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## Army National Guard Proposes Cleanup Plan; Requests Public Comments

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**Ricochet Area Munitions Response Site in State Game Lands 211**  
Annville, Pennsylvania June 2012

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### Public meeting

The Army National Guard will hold a public meeting to explain its preferred remedial alternative and proposed plan and to answer questions. We will accept oral and written comments at the meeting.

**Date:** Thursday, June 21, 2012

**Time:** 6:30 p.m.

**Place:** East Hanover Township  
Building (Dauphin County)  
8848 Jonestown Road  
Grantville, PA 17028

### Public comment period June 7 – July 6, 2012

We invite your questions and comments at the public meeting or in writing during the public comment period, June 7 to July 6, 2012. You can comment orally at the meeting or in writing by mail or e-mail to:

Ms. Joan Anderson  
PAARNG – PA Department of  
Military & Veterans Affairs  
Bureau of Environmental Management  
Building 0-11, Fort Indiantown Gap  
Annville, PA 17003

E-mail: joanderso@pa.gov

Comments must be postmarked or e-mailed by midnight July 6, 2012.

### Project website

This proposed plan is posted on the project website:

<http://www.dmva.state.pa.us>.

Click on “Featured Topics,” then click on “Final Proposed Plan” under the Administrative Record File heading. This website contains all Ricochet Area MRS technical reports and community outreach materials.

The Army National Guard Directorate and Pennsylvania Army National Guard are proposing “Focused Surface and Subsurface Removal of Munitions with Containment and Controls” as the cleanup remedy at the Ricochet Area Munitions Response Site (MRS) in State Game Lands (SGL) 211, Pennsylvania. The proposed cleanup would protect people from coming into contact with munitions present at the site.

The Department of Defense’s Military Munitions Response Program (MMRP), which began in 2001, addresses the potential explosives safety, health, and environmental issues resulting from past munitions use at current and former military training lands. In fulfilling its obligations under MMRP, the Army National Guard’s first priority is the protection of human health, safety, and the environment.

The MMRP follows the requirements of the National Contingency Plan\* and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and its amendments of 1986.

This proposed plan describes the various cleanup alternatives considered for the Ricochet Area MRS and identifies the Army National Guard’s preferred cleanup alternative. The public has until July 6, 2012, to comment on the Army National Guard’s proposed plan. See the adjacent box to find out how your opinion can be heard. The Army National Guard, in consultation with the Pennsylvania Department of Environmental Protection (PADEP) and the Pennsylvania Game Commission (PGC), will select a final cleanup plan for the Ricochet Area MRS after considering all public comments.

The public is also encouraged to review supporting documents that can be found at the Annville Free Library. The cleanup alternatives are described later in this proposed plan. The selected cleanup plan will be announced with local newspaper notice and in a document called a record of decision.

### About the Ricochet Area MRS

The Ricochet Area MRS is located between Second and Stony Mountains within eastern Dauphin County and northern Lebanon County in southcentral Pennsylvania. State Game Lands 211 are owned by the Commonwealth of Pennsylvania and managed by the PGC. The 3,262-acre site is located within the 70,000-acre SGL 211 and lies north of the Fort Indiantown Gap Military Reservation, Annville, PA. Fort Indiantown Gap was an Army Garrison from 1940 until 1998. Military munitions are present in the Ricochet MRS as a result of historical training activities conducted by the Army. The current artillery firing angles used by the Pennsylvania Army National Guard prevent ricochets into this area.

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*\*Section 300.415(a)(4)(ii) of the National Oil and Hazardous Substance Pollution Contingency Plan requires public participation in the process of approving a proposed record of decision. This proposed plan summarizes the technical documents available for viewing at the Annville Free Library.*

The topography of the Ricochet Area is a valley and ridge system. Ridgeline elevations range from 1,200 to 1,400 ft for Second Mountain, which marks the southern boundary of the MRS. Stony Mountain ridgeline elevations range from 1,610 to 1,670 ft. Stony Creek flows from northeast to southwest in the valley between the two ridgelines.

The Ricochet Area MRS contains a variety of conifer-dominated forests to mixed deciduous forests. Forested wetland areas are interspersed along many of the seeps and springs located throughout the MRS and along the Stony Creek stream corridor.

A diverse mix of mammals, birds, reptiles, amphibians, insects, and benthic macroinvertebrates are supported by the habitat present within the Ricochet Area MRS. There are no known federally listed threatened or endangered plant or wildlife species that occur within the Ricochet Area MRS. Potential special status species present include the following insects: Hand-Maid Moth, Pine Barrens Zale, and Black Dash. Terrestrial wildlife special status species include the Indiana Bat, Allegheny Wood Rat, and Timber Rattlesnake. Special status plant species include the Minniebush, Netted Chainfern, and American Holly.

While, there are no registered cultural or historic resources identified within the MRS, the area has a rich historical heritage. Numerous foundations from former homesteads, other structures associated with the Cold Spring Hotel and former railroad bed are present within the site. Human settlement in the MRS dates back to early 1820's when a tavern was established at Cold Springs. Coal mining and the rail road service were established through this area in the mid 1840s. The Cold Spring Hotel was established in 1850. The area was also extensively timbered in the late 1800s. The decline of commercial mining and timbering was followed by a development of the area for recreational purposes including a sportsmen's club, spring water bottling operations, and a YMCA camp also occupied the eastern portion of the MRS from 1924-1942. Around World War II time frame the railroad ceased operation and the tracks were removed. In addition, the U.S. Army used portions of this area as a bivouac and firing point in the 1940s and 1950s.

Current land use includes a number of recreational activities such as fishing, hunting, hiking, running, bicycle riding, snow shoeing, dog-sledding, cross-country skiing, snowmobiling, horseback riding, Fall Drive-Thru, and bird watching. The Horse-Shoe Trail and Appalachian National Scenic Trail are adjacent to the MRS. Non-recreational activities within the MRS include trail, game, and forest maintenance performed by PGC employees or their contractors.

There are no plans to change the current land use. The site will continue to be used for recreational and non-

recreational activities, including game land maintenance, special wildlife area management at herbaceous openings, and timber management. Herbaceous openings (food plots) are regularly maintained for wild game such as turkey and deer.

Timber harvests are also periodically conducted within SGL 211. Locations of harvests are selected based on timber surveys/inventories to identify manageable timber and areas for potential habitat improvement projects.

## **Nature and extent of MEC contamination**

The Ricochet Area was initially identified during the site inventory study conducted in 2003. The area identified in the study spanned 8,002 acres and included a potential ricochet zone associated with an artillery impact area and an overlapping range fan extending from a former firing point located within the Cold Spring portion of the site. Based on the results of the study, it was determined that the site was eligible under the MMRP.

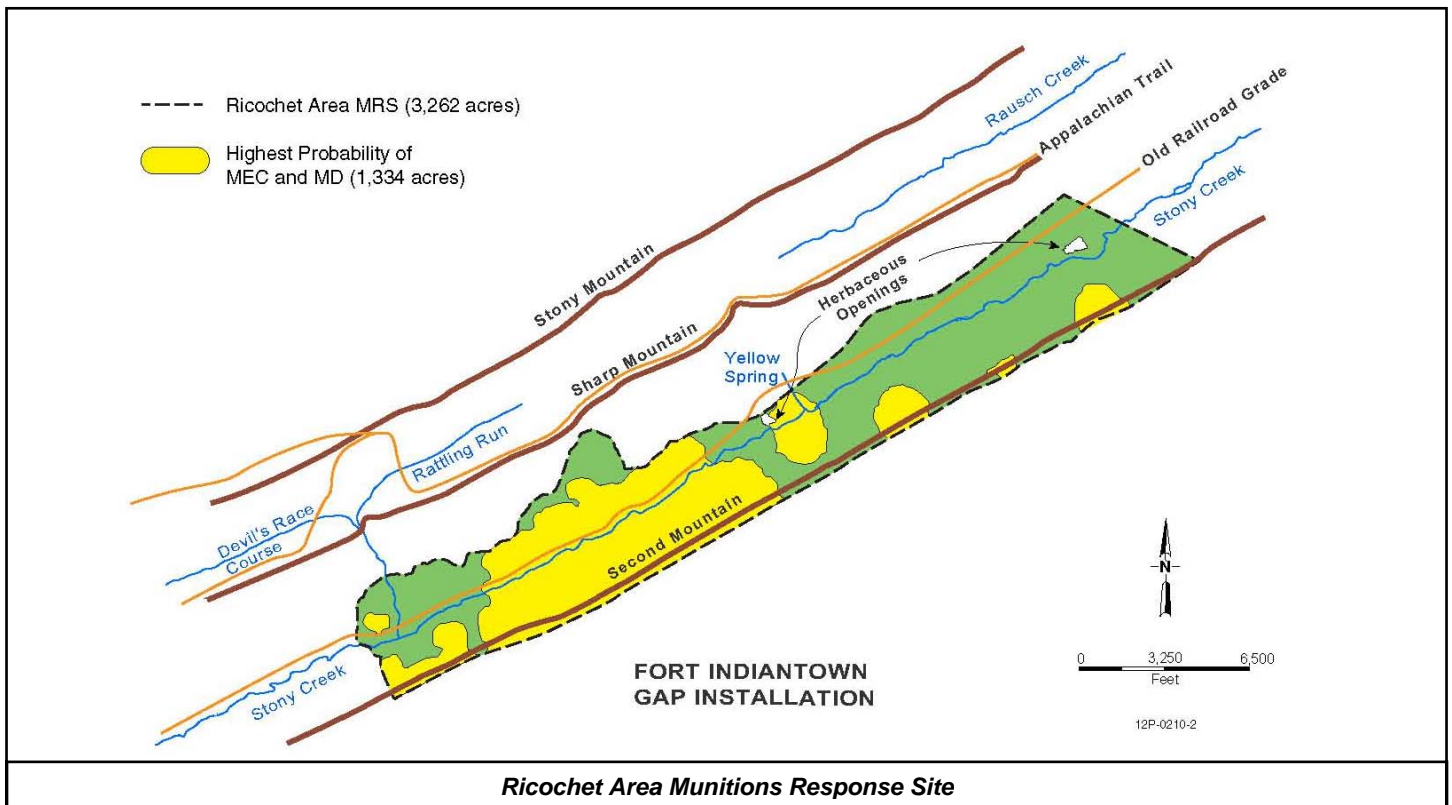
A site inspection (SI) was conducted between 2007 and 2008 to determine if munitions were present at the site. Although no munitions items were identified during the SI, historical reports document recovered inert projectiles, illumination canisters, and a live World War II high explosive Sherman tank round. Soil samples collected from the MRS during the SI did not indicate significant concentrations of munitions constituents. Based on past discoveries of these munitions, the Ricochet Area was assigned an MRS score of 2, the second highest priority under the MMRP. The MRS was recommended for a follow-on remedial investigation (RI).

The RI field work was initiated in 2009 to determine the nature (type) and extent (distribution) of munitions and explosives of concern (MEC), including unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC). Geophysical transect and grid surveys were performed on a statistically representative portion of the 8,002-acre site to characterize and constrain the distribution of MEC, munitions debris (MD), and MC in soil. Geophysical surveys conducted along transects and grids covered a total of 374 acres.

To assess the presence of MC, soil samples were collected and analyzed for explosives (e.g., TNT) and metals.

A total of 134 munitions items (121 MD and 13 MEC) were removed from the site and/or destroyed during the RI. The following items, intact, partially intact, and/or fragments, were recovered:

- 37-mm (millimeters) projectiles
- 57-mm projectiles
- 60-mm mortars
- 81-mm mortars
- 75-mm projectiles
- 105-mm projectiles
- 4.2-inch mortars
- 155-mm projectiles
- 165-mm projectiles
- MK-2A4 primers



The majority of these items were larger caliber 75-mm and 105-mm projectiles or canisters. Most of the items recovered (58%) were considered wholly inert munitions that never had energetic components. Forty-one percent (41%) of the items previously had energetic components but no energetic materials remained upon discovery. Only one percent (1%) of the items found was MEC with residual explosive constituents and representing an explosive hazard. The MEC included:

- One 155-mm high explosive projectile.
- Seven 75-mm high explosive projectiles.
- One 75-mm armor piercing high explosive projectile.
- Four MK-2A4 primers.

In addition to the 134 munitions items, 594 man-made cultural debris items (i.e., railroad spikes, nails, metal scrap, horseshoes, and wire) were recovered. None of these items were assessed to be culturally and/or historically significant. Items of interest were inspected and donated to local museums and interested community members.

All MEC and MD were recovered within a 3,262-acre area between the Stony Creek valley and the ridgeline of Second Mountain as shown in the figure above. No evidence of MEC or MD was found from the southern slope of Sharp Mountain extending north to Stony Mountain's ridgeline. Approximately 66% of the MEC and MD were located at the ground surface. The four primers were found at the former Cold Spring firing point at a depth of 12 inches below ground surface. Additional range-related debris, including fuze shipping

containers, rotating band covers and lifting lugs, was also found buried at Cold Spring firing point.

Analytical results for soil samples collected at MEC locations showed no significant MC detections.

Explosives and munitions-related metals concentrations were not detected above background levels or PADEP standards. The human health risk assessment concluded that no remedial action was necessary for MC to protect public health, welfare, or the environment based on the current and intended future use of the site (i.e., recreational visitors and site workers). The ecological risk assessment concluded that the potential risk from MC in soil to populations (i.e., plants and wildlife) is low.

The projected density of MEC and MD at the site is estimated at less than 1 to 9 items per acre. Residual MEC at the site is considered an explosives safety hazard. It is possible for the public to come into contact with MEC through handling or unintentional disturbance. Residual MD at the site is also considered a safety hazard since the general public cannot differentiate an explosive munition from an inert one. It is important to note that unless documented or certified as safe by a UXO technician, all munitions items are considered an explosive safety threat and a risk to the public.

The Ricochet Area MRS boundary was reduced during the RI to include only the area that was found to contain MEC and MD. The new MRS is 3,262 acres in size. Results from the RI also identified several areas totaling 1,334 acres within the MRS that have a higher probability for encountering MEC.

A feasibility study was prepared after the RI report was finalized in July 2011. A feasibility study is a detailed analysis that develops viable cleanup alternatives and examines the pros and cons of applying the alternatives to a specific MRS. Five cleanup alternatives were developed and analyzed as part of the Ricochet Area MRS feasibility study, which was finalized in January 2012.

## Remedial action objectives

The Ricochet Area MRS current and future land use is primarily outdoor recreational activities by the residents of Lebanon and Dauphin Counties, including hunting, biking, fishing, and hiking. PGC employees also access the MRS routinely for maintenance.

The goal of a cleanup alternative is to reduce explosives safety risk at the Ricochet Area MRS and to ensure protection of human health, public safety, and the environment.

To achieve this goal, objectives were established to minimize MEC exposure to the following:

- The public while maintaining access for recreational activities.
- PGC personnel at herbaceous openings maintained for turkey and deer.
- PGC personnel and contractors during timber harvesting activities.

## Cleanup alternatives

The Army National Guard considered five different alternatives for cleaning up the Ricochet Area MRS. All alternatives were evaluated against nine criteria required by the Superfund law (see criteria explanation in the box on this page). The five alternatives are summarized below, but full details are available in the technical documents on file at the Annville Free Library.

**Alternative 1 - No Action**—No Action is provided as a baseline for comparison to the other proposed alternatives. This alternative means no action will be taken to locate, remove, and dispose of munitions. Cost - \$0

**Alternative 2 – Containment and Controls**—Consists of various access control and/or public awareness components. Examples of containment and controls are brochures and fact sheets distributed to recreational

## Explanation of the nine evaluation criteria

The Comprehensive Environmental Response, Compensation, and Liability Act requires the evaluation of each cleanup alternative to address the following nine criteria:

1. **Overall Protection of Human Health and the Environment** – Evaluates whether a cleanup alternative provides adequate protection and evaluates how risks are eliminated, reduced, or controlled through treatment, engineering controls, or local government controls.
2. **Compliance with Applicable or Relevant and Appropriate Requirements** – Evaluates whether a cleanup option meets federal and state environmental laws, regulations, and other requirements or justifies any waivers.
3. **Long-Term Effectiveness and Permanence** – Considers any remaining risks after cleanup is complete and the ability of a cleanup option to maintain reliable protection of human health and the environment over time once cleanup goals are met.
4. **Reduction of Toxicity, Mobility, or Volume through Treatment** – Evaluates a cleanup option's use of treatment to reduce the harmful effects of the contaminants, their ability to move in the environment, and the amount of contamination present.
5. **Short-Term Effectiveness** – Considers the time needed to clean up a site and the risks a cleanup option may pose to workers, the community, and the environment until the cleanup goals are met.
6. **Implementability** – The technical and administrative feasibility of implementing a cleanup option, including factors such as the relative availability of goods and resources.
7. **Cost** – Includes estimated capital and annual operations and maintenance costs as well as the present worth cost. (*Present worth cost is the total cost of an alternative over time in terms of today's dollar value.*)
8. **State Acceptance** – Considers whether the state (Commonwealth of Pennsylvania) agrees with the National Guard's analyses and recommendations as described in the proposed plan.
9. **Community Acceptance** – Considers whether the local community agrees with the National Guard's analyses and proposed cleanup plan. The comments the National Guard receives on its preferred alternative are important indicators of community acceptance.

users; signs placed at game lands to notify the public of explosive safety hazards when encountering munitions; notifications included with permits and contracts; information added to existing printed materials; and an awareness video provided to groups and organizations using the game lands. Cost - \$181,998

**Alternative 3 – Surface Removal of Munitions with Containment and Controls**—Removal of MEC detected on the ground surface across the entire 3,262-acre Ricochet Area MRS. This alternative also includes containment and controls similar to those presented in Alternative 2. Cost - \$16,182,335

**Alternative 4 – Focused Surface and Subsurface Removal of Munitions with containment and Controls (Army National Guard's Preferred Alternative)**—Removal of MEC detected on the ground surface in the area identified (see figure on page 3) with more than 0.5 MEC and MD per acre and along trails

(estimated to be 1,334 acres of the Ricochet Area MRS). This alternative includes removal of MEC to detection depth at the herbaceous openings. This alternative also includes containment and controls, including MEC construction support as needed during timber management activities. Cost - \$6,757,826

**Alternative 6 - Removal of Munitions to Detection Depth with Containment and Controls**—Removal of MEC detected across the entire 3,262-acre Ricochet Area MRS to instrument detection depth. This alternative also includes containment and controls similar to Alternative 2. Cost - \$24,315,156

**Evaluation of alternatives**

The Army National Guard evaluated the various cleanup alternatives against seven of the nine evaluation criteria (see box on this page). The state and community acceptance criteria will be evaluated after public comments are received. More detailed information about the evaluation can be found in the *Feasibility Study Report for Ricochet Area Munitions Response Site in State Game Lands 211, Pennsylvania*. For the cleanup of the Ricochet Area MRS, the Army National Guard’s preferred choice is Alternative 4 - Focused Surface and Subsurface Removal of Munitions with Containment and Controls.

Alternative 4 focuses on locations where there is the highest probability of encountering MEC and MD on the ground surface. By implementing Alternative 4, it is anticipated that most of the MEC and MD at the MRS will be located and removed. Therefore, this alternative will reduce exposure risks inherent during recreational activities performed by the public and maintenance activities performed by PGC personnel.































In addition to the surface removal in the higher MEC/MD density of the MRS, surface and subsurface MEC would be




removed from two herbaceous openings. This complete clearance will reduce potential explosives hazards resulting from plowing and disking by PGC personnel who maintain these openings. And lastly, UXO construction support would be provided as needed during timber management activities, such as constructing access roads and establishing log landings. This will remove the surface and subsurface MEC/MD that would be encountered during these operations but specific to the areas where timber will be harvested.

Alternatives 1 and 2 are not desirable because they do not remove any MEC or MD. Alternative 3 covers a larger area than Alternative 4 but does not address subsurface MEC. Additionally, Alternative 3 is more expensive than Alternative 4 but may not provide additional benefit based on current and future land use. Alternative 5 is the most protective remedy but also the most expensive. In addition, it would result in the largest amount of disturbance to the environment and impact to special status species. Alternative 4 will have a lesser degree of disturbance to the environment than Alternative 5. Coupled with outreach efforts to mitigate the public’s encounter with MEC/MD, it is estimated that the MEC and MD removal conducted for Alternative 4, will fully address the explosive safety risk, locate and remove most of the MEC/MD, and provide the most cost effective solution for cleaning up the Ricochet Area MRS.

**Evaluating cleanup alternatives against nine evaluation criteria**

The Army National Guard evaluated the cleanup alternatives against seven of the nine evaluation criteria. (see “Explanation of evaluation criteria” on page 4). The state regulator and community acceptance criteria will be evaluated after public comments are received by the Army National Guard. The degree to which cleanup alternatives meet the evaluation criteria as determined by CERCLA is shown in the table below.

<b>Evaluation of cleanup alternatives</b>					
<b>Evaluation Criteria</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Preferred</b>	
				<b>Alternative 4</b>	<b>Alternative 5</b>
1. <b>Overall protection of human health and the environment</b>					
2. <b>Compliance with applicable or relevant and appropriate requirements</b>					
3. <b>Long-term effectiveness and permanence</b>					
4. <b>Reduction of toxicity, mobility or volume through treatment</b>					
5. <b>Short-term effectiveness</b>					
6. <b>Implementability</b>					
7. <b>Cost</b>	\$0	\$181,998	\$16,182,335	\$6,757,826	\$24,315,156
8. <b>State regulator acceptance</b>	Will be evaluated after public comment period.				
9. <b>Community acceptance</b>	Will be evaluated after public comment period.				

 = Favorable, meets criteria     = Moderately favorable     = Not favorable, does not meet criteria



## Next steps

The Army National Guard in consultation with PADEP and PGC will evaluate public reaction to the preferred cleanup alternative during the comment period and the public meeting before deciding on the final remedy. Based on new information or public comments, the Army National Guard may modify its proposed alternative or select another cleanup alternative outlined in this proposed plan. The Army National Guard encourages you to review and comment on the cleanup alternatives. More technical detail on the proposed

cleanup plan is available in the documents on file at the Annville Free Library and on the project website (*website address is provided on page 1*). The Army National Guard will respond in writing to comments in a responsiveness summary that will be part of the final decision document called the record of decision. Once finalized, the Army National Guard will announce the selected cleanup plan in a local newspaper advertisement and place a copy of the record of decision in the administrative record file at the Annville Free Library.

The Army National Guard Directorate and  
Pennsylvania Army National Guard  
propose a preferred cleanup alternative  
for the Ricochet Area Munitions Response Site  
in State Game Lands 211, Pennsylvania

Important community meeting scheduled for  
June 21, 2012



# Follow the 3Rs

## Recognize

Recognize when you may have encountered a munition.

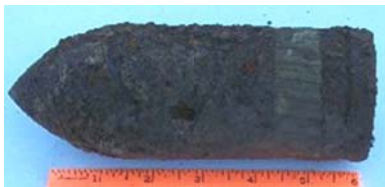
Recognizing when you may have encountered a munition is the most important step in reducing the risk of injury or death.

Munitions may be encountered on land or in the water. They may be easy or hard to identify.

To avoid risk of injury or death:

- Never move, touch or disturb a munition or suspect munition
- Be aware that munitions do not become safer with age, in fact they may become more dangerous
- Don't be tempted to take or keep a munition as a souvenir

Munitions come in many sizes, shapes, and colors. Some may look like bullets or bombs while others look like pipes, small cans or even a car muffler. Whether whole or in parts, new or old, shiny or rusty, munitions can still explode.



57-mm artillery projectile



37-mm artillery projectile

## Retreat

Do not touch, move, or disturb it; but carefully leave the area.

Avoid death or injury by recognizing that you may have encountered a munition and promptly retreating from the area.

If you encounter what you believe is a munition, do not touch, move, or disturb it. Instead, immediately and carefully leave the area by retracing your steps — going out of the way you entered. Once safely away from the munition, mark the path (e.g., with a piece of clothing or GPS coordinates) so response personnel can find the munition.



## Report

Immediately notify the police.

Protect yourself, your family, your friends, and your community by immediately reporting munitions or suspected munitions to the police.

Help the police by providing as much information as possible about what you saw and where you saw it. This will help the police and military or civilian explosives ordnance disposal personnel find, evaluate, and address the situation.

If you believe you may have encountered a munition, call 911 and report:

- The area where you encountered it.
- Its general description. Remember: do not approach, touch, move, or disturb it.
- When possible, provide:
  - Its estimated size
  - Its shape
  - Any visible markings, including coloring



75-mm high explosive projectiles