



Camp Mackall, North Carolina

September 2019

Background

The Department of Defense (DoD) uses and manages operational ranges to support national security objectives and maintain the high state of operational readiness essential to its mission requirements. The Department conducts non-regulatory, proactive, and comprehensive operational range assessments (ORAs) to support the long-term sustainability of these ranges while protecting human health and the environment. The purpose of an ORA is to determine if there is a release or substantial threat of a release of munitions constituents (MC) from an operational range to an off-range area that exceeds an applicable regulatory standard or creates a potential unacceptable risk to human health or the environment.

The Army ORA effort was developed to address DoD requirements detailed in DoD Directive 4715.11 (10 May 2004) and DoD Instruction 4715.14 (15 November 2018). The overall objective of the ORA is to assess operational ranges/range complexes to determine if an off-range MC release or substantial threat of an off-range MC release exists; if an off-range MC release exists, does it exceed an applicable regulatory reporting standard; and if an MC release or substantial threat of a release exists, determine whether it creates a potentially unacceptable risk to off-range human health or the environment.

Operational Range Assessment Findings (07/2019)

During ORA, we did not find actual or potential off-range migration of MCs. Based on data evaluated for the updated CSM, the conclusions from the 2013 Phase II and SLERA remain valid and further sampling is not required at this time. The Advanced Assessment determined that potential MC, associated with current training at Camp Mackall, are not migrating off-range and do not pose a risk to human and/or ecological receptors.

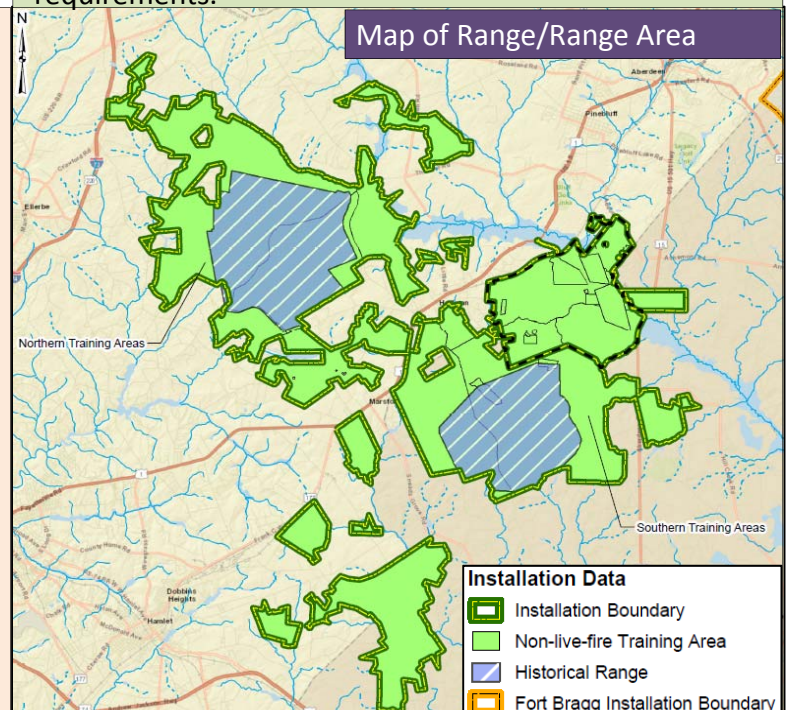
Next Steps

The installation's operational ranges should be included in the FY23-37 cycle of ORAs to satisfy re-assessment requirements.

Installation Overview

Camp Mackall is located in Hoffman, North Carolina. The installation is situated 9 miles south of the town of Southern Pines and 75 miles southwest of Raleigh, North Carolina. Camp Mackall is a sub-installation to Fort Bragg, which is located 6.5 miles to the east. The installation was established in 1942 on hunting lands that the Department of Interior purchased from the DuPont Company.

Beginning in 1944, intensive parachute, glider, and ground tactics training were conducted by the 11th, 17th, 101st, and 13th Airborne Divisions at Camp Mackall. During this time, the Northern and Southern Training Areas included a number of small arms ranges, mortar ranges, and combat training areas that were utilized for live-fire training.



Installation Overview (continued)

Live-fire training at Camp Mackall ceased in 1948 and after World War II, control of the majority of land area reverted to the Secretary of the Interior for use as a wildlife management area. No live-fire training has occurred at Camp Mackall since 1948 and there are no plans to conduct live-fire activities there in the future.

Camp Mackall currently consists of 32 operational ranges totaling 60,764.97 acres. Of the total operational footprint, 7,968.84 acres are Army-owned and the remaining 52,796.13 acres are owned and managed by Sandhills Gamelands. The current operational ranges, which are dispersed across the Northern and Southern Training Areas, include landing zones, drop zones, field training areas, and various maneuver training areas. All ranges are non-live-fire and current training at Camp Mackall is limited to blanks and pyrotechnics.

Previous ORA Investigations

The 2006 Phase I ORA evaluated 36 operational ranges, including an airfield, drop zones and maneuver training areas totaling 60,165 acres. The ORA concluded that 26 ranges were Unlikely to have a source-pathway-receptor interaction because there was limited to no munitions use on the ranges. The ORA categorized 10 ranges as Inconclusive based on the presence of a historical source, potential surface water and/or groundwater migration pathways, and off-range human and ecological receptors. These 10 Inconclusive ranges were recommended for further evaluation through a Phase II.

Subsequent to the ORA Phase I, an ORA Phase II site reconnaissance was conducted to confirm/update the Phase I findings and collect additional data to refine the CSM prior to the ORA Phase II sampling. Based on a re-evaluation of historical surface danger zones, it was determined that some areas previously identified as source areas contained no source of potential MC. Consequently, the Inconclusive range count was reduced from 10 to 7.

The Phase II Investigation focused on sampling within the watersheds of Bones Fork, Drowning Creek, an unnamed tributary of Big Muddy Creek, Juniper Creek, and Jordan Creek.

Previous ORA Investigations (continued)

These creeks collectively drain Camp Mackall's Inconclusive range areas to the southwest, northeast, and south.

The Phase II multi-season field sampling was conducted at Camp Mackall from April 2012 to January 2013. Wet and dry season surface water, sediment, and benthic macroinvertebrate sampling was conducted at five downstream locations and two upstream reference locations to capture potential seasonal variations in water quality. Five temporary monitoring wells were installed and screened within the Middendorf Aquifer, downgradient of Inconclusive areas, and one round of groundwater samples were collected from each monitoring well. Samples were analyzed for explosives, perchlorate, and metals.

Downstream detections of MCOC in surface water samples were limited to perchlorate and metals, and of these detections, only copper and lead were detected at elevated concentrations. Downstream of the Northern Training Area Inconclusive ranges, the maximum and 95% upper confidence limit (UCL) concentrations for copper were above the associated ecological screening level in Drowning Creek (SWS-02) during the clear weather wet season sampling events. However, the average copper concentration at this discharge point was not significantly different from the average upstream reference concentration. Therefore, the Phase II determined that the copper concentrations detected in downstream surface water were not likely related to munitions use on the Inconclusive ranges.

Downstream of the Southern Training Area Inconclusive Ranges, the maximum and 95% UCL concentrations of copper and lead were detected above the associated ecological screening levels at one downstream location in Juniper Creek (SWS-04) during the clear weather dry season sampling event. However, copper and lead concentrations detected downstream in Juniper Creek were not significantly different from the average upstream reference concentrations.

Previous ORA Investigations (continued)

Additionally, historical private small arms ranges are located upgradient of the Southern Training Area, which may have contributed to downstream copper and lead concentrations. Therefore, the Phase II determined that the copper and lead concentrations detected in downstream surface water were not likely related to munitions use on the Inconclusive ranges.

No explosives were detected in any of the surface water, sediment, or groundwater samples collected at Camp Mackall. Downstream detections of MCOC in sediment were limited to metals detected at levels below associated ecological screening levels.

Detections of metals and perchlorate in groundwater samples were below potable associated screening levels and below associated ranges of uncertainty. The benthic macroinvertebrate surveys indicated no MCOC-related impairment at Camp Mackall.

To assist in the assessment of the nature and extent of potential ecological risk from the MCOC detected downstream of the Inconclusive range areas, a Screening Level Ecological Risk Assessment (SLERA) was performed. The SLERA provided an assessment of risks based on a qualitative weight-of-evidence approach using the aforementioned metals sampling results.

The SLERA indicated that MCOC concentrations detected in the sampling locations were not expected to have a potential for risks to benthic, aquatic, or piscivorous ecological receptors. Based on the conclusions drawn from the SLERA, the ranges categorized as Inconclusive during the Phase I and assessed under this Phase II were re-categorized as Unlikely and placed into the periodic review program.

ORA Advanced Assessment (2019)

Based on an evaluation of updated data gathered as part of the 2019 Advanced Assessment, no significant changes to Camp Mackall's CSM components have occurred (since the previous assessment).

ORA Advanced Assessment (2019) (continued)

Because changes to associated CSM components are limited and the Phase II/SLERA concluded that MCOC were not migrating off-range at concentrations that posed a risk to off-range receptors, it was determined that media sampling was not necessary as part of the Advanced Assessment. In lieu of sampling, a CSM update was completed.

The CSM update determined that Camp Mackall's current operational footprint, which includes 32 operational ranges covering 60,765 acres, has been slightly altered since the 2013 Phase II (36 operational ranges covering 60,165 acres). These changes to the operational footprint have not resulted in the introduction of any previously unassessed source areas and no live-fire munitions have been expended at Camp Mackall since 1948.

Since 2016, approximately 10 pyrotechnics and 20,000 small caliber blanks have been used at the installation annually, resulting in a negligible MCOC contribution. No changes to the surface water or groundwater pathways have occurred since the previous Phase II Assessment in 2013. No new human receptors have been identified since the previous Phase II Assessment in 2013. Although several new ecological receptors have been identified since the 2013 Phase II, the sources and pathways have not changed, and no risk associated with MCOC exists for these receptors.

Based on data evaluated for the updated CSM, the conclusions from the 2013 Phase II and SLERA remain valid and further sampling is not required at this time. The Advanced Assessment determined that potential MC, associated with current training at Camp Mackall, are not migrating off-range and do not pose a risk to human and/or ecological receptors.