



Headquarters Marine Corps

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FINAL

RANGE ENVIRONMENTAL VULNERABILITY ASSESSMENT

**Marine Corps Recruit Depot –
Parris Island, South Carolina**

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Executive Summary

The United States Marine Corps (Marine Corps) Range Environmental Vulnerability Assessment (REVA) program meets the requirements of the current Department of Defense Directive 4715.11 *Environmental and Explosives Safety Management on Operational Ranges within the United States* and Department of Defense Instruction 4715.14 *Operational Range Assessments*.

The purpose of REVA is to identify whether there is a release or substantial threat of a release of munitions constituents (MC) from the operational range or range complex areas to off-range areas. This is accomplished through the use of fate and transport modeling and analysis of the indicator MC based upon site-specific environmental conditions at the operational ranges and training areas at an installation.

This report presents the assessment results for the operational ranges and training areas at Marine Corps Recruit Depot (MCRD) Parris Island, South Carolina. This report is the first comprehensive report on MC associated with the operational ranges at MCRD Parris Island and serves as the baseline of environmental conditions of the ranges.

MCRD Parris Island maintains operational ranges, including small arms firing ranges, as part of the training activities conducted at the installation. The current, as well as historical, uses of these operational ranges and firing ranges were assessed under REVA. The three distinct operational range areas at MCRD are:

- Elliott's Beach Training Area
- Page Field Training Area
- Weapons and Field Training Battalion Area Range Complex

The eight small arms firing ranges identified at MCRD Parris Island within the Weapons and Field Training Battalion Area Range Complex are:

- Pusan Pistol Range
- Nak Tong Pistol Range
- Suribachi Pistol Range
- Khe Sanh Rifle Range
- Inchon Rifle Range
- Chosin Rifle Range
- Starlight Rifle Range
- Hue City Rifle Range

The operational ranges were assessed for the MC trinitrotoluene (TNT), cyclotetramethylene tetranitramine (HMX), cyclomethylenetrinitrazine or Royal Demotion Explosive (RDX), and perchlorate, while the small arms ranges were evaluated for lead. The typical REVA assessment includes a screening model for operational ranges and a qualitative analysis of the small arms ranges. However, a qualitative assessment was conducted for all the MCRD Parris Island operational ranges because of the complexities of the tidal environmental setting for which no models have been developed. The small arms range analysis is qualitative because exact fate and transport parameters, including dissolution rates associated with lead bullets, are currently unknown within the scientific community.

The three operational range areas (Elliott's Beach Training Area, Page Field Training Area, and the Weapons and Field Training Battalion Area Range Complex) are not considered areas of concern. This assessment is based primarily on three factors: most of the MC loading areas identified in the operational range areas are historical, currently used MC loading areas are small in size, or the type of MC being deposited. MC deposited in these areas most likely readily migrate through the sandy soil into the shallow groundwater, where they mix/blend and disperse. This interaction with the groundwater reduces the present concentrations.

The small arms ranges were qualitatively assessed using the Small Arms Range Assessment Protocol (Malcolm Pirnie, 2006) with the results indicating that the surface water and groundwater have moderate levels of environmental concern at all ranges. However, professional judgment increased the scoring to high for the surface water at the ranges, since the pistol range surface danger zones (SDZ) extend over the Broad River and rifle range SDZs extend over wetland areas. The installation currently is working with the University of South Carolina-Beaufort on evaluating the fate of lead in the areas surrounding the small arms ranges, which can be used to further refine the small arms range assessments.

To view the complete report, please go to <http://www.mcrdpi.usmc.mil/ops/index.asp>