



Operational Range Assessment Volk Field Air National Guard

Air Force Operational Range Assessment Program

January 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

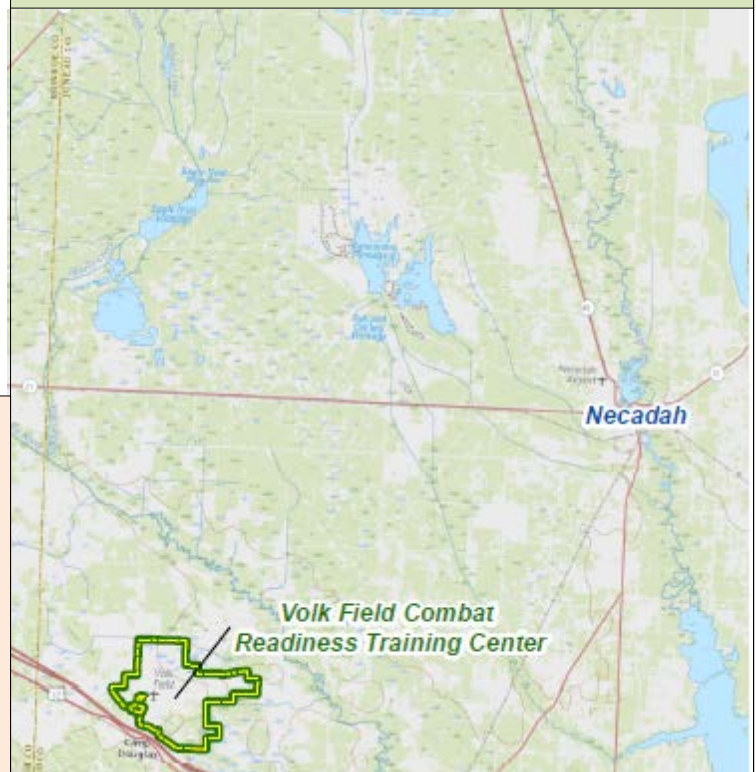
Volk Field [Combat Readiness Training Center], part of the Air National Guard (ANG), is located in Juneau County in west-central Wisconsin, approximately 90 miles northwest of Madison, Wisconsin. Volk Field manages one geographically separate unit, the Hardwood Air-to-Ground Range, which is located in Juneau County in west-central Wisconsin, about 25 miles north-northeast of Volk Field.

ORAP Findings: June 2018 ORA Report

- Migration mechanisms at Volk Field ANG were identified as unlikely to transport munitions constituents (MC) to off-range locations.
- No actual or potential off-range migration of MC exists for the areas assessed at Volk Field ANG.
- No unacceptable risks to human health or the environment were identified for the areas evaluated at Volk Field ANG.

Next Steps

Volk Field ANG is scheduled to be assessed in accordance with USAF and DoD policy specifying periodic assessment at least every five years or sooner if significant changes occur that may impact assessment decisions.



Installation Overview Continued

During implementation of the ORAP at Volk Field, three ranges were verified as eligible for an assessment under the USAF ORAP – a Small Arms Range (SAR), a Military Operations on Urban Terrain (MOUT) Facility, and Hardwood Air-to-Ground (ATG) Range. No other ranges or training areas were identified at Volk Field.

The following summarizes USAF ORAP efforts for the SAR and Hardwood Range only. The newly identified MOUT will be assessed during the next schedule ORA at Volk Field. This is the third ORA at the SAR and fourth ORA for Hardwood Range.

SAR Assessment Overview

The Volk Field SAR, located in the southwestern portion of the installation, is a partially contained range with a covered firing line, a vegetated sandy floor, vegetated side berms and back berm, overhead baffles, and a ballistic rubber covered steel backstop. The perimeter of the SAR is enclosed by a fence, which encompasses approximately 2.2 acres of land.

The SAR became operational in 1999, and is currently used by the ANG as well as numerous federal and non-federal agencies exclusively for small arms training and qualification. The land on which the current range is located was formally occupied by a group of former rifle ranges which were constructed between 1894 and 1954. These historical ranges have been addressed under the Air Force's Military Munitions Response Program (a record of decision was signed in 2017).

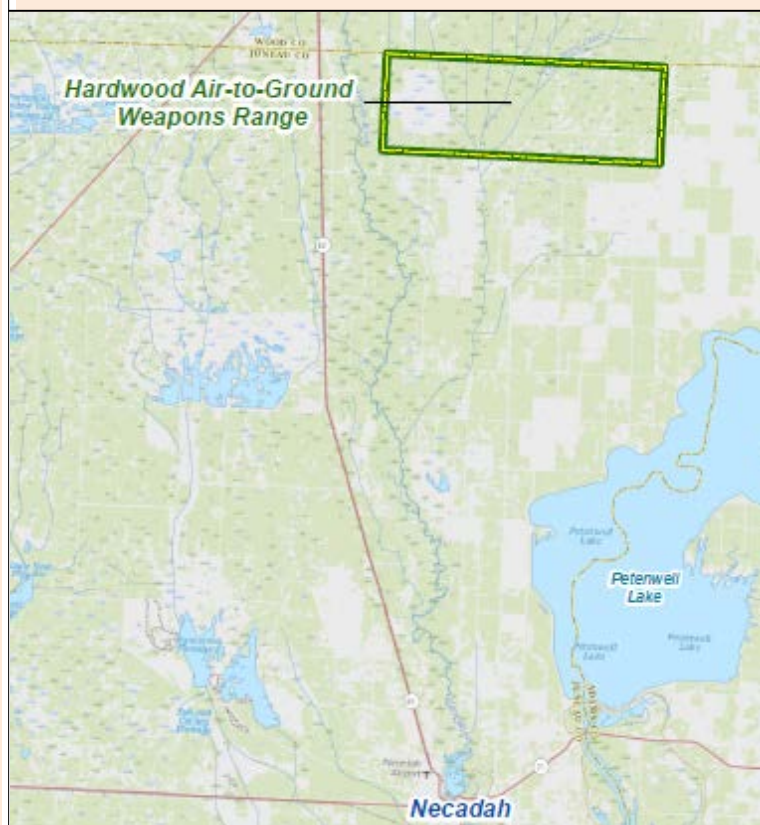
In 2008, an initial Phase 1 was conducted at the SAR. The SAR was described as having a covered firing line, baffles, targets, a backstop and being surrounded by an earthen berm. The backstop, targets, and baffles were identified as being composed of or lined with ballistic rubber intended to absorb and contain all expended munitions. The evaluation found, based on a lack of a potential MC source due to use of ballistic rubber and management practices that a release of MC from all transport pathways was unlikely. No source-receptor interactions were identified for the Volk Field SAR.

The 2014 Phase 1 indicated that through small arms firing and training activities, MC is potentially present

SAR Assessment Overview Continued

at the SAR; and concluded MC, if present, could be transported by a drain pipe near the earthen berm and backstop. All exposure pathways were deemed incomplete, except for a potentially complete surface water/sediment exposure pathway due to the possible presence of MC (metals) and the potential for stormwater with MC to flow off-range. The Phase 1 recommended soil and surface water samples (if present) be collected, at or near the range boundary, and where excess stormwater likely infiltrates into the subsurface within an off-range topographic depression.

In 2018, an initial Phase 2 was completed at the SAR. Since the construction of the range in 1999, the steel backstop has been utilized for munitions impact and no munitions have been directed or fired into the earthen berms. A metal culvert is present in the approximate center of the southwestern side berm which discharges to the exterior of the SAR. The topography at the SAR slightly slope towards the culvert; however, precipitation is likely to infiltrate in place rather than flow overland due to the underlying (native) soils and the layout of the range (i.e., vegetated berms and sandy range floor). In the unlikely event that surface water would migrate off-range, it would flow through



SAR Assessment Overview Continued

it would flow through the culvert and discharge to the well-vegetated topographic depression surrounding the SAR. Depth to the shallow groundwater is expected to be approximately 10 ft bgs, and groundwater originating in this area will eventually infiltrate into the bedrock aquifer within approximately 130 feet of the ground surface. No surface water was present during sampling; therefore, surface soil was the only medium collected. Samples were collected from one location just downgradient of the discharge point of the culvert exiting the SAR in order to help determine MC migration off-range. Soil samples were analyzed for metals via USEPA 6020A. MC metals (copper, iron, lead, and zinc) were detected in all soil samples, with some detection above protection of groundwater screening levels. However, all detected concentrations were similar or less than reference sample concentrations and, with the exception of zinc, were below the State Background Threshold. Therefore, detections of metals were found to be a result of natural conditions rather than attributed to range activities. The Phase 2 effort concluded an MC release via surface water/sediment and groundwater is unlikely, and no risks to human health or the environment exist from munitions use. All exposure pathways were determined to be incomplete.

Hardwood Range Assessment Overview

The Hardwood ATG Range, encompassing 7,263 acres of land, is located 25 miles north-northeast of Volk Field CRTC, and became operational in 1955. The perimeter of the range is partially fenced with locked gates located at all access roads and posted with warning signs. The Hardwood ATG Range is bordered by forested and agricultural lands on all sides including cranberry bogs to the north, east, and south.

Prior to use as a training range, the lands consisted of forest and wetland areas, and small-scale homesteads. Currently, all parcels of land that make up the range are owned by the State of Wisconsin, leased to the USAF, and are then licensed to the WIANG. The range is used to support requirements of ANG units from Minnesota, Illinois, Iowa, South Dakota, Michigan, and Wisconsin. Additionally, other military branches, both active and reserve, utilize the range. Furthermore, current policy allows hunting in portions of the

Hardwood Range Assessment Overview Continued

Hardwood ATG Range; however, all recreational users are required to check in with range control.

The Hardwood ATG Range includes gravel and dirt roads (which provide access to interior), a vehicle maintenance/storage shop, a parking area, a range control building and a control tower, and three primary training areas. Training primarily occurs during the day; however, the range is occasionally used for night training missions. Munitions are primarily deployed from a variety of aircraft; however, some munitions are deployed during training on the ground. Since its creation in 1955, no high explosive munitions have been expended at the range. Munitions utilized at the range are limited to practice large caliber rounds, non-explosive medium caliber munitions, and small caliber munitions.

In 2004, as part of a nationwide limited field study which included sampling (a Phase 2), was completed at Hardwood ATG Range. The three media routes were identified as having the potential to distribute and redistribute munitions-related constituents and were evaluated: air; surface water/sediment; and groundwater. The general sampling strategy was to collect samples from accessible areas downstream and/or downgradient of target/impact areas and near the boundary. The results of sampling indicate that perchlorate and explosive constituents are not migrating from the range along the most likely pathways. Metals (lead and manganese) were reported in many of the collected samples, but were for the most part indicative of natural background levels. Of notable exception was lead and manganese at elevated levels of detection in two areas. The significance of the elevated findings could not be further evaluated with available data, and an expanded investigation recommended.

In 2006, an assessment was completed to further evaluate the possibility source/receptor interactions. In order to determine if MC is migrating, sampling associated with the surface water/sediment transport exposure route was conducted. Sediment, soil and surface water samples were collected from natural drainage features. The collected samples were analyzed for explosives, perchlorate, metals, and

Hardwood Range Assessment Overview Continued

white phosphorous. The results indicate that MC are not migrating from the range along the most likely pathway (surface water/sediment). Metals were reported in many of the collected samples but the results, for the most part, were below background and/or applicable screening levels. However, the presence of metals (above background) could promote migration via storm water runoff into the drainage canals. While results support the conclusion that migration is not occurring, the potential for migration exists. Although no source/receptor interactions identified, the continued monitoring of transport routes is recommended.

The 2014 ORA, evaluated the range through a qualitative review and quantitative sampling. No change in conditions were noted, potential sources include MC in the environment within target / impact areas; potential receptors include off-range humans and ecological organisms that could interact with MC-affected media for significant durations of time, thereby classifying as a long-term exposure. Medium (soil, sediment, and surface water) from primary drainage features at the range were sampled again for MC of potential concern: explosives; metals; perchlorate; nitrocellulose; nitroguanidine; and white phosphorus. No analyzed MCs were reported at levels above the project screening levels suggesting that surface water migration of MC to off-range areas is not occurring. Therefore, the surface water/sediment exposure pathway was not considered to be complete for human health or ecological receptors associated with the Hardwood Range. Additionally, the ORA recommended the next assessment effort include sampling of an on-range well(s) to confirm that groundwater remains unimpacted from operations.

Hardwood Range Assessment Overview Continued

In 2018 a Phase 2 was completed at Hardwood ATG Range. Efforts consisted of records reviews, interviews, a visual survey, and media sampling. Surface water, sediment, and groundwater samples were analyzed for metals and explosives as MC could be present in the surface and subsurface soils (source media) in the target / impact areas. Precipitation during heavy storms can produce flow with velocity that is sufficient enough to transport surface water/sediment into the drainage canals/channels present at the range and eventually south towards the range's southern boundary. The Hardwood ATG Range is underlain by moderately drained soils, and depth to groundwater within the shallow glacial outwash aquifer is approximately 10 ft bgs. The shallow aquifer is recharged via infiltration of precipitation and snowmelt. Shallow groundwater is expected to discharge to the various surface water features (i.e., channels and canals) and leave the range as surface water. Surface water and sediment analytical results indicated one sediment sample had an iron detection exceeding an applicable screening level. However, iron occurs naturally at high concentrations and therefore is not an indicator of migration and/or an MC release. Groundwater analytical results identified iron and zinc concentrations which exceeded applicable screening levels. The MC exceedances are attributed to naturally occurring conditions, as iron and zinc occur naturally at high concentrations, rather than an indicator of an MC release. No explosives were detected in any of the surface water, sediment, or groundwater samples; and all other metal concentrations were below associated human and ecological health screening levels. Thus, no MC are migrating off-range and all exposure pathways were determined to be incomplete.

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/>