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of Engineers®**

Former Raritan Arsenal Remedial Investigation – Phase I



Presentation for Public Information Meeting – Sayreville Borough Hall – November 7, 2013

Formerly Used Defense Sites Program (FUDS)

Former Raritan Arsenal

Edison, New Jersey

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

A Munitions Remedial Investigation is Beginning

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

**We
Are
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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 of the former Arsenal
- The purpose is to:
 - Characterize the nature and extent (i.e., what is it, and 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/documented Department of Defense release.
 - Perform human health and ecological risk evaluations, as well as complete a MEC hazard assessment.
 - Collect sufficient data to define remedial alternatives in the Feasibility Study that will follow.



Specific Areas of Focus

Area ID	Name of Area	Acreage
Area 1	Former Demolition Area	0.57
Areas 6, 6A, 6B	Former Burning Ground and Impoundment Area	130
Area 10	Former Wastewater Treatment and Magazine Area	140
Area 11	Former Dredged Material and Explosives Area	11
Area 12	Former Dredged Material and Explosive Detonation Area	82
Area 13	Submerged Dock Area	23
Area 16	Former Magazine Area	277
Area 18D	Trench of Shell Casings	31
Areas 9 and 19	Former Magazine Areas	294
DSA	Dredge Spoils Area	645



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Area 16	Former Magazine Area
Area 18D	Trench of Shell Casings
Areas 9 and 19	Former Magazine Areas
DSA	Dredge Spoils Areas
DSA #s 5 and 6	Areas to be Investigated on the south side of the river

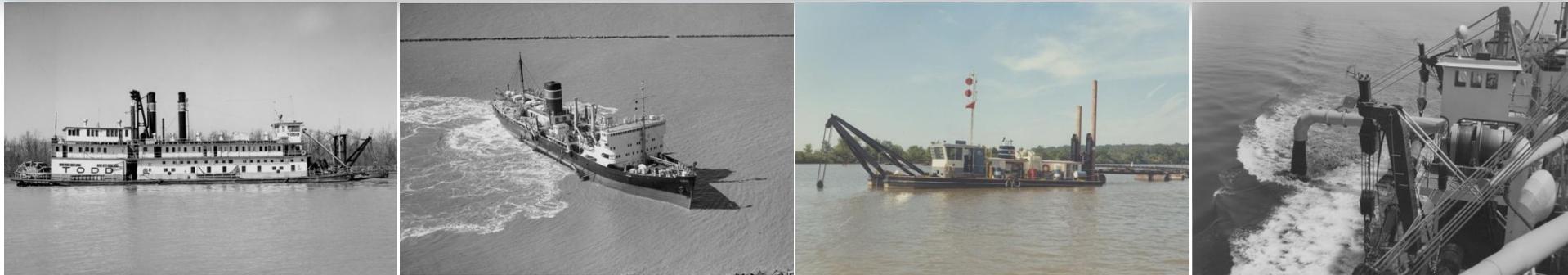


Investigation Area in Sayreville

- Dredge Spoils Area #5
 - 228-acre area of wetlands along the southern shore of the Raritan River, just north of Sheffield Towne community
- Dredge Spoils Area #6
 - One of two small islands in the river, known as the Crab Islands
- 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.

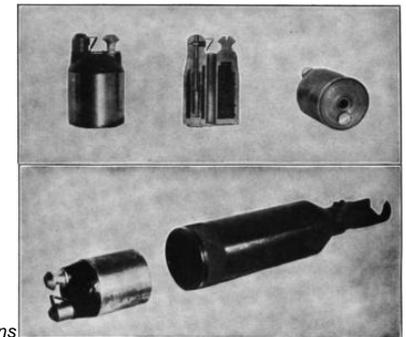


Brief History of Dredge Spoils Area (DSA) # 5



Dredges from the 1950s-1970s, U.S. Army Corps of Engineers Dredging Operations Support Program - Historical Photos

- 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

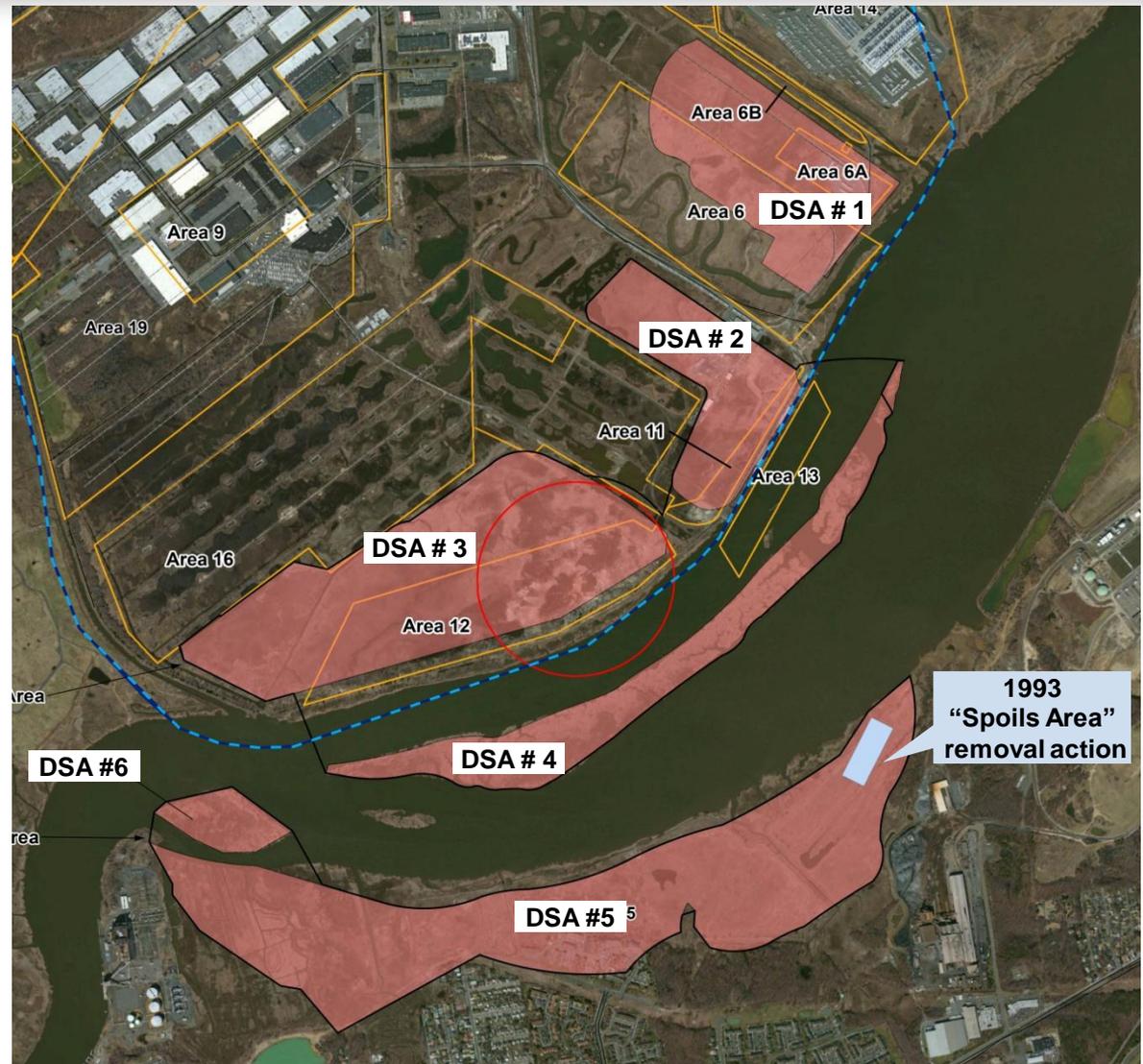


Historical photos - Wikimedia Commons



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

- 2012: Records research identified historical maps showing the permitted limits of dredge spoils disposal areas, including:
 - Along the northern shore of the river on the former arsenal property (DSA # 1-3)
 - Two islands in the river (DSA # 4 and DSA #6)
 - Along the southern shore of the river; added to the munitions investigation as DSA #5



A Phased Approach

Phase I

- Locate buried metallic objects that might be munitions

November 2013

Phase II

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

January 2014

Phase III

- Sample soil for munitions compounds where munitions were found

June 2014



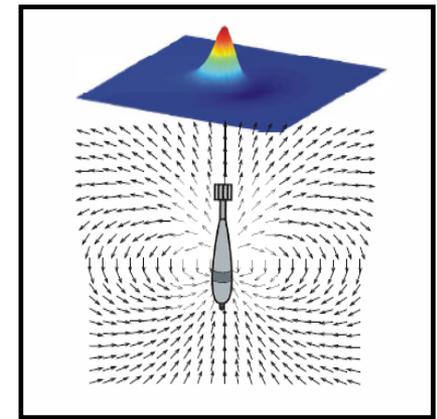
Phase I – Site Preparation and DGM (Nov – Dec 2013)

- Phase I field work is scheduled to start November 11, 2013.
- Vegetation will first be cut and cleared to allow for surface clearance and Digital Geophysical Mapping (DGM).
- Surface clearance: walk over the area and pick up metallic objects on the surface that could interfere with the DGM.
- In the unlikely event that a munitions item is discovered on the surface:
 - If it 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, soil, etc. will be used to conduct a safe controlled detonation



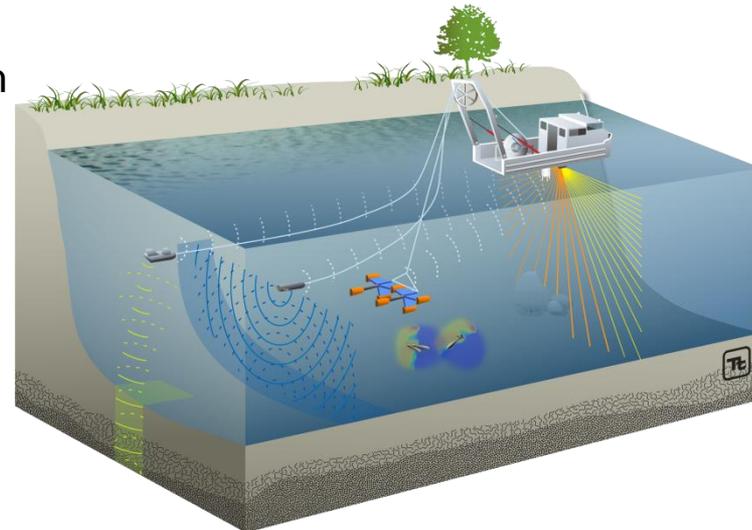
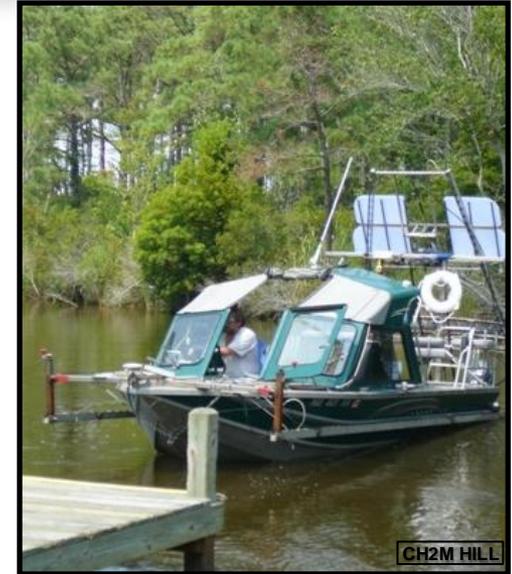
What is Digital Geophysical Mapping or DGM?

- Terrestrial Digital Geophysical Mapping (land sites)
 - Geophysical technicians slowly walk over the areas to be investigated using electromagnetic Induction (EMI) instruments
 - DGM is not *intrusive*: it does not require that anything buried under the ground be disturbed
 - Subsurface “anomalies” (metallic objects) are recorded electronically
 - A digital map is created so anomalies can be located in the next phase of the investigation.
 - *Anomalies may be any metallic objects, not necessarily munitions*
 - For example, pipes and fence posts

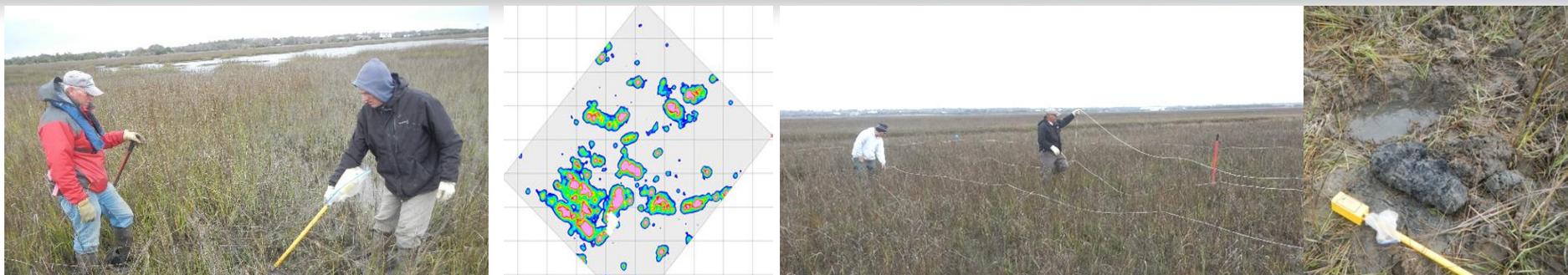


What is Digital Geophysical Mapping or DGM? *(continued)*

- Underwater Digital Geophysical Survey (river)
 - Underwater instruments are pulled by a boat in a specific pattern
 - Underwater DGM will be used to identify metallic debris that could be munitions, on or beneath sediments on the river bottom
- Skilled geophysicists and munitions experts will:
 - Analyze the data collected from both terrestrial and underwater DGM
 - Select subsurface anomalies that might be munitions and should be further investigated



Phase II – Intrusive Investigation (Jan – March 2014)

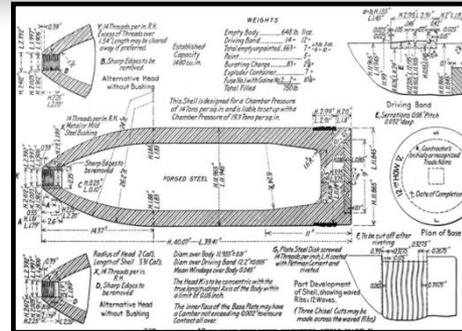


- Phase II is scheduled to start in January 2014, after subsurface anomalies have been identified, prioritized and selected for investigation.
- Unexploded ordnance technicians will:
 - Re-locate the mapped anomalies using surveying equipment.
 - Carefully excavate anomalies using a combination of hand tools (*shovels, trowels*) and heavy equipment (*tracked excavators, backhoes*).
 - Identify the anomalies and determine whether they are munitions or “cultural debris” (*metal objects such as pipes, fence posts, marine debris, etc.*)
 - Inspect munitions and determine whether they can be moved safely, or will need to be destroyed in place.
- For safety reasons during these intrusive investigations, exclusion zones are established to keep “non-essential personnel” out of the areas that are being actively investigated.



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

- Phase III will begin after identifying and classifying any munitions that are recovered during Phase II.
- 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

Phase	Task	Duration (business days)	Projected Start	Projected Finish
Phase I	Mobilization and Site Set-up	5 days	Wed 10/23/13	Fri 10/25/13
	Terrestrial (Land Sites) Surveying (DSA #5 and DSA #6)	4 days	Fri 11/8/13	Thu 11/14/13
	Vegetation Clearance (DSA #5 and DSA #6)	3 days	Mon 11/11/13	Thu 11/14/13
	Surface Clearance (DSA #5 and DSA #6)	3 days	Fri 11/15/13	Tues 11/19/13
	Terrestrial DGM Surveys (DSA #5 and DSA #6)	3 days	Wed 11/20/13	Fri 11/22/13
	River (Underwater) Digital Geophysical Mapping (DGM) Surveys	10 days	Mon 11/4/13	Fri 11/15/13
Phase II	Intrusive Investigation	January – March 2014		
Phase III	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 general public, stakeholders, and local government informed about what is happening, and when it will be happening.
 - Will schedule additional meetings throughout the phases of the investigation so all interested parties remain well informed.



Questions

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

Ms. Sandra L. Piettro, Project Manager

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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 mailings/public meeting notices:

- 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!*

