

Environmental Cleanup at Range 1 and the Small Arms Range Complex

Introduction

This factsheet discusses the cleanup actions at two former small arms ranges within Papago Park Military Reservation (PPMR), Range 1 and the Small Arms Range Complex (SARC). The Papago Park Military Reservation (PPMR) occupies approximately 480 acres of land and is bounded by Oak Street to the north, 52nd Street to the west, and City of Phoenix property to the south and east. PPMR serves as the Joint Forces Headquarters for the Arizona National Guard (AZNG).

Range 1 located in the northern portion of PPMR at the base of Barnes Butte is bordered on the east by operational range area. The SARC, located directly north of the eastern portion of Range 1 is bordered on the northwest by operational range area. Both ranges are collectively referred to as Munitions Response Sites (MRSs) and are shown on Figure 1.

Site Update

A historical records review (HRR), conducted in 2004, and a site investigation (SI), conducted in 2005, were completed for PPMR. A Remedial Investigation Feasibility Study (RI/FS), including geophysical data collection and soil sampling was completed in June 2010 for Range 1 and the SARC. A report detailing the investigation efforts and findings was reviewed and approved by the Arizona Department of Environmental Quality (ADEQ) and their comments were addressed. The report includes a human and ecological risk assessment and recommends alternatives for cleanup.

What is the planned cleanup action at this site and how long will it take?

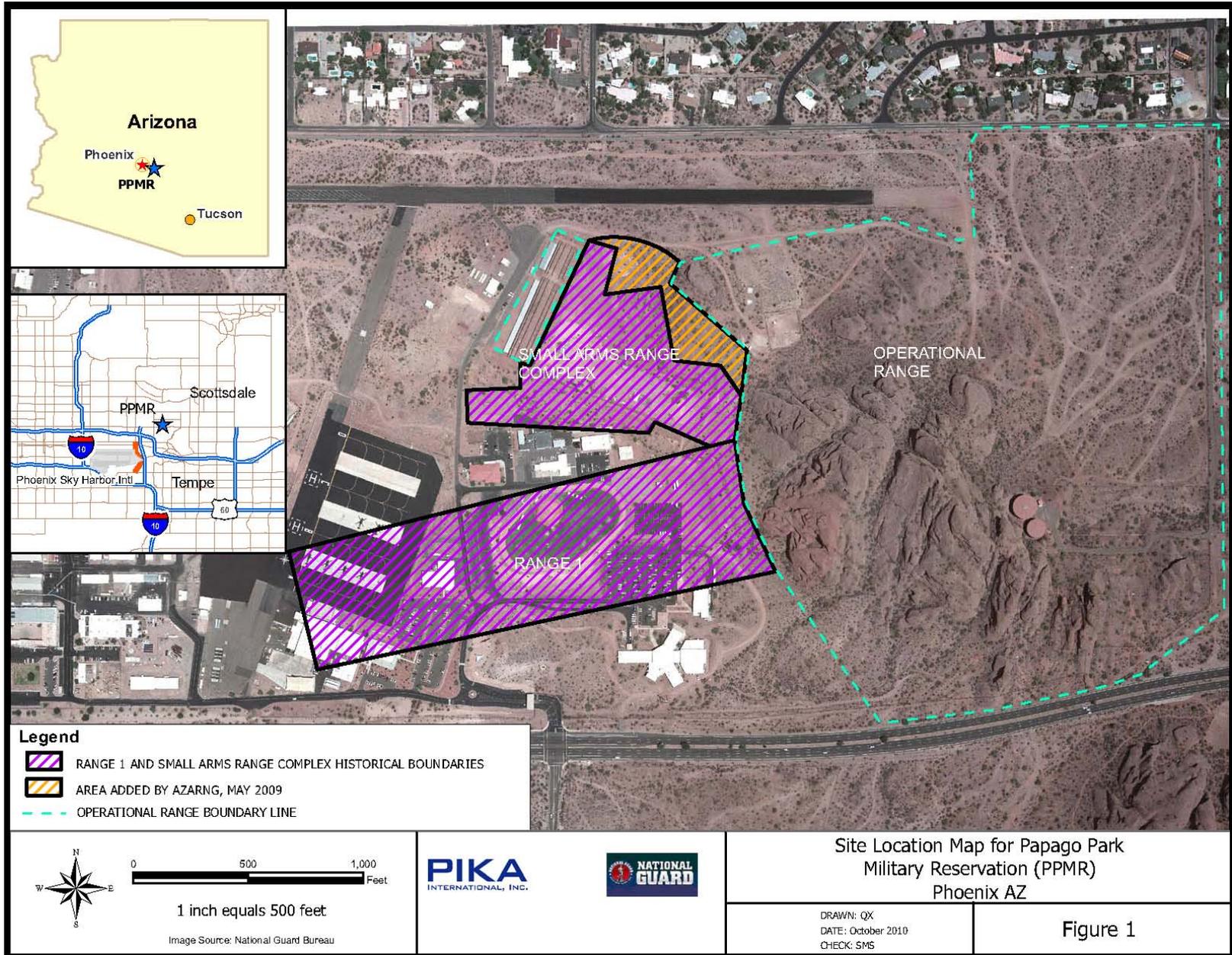
The planned cleanup will use a combination of actions. For the berm areas, excavation and dry sieving followed by the disposal of hazardous soil to a landfill and reuse of non-hazardous soil onsite is planned. For the range floor areas at both MRSs, vacuuming and hand collection of bullets and bullet fragments followed by the disposal of hazardous soil to a landfill and reuse of non-hazardous soil onsite is planned. Approximately 4.75 acres of Range 1 and 8.0 acres of the SARC will be cleaned up as part of this project. Cleanup activities are anticipated to start in September 2011 and be complete by January 2012.

What impact will this treatment activity have on neighbors?

The cleanup activity will use heavy equipment to process and handle soil resulting in some fugitive dust emissions. A storm water pollution prevention (SWPP) plan including dust control technologies and inspections will be created and used to ensure compliance with Maricopa County regulations.

Soil contamination at this site

At Range 1, lead is the only contaminant of concern (COC) in the soil. Overall, the concentration of lead in the soil within the target berm at Range 1 is below the Arizona residential soil remediation level of 400 mg/kg, however there are three areas in the vicinity of the berm where the concentration of lead in soil exceeds 400 mg/kg (red polygon areas shown on Figure 2). The contamination also consists of bullet debris (old bullets, copper jackets and fragments of old bullets and jackets) on the surface in the vicinity of the berm. This area is to the east of the berm, between the back slope of the berm and the shared boundary with the operational range.



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Soil contamination at this site (continued)

At the SARC, lead and arsenic are the COCs that exist above the Arizona residential soil remediation level of 400 mg/kg in the soil within the berm and some areas of the range floor at the ground surface and very shallow subsurface soils away from the target berm (red polygon areas shown on Figure 2). Bullet debris is more prevalent in the SARC than at Range 1 and is mostly located to the northeast and south of the open graded area and to the east of the target berm (polygon with blue boundary shown on Figure 2). The amount of bullet debris varies from a few scattered pieces to clusters of bullets and copper jackets. The bullet debris presents a future potential for leaching into soil. Inset photos on Figure 1 show representative bullet debris items collected from the MRSs during the RI/FS investigation conducted in 2010.

Human Health Risk Assessment

To evaluate human health effects from lead exposures, two lead models developed by United States Environmental Protection Agency (USEPA) were used. The first model, the Integrated Exposure Uptake Biokinetic Model (IEUBK), evaluates the potential for unacceptable health effects from lead exposures in soil to child receptors (up to age 7). The second model, the Adult Lead Model (ALM), predicts the lead blood levels that would likely occur in a pregnant woman and her fetus from non-residential exposure to lead-contaminated soil and dust (e.g., a commercial worker scenario). The threshold for unacceptable exposure established by USEPA is a predicted blood lead level of 10µg/dL.

Additionally, all predicted probabilities of exceeding the blood lead level of 10 µg/dL should be less than 5 percent (%).

The assessment using the IEUBK model concluded that the potential exposures to lead in surface and subsurface soils:

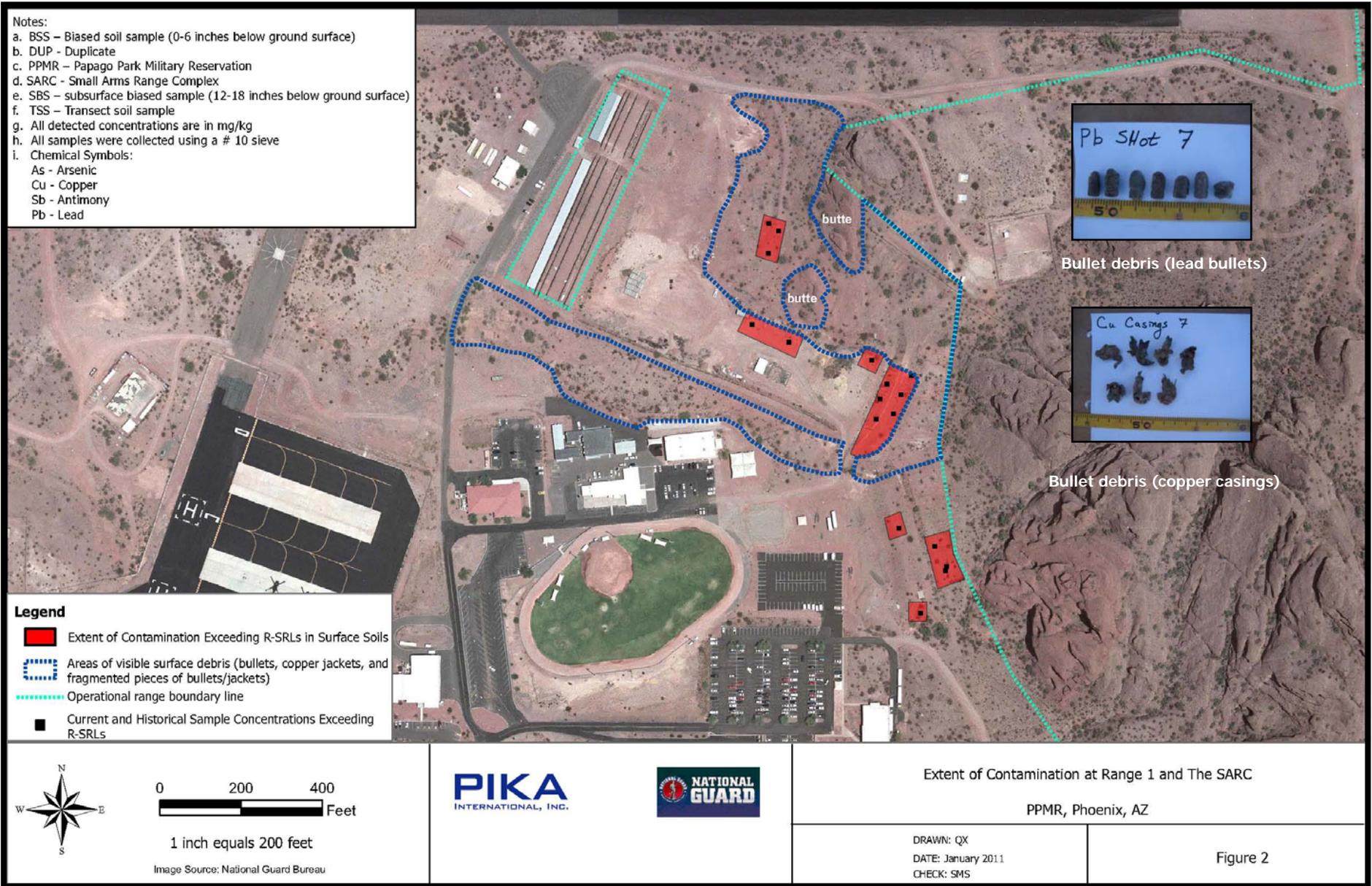
- At both MRSs for children (as trespassers, recreational users, or hypothetical residents) do not exceed the threshold.

The assessment using the ALM model concluded that the potential exposures to lead in surface and subsurface soils:

- Do not exceed the threshold at Range 1 for current and future adult recreational users, trespassers, landscape workers, utility workers, and commercial.
- Do not exceed the threshold at the SARC for current adult trespassers and landscape workers and future recreational users.
- Exceed the threshold for at the SARC for future utility/construction workers. Controls to minimize potential exposure to lead in soil for a female worker involved with the cleanup would be necessary.

Ecological Risk Assessment

Hazard quotients (HQs) were used to quantitatively estimate the potential for risk to primary producers (plants), primary consumers (herbivores), secondary consumers (omnivores), and tertiary consumers (carnivores) from each COC. The potential for risk to a particular receptor from a particular COC was considered negligible when the calculated HQ did not exceed unity (1.0). When the HQ exceeded unity, an Uncertainty Analysis was conducted to determine whether that value realistically reflects a potential for risk to that receptor or whether the quantified value is more likely to be the result of conservative assumptions used in its calculation.



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Ecological Risk Assessment (continued)

At Range 1, plants, cactus mouse, and cactus wren exhibited HQs greater than unity. The uncertainty analysis found that the estimations of exposure and potential toxicity used in calculating the HQs are based on conservative assumptions of bioavailability, uptake, and toxicological threshold. The resulting HQs are likely to overestimate the potential for risk. Based on this evaluation, it does not appear likely that significant risk to ecological receptors exists at Range 1.

For the SARC, all receptors except two carnivores (the gray fox and Harris's hawk) exhibited HQs greater than unity. The maximum HQ was 38 for the cactus wren's exposure to lead. The cactus mouse had a HQ of 14 from exposure to antimony and the plant had a HQ of 7.3 from exposure to lead. Although the estimations of exposure and potential toxicity used in calculating the HQs are based on conservative assumptions of bioavailability, uptake, and toxicological threshold, resulting in HQs that are likely to overestimate the potential for risk to exposed individuals, the magnitudes of the two highest HQs (38 for cactus wren exposure to lead and 14 for cactus mouse exposure to antimony) indicate the potential exists at this site for adverse toxic responses to occur. Thus the potential for risk to ecological receptors at this SARC cannot be excluded.

How can the public participate in the process?

A public notice was published in two local newspapers (*The Arizona Republic* and *The Scottsdale Republic*) on January 27, 2010 soliciting public interest in formation of a Restoration Advisory Board (RAB) and inviting the public to review environmental restoration documents associated with this project. To date, no member of the public has come forward either expressing interest in forming a RAB or with questions concerning this cleanup action.

A 30-day public comment period will be instituted that will provide the public enough time to express their opinions on the process and results of a project action or investigation. Additionally, public meetings will be held when significant site investigation or remediation documents are completed. Public service announcements of each meeting will be printed in *The Arizona Republic*. A public meeting will be held at a date, time, and location convenient to community members.

Additional information related to cleanup activities can be obtained by accessing the installation website at (www.azdema.gov) or by contacting the representatives listed below:

AZARNG (Public Affairs)	AZARNG (Technical)	ADEQ (Technical)
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