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Former Raritan Arsenal Remedial Investigation – Phase 2



Open House and Public Information Meeting – Sayreville Council Chambers – January 14, 2014

Formerly Used Defense Sites Program (FUDS)

Former Raritan Arsenal

Edison, New Jersey

Contract # W912DY-09-D-0060, Task Order 003

Update on the Munitions Remedial Investigation

This presentation provides information about Phase 2 of the work along the south shore of the Raritan River, in the wetlands between the river and Sayreville Boulevard.

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To
Keeping
The
Public
Informed**

Focus of the Remedial Investigation (RI)



- Since 1989, numerous investigations and removal actions have been completed at the former Raritan Arsenal.
- This investigation focuses on 12 specific areas to:
 - Characterize the *nature* (what is it) and *extent* (where is it) of munitions and explosives of concern (MEC), munitions constituents (MC), and other hazardous and toxic wastes that are specifically related to a known Department of Defense release.
 - Perform human health and ecological risk evaluations, as well as complete a munitions hazard assessment.
 - Collect sufficient data to define remedial alternatives in the Feasibility Study that will follow.



A Phased Approach

Phase 1

- Locate buried metallic objects that might be munitions

Phase 2

- Dig up and identify metallic objects
 - *Are they unrelated objects (pipe, rebar, fence posts) or munitions?*

Phase 3

- Sample soil for munitions compounds where munitions were found

November 2013

January 2014

June 2014



Investigation Area in Sayreville

- Dredge Spoils Area #5
 - 228-acre area of wetlands along the southern shore of the Raritan River, just north of Sheffield Towne community
- The lower Raritan River was dredged in the World War I and World War II eras to maintain a channel and turning basin for ships loading and unloading at the former Raritan Arsenal.
- Dredged materials (“dredge spoils”) might have contained discarded military munitions that fell off cargo ships during loading and unloading.
 - Munitions packed for shipping would not be armed or have fuzes attached

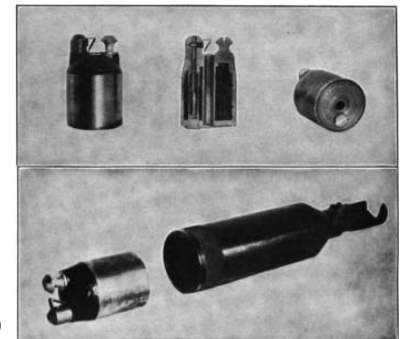


Brief History of Dredge Spoils Area (DSA) # 5



Dredges from the 1950s-1970s (Historical photos - U.S. Army Corps of Engineers Dredging Operations Support Program)

- 1940s-1950s: Raritan River dredged to increase its depth for shipping
 - Dredge spoils were deposited in several locations, including an 8-acre parcel near the Sayreville wastewater plant, known as the “Spoils Area”
 - The “Spoils Area” was also used by the town of Sayreville, during installation of a sewer plant effluent diffuser in the river bed
- 1993: USACE conducted a munitions removal action in the Spoils Area
 - A total of 245 ordnance items were removed from a depth of 4-8 feet below the ground
 - 14 Mk II hand grenades
 - 231 French rifle grenades

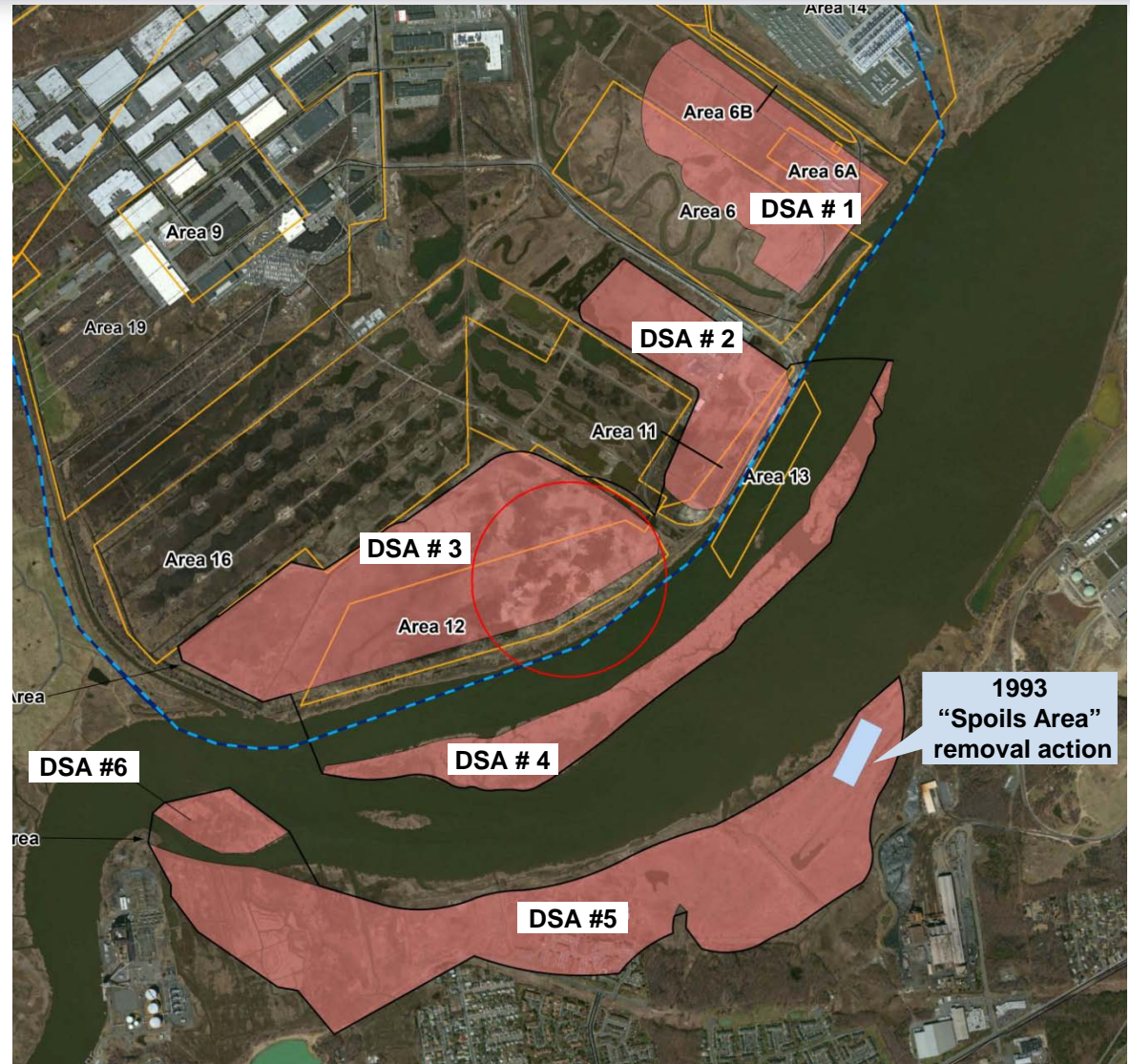


(Historical photos - Wikimedia Commons)

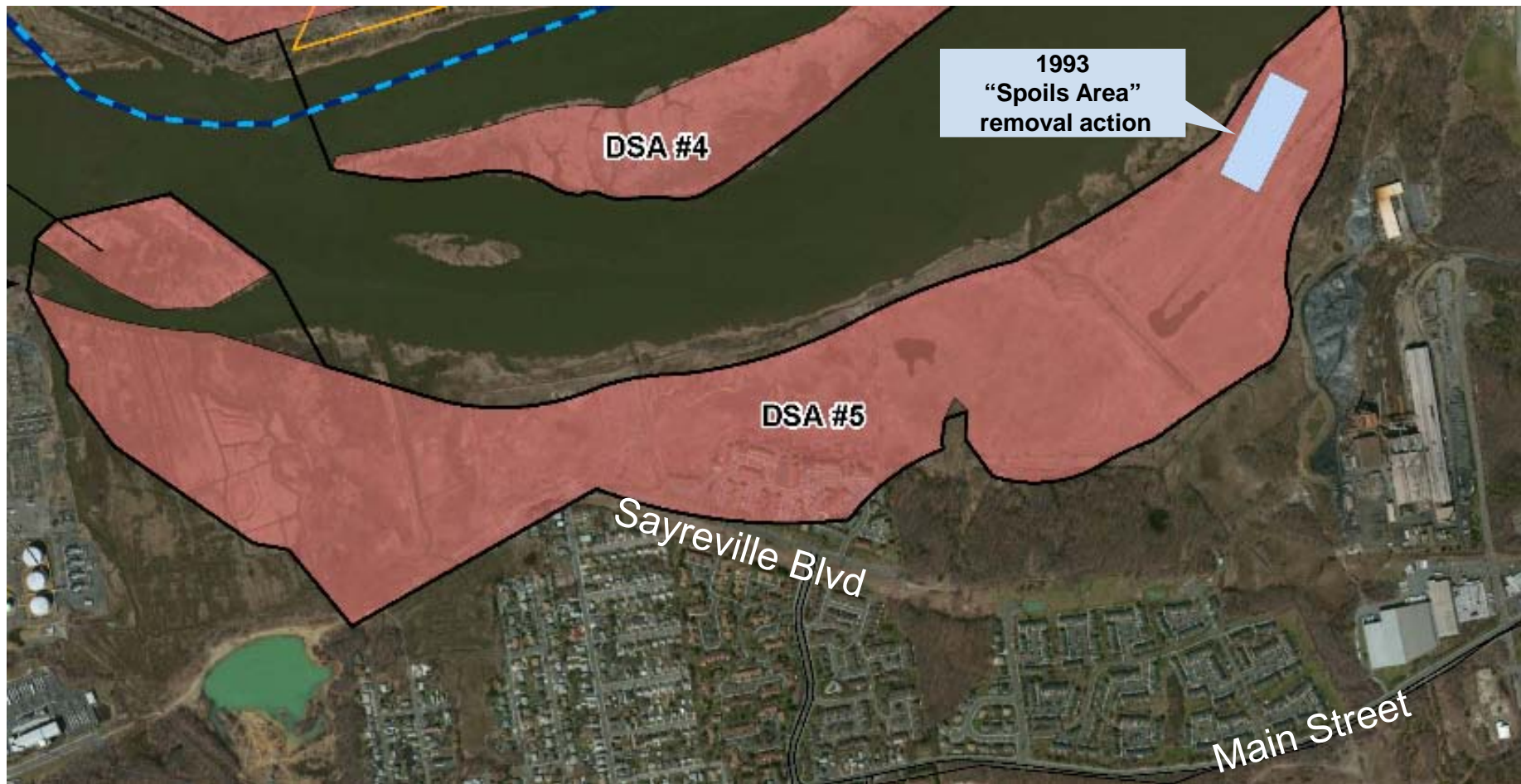


Brief History of Dredge Spoils Area (DSA) #5 (continued)

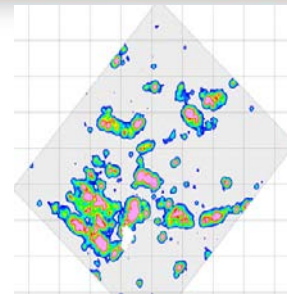
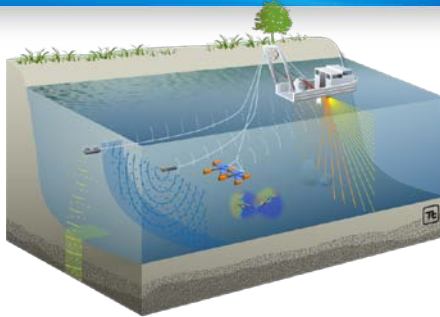
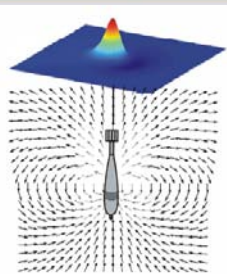
- 2012: Records research identified historical maps showing the permitted limits of six dredge spoils disposal areas
 - Including one on the southern shore of the river
 - Added to the munitions investigation as DSA #5
- Examination of the site suggested that the *actual* area used for dredge disposal at DSA #5 was probably smaller than the *permitted* area shown here



Dredge Spoils Area (DSA) #5



Phase I Work is Complete (Nov – Dec 2013)



■ Surface preparation

- Vegetation was cut and cleared to allow for surface clearance.
- Teams walked over the area and picked up metallic objects on the surface.

■ Digital Geophysical Mapping (DGM)

- Electromagnetic induction (EMI) instruments were used to electronically record and create a digital map the locations of subsurface “anomalies” (metallic objects).
- *Anomalies may be any metallic objects, not necessarily munitions, for example pipes and fence posts*

■ Data Analysis

- Skilled geophysicists and munitions experts evaluated the data collected in Phase 1
- Selected subsurface anomalies that might be munitions for further investigation



Phase 1 Results- DSA #5

- The DGM survey of DSA #5 was conducted December 13-18, 2013, along 3-meter-wide parallel transects with 80-meter spacing between transects.
- A total of 543 anomalies (unknown metallic objects) were detected beneath the ground surface.



Phase 2 – DSA #5 Anomalies to be Investigated

The 228 anomalies shown as yellow dots were randomly selected for investigation and classification in Phase 2



Phase 2 – Intrusive Investigation (Jan – March 2014)



- Phase 2 is scheduled to start in January 2014. Unexploded ordnance technicians will:
 - Re-locate the mapped anomalies using surveying equipment.
 - Carefully excavate anomalies using a combination of hand tools (*shovels, trowels*) and heavy equipment (*tracked excavators, backhoes*).
 - Identify the anomalies and determine whether they are munitions or unrelated metal objects such as pipes, fence posts, marine debris, etc.
 - Inspect munitions and determine whether they can be moved safely:
 - If an item is deemed safe to move, it will be moved to a remote location where it will be destroyed.
 - If it is not safe to move, engineering controls such as sandbags or soil will be used to conduct a safe controlled detonation.
 - Nearby residents may hear a muffled explosion.



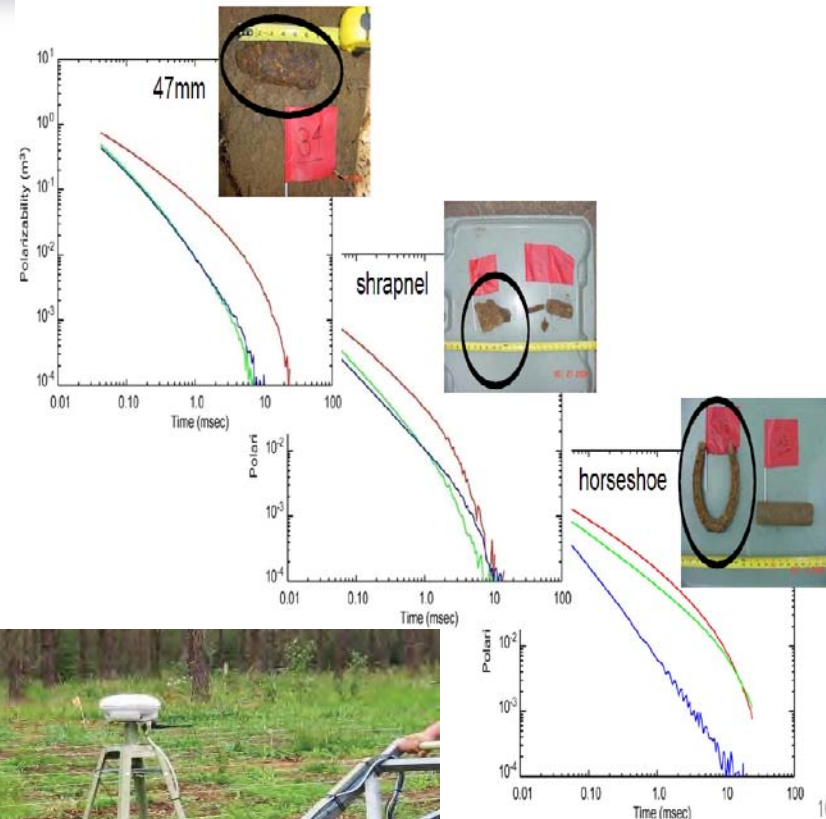
Exclusion Zones

- For safety reasons, **exclusion zones** are established to keep “non-essential personnel” out of the areas where active digging and handling of munitions is being conducted.
 - Mostly in the unpopulated wetland area
 - May also include temporary road closures, interruptions of river traffic, and any homes that are adjacent to digging areas
- To date, Phase 1 work has been non-intrusive and thus has not required any residential evacuation or road closures
- Every attempt will be made to minimize any impacts on community members during Phase 2.



TEMTADS: Minimizing disruption to the public

- An advanced detection system called TEMTADS will be used to help determine if these anomalies are *munitions* or *unrelated metallic objects*.
 - TEMTADS is not intrusive, so exclusion zones will not be active during this work.
- This will *minimize the number of anomalies* that need to be dug up for identification and thereby *minimize the disruption* to the public.



Exclusion Zones – DSA #5

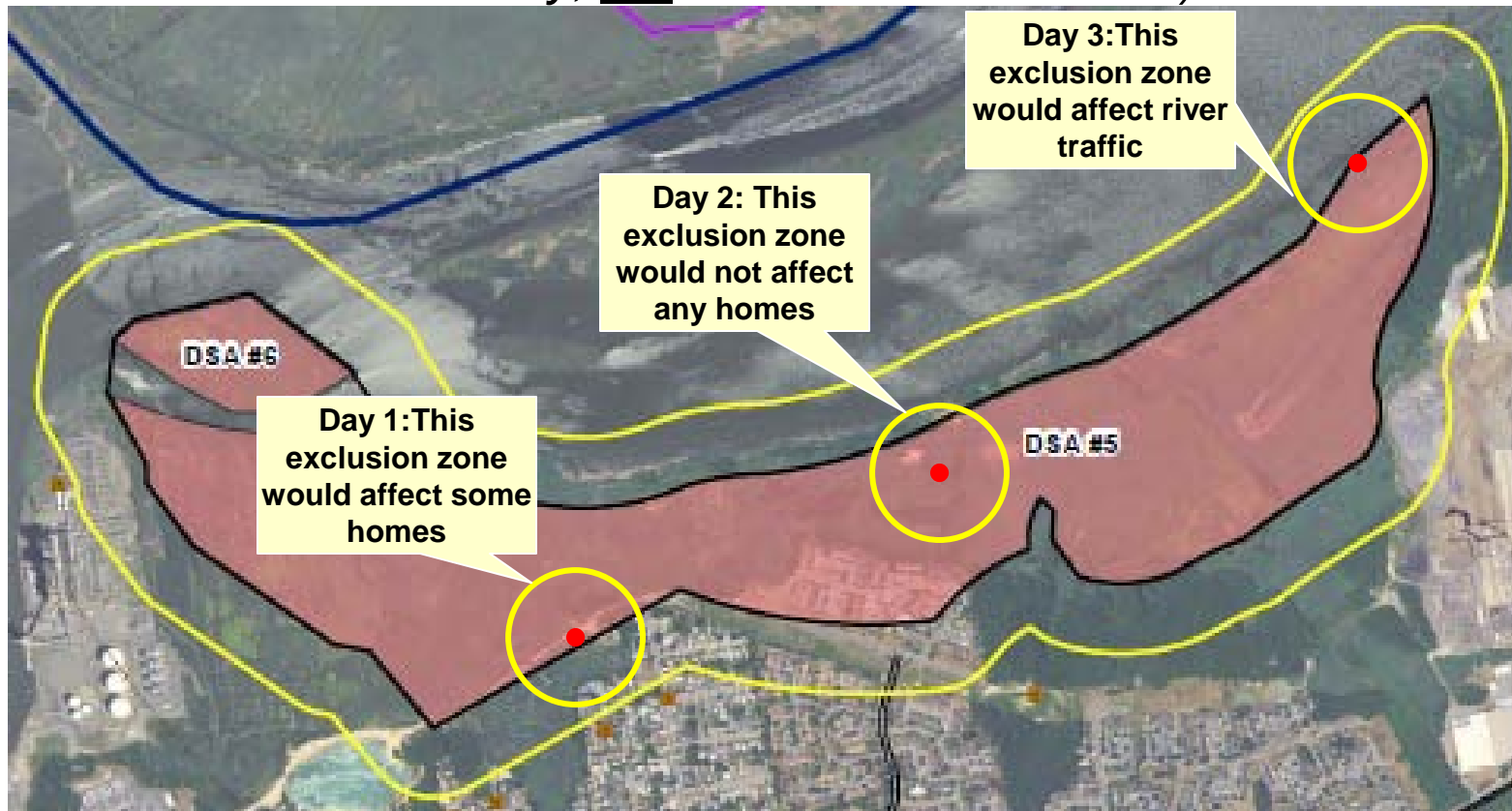
- The **HFD** or Hazardous Fragmentation Distance (yellow line)
 - Is based on the type of munitions expected at a site: **450 feet for DSA #5**
- This represents a **maximum exclusion zone** calculated from the boundary of DSA #5.
- During the investigation, active exclusion zones will be established only around the **specific anomalies** being investigated at a given time.
- Thus, the active exclusion zone on any given day will include only a **small portion** (if any) of the area shown here.



Exclusion zones would be limited in size

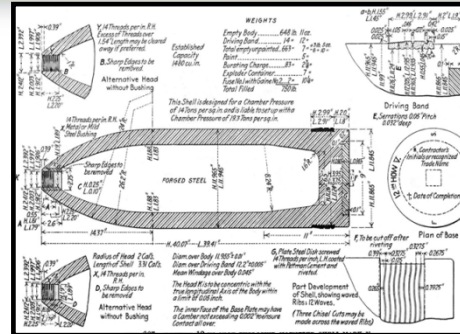
- Only the anomalies that TEMTADS data show as possible munitions will be dug up. Exclusion zones will center on those and only be active for a brief period.

(NOTE: for illustration only, not based on actual data.)



Phase 3 – Sampling & Analysis (June – July 2014)

- Phase 3 will begin after identifying and classifying any munitions that are recovered during Phase 2.
- Munitions experts and scientists will identify the types of compounds (*specific metals and explosives*) that make up those recovered munitions.
- Environmental samples will be collected and analyzed for those specific compounds, to ensure that they have not been released into the environment.



Schedule

All dates are approximate and may change

Phase	Task	Duration
Phase 1	Vegetation Reduction, Surface Clearance, and Digital Geophysical Mapping (DGM)	November – December 2013
Phase 2	Reacquisition and flagging of anomalies, TEMTADS, and Intrusive Investigation	January – February 2014
	• TEMTADS non-intrusive examination of anomalies (multiple areas)	January 20 th -30 th
	• Analyzing TEMTADS data and planning intrusive investigation	January 31 st – February 14 th
	• Coordinating with residents in exclusion zones (if any)	Week of February 17 th – 24 th
	• Intrusive investigation where residents are in exclusion zones	Late February – early March
Phase 3	Environmental Sampling & Analysis	June – July 2014



Safety and Coordination

- The US Army Corps of Engineers
 - Is committed to investigating these areas with the utmost concern for the safety of the public.
 - Is committed to keeping the public, property owners, local government, and other interested parties informed about what is happening, and when it will be happening.



Questions

- If you have questions that were not answered tonight, please contact:

Ms. Sandra L. Piettro, Project Manager

Phone – 917-790-8487

Email – Sandra.L.Piettro@usace.army.mil



- For more information about investigations at the former Raritan Arsenal:

- Visit the project website:

www.nan.usace.army.mil/Raritan



- To sign up for future notifications:

- Make sure you signed the sign-in sheet tonight
- Send an email to Sandra.L.Piettro@usace.army.mil
- Sign up for the Borough of Sayreville's online mailing list at www.sayreville.com



*Thanks for your
participation!*



Remember the 3 Rs



The '3 Rs' of munitions safety are always important to know, especially where munitions were used or stored in the past. Munitions are sometimes hard to identify. If you have found something you even *think* might be a munition:

- RECOGNIZE: Do not touch it
- RETREAT: Note the location and move away
- REPORT: Call 911

