



North Carolina Department of Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

April 24, 2015

Gregory G. Bean
Director of Public Works
US Army Installation Management Command
2175 Reilly Road, Stop A
Fort Bragg, North Carolina 28310-5000

gregory.g.bean@us.army.mil

RE: Evaluation of the Little Muddy Lake Dam, Camp Mackall, Scotland County, ER 15-0864

Dear Mr. Bean:

Thank you for your letter of April 7, 2015, concerning the above-referenced undertaking. We have reviewed the materials submitted and offer the following comments.

We understand the spillway of the Little Muddy Lake Dam is slated for demolition due to structural problems and potential failure. Beach houses, piers and other recreational infrastructure previously surrounding the dam are gone, compromising the context of the dam, as well as, its integrity of setting. Thus, we concur the dam is not eligible for listing in the National Register of Historic Places and we have no further comment on the proposed undertaking.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

A handwritten signature in blue ink that reads "Renee Gledhill-Earley".

for Ramona M. Bartos

cc: Charles Heath, Fort Bragg

charles.l.heath.ctr@mail.mil



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FT BRAGG
2175 REILLY ROAD, STOP A
FORT BRAGG, NORTH CAROLINA 28310-5000

April 7, 2015

Directorate of Public Works

Ms. Renee Gledhill-Earley
State Historic Preservation Office
Department of Cultural Resources
4617 Mail Service Center
Raleigh, North Carolina 27699-4617

Dear Ms. Gledhill-Earley:

In accordance with Section 106 and Section 110 of the National Historic Preservation Act of 1966, as amended, the Fort Bragg Cultural Resources Management Program (CRMP) staff has evaluated the Little Muddy Lake Dam, located at Camp Mackall, Scotland County, North Carolina to determine its eligibility for listing on the National Register of Historic Places (NRHP). The Determination of Eligibility (DOE) study was initiated because the dam's spillway structure is scheduled for demolition and replacement later in 2015. In addition, large trees growing on the sides of the dam's earth embankment will be removed, the crest of the earthwork will be graded, and the flanks repaired, as well as hardened with granite rip-rap along erosion prone sections. The work to be executed on the dam is in response to multiple negative findings in a recent Periodic Dam Inspection Report prepared in 2012 by the U.S. Army Corps of Engineers (USACE). The USACE inspectors determined that the Little Muddy Lake Dam is in "poor condition," due to multiple structural problems, and in danger of failing; the dam is rated as a "high hazard" structure. Under cover of this letter, we are submitting the results of the CRMP staff's evaluation, a final draft of the DOE report, for your review and comment as per 36 CFR 800.

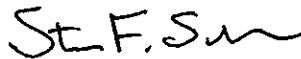
In summary, the Little Muddy Lake Dam, which impounds a segment of Big Muddy Creek near the current eastern boundary of Camp Mackall, was built ca. 1943 to create Little Muddy Lake. This dam, the second built by the U.S. Army along Big Muddy Creek in the early 1940s, provided an additional impoundment for military training and recreational swimming for Army personnel stationed at Camp Mackall during World War II. Based on the evaluation findings detailed in the enclosed report, the CRMP staff recommends the structure as not eligible for inclusion on the NRHP. While the dam has been minimally modified since the 1940s, Little Muddy Lake now shows no signs of its originally intended use as a swimming area. Because the dam and its surroundings lack the integrity to convey its significance as a WWII-era military recreational area, the dam is recommended as not eligible

for listing on the NRHP under Criterion A for significance to a broad pattern of history or historical events. Additionally, the dam is a standard earth embankment type with a reinforced concrete spillway structure typical for the period of construction, and is not eligible under Criterion C for engineering design/construction.

By way of this letter, we also note that in the coming months, the CRMP staff will be executing a related, in-house study to determine the respective National Register eligibility statuses for the remaining lake dams on the installation that are more than 50 years old. This subsequent study will include DOE evaluations on the McKiethan Pond, Mott Lake, and Mossgiel Lake dams, as well as the partial remains of two, pre-1918 hydroelectric dams at Fort Bragg. The latter two structures are the Lakeview Light & Power Company Plant No. 1 (31HK544) and Lakeview Light & Power Company Plant No. 2 (31HK1253) dams. We look forward to your comments regarding the enclosed document.

Should you have any questions, please contact Mr. Charles Heath, Interim Architectural Historian and Staff Archaeologist, at (910) 908-4284, email charles.l.heath.ctr@mail.mil, or Mr. Paul G. Humphrey, Chief, Environmental Management Branch, at (910) 396-6518 or paul.g.humphrey2.civ@mail.mil.

Sincerely,



Gregory G. Bean
Director of Public Works

Enclosure

**Little Muddy Lake Dam at Camp Mackall, Scotland County, North Carolina:
Determination of Eligibility for the National Register of Historic Places**



Jessica R. French*

**Cultural Resources Management Program
Environmental Management Branch
Directorate of Public Works
Fort Bragg, North Carolina**

**May, 20 2015
Final Report**

**This project was supported in part by an appointment to the Environmental Management Participation Program for the U.S. Army Environmental Command (USAEC) administered by the Oak Ridge Institute for Science and Education (ORISE) through an agreement between the U.S. Department of Energy and USAEC.*

Table of Contents

Table of Contents	2
Introduction	3
Historic Context	4
Setting.....	7
Architectural Description	8
Integrity	9
Recommendation of Eligibility	10
Appendix A: Maps (Figures 4–6) and Photographs (Figures 7–16)	11
Bibliography.....	20

Introduction

In accordance with the National Historic Preservation Act (NHPA), the Fort Bragg Cultural Resources Management Program (CRMP) is responsible for the identification, evaluation, and management of cultural resources located at Fort Bragg, North Carolina. In addition to the installation cantonment, training lands and firing ranges, the Fort Bragg Military Reservation includes Pope Army Airfield, Simmons Army Airfield and a satellite installation, Camp Mackall. Under Section 106 and Section 110 of the NHPA, the CRMP staff initiated a project to evaluate the circa (ca.) 1943 Little Muddy Lake Dam at Camp Mackall for its eligibility for inclusion on the National Register of Historic Places (NRHP). The Fort Bragg Directorate of Public Works plans to demolish and replace the dam's original spillway structure, remove mature trees from both sides of the earth embankment, grade and repair the earthwork, and stabilize portions of the dam with granite rip-rap. This work will be undertaken in response to a periodic dam inspection performed by the U.S. Army Corps of Engineers (USACE). The 2012 dam inspection report concludes that the dam is in poor condition and further indicates that the structure is subject to failure; the dam is currently rated as a "high hazard" structure.¹

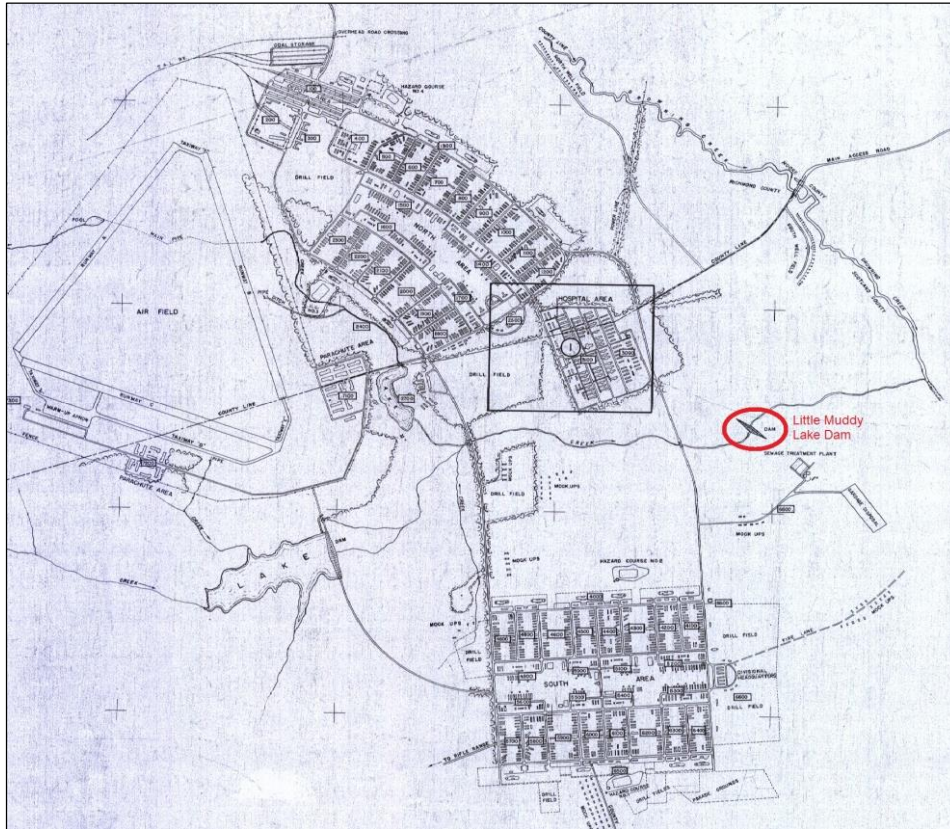


Figure 1. This early 1943 Steam Distribution System map of Camp Mackall shows Little Muddy Lake Dam (circled in red) before the lake bed was flooded (Fort Bragg CRMP Archives).

¹ Dawn M. Wetzel and Susan M. Bruns, "Periodic Inspection Report: Little Muddy Lake Dam, Camp Mackall Military Reservation, North Carolina," Engineer Research and Development Center, U.S. Army Corps of Engineers, April 2012, 3–10.

The planned structural modifications and earthwork repairs will result in significant, non-reversible alterations to this early 1940s era structure, which has not been previously assessed for NRHP eligibility. Fieldwork and background research activities for this DOE evaluation were executed by Jessica R. French (ORISE-CRMP) and Charles L. Heath (CRMP) in 2013 and 2014. Ms. French prepared the study report, assisted by Mr. Heath who contributed to the document, prepared map figures, and provided review comments on previous drafts of the final report.

Both Fort Bragg proper and Camp Mackall are situated in a geographic sub-province known as the Carolina Sandhills. Little Muddy Lake Dam is located on the Camp Mackall Military Reservation, which is situated in parts of Richmond, Scotland and Moore Counties, North Carolina. The dam is in the Scotland County section of the reservation. The structure physically dams a segment of Big Muddy Creek forming Little Muddy Lake, approximately 2,300 meters (2,500 yards) downstream from a second lake and dam on Big Muddy Creek, Big Muddy Lake and Dam. The Little Muddy Lake Dam was built ca. 1943 as part of the training camp infrastructure constructed at Camp Mackall (Hoffman Airborne Camp) after the United States entered World War II (1939–1945). After the war, Little Muddy Lake was primarily used for recreation and it continues to serve that purpose today. Little Muddy Lake Dam’s construction is similar to several other lake dams built between ca. 1923 and ca. 1943 at Fort Bragg (e.g., Hutaff Lake, McKiethan Pond, Mott Lake dams). Since some of these dams are also in need of significant repairs, in some cases also requiring spillway demolition and replacement, the CRMP is undertaking a separate, comprehensive survey of all remaining dams that are fifty years and older in order to respectively determine their eligibility for the NRHP.

Historic Context²

Hoffman Airborne Camp was initially established by the U.S. Army (Army) in the vicinity of Hoffman, North Carolina in the summer of 1942. The camp, a temporary training facility to be operated for the duration of World War II (WWII), was specifically planned as a specialized training area for airborne operations troops. Basic training, parachute, and glider training exercises were all conducted at the camp, as well as neighboring Fort Bragg, during the final years of WWII. Through 1945, the camp was the only temporary Army training camp (or permanent Army post) solely dedicated to airborne operations training activities. Prior to the establishment of the Hoffman Airborne Camp, the Army conducted two large scale training exercises in the Carolina Sandhills known as the “Carolina Maneuvers.” The Army negotiated maneuver rights easements with local landowners throughout the region, including some of the property owners whose lands would later be purchased to create Hoffman Airborne Camp. The first Carolina Maneuvers exercise was conducted in 1941 and the second in the summer of 1942. The Army chose the location near Hoffman as the site for the new airborne training facility in August 1942. Shortly after its establishment, the approximately 56,000-acre (now approximately 7,900 acres) camp was renamed Camp Mackall on February 8, 1943 in honor of Private John Thomas (Tommy) Mackall. Private Mackall was mortally wounded during the Allied invasion of North Africa on November 8, 1942, the same day construction got underway at the new camp.

² Portions of the historic context are adapted from U.S. Army Garrison, Fort Bragg, “Fort Bragg and Camp Mackall Integrated Cultural Resources Management Plan FY 2007 to 2011,” June 2007, 2–4 and 47–61.

The bulk of the land acquired to form the camp was transferred to the Army from the U.S. Department of Interior, but the Army purchased several large tracts of private land from local landowners as well, sometimes relying on previously negotiated maneuver rights to facilitate the transactions. Situated in Richmond, Scotland, and Moore counties, the former Department of Interior land was the site of the “Sandhills Project” of the Land Utilization Program, a New Deal-era program aimed at purchasing and redeveloping sub-marginal farmlands. In 1939, portions of that land area still remained under the ownership of the Department of Interior, but the holdings were actually managed by the State of North Carolina and known as the North Carolina Wildlife Management Area. Part of the new Army camp was the site of a former corporate retreat for the Baltimore-based, Barber Steamship Company, and later the DuPont Corporation. Little Muddy Lake Dam is located in northern Scotland County, in the section of Camp Mackall that was once part of the “Sandhills Project.”

Military construction at Camp Mackall began on November 8, 1942. The new buildings were all temporary, modified Army Theater of Operations-style (T/O) buildings, wood frame structures finished with plank siding covered in tar paper and heavier tar paper roofs. In total, over 1,750 buildings were erected at Camp Mackall in just under six months. Most of the construction work was undertaken by civilian contractors. J. A. Jones Construction Co. of Charlotte, N. C. oversaw the construction of buildings, while D. W. Winkelman Construction Co. (Syracuse, N.Y.) cleared and graded land to build roads, and Grannis, Higgins, Thompson & Street (Charlotte, N.C.) laid the railroad line to Camp Mackall.³ The camp’s cantonment was divided into two main sections, then known as the North Area and the South Area (Figure 1). These developed areas were separated by about a mile, with the station hospital complex conveniently situated in between. Construction consisted of all T/O buildings and related structures necessary to support the camp’s training mission, including the Army’s Airborne Command headquarters, the garrison command headquarters, barracks, dining facilities, and the hospital. In addition, numerous garrison support and troop recreation buildings, including service clubs, chapels, theaters, and libraries, were part of the cantonment construction.

The first airborne units began to moving onto Camp Mackall early in 1943. The U.S. Army Airborne Command also moved from Fort Bragg to Camp Mackall at this time. The 82nd and 101st Airborne Divisions remained garrisoned at Fort Bragg, but soldiers from both divisions routinely trained at Camp Mackall. On February 25, 1943 the 11th Airborne Division was the first airborne division headquartered at the camp. Additionally, the 17th Airborne Division was activated at the installation in April 1943; the 13th Airborne Division was activated at Fort Bragg in August 1943 and then moved to Camp Mackall at the beginning of 1944. When construction was complete, the installation cantonment was the size of a small city and contained all of the infrastructure and services necessary to operate independently.⁴ During WWII thousands of soldiers passed through Mackall for training, and a Prisoner of War camp for German, Africa Corps prisoners was later built just south of Little Muddy Lake. Between 1943 and 1946, Camp Mackall maintained a population of about 30,000 troops and support personnel at any given time.

³ “The State’s Newest Camp,” *The State*, April 3, 1943, 27.

⁴ Lowell Stevens and Tom MacCallum, *Camp Mackall, Its Origins and Times in the Sandhills of North Carolina*, (Rockingham, NC: Richmond County Historical Society, 2011), 75.

While training was the primary mission, soldiers still had ample leisure time. The small towns and cities surrounding Camp Mackall including Rockingham, Aberdeen, Southern Pines, and Fayetteville typically filled with military personnel and their families on the weekends. To better serve the troops, U.S.O. clubs were opened in both Rockingham and Aberdeen.⁵ But, the Army also provided many recreational opportunities within Camp Mackall. The five movie theaters built on post could seat a total of 4,500 people. Seven service clubs provided indoor games, writing desks, lounge chairs, and “music boxes” along with gymnasium space. Two All Purpose Recreation (APR) buildings were also built on Mackall. These recreation facilities hosted bands and orchestras, among other entertainment. Sports also were popular on post. The Post Special Services Office organized baseball, football, boxing, and other sports. Two baseball fields and several outdoor boxing rings were constructed at Mackall during its initial phase of building, and several parade fields also doubled as athletic fields.⁶



Figure 2. A civilian employee (or visitor) watching swimmers at an unidentified lake (most likely Big Muddy Lake) at Camp Mackall (Lowell Stevens and Tom MacCallum, *Camp Mackall, Its Origins and Times in the Sandhills*, 163).

⁵ Frank A. Blazich, “Part of Us: The Relationship between Hoffman, North Carolina and Camp Mackall, North Carolina from September 1942 to September 1945,” (Honors Thesis, Department of History, University of North Carolina at Chapel Hill, 2004), 37-38.

⁶ Stevens and MacCallum, *Camp Mackall, Its Origins and Times in the Sandhills of North Carolina*, 76.

Camp Mackall also had facilities for swimming, fishing, and hunting. Part of the early “Sandhills Project” included both recreational development and wildlife cultivation. A number of lakes were created on what became Camp Mackall when the land was managed by the Bureau of Land Reclamation. A fish hatchery was established early on to stock regional streams and lakes with fish, which were then open to public fishing. The project also established recreational facilities including cabins, trails camping areas and picnic grounds.⁷ When the Army took control of the “Sandhills Project” lands in 1942, these facilities were made available for use by military personnel.

The Army also created two additional lakes at Camp Mackall, both situated close to the two primary cantonment areas. Big Muddy Creek, which runs between the North and South Areas, was dammed in two places to create additional swimming space for both training and recreational purposes (Figure 2).⁸ Big Muddy Lake was created first, ca. 1942–1943, to the west of the two main cantonment areas, just south of what is now Mackall Army Airfield. Although this lake is still extant, the original spillway structure of Big Muddy Lake Dam was completely replaced in 2009 (Figures 15 and 16; note: locational maps and current condition photographs, Figures 4–16, are found in appendix A). Little Muddy Lake Dam was built to form a second lake on Big Muddy Creek ca. 1943; the structure was not built in 1937, the date indicated in the most recent dam inspection report.⁹ This second dam was placed east of the South and North Areas of the cantonment, but the lake extended westward from the dam, just south of the station hospital area. A September 1943 map of Camp Mackall illustrates the dam, but also indicates that the lake was not yet formed (Figure 1). The cartographic information suggests that some time lapsed between the dam completion date and the flooding of the lake.

At the conclusion of WWII, Camp Mackall moved under the jurisdiction of Fort Bragg and continued operation as an Army training facility.¹⁰ However, much of the camp land was subsequently deeded to the State of North Carolina for wildlife management purposes in 1948; most of transferred lands are now part of the Sandhills Game Land. Since 1952, Mackall has served primarily as a training area for the 82nd Airborne and U.S. Army Special Forces troops. By the late 1970s, all of the WWII temporary buildings at Camp Mackall were razed and removed.¹¹ In addition to training areas, parts of the camp, including Little Muddy Lake, have continued to serve as recreational areas for soldiers and their families.

Setting

Little Muddy Lake Dam is located near the present eastern boundary of Camp Mackall. Big Muddy Creek flows east into Downing Creek, which forms part of Camp Mackall’s eastern boundary between Hoke and Scotland Counties (appendix A: Figures 4–6). The dam is just east of what was the main road between the North and South Areas of the former cantonment. Sometime after WWII, this road was renamed 11th Airborne Division Road. Today, the lake and

⁷ H. H. Wooten, *The Land Utilization Program, 1934–1964*, Agricultural Economics Report No. 85 (Washington, D.C.: U. S. Department of Agriculture, 1965), 62.

⁸ Ibid.

⁹ Wetzel and Bruns, “Periodic Inspection Report: Little Muddy Lake Dam, Camp Mackall Military Reservation, North Carolina,” 2.

¹⁰ “Mackall to Continue Fort Bragg Sub-Post,” *Fayetteville Observer*, August 1, 1946, 10.

¹¹ Beverly Lindsey, “Camp Mackall Is Losing Its ‘Temporary’ Buildings,” *Fayetteville Observer*, March 1, 1979.

dam are surrounded by densely wooded training lands, generally a mix of mature pine trees and various hardwood species (Figures 5 and 7). Trees have also grown up on both sides of the dam embankment. The unimproved, tertiary road crossing the top of the dam, is typically covered with pine straw and other leaf litter. No buildings exist in the immediate vicinity of the dam, but just south and east of the structure is the former Sewage Treatment Plant site (Figure 6). When operational during WWII, the plant originally discharged treated wastewater into lower reaches of Big Muddy Creek and below the Little Muddy Lake Dam outfall.

Architectural Description

Little Muddy Lake Dam is principally composed of an earthen embankment, approximately 1,150 feet in length (crest length) and 15 feet in height (top of dam), and a controlled, closed-channel spillway structure constructed of reinforced concrete components (appendix A: Figures 7–12). The spillway, which incorporates a drop inlet with twin intakes, a conduit, and twin box culvert outlets, is of a comparatively generic design, typical of ca. 1930s–1960s construction in the United States.¹² The dam incorporates no emergency spillway. Reinforced concrete wingwalls flank the outer sides of the spillway outlets, and the water control structure on the reservoir side of the spillway uses a stoplog weir system, rather than gates, to control the height of the lake. The spillway’s primary intake and outlet structures appear to be original to the initial construction of the dam, ca. 1943. Locally available stone from the surrounding Sandhills area was likely used as the base aggregate for the cast-in-place concrete components. The drop inlet structure is now covered with painted wood decking, which was installed in recent decades. Also in the recent past, a chain-link fence was added at the lake end of the decking to restrict access to the inlet mouth (Figures 7 and 8). On the downstream side of the embankment, a set of wood stairs leads down to the outlet structure (Figure 9). The stairs appear to be later replacements, but stone and concrete landings at the top and bottom of the stairs appear to be original, ca. 1940s, but possibly dating to the 1950s or later. Similar to the dam’s other concrete structures, both landings are constructed of coarse aggregate concrete, with locally available stone as the base. A cast iron pipe, part of an abandoned wastewater conduit system, runs across the top of the spillway’s outlet structure (Figure 10).

Several brick and mortar manholes, also part of this abandoned wastewater system, can be found along the dam embankment, extending south from the dam in the direction of the former Sewage Treatment Plant. These round manhole structures are connected by 24-inch concrete pipes and likely connect with the partially exposed iron pipe running across the dam outlet structure. Only one manhole, to the southeast of the dam, in the general area of the east abutment, remains completely intact (Figure 13). The exteriors of these structures have a smooth finish of mortar covering the brick construction. The dam apparently provided a cleared pathway over Big Muddy Creek to place the pipe. The iron pipe and manhole system also appear to date to ca. 1942–1943.

¹² Wetzel and Bruns, “Periodic Inspection Report: Little Muddy Lake Dam, Camp Mackall Military Reservation, North Carolina,” 2; Perry A. Fellows, *Low Dams: A Manual of Design for Small Water Storage Projects* (Washington, DC: U.S. Government Printing Office, 1939); U.S. Bureau of Reclamation, *Design of Small Dams* (Washington, D.C.: U.S. Government Printing Office), 1960.

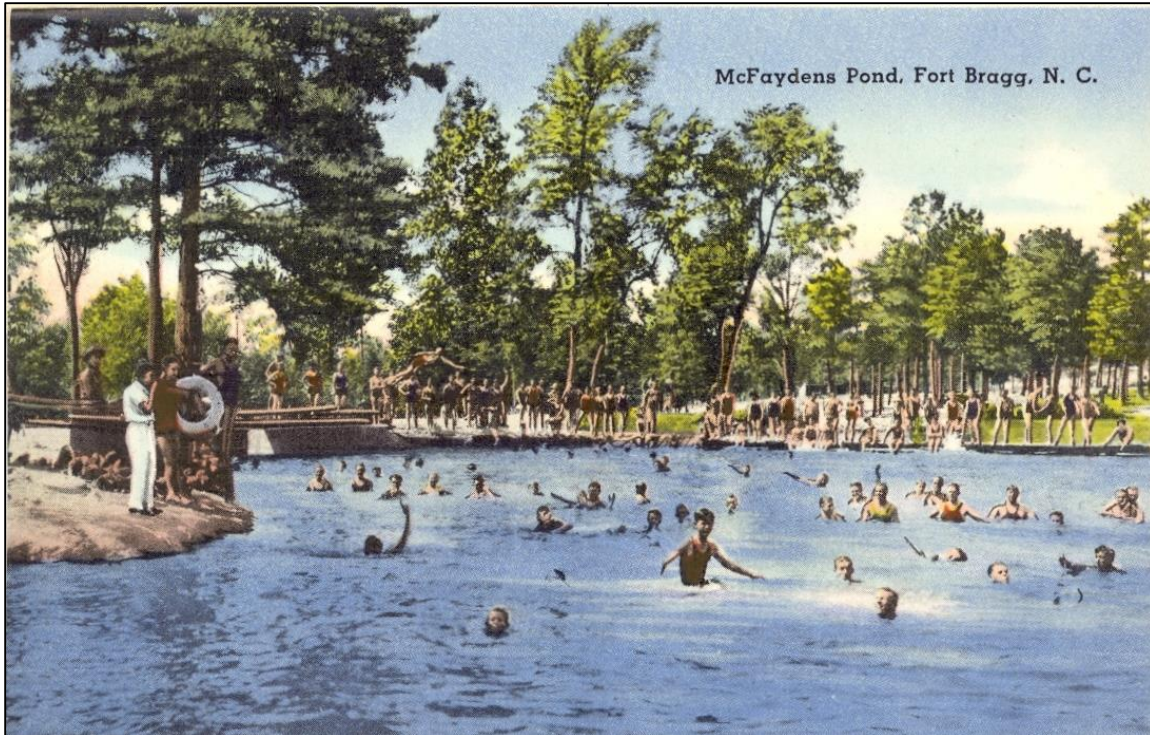


Figure 3. This ca. 1940s postcard shows McFayden Pond off Butner Road on Fort Bragg, a typical recreational swimming facility of the WWII era. Note the swimming platform extending from the dam, around the bank of the lake, in the background, and the beach area on the left bank (Charles Hall, Jr. Collection, Fort Bragg CRMP Archives).

Integrity

The Little Muddy Lake Dam remains largely intact. The spillway inlet and outlet works are composed of original material, and the earthen embankment, as well as the crest of the dam, have undergone no obvious major alterations since the early 1940s. The later additions of decking and fencing on the dam's intake feature do not compromise the integrity of the overall dam structure itself. However, the context for the dam has been lost. All of the temporary World War II buildings that existed in the former installation cantonment areas to the west of the lake and dam have been demolished. Without the context of the WWII buildings, the dam has compromised integrity of feeling and association.

Any accompanying recreational facilities built around the lake in the 1940s, have also been completely lost. Although it is unclear exactly what structures were built to accompany Little Muddy Lake Dam and the associated impoundment, evidence from other period lakes used for recreation at Fort Bragg and Camp Mackall during the World War II era suggests that piers, bathhouses, and sand beach areas were common features (Figure 2 and Figure 3). Young's Lake in the "Spring Area" of Fort Bragg was a segregated African American swimming facility during WWII. This lake originally had three piers, a beach area, and two bathhouses.¹³ Another Fort

¹³ Lauren Miller and Michelle Michael, "Butner Road Chapel and Young's Lake Determination of Eligibility for the National Register of Historic Places, Fort Bragg, North Carolina," January 2008, 7.

Bragg recreational lake, McFayden Pond off Butner Road, also included a beach area, along with a swim platform, diving boards and bathhouses (Figure 3). A ca. 1943–1945 photograph of swimmers in an unidentified lake on Camp Mackall reveals a pier and a second wood structure, possibly a bathhouse, in the background of the image (Figure 2). No accompanying recreational structures dating to the WWII era remain at Little Muddy Lake. Without these accompanying support structures the lake does not retain the appearance of an early military recreational facility. Consequently, Little Muddy Lake Dam has compromised integrity of design, feeling, and association.

Recommendation of Eligibility

Little Muddy Lake Dam is recommended as not eligible for listing in the National Register of Historic Places. The dam is not eligible under Criterion C for Architecture. The structure is composed of a typical earthen embankment dam with a controlled, closed-channel spillway of standard design and materials regionally common for the period of construction.¹⁴ It does not represent significant engineering innovation, nor is it representative of the work of a master engineer. The dam is also not eligible under Criterion A for military community planning and development, or military history and recreation. Developed as a recreational and training feature for soldiers stationed at Camp Mackall during World War II, Little Muddy Lake, formed by the dam, is a significant part of the early history of Camp Mackall. However, because all associated recreational infrastructure has been lost, and because all of the WWII temporary buildings from both the North and South cantonment areas were razed, the dam does not have integrity of design, feeling or association. These aspects of integrity are vital to conveying the dam's significance. The dam by itself does not demonstrate how the lake was once the site of a bustling recreation area filled with soldiers living and training on Camp Mackall.

¹⁴ Perry A. Fellows, *Low Dams: A Manual of Design for Small Water Storage Projects*, (Washington, DC: U.S. Government Printing Office, 1939).

Appendix A:

Maps (Figures 4–6) and Current Conditions Photographs (Figures 7–16)

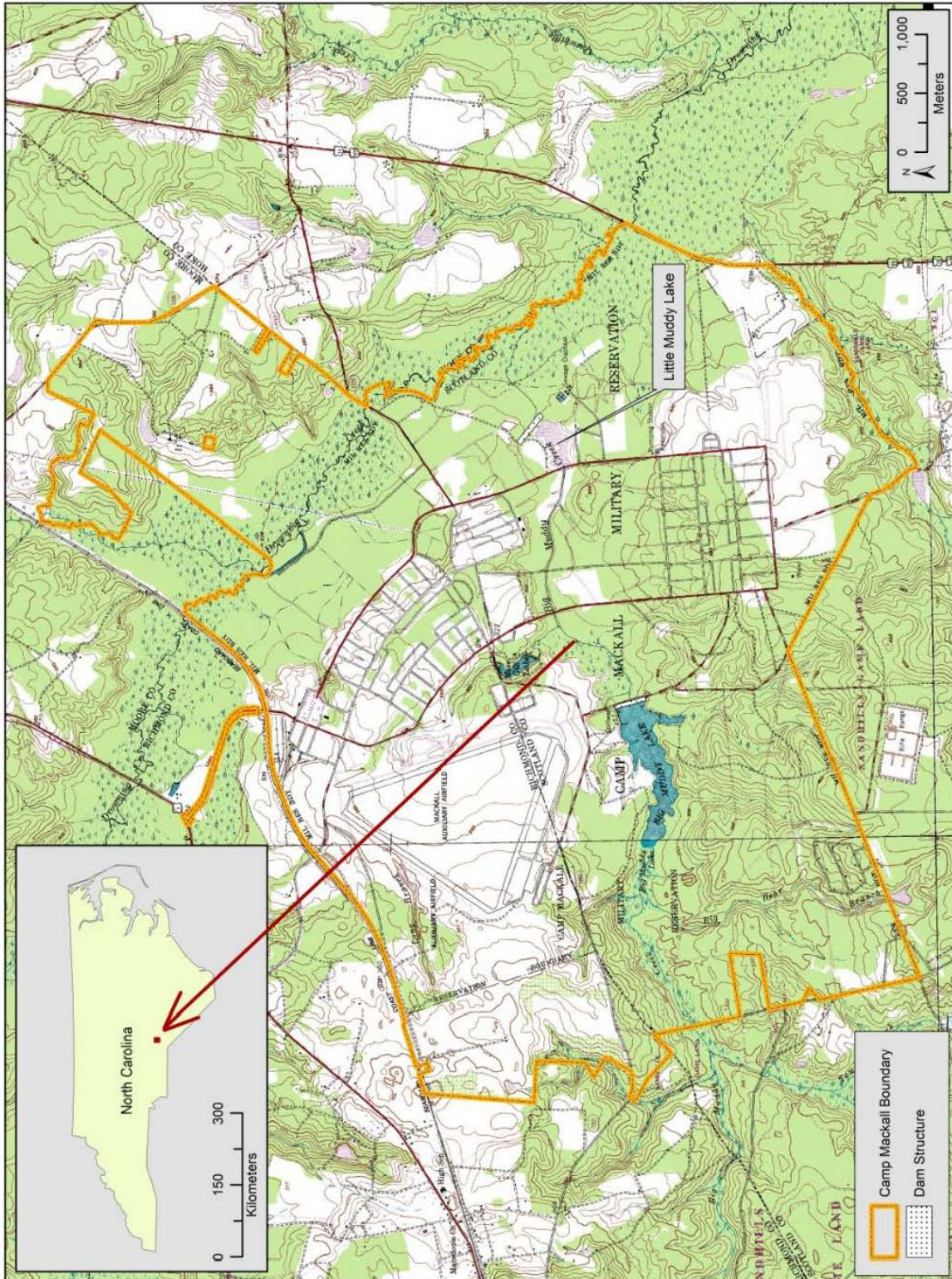


Figure 4. Topographic map excerpt (Pinebluff, NC, 7.5' USGS Quadrangle [Scale: 1:24,000], 2002) showing Camp Mackall Military Reservation boundaries and the locations of Little Muddy Lake and Little Muddy Lake Dam (Fort Bragg CRMP).

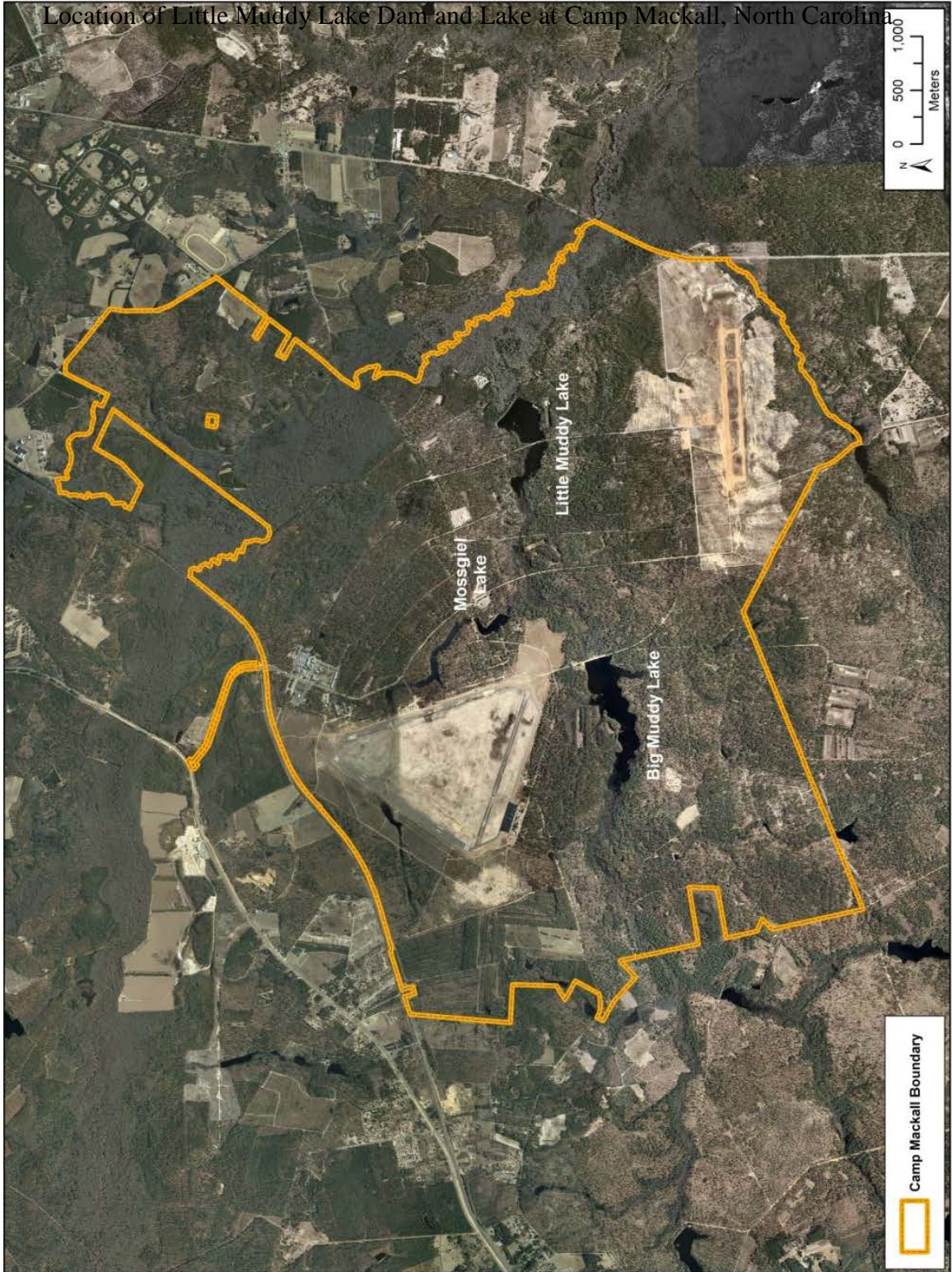


Figure 5. Aerial map (2010) showing Camp Mackall Military Reservation boundaries and lakes (Fort Bragg CRMP).

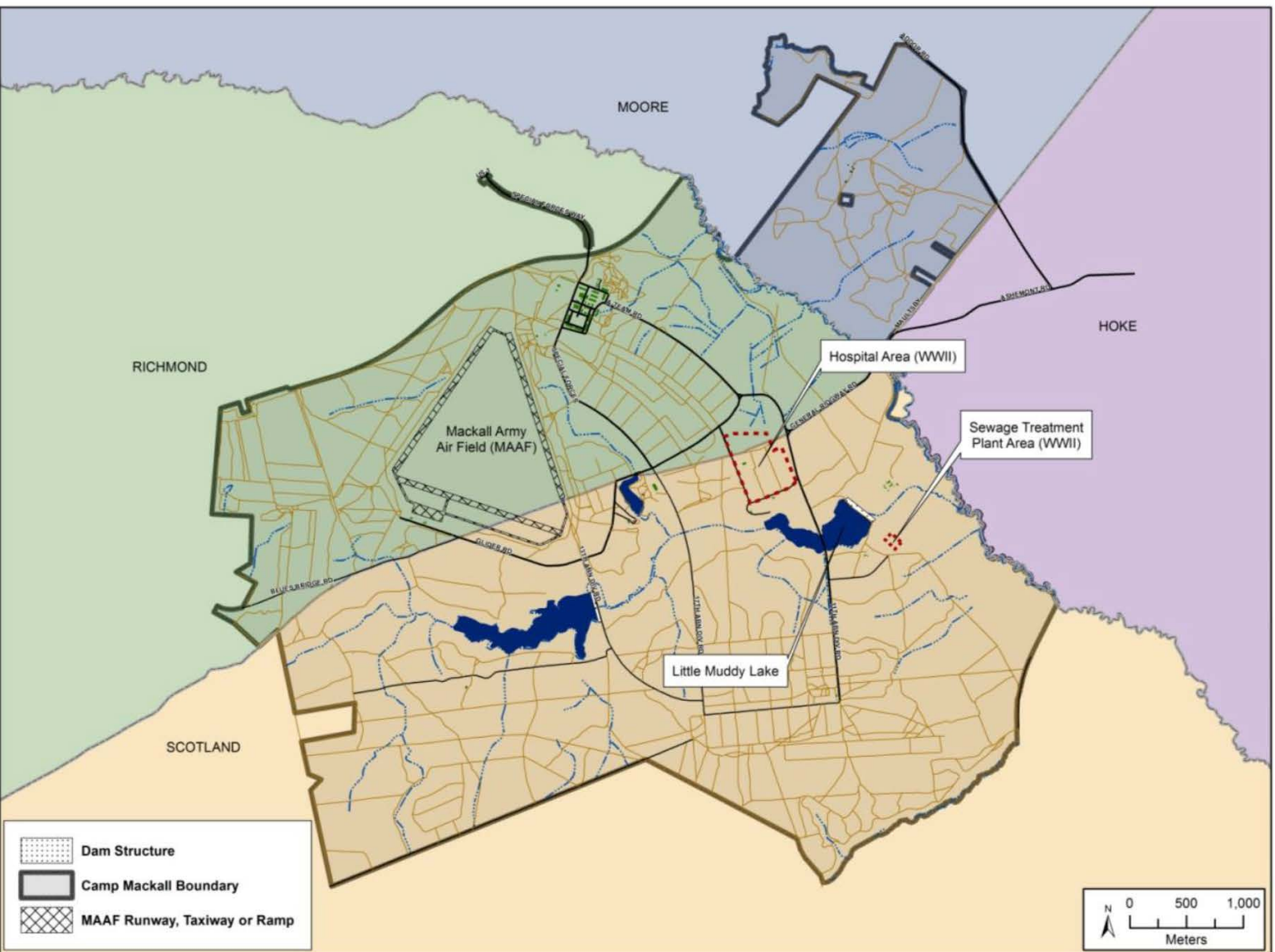


Figure 6. Thematic map of the Camp Mackall Military Reservation showing surrounding county boundaries, installation road network, creeks, lakes and other features. Note the proximity of Little Muddy Lake Dam to the former Sewage Treatment Plant complex and the proximity of the western end of the lake to the WWII Hospital Area.



Figure 7. The spillway intake structure of the dam from the southeastern bank of the lake.



Figure 8. Modern decking and fencing have been added to the spillway intake structure. Horizontal marks left from the concrete forms used in building the drop inlet can be seen on the sides of the inlet.



Figure 9. A set of steps leads to the spillway outlet. The concrete and stone landings at the top of and bottom of the steps are likely original; however, it appears that the wood steps and railings have been replaced.



Figure 10. The spillway outlet structure consists of a two-cell, concrete box culvert. Note the partially exposed cast iron, wastewater pipe running across the embankment, just above the outlet.



Figure 11. A pier extends west into Little Muddy Lake from the southern part of the dam. The pier is either a modern replacement or later addition, ca. 1980s–1990s.



Figure 12. Downstream view of Big Muddy Creek from the dam embankment above the spillway outlet.



Figure 13. This is the only completely intact brick and mortar manhole structure. It is located just the southeast of the dam embankment.



Figure 14. This manhole structure, located on the crest of the dam, has significantly deteriorated.



Figure 15. Work to replace the spillway inlet structure on Big Muddy Lake Dam was completed in 2009.



Figure 16. Work on Big Muddy Lake Dam in 2009 included replacement of the outlet structure. Note the new concrete wingwalls and observation platform.

Bibliography

- Blazich, Frank A. "Part of Us: The Relationship between Hoffman, North Carolina and Camp Mackall, North Carolina from September 1942 to September 1945." Honors thesis, Department of History, University of North Carolina at Chapel Hill, 2004.
- "Camp Mackall, At Hoffman, Will Be Formally Dedicated Saturday." *Fayetteville Observer*, April 30, 1943.
- Doyle, Charlie and Lou Varrone. "Who Was Tommy Mackall?" *Veritas*, May–June 1977:3-13.
- Fellows, Perry A. *Low Dams: A Manual of Design for Small Water Storage Projects*. Washington, D.C.: U.S. Government Printing Office, 1939.
- Lindsey, Beverly. "Camp Mackall Losing Its 'Temporary' Buildings." *Fayetteville Observer*, March 1, 1979.
- "Mackall to Continue Fort Bragg Sub-Post." *Fayetteville Observer*, August 1, 1946.
- Miller, Lauren and Michelle Michael. "Butner Road Chapel and Young's Lake Determination of Eligibility for the National Register of Historic Places, Fort Bragg, North Carolina." Fort Bragg, NC: Cultural Resources Management Program, Directorate of Public Works, January 2008. Report on file, Directorate of Public Works, Fort Bragg, North Carolina.
- Office, Assistant Chief of Staff G3. "History of Fort Bragg, 1918–1967." Fort Bragg, NC: Headquarters, XVIII Airborne Corps and Fort Bragg, 1968. Manuscript on file, Office of the Command Historian, XVIII Airborne Corps, Fort Bragg, North Carolina.
- Stevens, Lowell and Tom MacCallum. *Camp Mackall, Its Origin and Times in the Sandhills*. Rockingham, NC: Richmond County Historical Society, 2011.
- "The State's Newest Camp." *The State*, April 3, 1943:27-28.
- Wetzel, Dawn M., and Susan M. Bruns. "Periodic Inspection Report: Little Muddy Lake Dam, Camp Mackall Military Reservation, North Carolina" (PIR-BRA-11-T4077). Vicksburg, MS: Engineer Research and Development Center, U.S. Army Corps of Engineers, April 2012. Report on file, Directorate of Public Works, Fort Bragg, North Carolina.
- Wooten, H. H. *The Land Utilization Program, 1934–1964* (Agricultural Economics Report No. 85). Washington, DC: U.S. Department of Agriculture, 1965.
- U.S. Army Corps of Engineers. "Emergency Action Plan: Little Muddy Lake Dam, Camp Mackall, North Carolina." Savannah, GA: Savannah District, U.S. Army Corps of Engineers, February 2002. Report on file, Directorate of Public Works, Fort Bragg, North Carolina.

U.S. Army Garrison, Fort Bragg. "Fort Bragg and Camp Mackall Integrated Cultural Resources Management Plan FY 2007 to 2011" (ERDC/CERL SR-07-9). Champaign, IL: Construction Engineering Research Laboratory, Engineer, Research and Development Center, U.S. Army Corps of Engineers, and Fort Bragg, NC: Cultural Resources Management Program, Directorate of Public Works, U.S. Army Garrison, Fort Bragg, June 2007.

U.S. Bureau of Reclamation. *Design of Small Dams*. Water Resources Technical Publication. Washington, D.C.: U.S. Government Printing Office, 1960.

U.S. Soil Conservation Service. *Earth Dams and Reservoirs* (Technical Release No. 60, 210-VI, Revised [1985] and Amended [1990]). Washington, D.C.: U.S. Department of Agriculture, October 1990.

U.S. Soil Conservation Service. *Gated Outlet Appurtenances: Earth Dams* (Technical Release No. 46. U.S. Portland, OR: Department of Agriculture, June 1969.