

**FINAL  
OPERATIONAL RANGE ASSESSMENT PROGRAM  
PHASE I QUALITATIVE ASSESSMENT REPORT  
VOLUNTEER TRAINING SITE - MILAN  
MILAN, TENNESSEE**

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## **EXECUTIVE SUMMARY**

The United States (U.S.) Army is conducting qualitative assessments at operational ranges to meet the requirements of Department of Defense policy and to support the U.S. Army Sustainable Range Program. The operational range qualitative assessment (hereinafter referred to as Phase I Assessment) is the first phase of the U.S. Army Operational Range Assessment Program. This Phase I Assessment evaluates the operational range area at Volunteer Training Site-Milan (VTS-Milan) to assess whether further investigation is needed to determine if potential munitions constituents of concern (MCOC) are or could be migrating off-range at levels that may pose an unacceptable risk to human health or the environment. In conducting the Phase I Assessment, MCOC sources, potential off-range migration pathways, and potential off-range human and ecological receptors are evaluated as appropriate.

VTS-Milan, which occupies approximately 2,472 acres of land in northwestern Tennessee, is located approximately six miles east of Milan in Carroll and Gibson counties. VTS-Milan was established in 1963 as a Tennessee Army National Guard (TNARNG) training area and is used for maneuver training, small arms familiarization and qualification, convoy training, and land navigation training. The TNARNG uses the property under license from the Mobile District of the U.S. Army Corps of Engineers.

As part of the Operational Range Inventory Sustainment, a draft update to the Army Range Inventory Database-Geodatabase (ARID-GEO) was submitted to the U.S. Army Environmental Command in December 2006. The ARID-GEO (2006) identifies 50 operational ranges encompassing 2,331.43 and an other than operational use area of approximately 140.17 acres. Sixteen ranges included in ARID-GEO (2006) are future ranges (i.e., have not yet been constructed) and, therefore, are not included in this Phase I Assessment. One range, an urban assault training course, is not listed in the ARID-GEO (2006), but has been operational since early 2006. An ORIS Discrepancy Memorandum will be submitted to the USAEC to correct the ARID-GEO (2006) data for VTS-Milan. Based on data collected during the site visit and TNARNG personnel interviews, 35 operational ranges exist on the property, encompassing the same 2331.43-acre area. Training activities conducted at VTS-Milan include the use of small arms live-fire ranges (e.g., rifle, pistol, and minitank ranges), practice training ranges, grenade practice ranges, and 25 training and maneuver areas (including a land navigation course, a float bridge site, tank trails, a demolition range, a gas chamber and an urban assault course). Several of the small arms live-fire ranges are located in a cluster in the cantonment area in the southern portion of the installation.

According to munitions data collected during the Phase I Assessment, the types of munitions currently and historically fired at VTS-Milan are limited to small caliber and practice medium caliber munitions. Potential MCOC associated with these munitions types include lead, antimony, copper, and zinc. MCOC sources have been identified for seven ranges, including four small arms live-fire ranges, two inactive practice training ranges, and a grenade launcher practice range. In general, MCOC from primary source areas potentially impact soil (e.g., impact berms and impact areas near targets). Release mechanisms for soil may include leaching from soil to groundwater or erosion and runoff to off-range surface soil or to nearby streams. Once potential MCOC are deposited in surface water / sediment, they have the potential to migrate downstream, recharge the shallow groundwater, or be taken up by aquatic plants or animals.

Three of the small arms live-fire ranges for which MCOC sources have been identified have covered concrete firing lines, lateral boundary walls, baffles, and secure berms, preventing water from

contacting the berms and firing lines and transporting MCOC off-range. Migration of MCOC from the remaining ranges with primary source areas is unlikely due to the presence of clay within the soil (ranging between 12 to 23 percent), flat topography, and the presence of dense grass and shrubby vegetation. The grenade launcher practice range and the inactive practice training ranges drain via perennial streams to a tributary of the Rutherford Fork of the Obion River. Furthermore, the groundwater table at VTS-Milan is encountered at approximately 20–90 feet below ground surface. Therefore, no groundwater or surface water pathways were identified for the ranges with potential sources of MCOC at VTS-Milan.

Although pyrotechnics, small caliber blanks, demolition charges, simulators, and flares are used occasionally (i.e., less than once a month) at the training and maneuver areas, spent munitions items are collected after training exercises, and the types of training conducted preclude the accumulation of MCOC in any one area, reducing the likelihood of MCOC release from these range areas.

The 35 operational ranges at VTS-Milan are categorized as Unlikely.

#### **Unlikely – Five-Year Review**

Thirty-five ranges at VTS-Milan are categorized as Unlikely, totaling 2,331 acres. These ranges consist of four small arms live-fire ranges, three practice training ranges, two grenade practice ranges (one with an observation tower), and 25 training and maneuver areas (including a demolition range). Ranges where, based upon a review of readily available information, there is sufficient evidence to show that there are no known releases or source-receptor interactions off-range that could present an unacceptable risk to human health or the environment are categorized as Unlikely. Ranges categorized as Unlikely are required to be re-evaluated at least every five years. Re-evaluation may occur sooner if significant changes (e.g., change in range operations or site conditions, regulatory changes) occur that affect determinations made during this Phase I Assessment.

**Table ES-1** summarizes the Phase I Assessment findings.

**Table ES-1: Summary of Findings and Conclusions for VTS-Milan**

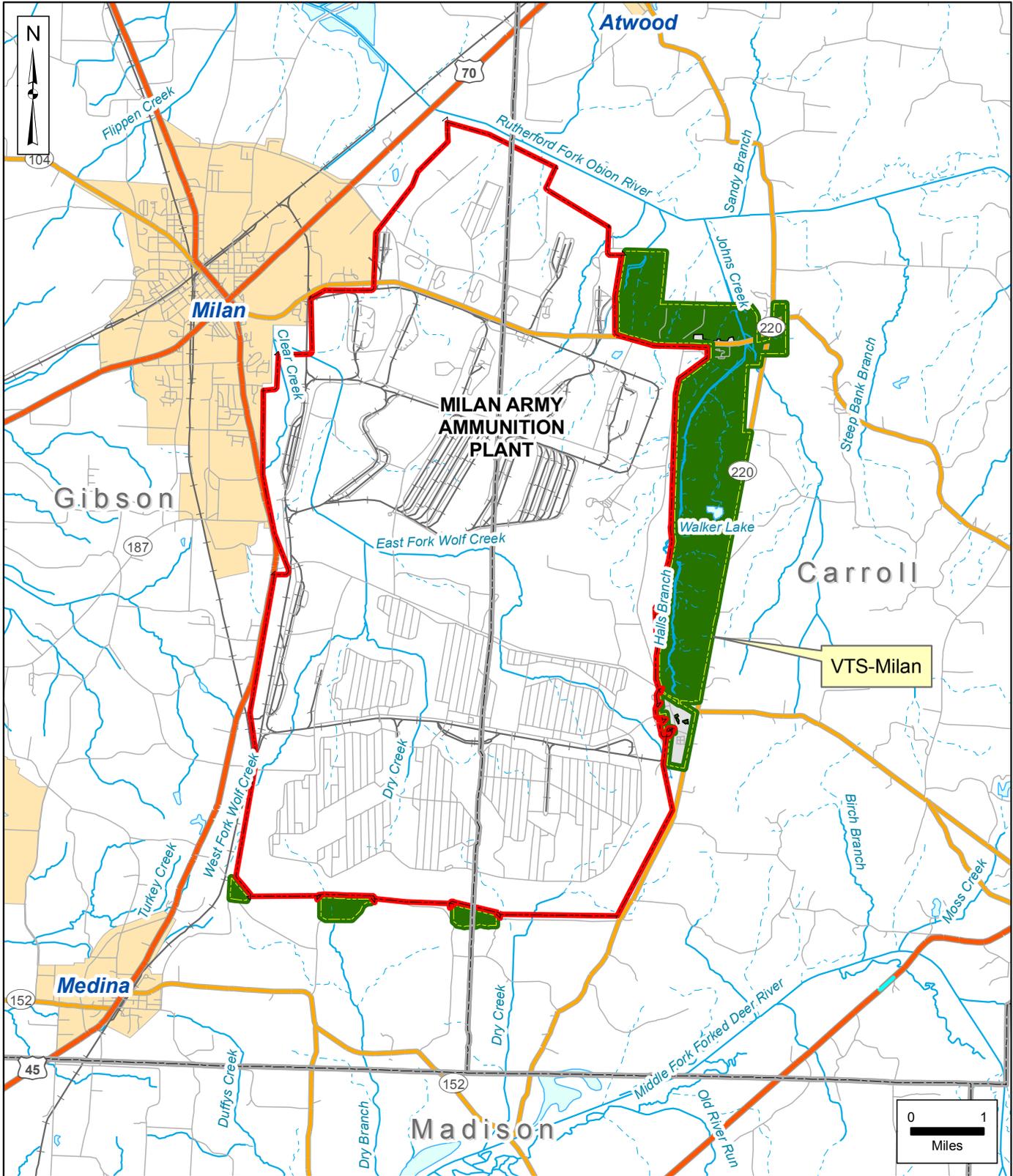
Category	Total Number of Ranges and Acreage	Source(s)	Pathway(s)	Human Receptors	Ecological Receptors	Conclusions and Rationale
Unlikely	35 operational ranges; 2,331 acres	Soil (berm and surface soil) at a four small arms live-fire ranges, two inactive practice training ranges, and a grenade launcher practice range	None	Not evaluated (no pathway/release mechanism was identified)		Re-evaluate during the five-year review. No pathway/release mechanism was identified.
		Limited source—limited military munitions use at an active practice training range, a practice hand grenade range, and 25 training and maneuver areas (including a demolition range and an urban assault course)	Not evaluated (limited source identified)		Re-evaluate during the five-year review. Limited sources were identified.	

## ABBREVIATIONS/ACRONYMS

amsl	Above mean sea level
ARID-GEO	Army Range Inventory Database-Geodatabase
bgs	Below ground surface
CCC	Criterion Continuous Concentration
CSM	Conceptual Site Model
DNT	Dinitrotoluene
DoD	Department of Defense
DODI	Department of Defense Instruction
E	Ecological receptors identified. (This refers to range grouping; pathway designation always precedes E designation.)
GIS	Geographic Information System
GW	Groundwater pathway identified. (This refers to range grouping; M designation always precedes GW designation.)
H	Human receptors identified. (This refers to range grouping; pathway designation always precedes H designation.)
HMX	Cyclotetramethylenetetranitramine
HUC	Hydrologic Unit Code
JFHQ TN	Joint Forces Headquarters, Tennessee
LS	Limited Source.
M	Munitions used. (This refers to range grouping; M designation always precedes applicable pathway.)
MAAP	Milan Army Ammunition Plant
MCOC	Munitions Constituents of Concern
mm	Millimeter
mg/L	Milligram per Liter
NG	Nitroglycerin
ORAP	Operational Range Assessment Program
PETN	Pentaerythritoltetranitrate
PU	Pathway unlikely or incomplete. (This refers to range grouping; M designation always precedes PU designation.)
RDX	Cyclotrimethylenetrinitramine
RFMSS	Range Facility Management Support System
SW	Surface water pathway identified. (This refers to range grouping; M designation always precedes SW designation.)
TNARNG	Tennessee Army National Guard
TNT	Trinitrotoluene
µg/L	Micrograms per Liter
U.S.	United States
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAEC	United States Army Environmental Command
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VTS-Milan	Volunteer Training Site - Milan
°F	Degrees Fahrenheit



Operational Range Assessment Program  
 Phase I Qualitative Assessment  
 VTS-Milan, TN  
 Figure 1-1  
 General VTS-Milan Location



**Installation**

- Installation Boundary
- Operational Area
- Other than Operational Area
- Milan Army Ammunition Plant

**Hydrology**

- River/Stream (Perennial)
- Stream (Intermittent)
- Water Body

**Transportation**

- Interstate
- Highway
- Major Road
- Local Road
- County Boundary

Data Sources:  
 AEC, ARID-GEO, 2006  
 ESRI, StreetMap USA, 2005  
 VTS-Milan, 2007

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