Operational Range Assessment
Shaw Air Force Base

Air Force Operational Range Assessment Program February 2019

Background

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 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 USAF Operational Range Assessment Program (ORAP), established to comply with DoD policy, sets forth procedures for consistently conducting ORAs throughout the Air Force. The USAF ORAP assessment methodology uses an installation-wide approach to verify the ORAP inventory and accomplish range-specific assessments. An Air Force ORA is comprised of two primary phases: Qualitative Assessment, Phase 1 and Quantitative Assessment, Phase 2 (if required).

- A Qualitative Assessment, Phase 1, encompasses records review, interviews, and a visual survey.
- A Quantitative Assessment, Phase 2, encompasses records review, interviews, visual survey, and environmental media sampling.

Installation Overview

Shaw Air Force Base (AFB), part of the Air Combat Command, is located in Sumter County west of the city of Sumter and approximately 35 miles east of Columbia, South Carolina. Shaw AFB manages two geographical separate units: the Wateree Recreational Area located about 40 miles north of the base in Kershaw County; and the Poinsett Electronic Combat Range located about 10 miles south of the base.

ORAP Findings: October 2017 ORA Report

- Munitions constituents (MC) may be transported to off-range locations through the surface water and groundwater pathways.
- A potential off-range migration of MC exists for one of the three areas assessed.
- No unacceptable risks to humans or the environment were identified for the areas evaluated at Shaw AFB.

Next Steps

Shaw AFB (to include Poinsett) is scheduled to be assessed in accordance with USAF and DoD policy specifying periodic assessment at least every five years.

- One area is scheduled for further evaluation earlier than the specified five years due to a potential off-range MC release finding

Installation Overview Continued

During implementation of the ORAP at Shaw AFB, three ranges were verified as eligible and assessed under the USAF ORAP – Explosives Ordnance Disposal (EOD) Proficiency Training Range, Small Arms Range (SAR), and Poinsett Electronic Combat Range (Poinsett). Shaw AFB also contains a Skeet and Trap Range; however, as this range is used solely for recreational purposes it is ineligible for an assessment under the ORAP.

The following summarizes USAF ORAP efforts for the EOD Range, SAR, and Poinsett. This is the second ORA at the EOD and SAR; and the third ORA for Poinsett.

EOD Range Assessment Overview

The EOD Proficiency Training Range is located on the southeast portion of Shaw AFB. The EOD Range is approximately 22 acres, with activities taking place in a centrally located cleared area covering roughly 3 acres. Fencing, which denotes the boundary, surrounds the area and includes the 500-foot safety arc. The range was constructed in 2005, in the same location as former fire training area, and has a net explosive weight limit of 5 pounds. The EOD Range is used for explosive proficiency training exercises once per month and for emergency detonations a few times per year.

In 2011 an initial Phase 1 ORA was finalized. The effort identified a suspected MC source in soils associated with detonation points. The air, soil, surface water and sediment MC pathways were determined to be incomplete. However, MC may infiltrate through soils to shallow groundwater as such the groundwater pathway was identified as potentially complete. Further evaluation, a Phase 2, was recommended.

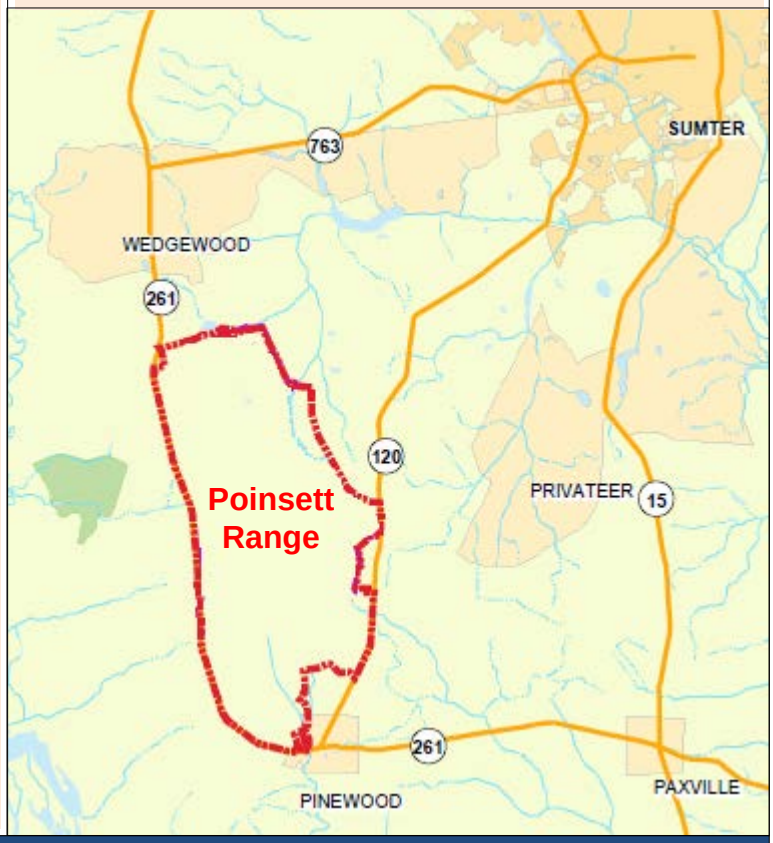
The 2017 Phase 2 ORA concluded MC, if not consumed during activities, may be present in soils. All other mechanisms were deemed unlikely to transport MC to off-range locations except for the infiltration of MC to groundwater. Soil and groundwater samples were collected near suspected sources and analyzed for explosives and metals. MC (RDX, iron, and lead) were detected in soils above screening values. However, MC concentrations significantly decreased with depth. Several explosive compounds and iron were detected

EOD Range Assessment Overview Continued

in groundwater above screening values. Based on site characteristics (depth to groundwater, flow rate, and clay sequences), the ORA concluded that the data does not support an area of impacted groundwater. No complete exposure pathways were identified for human or ecological receptors.

SAR Assessment Overview

The SAR, encompassing approximately 1.92 acres, is located along the eastern installation boundary. Access to the SAR is restricted by a chain-link fence. Use of the area for small arms training dates back to at least 1966. In 1986, due to a storm event, the range was modified and the original impact berm moved to its current location. The range currently consists of covered firing positions, a concrete floor, concrete side walls, and overhead baffles. A steel bullet catchment system was installed in 2004, the range floor was removed and re-installed in 2008, and in 2015 an enclosed shell was constructed. The SAR is used for small arms weaponry qualification. The impact berm and adjacent area has been utilized for training with riot control as well as with non-lethal 40-mm grenades and 12-gauge non-lethal rounds. However this activity is no longer conducted at the SAR.



SAR Assessment Overview Continued

In 2014 the initial ORA was finalized. Based on existing data, a source of MC was identified at the SAR. The effort indicated MC could be transported from soils and that the air, surface water, and groundwater exposure pathways were potentially complete. As such further evaluation, a Phase 2, was recommended.

The 2017 Phase 2 ORA indicates MC may be present in the earthen berm. A re-evaluation of the air and groundwater pathways determined these pathways are unlikely to transport MC to off-range locations due to built infrastructure and environmental conditions. The primary mechanism for MC migration at the SAR would be through surface water runoff. Soil, surface water, and groundwater samples were collected from on-range and off-range locations. Samples were analyzed for metals. Metals (copper, iron, and lead) were detected above screening values in sampled media. Although samples taken off-range had exceedances above screening values, the area receives drainage from other activities as such the detections could not be solely attributed to range activities. The ORA concluded a substantial threat of an off-range MC release exists. However, no unacceptable risks to human health or the environment were identified.

Poinsett Range Assessment Overview

Poinsett Electronic Combat Range, encompassing 12,521 acres, is located about 10 miles south of Shaw AFB near the communities of Wedgefield and Pinewood. Poinsett has been operated by the USAF since the mid 1940s as a training range for air-to-ground ordnance delivery and electronic warfare training. Poinsett consists of two primary impact areas. Ordnance expenditures are restricted to training rounds and inert bombs, no live munitions are used at the Poinsett. The majority of the range is either forested or comprised of elliptically shaped marshes.

In 2004, the USAF conducted a limited field study on air-to-ground ranges. During the study samples were

Poinsett Range Assessment Overview Continued

collected at or near the range boundary along suspected MC migration routes. For Poinsett Range soil, surface water, sediment, and groundwater samples were obtained and analyzed for metals, explosives, and perchlorate. All results were below detection limit and/or below identified screening levels. The study found MC is not migrating to off-range locations.

In 2007 an assessment was completed. The effort utilized existing data to further evaluate source-receptor interactions. The ORA concluded migration of MC to off-range locations via air, soils, surface water/sediment, and groundwater is unlikely and source-receptor interactions were not apparent.

In 2017 a Phase 2 ORA was completed. The effort indicates MC is likely to be consumed with limited MC available for transport. Air and soil pathways were deemed unlikely to transport MC. Additionally the ORA concluded surface water runoff is not likely to transport MC significantly from impact areas. The effort determined that the most probable transport mechanism is the leaching of MC from soils to groundwater. However, due to limited MC and sedimentation in surrounding wetlands the off-range migration of MC via groundwater was also deemed unlikely to occur. During the ORA groundwater samples were collected and analyzed for explosives, perchlorate, white phosphorus, and metals (lead and chromium). Explosives, perchlorate, and white phosphorus were not detected and/or were not at concentrations above screening levels. One on-range sample contained total chromium and lead in excess of the screening levels, but results were below the screening level for dissolved chromium and lead. Based on data collected, the ORA effort determined there is no actual or potential release of MC at Poinsett Range. No complete exposure pathways were identified for human or ecological receptors, as such no suspected risks exist due to activities.

For more information on this assessment or the Air Force Operational Range Assessment Program contact the Ranges Subject Matter Expert, Technical Branch, Environmental Quality Directorate, Air Force Civil Engineer Center
For more information on the DoD Operational Range Assessment Program visit https://denix.osd.mil/orap/home/