Figure 100).
    - Do not paint areas that have not been painted in the past.





Figures 99 and 100. Historic hand-writing.

Endnotes

[1] The AHRS or Alaska Heritage Resource Survey number is a data repository of identified cultural resources within the State of Alaska. This repository is maintained by Alaska's State Historic Preservation Office.

[2] George J. Eicher, "History of the Bristol Bay Investigation" (unpublished manuscript, April 25, 1967), 1-4.

[3] John O. Furuness to Edward J. Kurtz, "Transfer of Property," June 22, 1978.2

[4] Eicher, "History of the Bristol Bay Investigation," 1-4.

[5] Harry Rietze to Gilbert Blinn, January 13, 1977; John O. Furuness to Edward J. Kurtz, "Transfer of Property," June 22, 1978.

[6] H. David Evans, *Historic Structures* [sic] *Report, BL-3, Katmai National Park, Alaska* (Anchorage, AK: National Park Service, 1993).

[7] Patricia McClenahan (Unpublished manuscript, March 4, 1993); Janet Clemens, *Lake Brooks Field Laboratory National Register of Historic Places Determination of Eligibility* (Anchorage, AK: National Park Service, 1999); Judith E. Bittner to Deborah Liggett, July 1, 1999.

[8] Jo Antonson to Dale Vinson, March 22, 2011.

[9] Grant Crosby, "BL3 Site Drainage Site Visit Report," July 21-22, 2014.

[10] Crosby, "BL3 Site Drainage Site Visit Report."

[11] Don E. Dumond, "Archeology on the Alaska Peninsula: The Naknek Region, 1960-1975," *University of Oregon Anthropological Papers*, no. 21 (1981), 6, Table 6-13.

[12] Frank Norris, *Isolated Paradise: An Administrative History of the Katmai and Aniakchak National Park Units* (Anchorage, AK: National Park Service, 1996), 263-264.

[13] Norris, *Isolated Paradise*, 265; Lewis G. MacDonald, "Chronological History of Salmon Canneries in Central Alaska," *Alaska Fisheries Board Annual Report,* no 3 (1951), 78, 83.

[14] Ward T. Bower, *Alaska Fishery and Fur-Seal Industries in 1920* (Washington, D.C.: Government Printing Office, 1921), 30.

[15] Bower, *Alaska Fishery and Fur-Seal Industries,* 17; Robert F. Griggs, "Our greatest national monument," *National Geographic Magazine,* vol. 40, no. 3 (September 1921), 219-292.

[16] Bower, *Alaska Fishery and Fur-Seal Industries,* 284

[17] Frank T. Been, *Field Notes of Katmai National Monument Inspection* (McKinley Park, AK: National Park Service, 1940), 8; Norris, Isolated Paradise, 267.

[18] Katherine Ringsmuth, *At the Heart of Katmai: An Administrative History of the Brooks River Area* (Washington, D.C.: Government Printing Office, 2013), 15.

[19] F.A. Davidson to National Park Service, April 16, 1940.

[20] Hillory A. Tolson to Charles E. Jackson, April 25, 1940.

[21] A.E. Demaray to Charles E. Jackson, May 14, 1940.

[22] Ringsmuth, *At the Heart of Katmai,* 15.

[23] Eicher, "History of the Bristol Bay Investigation," 5-6.

[24] Richard A. Cooley, *Politics and Conservation: The Decline of the Alaskan Salmon* (New York: Harper and Row, 1963), 157; Ward T. Bower, *Alaska Fishery and Fur-Seal Industries in 1942* (Washington: United States Government Printing Office, 1944), 28; Seton H. Thompson, *Alaska Fishery and Fur-Seal Industries in 1949* (Washington: United States Government Printing Office, 1952), 32.

[25] Norris, *Isolated Paradise,* 270; Thompson, A*laska Fishery and Fur-Seal Industries,* 27; Eicher, "History of the Bristol Bay Investigation," 9; Norris, *Isolated Paradise*, 270; Ringsmuth, *At the Heart of Katmai,* 57.

[26] George J. Eicher, "The Effects of Laddering a Falls in a Salmon Stream" (unpublished manuscript, n.d.), 2.

[27] Eicher, "History of the Bristol Bay Investigation," 10.

[28] George Eicher to National Park Service, September 1, 1989.

[29] Eicher, "History of the Bristol Bay Investigation," 1.a

[30] Eicher, "History of the Bristol Bay Investigation," 11.

[31] Eicher, "History of the Bristol Bay Investigation," 11.

[32] George J. Eicher, "Factors Influencing the Return of Red Salmon to the Naknek-Kvichak and Other Fisheries of Bristol Bay, Alaska" (unpublished manuscript, 1963), 87-88.

[33] Eicher, "History of the Bristol Bay Investigation," 11-12.

[34] Merrell, Interview.

[35] Theodore Merrell, "Salmon Survival Investigations, Field Operations Report, 1957," (unpublished manuscript, 1957), 1-3; Ringsmuth, *At the Heart of Katmai,* 69.

[36] Merrell, "Salmon Survival Investigations," 1-3; Ringsmuth, *At the Heart of Katmai*, 69.

[37] Ringsmuth, *At the Heart of Katmai,* 71.

[38] Norris, *Isolated Paradise,* 285.

[39] Harry L. Reitze to George A. Hall, November 15, 1967.

[40] John A. Rutter to Harry L. Reitze, March 9, 1970.

[41] Harry L. Reitze to Edward J. Kurtz, March 20, 1978.

[42] Gilbert E. Blinn to William J. McNeil, December 6, 1976; Harry L. Reitze to Gilbert E. Blinn, January 13, 1977.

[43] Blinn to McNeil, December 6, 1976.

[44] Robert Carper, List of Classified Structures Inventory, Katmai National Monument (unpublished manuscript, 1976).

[45] John O. Furuness and Harry L. Reitze to Edward J. Kurtz, June 22, 1978.

[46] Furuness and Reitze to Kurtz, June 22, 1978.

[47] Pat McClenahan to Bonnie Houston, "BL-3," n.d; Superintendent Annual Reports 1978, 1979.

[48] Eicher, "History of the Bristol Bay Investigation," 4.

[49] Been, *Field Notes of KNM Inspection,* 40.

[50] Howard Baltzo, Journal, 1941.

[51] Eicher, H "History of the Bristol Bay Investigation," 5.

[52] Been, *Field Notes of KNM Inspection,* 40.

[53] Baltzo, Journal.

[54] Merrell, Interview.

[55] Baltzo, Journal; Eicher, "History of the Bristol Bay Investigation," 5.

[56] Merrell, Interview; Alfred C. Kuehl, *Report on Katmai National Monument – Alaska* (San Francisco: National Park Service, 1945).

[57] Eicher, "History of the Bristol Bay Investigation," 5-6.

[58] Merrell, Interview.

[59] Merrell, Interview.

[60] Merrell, Interview.

[61] McClenahan to Houston; Superintendent Annual Reports 1978, 1979.

[62] B. Wemple, HUDAT Inspection Form: BL-3, September 8, 1989; Evans, *Historic Structure Report*, 7.

[63] Evans, BL-3 *Historic Structure Report,* 7.

[64] Evans, *Historic Structure Report,* 15-16.

[65] Richard Sherman to Superintendent, Katmai, "BL-3 Rehabilitation Project, Fures Cabin," April 19, 1993.

[66] Photographs, National Park Service, Alaska Regional Office, Historic Architecture Program, BL3 Digital Files.

[67] Jim Gavin, "Correct Bat Infestations in Four Brooks Camp Buildings," PEPC Project, July 5, 2013.

[68] Weeks and Grimmer, *The Secretary of the Interior's Standards,* 117.

[69] Weeks and Grimmer, *The Secretary of the Interior's Standards* 61.

[70] Weeks and Grimmer, *The Secretary of the Interior's Standards* 62.

[71] Weeks and Grimmer, *The Secretary of the Interior's Standards*

[72] Ideally, an interdisciplinary review team would include the park's historian, historical architect, and historical landscape architect. If these positions are vacant, park-level positions may be replaced by those at the regional level.

[73] This recommendation is for shakes. not shingles. Shingles are sawn on both faces and are thinner at the butt than shakes. Shakes are split on the face.

[74] Judith E Bittner to Deborah Liggett, July 1, 1999.

[75] This is the original formula used to construct the foundation mortar.

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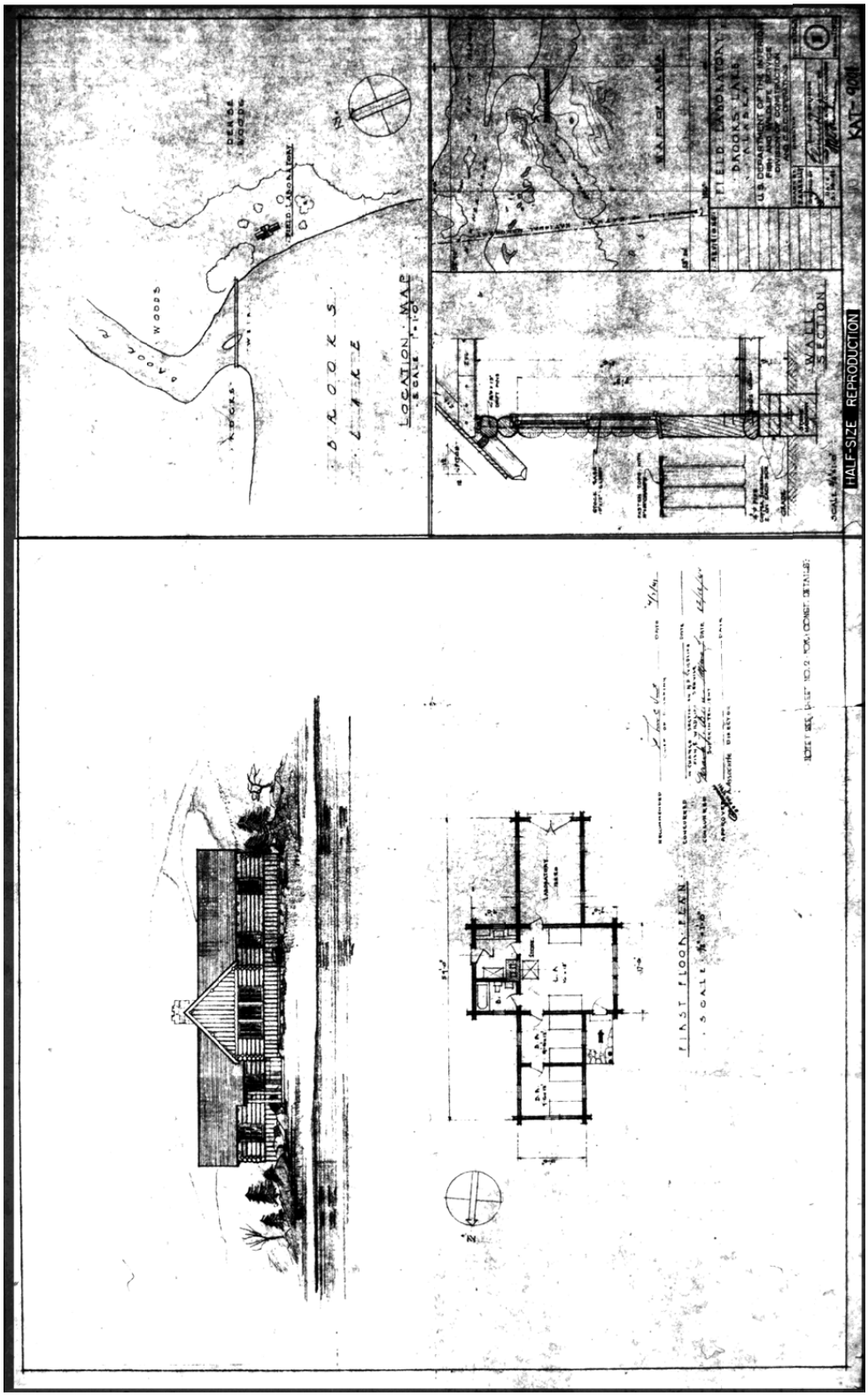
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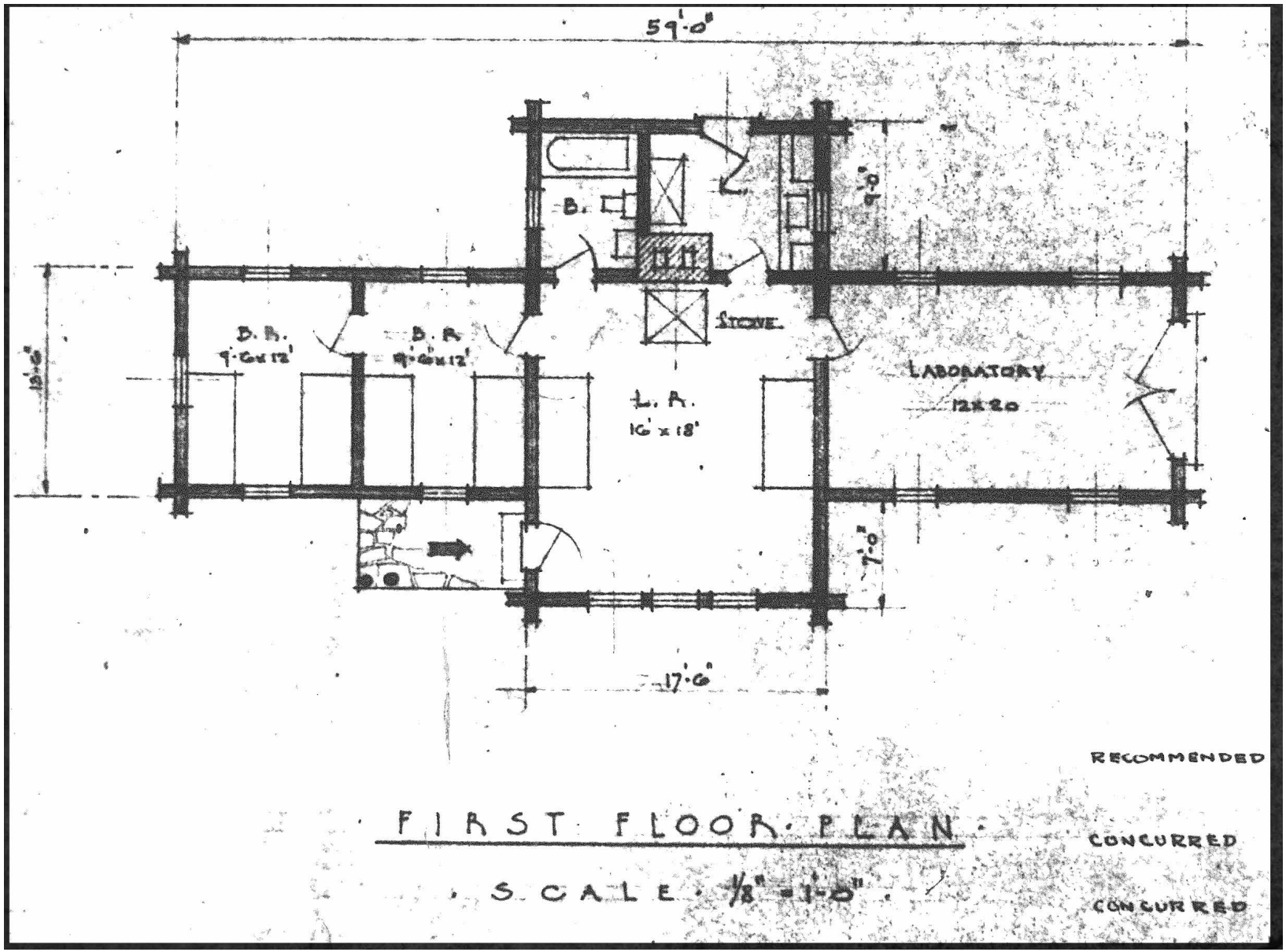
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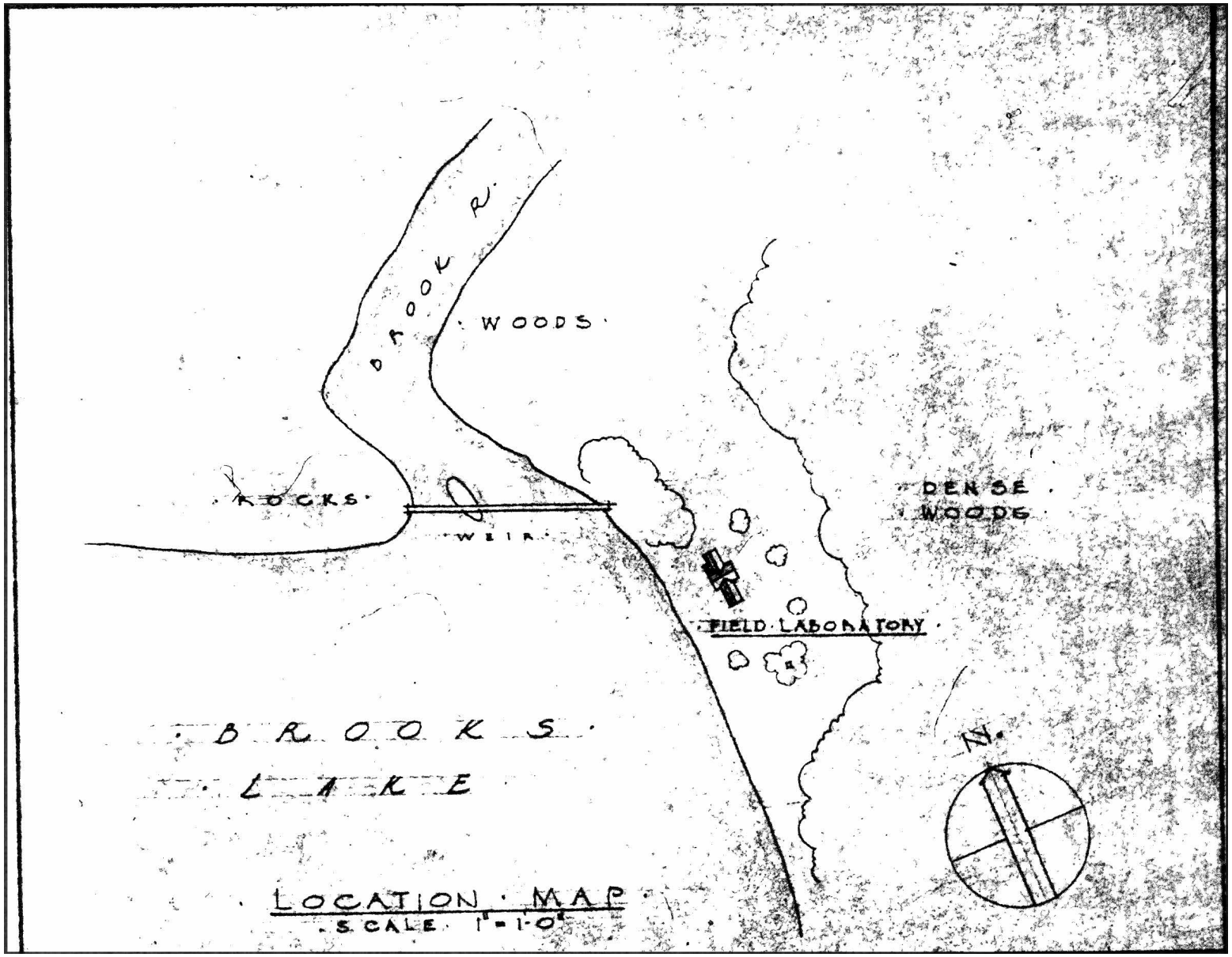
Appendix A: Construction Plans (1941)



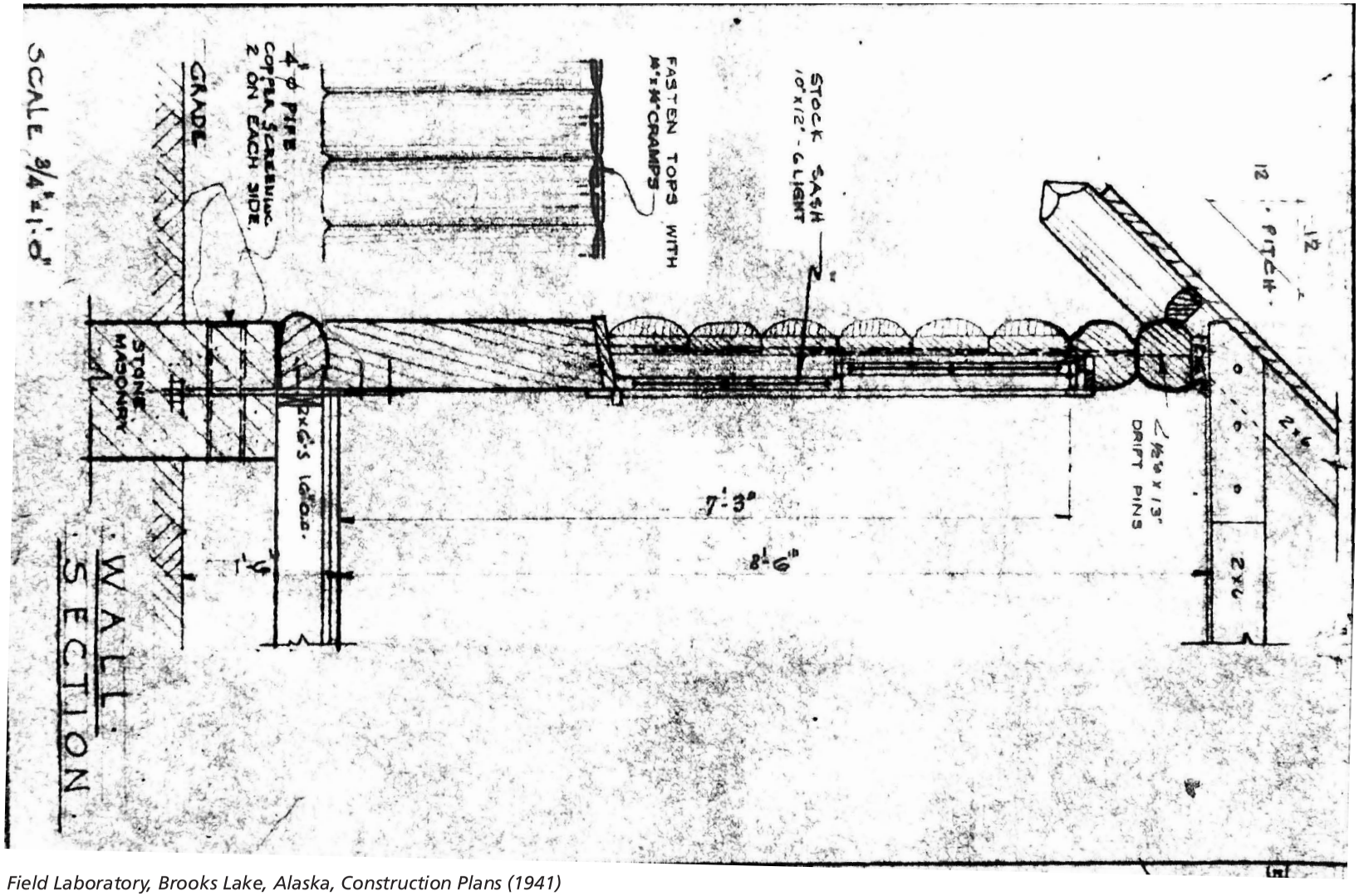
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Field Laboratory, Brooks Lake, Alaska, Construction Plans (1941)

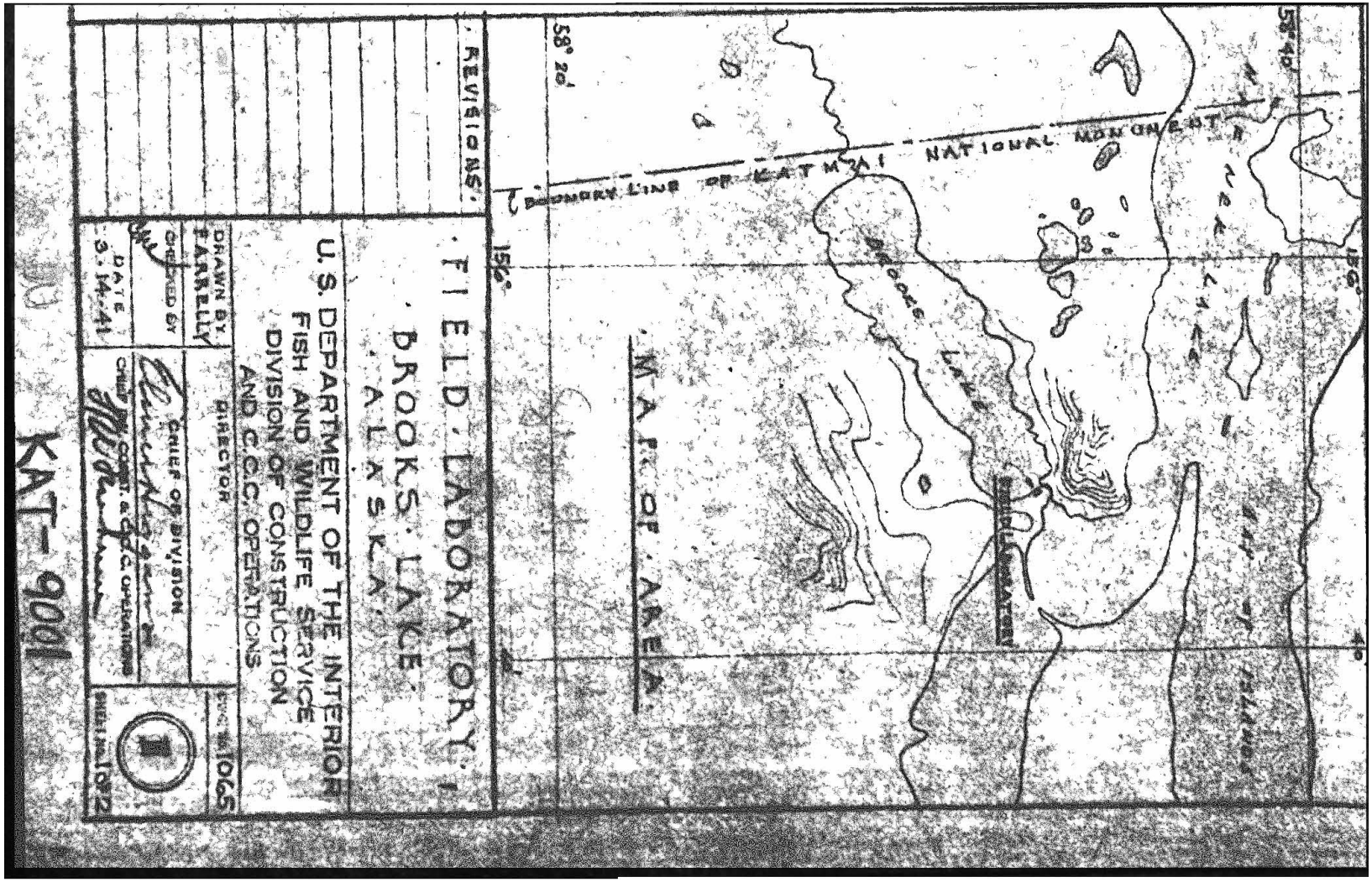


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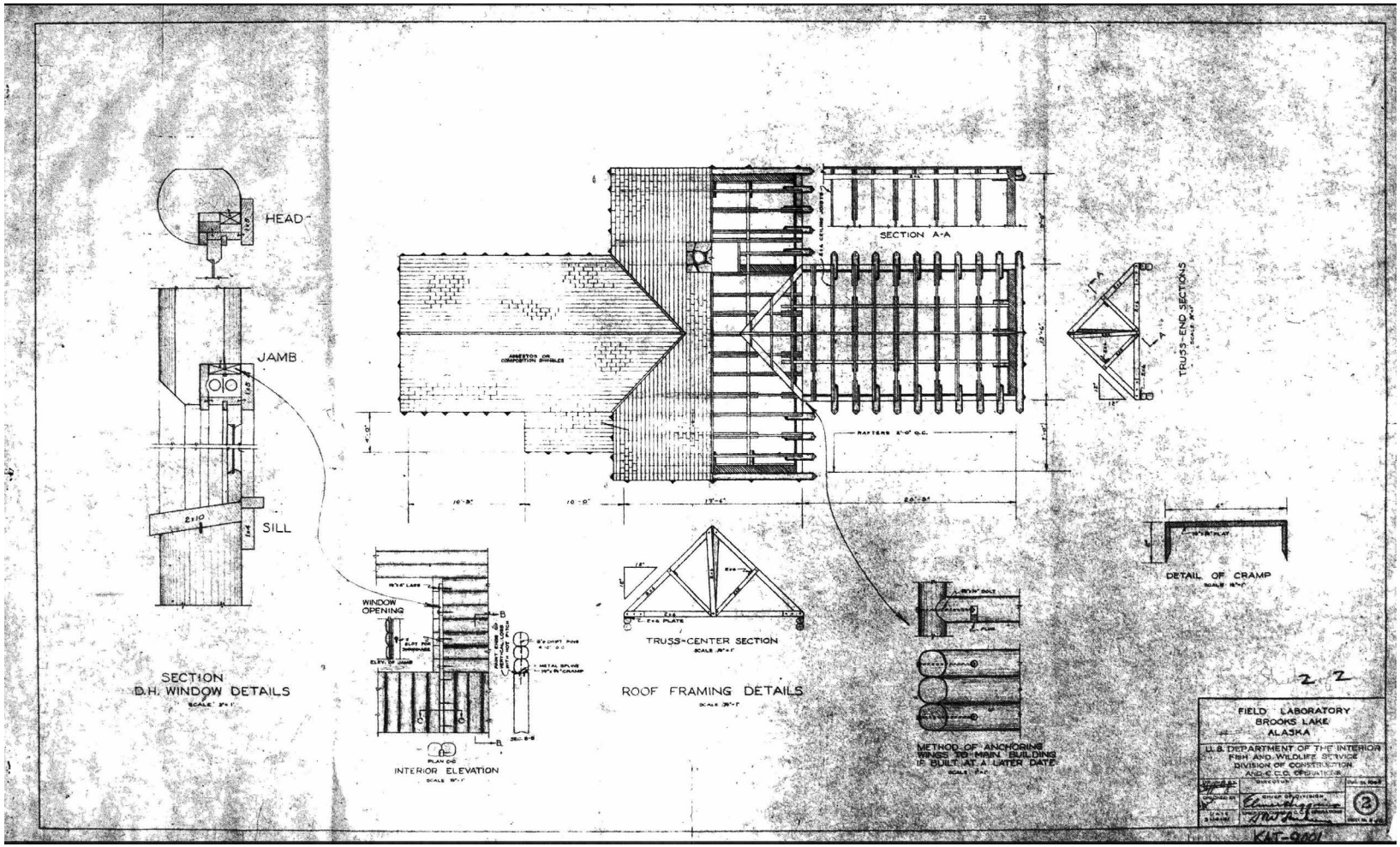


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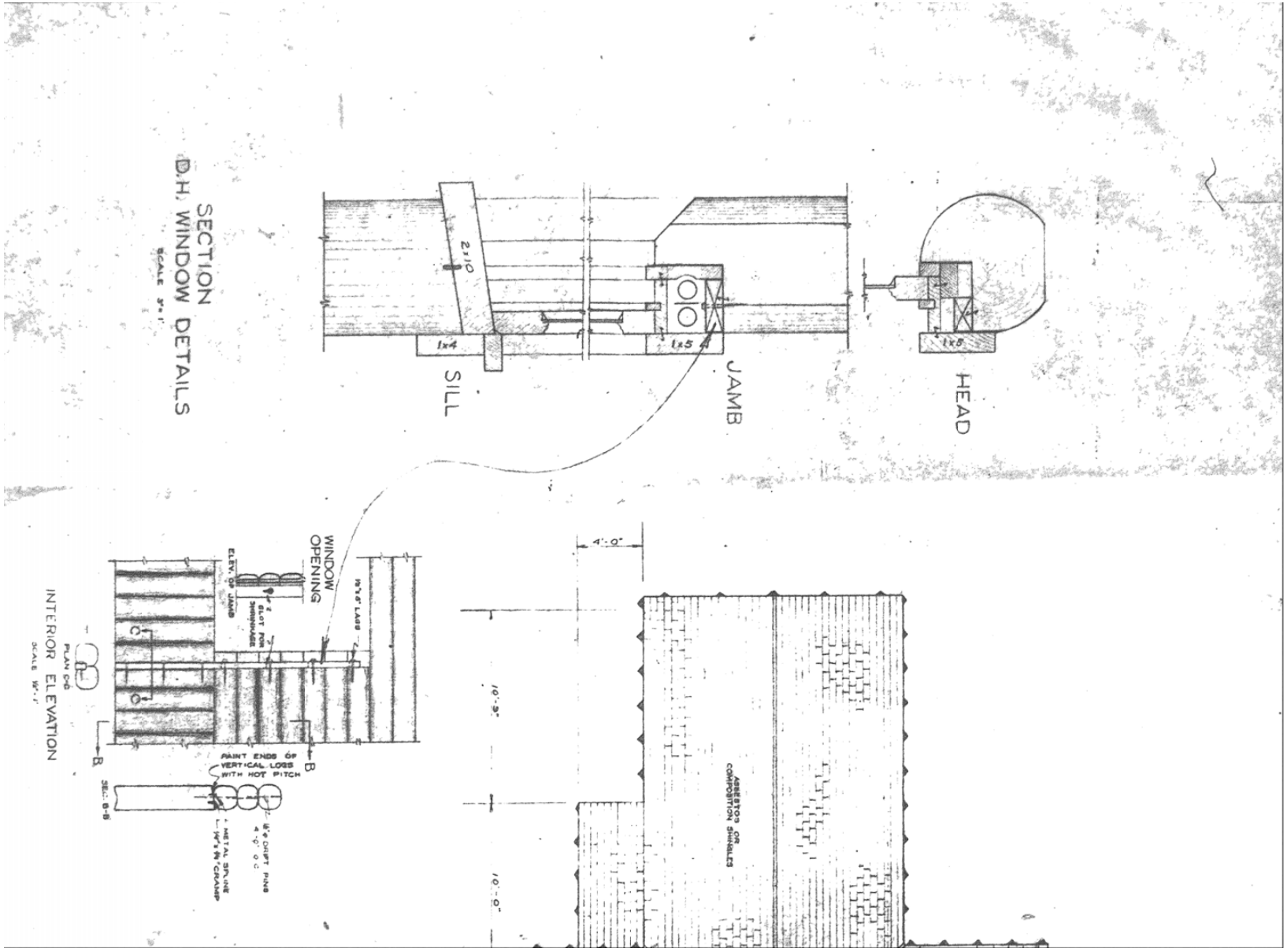
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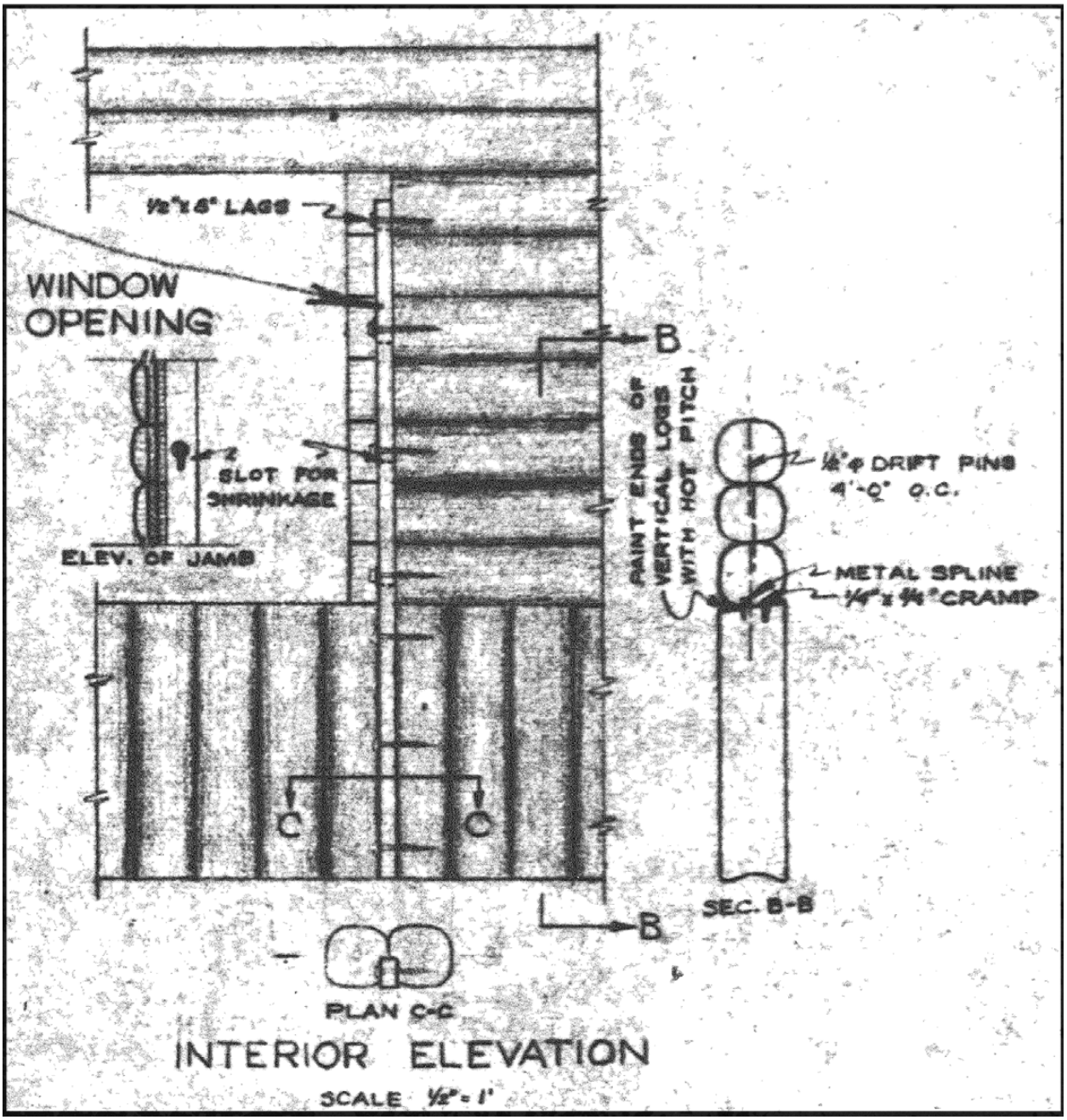
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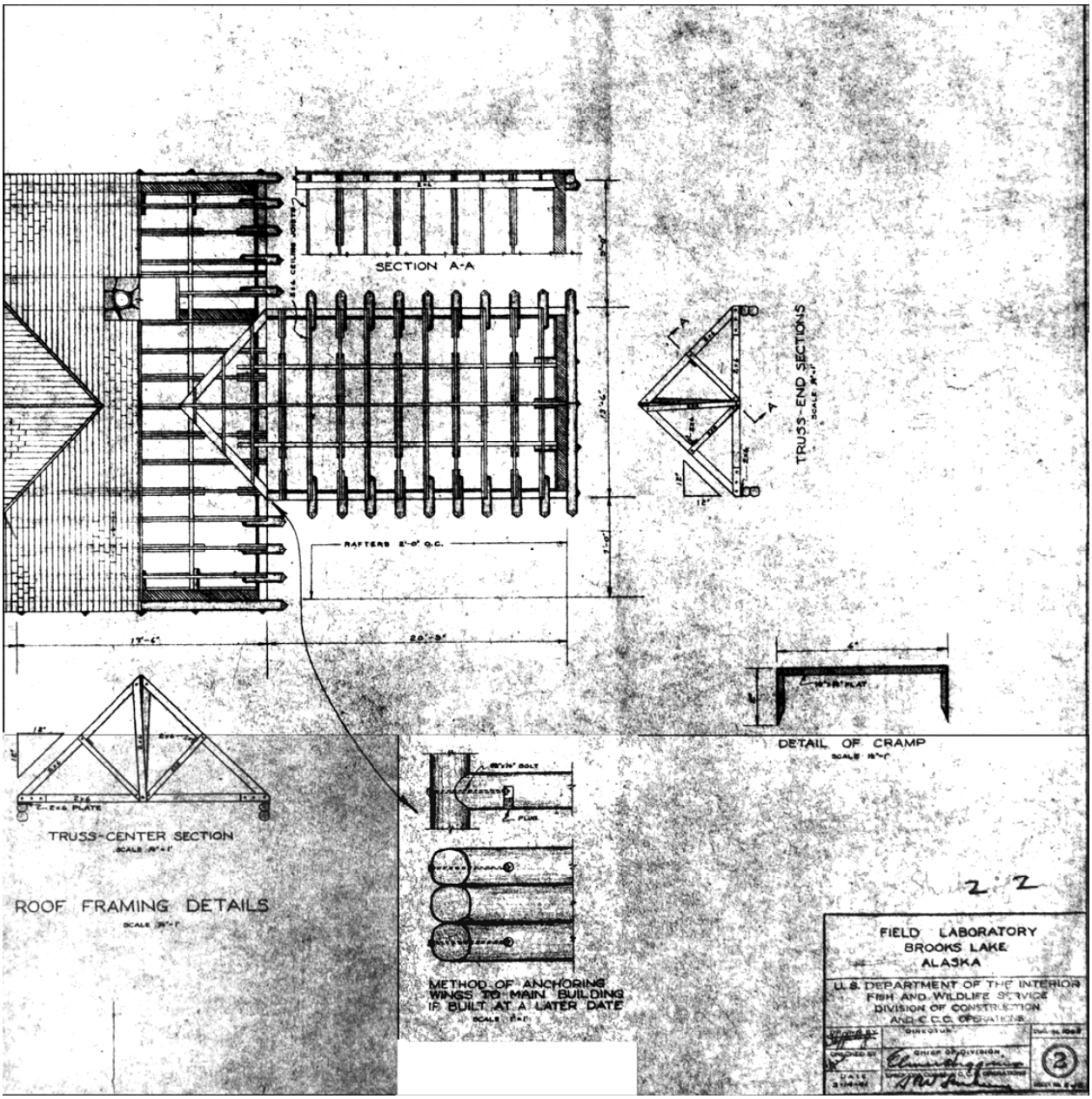
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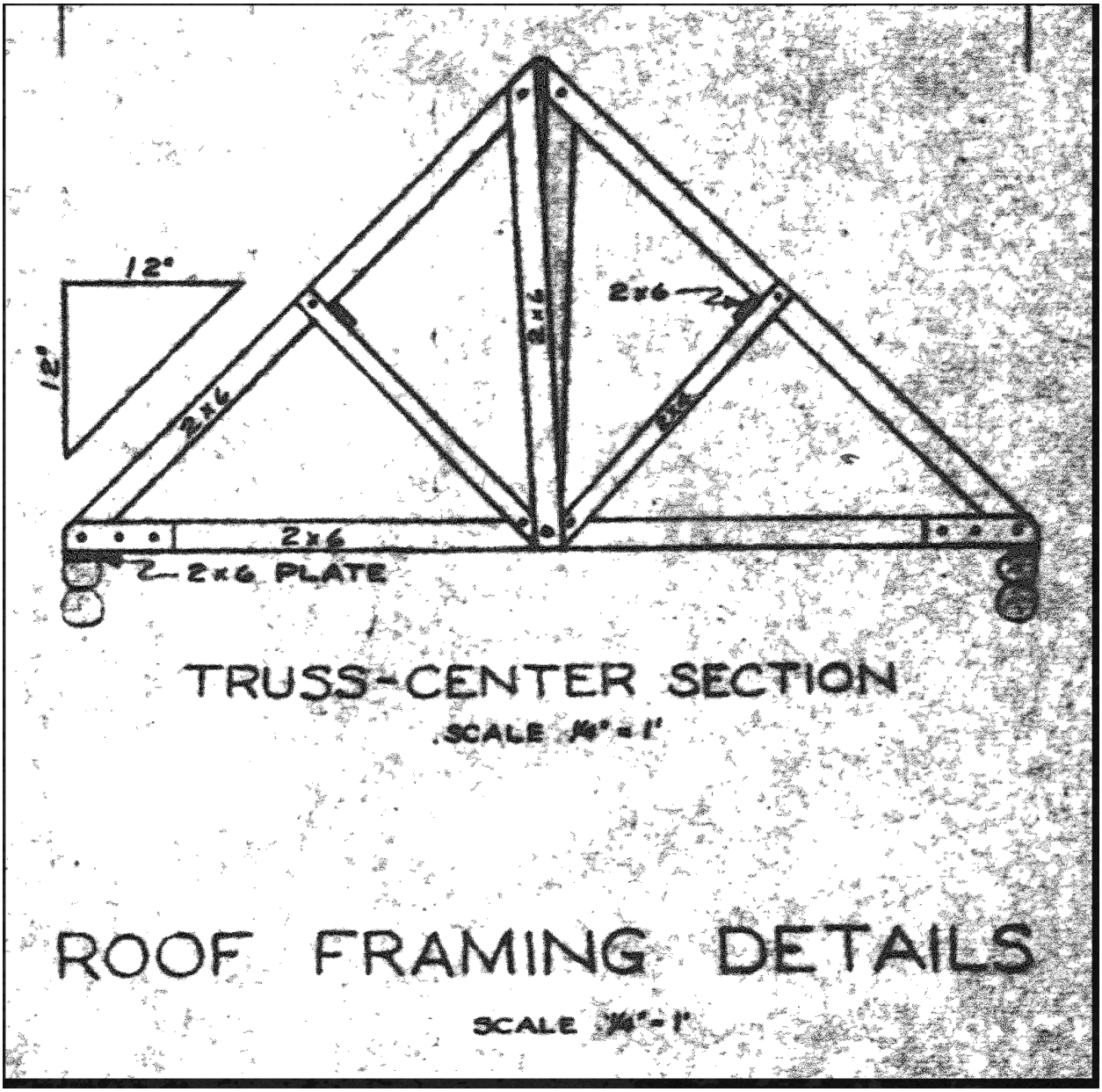
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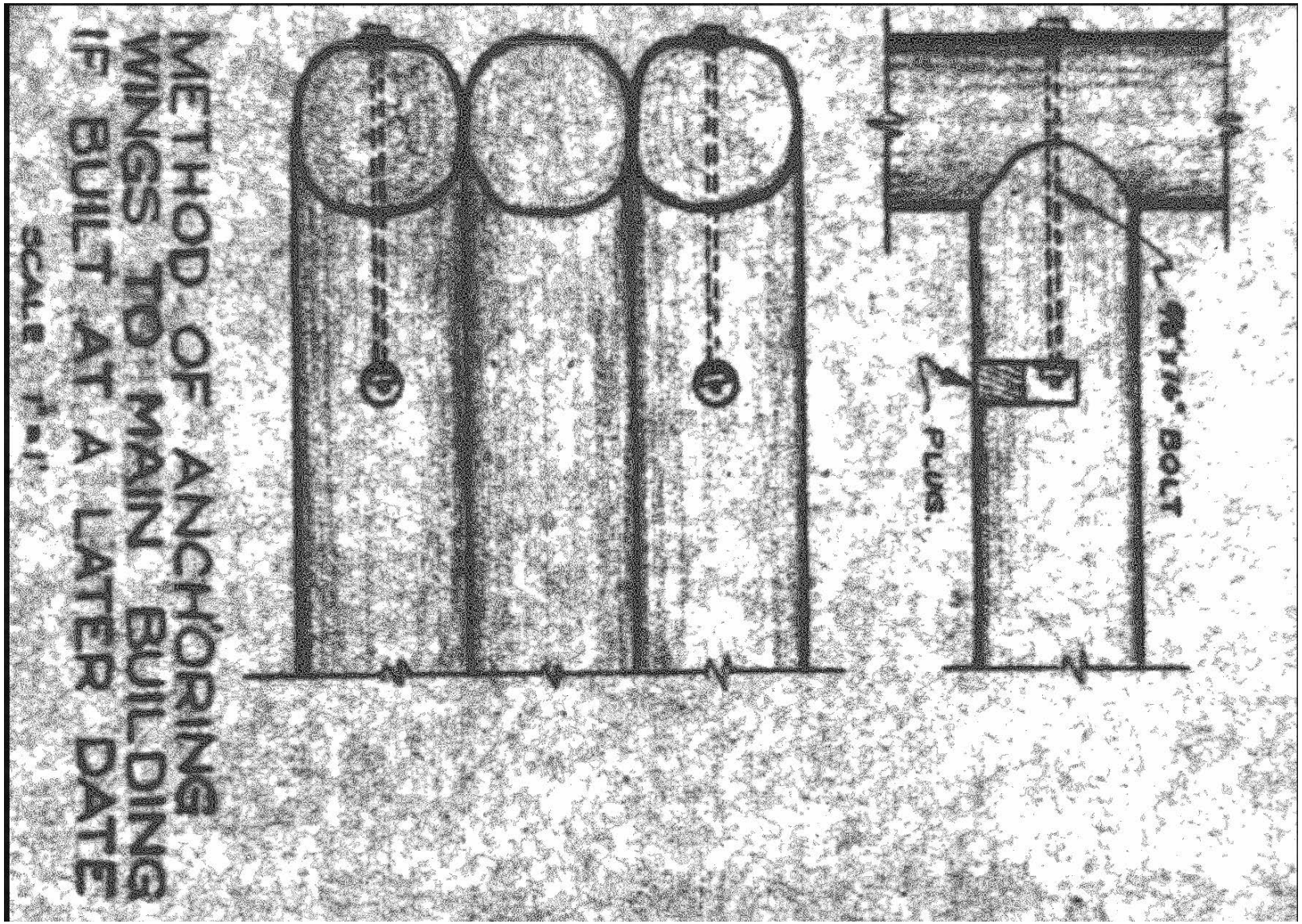
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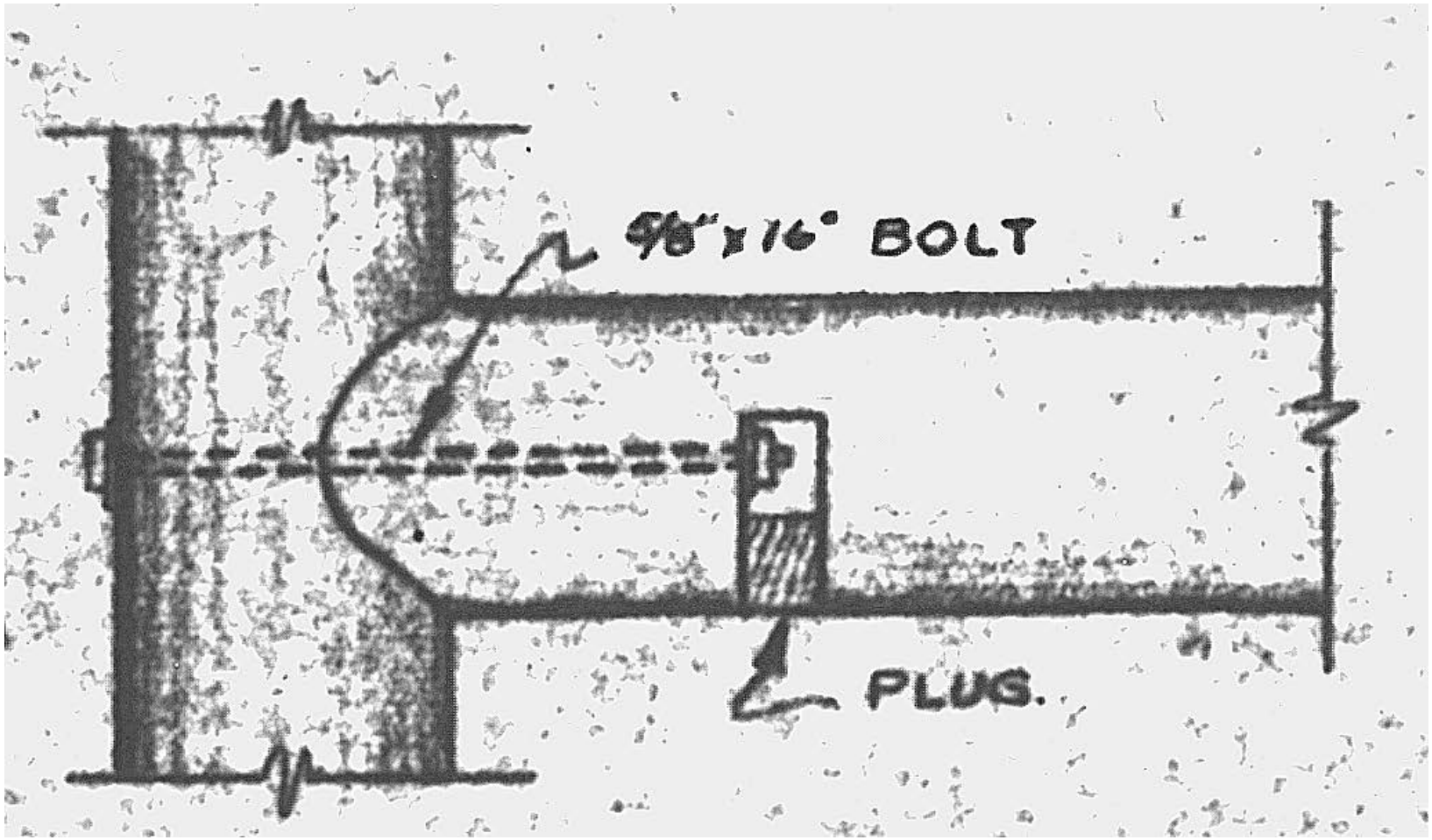
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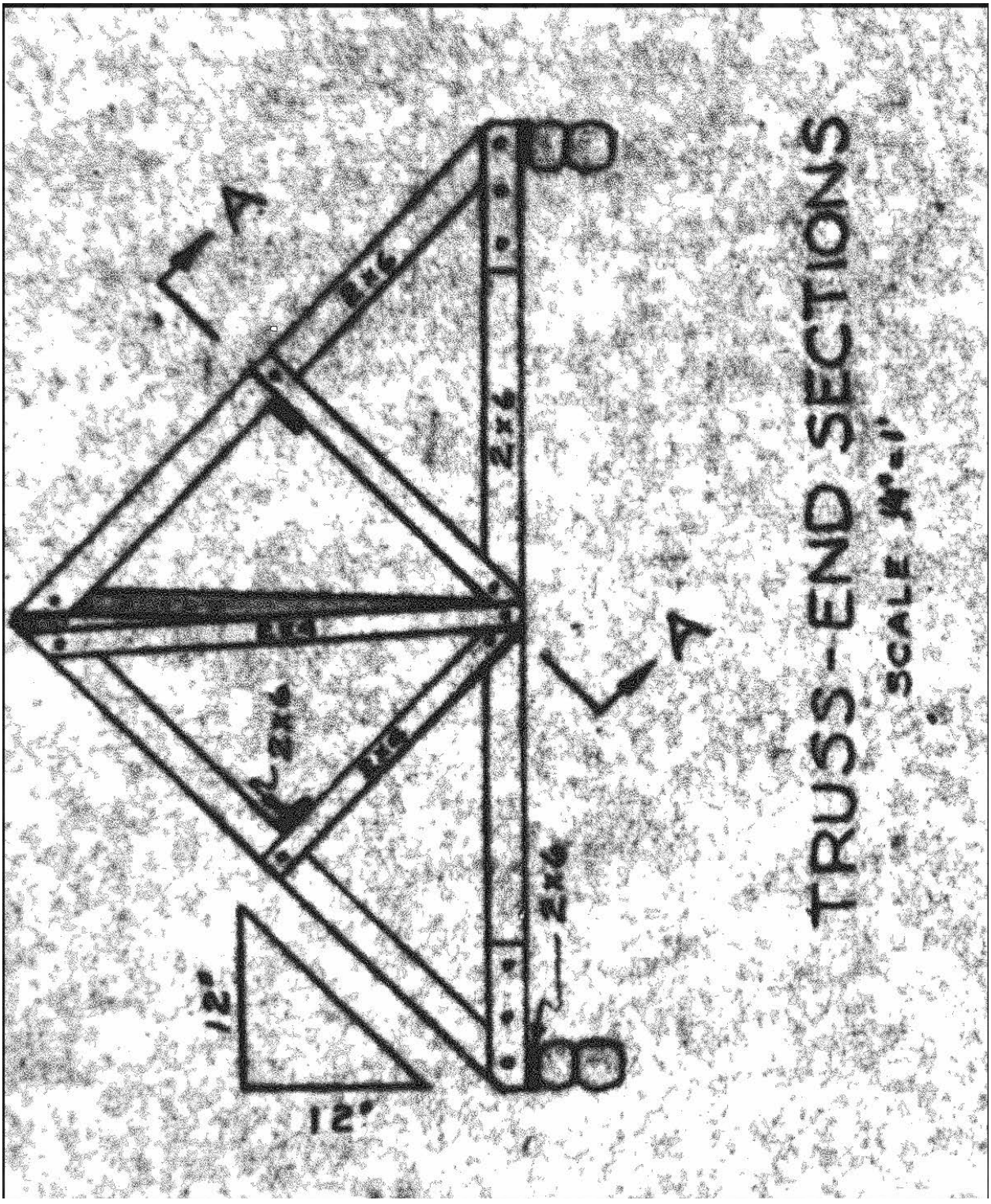
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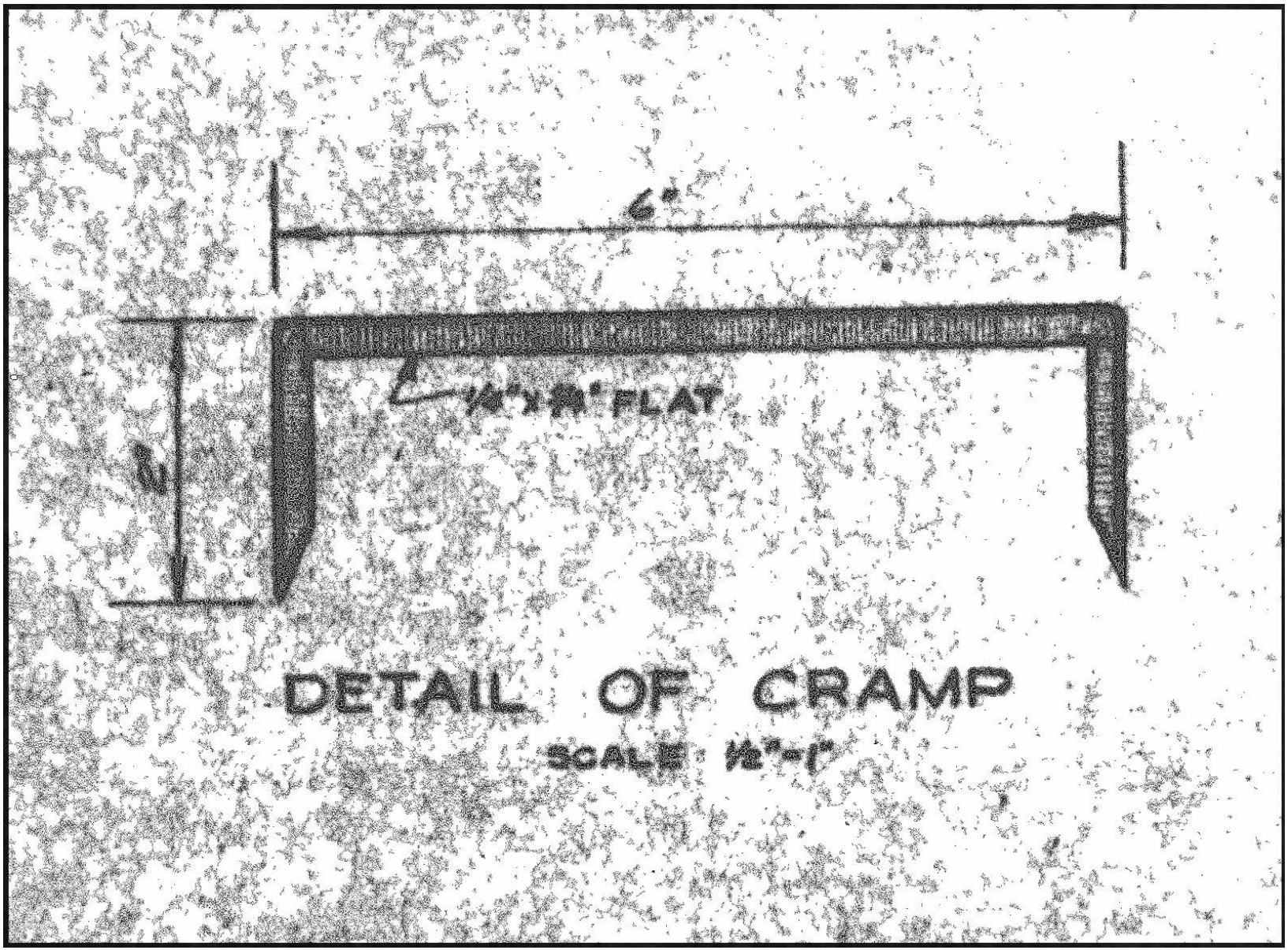
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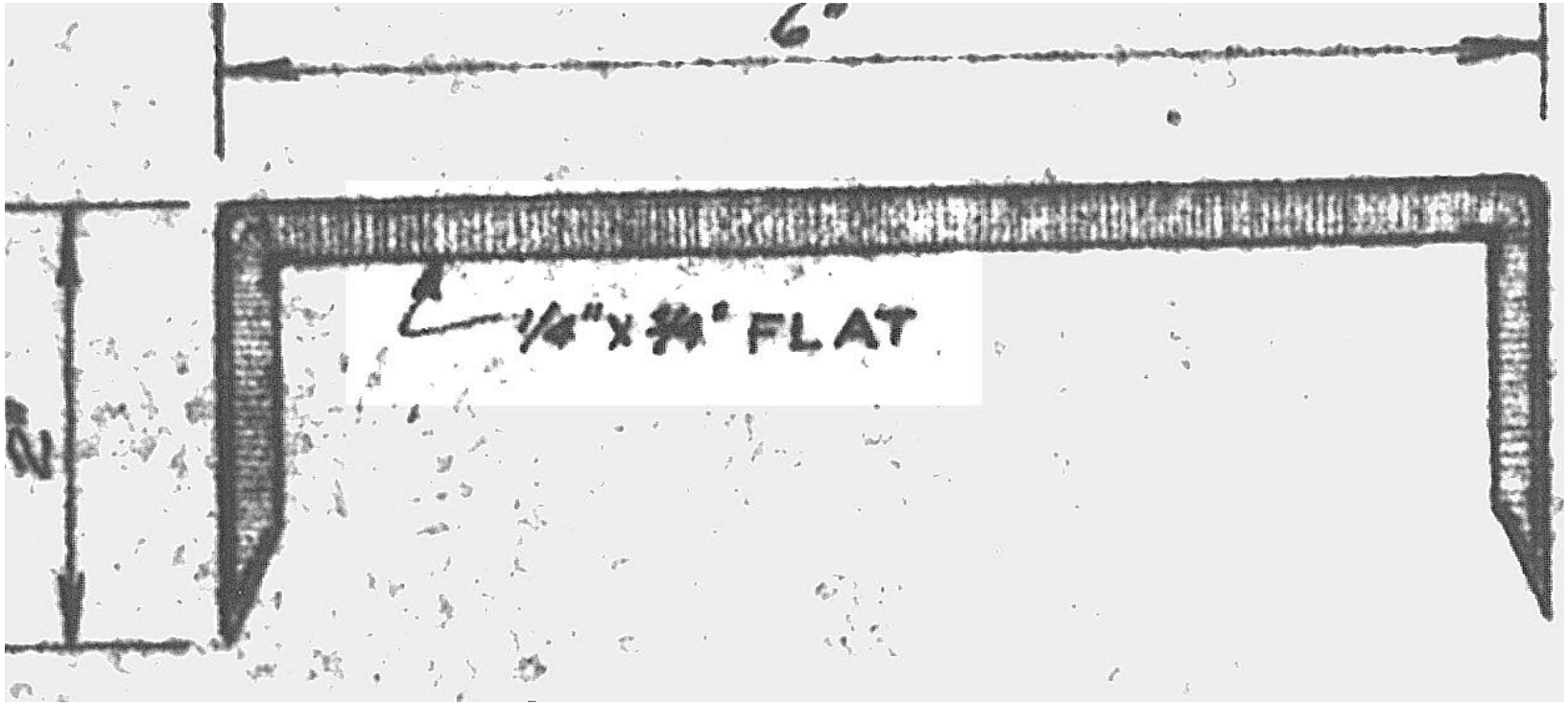
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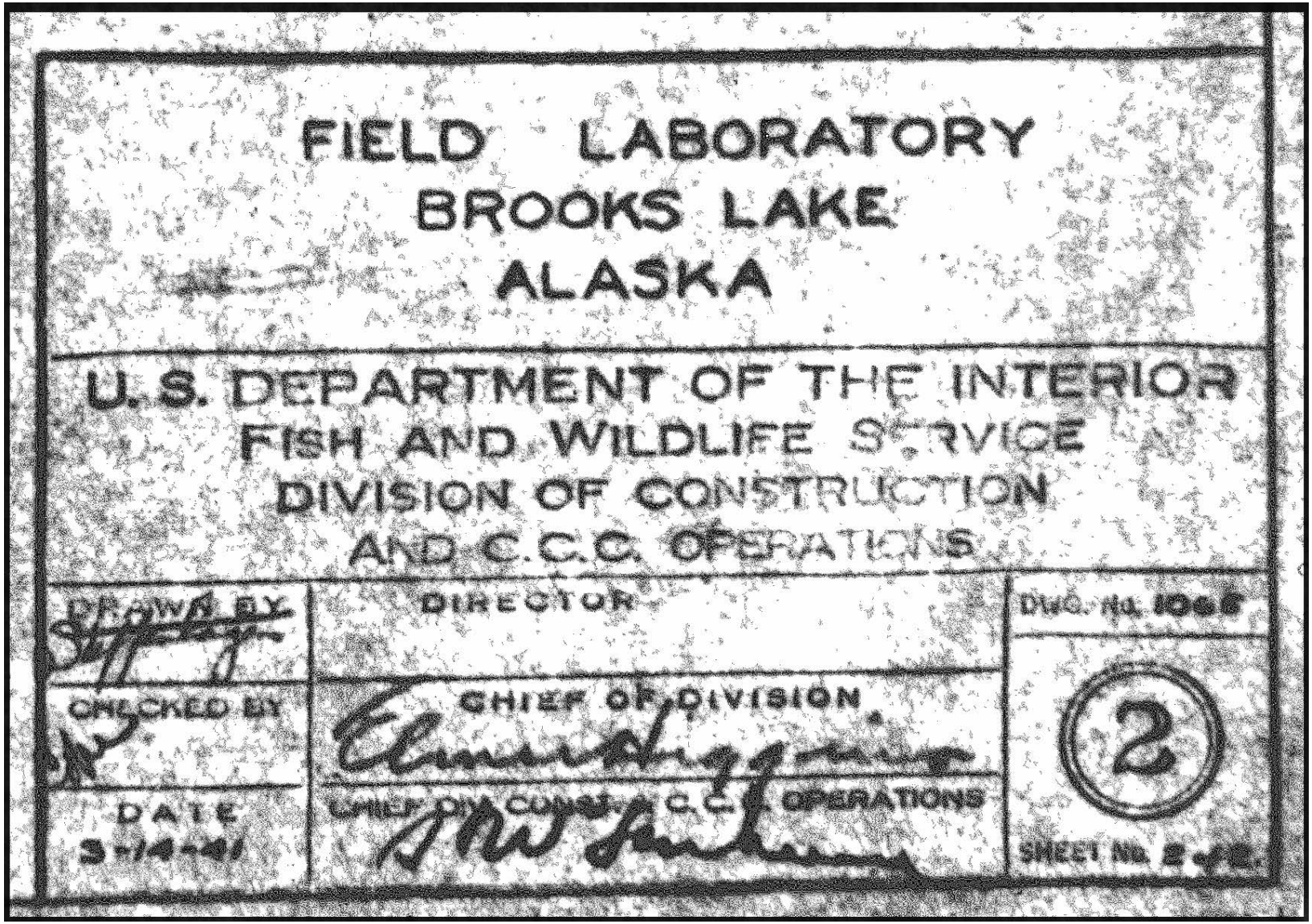
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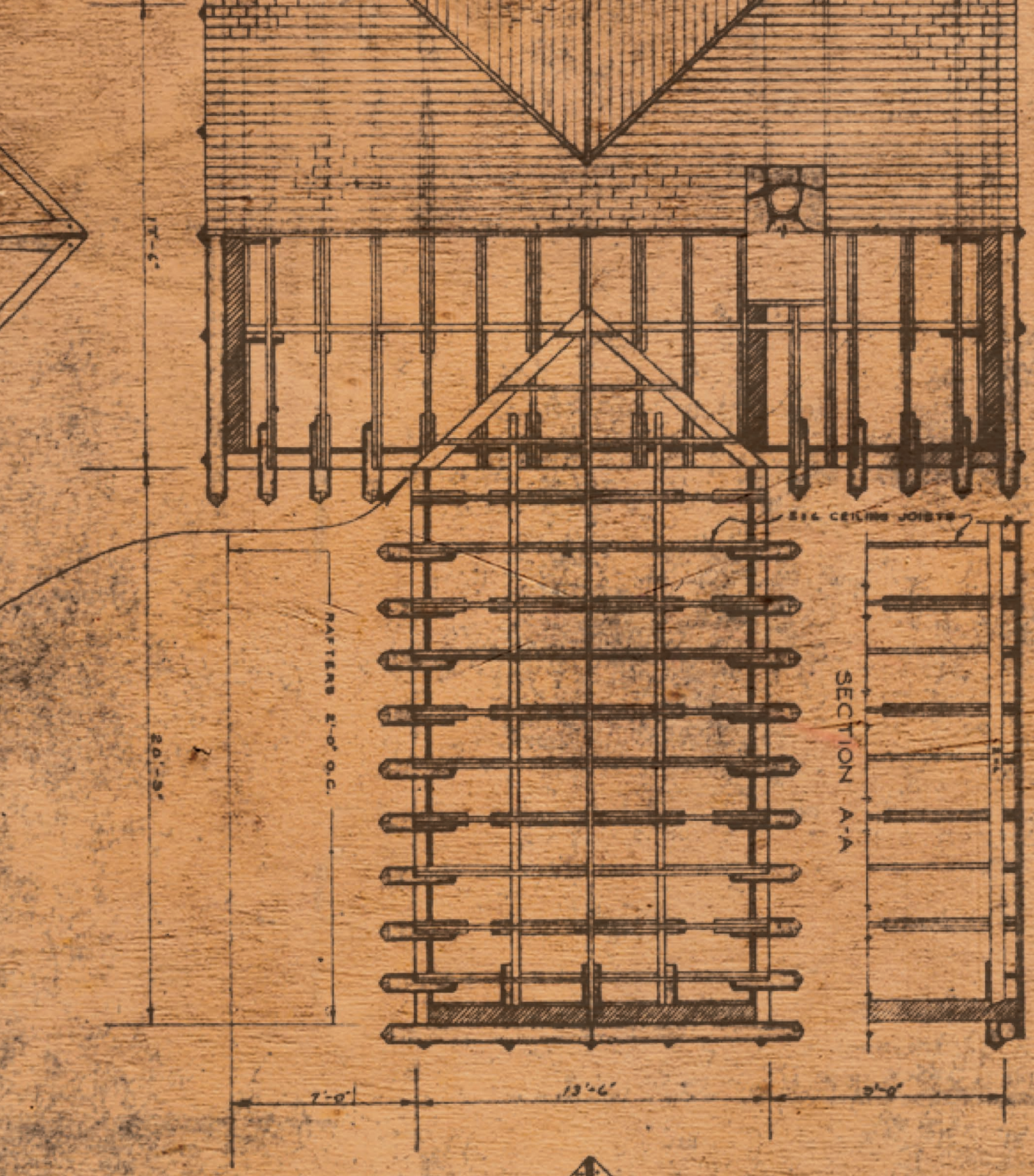
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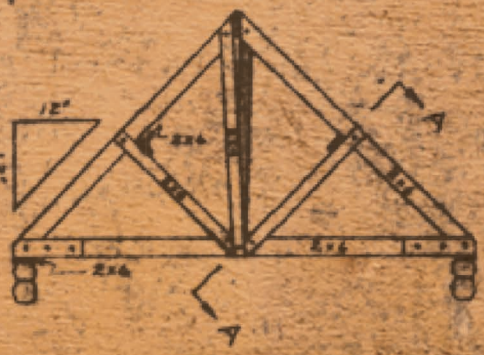


Field Laboratory, Brooks Lake, Alaska, Construction Plans (1941)



Field Laboratory, Brooks Lake, Alaska, Construction Plans (1941)





TRUSS-END SECTIONS

SCALE 3/4"=1'

Appendix B:
BL3 Site Drainage Recommendations (2014)

Katmai National Park & Preserve
BL3 Site Drainage
Site Visit Report July 21 & 22, 2014

Background

On July 21st and 22nd, Alaska Regional Office (ARO) Historical Architect, Grant Crosby, conducted a site visit to Brooks Camp to inspect the drainage concerns associated with BL3. The following recommendations are based on the site visit and discussions with Katmai National Park & Preserve Cultural Resource Specialist, Dale Vinson and Chief of Maintenance, Jim Gavin; ARO Architectural Historian, Heather Feil; ARO Civil Engineer, Bill Huebner; and ARO Landscape Architect, Ken Pendelton.

The design intent of this project is to improve the perimeter drainage of BL3, much of which comes from roof runoff. The project includes several challenges including a high likelihood of archeological impact (known deposits at 20 cm) and the relatively level site which will make the required slope for drainage a challenge (typically 1/8" per foot). The recommendations outlined below include physical improvements (ie: improve grading) and operational management solutions (personnel actions.) Some recommendations extend beyond the scope of this project but are included to facilitate the opportunity to act on them while working on the building.

Gutters

The design team considered gutters as an option to route water from the roof and away from the building, but it was determined that gutters would be too challenging both from cultural and maintenance perspectives for the following reasons:

- Gutters on a metal roof would likely be pulled off in the spring by snow slides OR the roof would require snow guards which would alter the appearance and add more opportunity for roof failure.
- Gutters would hang down below the eave and further obstruct the windows.
- If the Park chose to re-roof BL3 with cedar shakes per the original configuration, would gutters be considered? Additional concerns were expressed due to the required maintenance of gutters (cleaning) and the problems associated with untimely repairs (failed downspouts) which cause substantial problems to buildings.

Crawlspace

The crawlspace under the main volume of BL3 was inspected during the site visit. There was no evidence of access to the crawl spaces associated with the wings. The soil was moist under the main volume of BL3 and may be attributed to the drainage issues or naturally occurring rising damp. The interior face of the stone foundation walls appeared to be dry with minimal evidence of moisture infiltration (ie: water stains.) A few locations may receive periodic moisture infiltration, near foundation vents, for example, but the drainage improvements outlined in this report should mitigate those concerns.

Recommendations

1. Clean up the debris in the crawl space. The debris absorbs moisture and perpetuates the concerns.
2. Reinsulate the floor cavity. The cavity was insulated at some point but later removed. This may be a result of pest activity, but the insulation could be clad with 1/8" hardware cloth or 1/8" plywood. Insulation will improve the comfort of the main room.
3. Install a 6 mil reinforced plastic ground cloth to minimize the rising damp. The ground cloth should wrap up the footings and piers. All joints should be taped.
4. Consider adding Simpson H2.5 clips to the floor joist connections at the central beam and Simpson A35 at the mudsill around the perimeter. Consider adding angle brackets at the joints of the wood posts (concrete pad and beam). The foundation does not have any positive connections to resist loads during an earthquake or flood event.
5. Consider installing a couple of light fixtures with surface mounted conduit to facilitate annual inspections of the crawl space.



Photo 1: The crawlspace under BL3's main volume would benefit from a 6 mil reinforced plastic ground cloth to mitigate rising damp.



Photo 2: Some evidence of rising damp at the base of the stone foundation is evident. Appropriate perimeter drainage should improve the condition.



Photo 3: The round hole in the stone foundation wall is a foundation vent which periodically drains into the foundation.

Perimeter Drain

The design team determined an engineered swale to direct the roof and site run off away from the building is the preferred direction. Site investigations indicate the grade around the perimeter of the building fluctuates and encourages ponding in low areas. (**Photo 4**) The primary objective of the engineered swale is to improve the topography of the building's perimeter with an positive slope to the direction of the lake. The convex profile of the swale will retain the surface water and if appropriately graded, will direct moisture away from the building. The stone foundation of the BL3 is a character defining feature thus it is important to keep the foundation visible at the exterior. Perhaps the most significant challenge of the project is grading the engineered swale around both sides of the building without covering or uncovering too much of the foundation.

Concerns over a "French drain" style of system with a buried perforated pipe covered in gravel included the fear of silt clogging the system. See attached site plan for a diagram illustrating the engineered swale.

In order for the engineered swale to perform as intended, several operational issues must be resolved.

1. The north room of BL3 is accessed from the exterior and the residents use the concrete walkway from the living room or walk around the exterior of the building, impacting the soil where the swale would be located. During the July 2014 site visit, evidence of vehicle use on the lake-side of BL3 was visible suggesting that residents transport gear to their room using a ATV. Continued use in this area will impact the design of a swale. (**Photo 5**)
2. Parking at the northeast area of the building should not be permitted. See section below titled Rock Bollards for more detail. (**Photo 6**)
3. The residents in the north room access the outhouse by walking around the north end of the building past the fuel tank. A social trail is visible and if this continues, the swale will not drain appropriately toward the lake because of continued soil compaction. The residents should use the concrete walkway and travel through the building to access the boardwalk to the outhouse or a new boardwalk following the social trail should be established to protect the swale. (**Photos 7&8**)
4. Stacking firewood along the concrete walkway on the west elevation should not be permitted for several reasons. First, roof runoff splashes against the wood and drains back toward the window sill and wall. Second, boards have been placed in front of the window to prevent breaking the glass. Lastly, storing firewood at the exterior of this log structure not only presents a wild fire concern (see the Fire Wise Program for more details), it provides a home to beetles and bugs who feast on wood. The natural progression is to infest the building itself.
5. A social trail used by bears and anglers travelling through the site from the Brooks River may present a problem for the swale if the soil is compacted. A simple plank crossing over the swale may direct anglers to cross at an preferred location. Bears will be bears. (**Photo 5**)

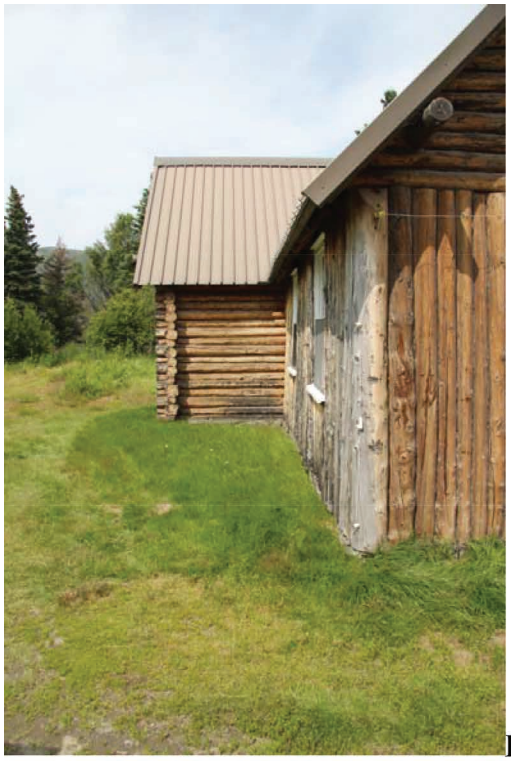

Photo 4


Photo 5



Photo 6



Photo 7: A social path has developed around the north end of BL3 providing access between the north room and the outhouse.



Photo 8: The social path from the north room curves around the septic system to access the outhouse.

Rock Bollards to Prevent Parking

The road passes extremely close to the SE corner of BL3 and the concern has been discussed for years. (**Photo 9**) The roof and corner post have clear evidence of accidental bumps with vehicles, but the concern relative to this project is the slope of the road grade at the turn. Currently the road slopes toward BL3 at the turn and vehicular traffic during wet weather splashes muddy water on the building. Re-grading the slope to the interior of the turn will improve the situation.

Furthering the perimeter drainage concern at this corner is the parking of vehicles by residents and staff in this area. The parking is clearly compacting the soil and as a result, the grade under the roof's drip edge is sloped toward the foundation.

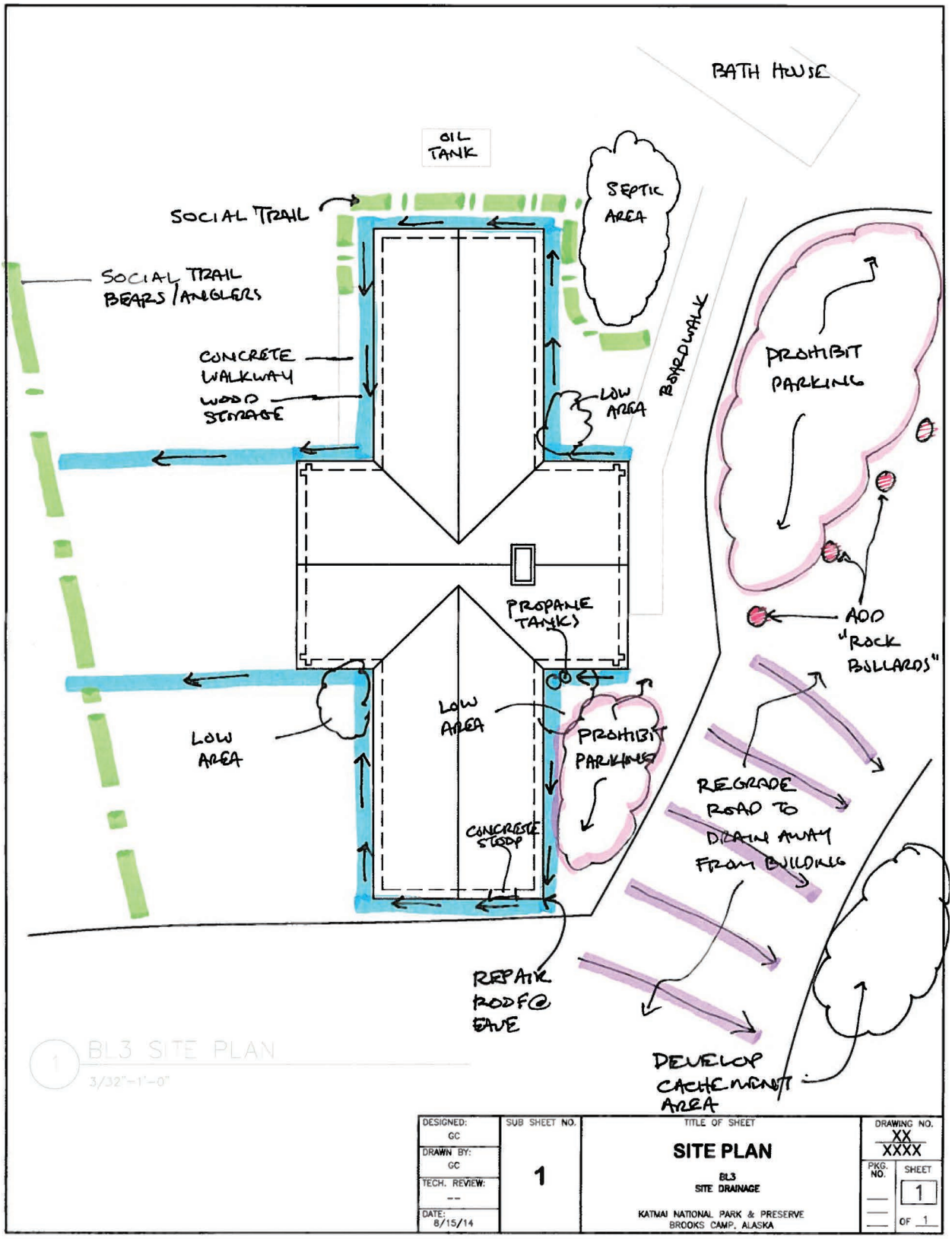
Recommendation:

1. Install partially buried boulders to serve as bollards to protect the building from accidental bumps and encourage residents and staff to park in defined areas. The bollards will also help protect the engineered swale from vehicle traffic.

Vehicular parking compacts the soil around BL3 and contributes to the drainage issues. Use of these areas for parking also increases the likelihood of accidental damage to the building from a vehicle.



Photo 9: The corner of the BL3's roof has been damaged repeatedly by accidental bumps from passing vehicles. Repairing the roof should be a priority of the cyclic maintenance project.


BATH HOUSE
OIL TANK
SEPTIC AREA
SOCIAL TRAIL
SOCIAL TRAIL BEARS / ANGLERS
CONCRETE WALKWAY
WOOD STORAGE
LOW AREA
BOARDWALK
PROHIBIT PARKING
ADD "ROCK BOLLARDS"
PROPANE TANKS
LOW AREA
LOW AREA
PROHIBIT PARKING
REGRADE ROAD TO DRAIN AWAY FROM BUILDING
CONCRETE STOOP
REPAIR ROOF @ EAVE
DEVELOP CACHE MENT AREA
1 BL3 SITE PLAN
3/32"=1'-0"
DESIGNED: GC
DRAWN BY: GC
TECH. REVIEW: --
DATE: 8/15/14
SUB SHEET NO. 1
TITLE OF SHEET
SITE PLAN
BL3
SITE DRAINAGE
KATMAI NATIONAL PARK & PRESERVE
BROOKS CAMP, ALASKA
DRAWING NO. XX XXXX
PKG. NO.
SHEET 1
OF 1



Katmai National Park and Preserve

National Park Service
Alaska Regional Office