



EA Engineering, Science, and Technology, Inc.

225 Schilling Circle, Suite 400  
Hunt Valley, MD 21031  
Telephone: 410-584-7000  
Fax: 410-771-1625  
www.eaest.com

## **FINAL OPERATIONAL RANGE ASSESSMENT PROGRAM REPORT FORT NATHANIEL GREENE, RHODE ISLAND**

---

The United States (U.S.) Army is conducting environmental 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 Assessment Program (ORAP) is being conducted in two phases: a Qualitative Assessment (Phase I) and a Quantitative Assessment (Phase II) to determine if munitions constituents of concern (MCOC) are migrating off-range via surface water or groundwater, and interacting with off-range receptors at concentrations that could pose an unacceptable risk to the environment. This document summarizes and refines the conceptual site model (CSM) from the Phase I and presents the results of the ORAP Phase II for United States Army Reserve Center Fort Nathaniel Greene (Fort Nathaniel Greene), Rhode Island.

Fort Nathaniel Greene is an approximately 105-acre installation located in Narragansett, Rhode Island, five miles southeast of the town of Wakefield-Peacedale, and approximately 10 miles southeast of Newport. The installation was historically part of a coastal defense system that was active from 1940 through 1947. In 1942, Hamilton Battery, located in the south-central portion of the installation, was constructed and outfitted with two 16-inch guns. Based on historical records, only 32 rounds were fired from those guns for testing purposes and in 1945, Hamilton Battery was deactivated. As stated in the Phase I, following the deactivation of the battery, an unknown quantity of propellant (previously stored at the battery) may have been disposed of within close proximity to the former Hamilton Battery, as was common practice at the time.

Fort Nathaniel Greene's current operational footprint consists of three ranges totaling 96 acres. These ranges are maneuver and training areas used for non-live fire field training exercises, which involve no munitions use (non-live fire or live-fire). Historically, limited quantities of small caliber blanks and pyrotechnics/obscurants have been used within Fort Nathaniel Greene's maneuver and training areas.

A Phase I for Fort Nathaniel Greene was completed in 2009 (EA, 2009). The Phase I determined that there was insufficient information to determine if potential MCOC, consisting of nitrates from the breakdown of nitrocellulose propellant (associated with the potential historical Hamilton Battery propellant storage), could migrate off-installation via groundwater and interact with off-range receptors at concentrations that could pose an unacceptable risk to human health or the environment. Therefore, one maneuver training area (encompassing the historical footprint of Hamilton Battery) was categorized as Inconclusive during the Phase I.

In the Phase I, estimated quantities of nitrocellulose propellant (approximately 67 tons) potentially present at the site prior to 1945 was based on the maximum quantity of propellant that would have been present at the Hamilton Battery at full storage capacity (EA, 2009). Because there was no existing documentation regarding the exact quantity, removal, or disposal of propellant from the Hamilton Battery, the Phase I states that the propellant may have been burned or buried within unknown disposal sites within the range; therefore the range was Inconclusive. However, it is also possible that the remaining quantities of propellant being stored at the Hamilton Battery at the time of deactivation were removed and transported to another installation for use.

During the Phase II, Phase I data was re-evaluated and it was determined that a source-receptor interaction was Unlikely due to presence of a limited MCOC source. The MCOC source is thought to be limited based on the following factors:

- No munitions are currently used for training activities on Fort Nathaniel Greene.
- Only a limited number of pyrotechnics and small caliber blanks were utilized at the site in recent history.
- Only 32 practice rounds were ever fired from the two historical 16-inch guns during the 1940s for proof firing, instrument calibration, and testing purposes. No combat rounds were fired.
- There are no historical records indicating how propellant was disposed of when Hamilton Battery was deactivated in 1945.
  - The Phase I states that it was potentially disposed of on-site, as that was common practice at the time.
  - There are no ordnance records for Fort Nathaniel Greene so it is unclear whether or not there was even any ammunition at the Battery to be disposed of initially.
  - Remaining quantities of propellant being stored at the Hamilton Battery at the time of deactivation may have been transported to another installation for use.
- The 2007 Military Munitions Response Program (MMRP) Site Inspection Report investigated two potential disposal sites that were identified as disturbed areas on 1948 aerial photographs (located near Hamilton Battery). However, this report could not positively identify either area as burial and/or burning areas for propellant.
  - The 1998 USACE Archives Search Report for Fort Nathaniel Greene stated that a review of aerial photographs and a site inspection did not reveal any possible burial areas (USACE, 1998). It also recommended No Further Action for any parcels of the current and historical Fort Nathaniel Greene.
- One potential surface disposal area (IRP Site 08) was addressed under the Installation Restoration Program (IRP) in 2006; no evidence was identified to indicate disposal of propellant had occurred on-site. The other disturbed area was not investigated.
- Nitrocellulose breaks down readily in the environment and even if propellants were disposed at the site, any evidence or remnants of propellant would have most likely dissipated within the past 60 years (URS, 2007).

Because the Phase II determined there was a limited source at Fort Nathaniel Greene, the Phase I Inconclusive range has been re-categorized as Unlikely (making all three operational ranges at Nathaniel Greene Unlikely). Fort Nathaniel Greene is recommended to be incorporated into the Periodic Review process with re-evaluation occurring within five years or sooner if significant changes (e.g., changes in range operations or site conditions, regulatory changes) occur that affect determinations made during the Phase I and Phase II. A summary figure is included as **Figure 1**.



Operational Range Assessment Program  
Phase II Quantitative Assessment  
USARC Nathaniel Greene, Rhode Island



**Figure 1**  
**Summary of Phase II Recommendations**



**Legend**

-  Installation
-  Unlikely Recommended for Periodic Review
-  Non-Operational Area

Data Sources:

ARID-GEO 2008  
ArcGIS Map Service 2010

Date:.....October 2012  
Prepared By:EA Engineering, Science, and Technology  
Prepared For:.....U.S. Army  
Contract Number:.....W912DR-07-D-0042-0007