



**US Army Corps
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New York District

**Former Raritan Arsenal; Edison, New Jersey
Formerly Used Defense Site (FUDS)**

**Public Information Meeting
15 July 2014
Edison Municipal Complex • Edison Room (3rd Floor)
100 Municipal Boulevard • Edison, New Jersey**

Meeting Summary

Introduction

The meeting began at 7:12 pm. One local official (Edison Township), three representatives of local environmental groups (Edison Wetlands Association and Edison Greenways), and one consultant (working for Federal Business Centers) attended the meeting. Ms. Sandra Pietro of the U.S. Army Corps of Engineers (USACE) welcomed everyone and described the purpose of the meeting as a project status update on the environmental restoration of the former Raritan Arsenal.

She began by giving a presentation on Restoration Advisory Boards (RABs), which she does every two years (**Attachment 1**). A RAB is an advisory committee where members provide individual advice to government decision-makers, but it is not a decision-making group. It is made up of community and government representatives and all are considered equal. RAB meetings act as a forum to exchange information and provide stakeholders with an opportunity to participate in the cleanup process throughout the CERCLA process.

To form a RAB, at least 50 citizens need to petition for a RAB; a form was provided as a handout. For Raritan Arsenal, USACE has been holding a public meeting twice a year and people come and provide input. In addition, USACE puts information on its website. These outreach methods seem to be working so far. If the public does submit more than 50 petitions, then Ms. Pietro would submit the forms to USACE upper management for a decision on formation of a RAB.

RAB members are selected through a specific selection process and are responsible for providing individual advice and attending regular meetings. RAB members often include the Federal agency involved at the site, the state environmental agency, the U.S. Environmental Protection Agency (USEPA), local agencies, local government, and representatives of the local community. At Raritan, USEPA is an affected property owner, so they are not as involved as a regulatory agency.

Presentation/Project Status

Ms. Pietro provided a slide presentation on the status of investigations of the various sites (**Attachment 2**). She began by describing the sites, or Operable (Decision) Units. The Former Raritan Arsenal is a large property (about 3200 acres) which is broken into smaller divisions for environmental investigation and remediation. She then showed a map of the operable units and proceeded to describe the status of investigation for each one.

Site-Wide Groundwater/Indoor Air/Vapor Intrusion

Groundwater is being addressed separately and covers most of the former Raritan Arsenal property. Years of sampling and documentation have been completed. A Remedial Investigation (RI) has been completed, and the operable unit is now in the Feasibility Study (FS) phase to evaluate the need for and possible alternatives for moving into the next phase. Ten areas of



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concern are documented in the FS. The FS report has been generated and is going to the New Jersey Department of Environmental Protection (NJDEP) in the fall of 2014.

The groundwater long-term monitoring program is ongoing. The first round of sampling was completed in 2010, with another completed in 2012. Based on these results, future sampling will be conducted every five years until 2042. Results indicate that groundwater plumes are reaching steady-state, with decreasing concentration levels and evidence of natural attenuation. Current concentrations are not showing potential risk to public health, which is being evaluated as part of the FS.

Indoor air and vapor intrusion are part of the groundwater study. Groundwater contamination releases vapors up through the soil, which can potentially affect air in buildings above it. USACE is currently evaluating eight buildings for potential risk. There is no risk now, but USACE is taking a proactive approach to evaluate potential future risk. Data is documented in air quality reports; Report #9 has been submitted to NJDEP for review.

Middlesex County College Property

A Final RI report has been prepared and submitted to NJDEP. It documents all the previous investigations, removal actions, etc., that have been done on the college property. USACE's recommendation is that there is no unacceptable risk and therefore, no need to generate an FS. USACE is proposing no further action for the college property because they have addressed concerns in 20 years of working on the property. The next step is to generate a Proposed Plan (PP) and Decision Document (DD) and hold a public meeting in fall 2014 to discuss the proposed action for the Middlesex County College Property, at which time, the public can review the PP and provide comments.

Thomas Edison Park

Work has been done at the park. There is a 5-6 acre part of the park that is fenced off and additional work has been done by CH2M HILL as part of the overall munitions investigation. The fenced area is one area where there had not been previous investigations. There are two other areas (9 and 19) that are also part of the remedial investigation, but an intrusive investigation was not conducted because the area is paved. All of these areas will be included in the RI report.

Commercial/Industrial Area (Raritan Business Center)

The commercial/industrial area is a developed area within the Raritan Business Center. A revised pre-draft RI report has been prepared; USACE will review and submit it to NJDEP in the fall, and will determine whether there will be an FS or not. Either way, there will be a PP and an opportunity for the public to review and provide comments.

Area 5 (former Chemical Warfare Material Site)

Area 5 is a former chemical warfare material site located within the commercial/industrial area. Numerous investigations have been completed. These investigations are being consolidated into



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one RI report, which was submitted to NJDEP for review. NJDEP had comments, and USACE is currently finalizing the response to comments. If USACE and NJDEP concur, USACE will finalize the RI report and move forward to the FS stage.

Mr. Frazier (USACE Huntsville) added that investigations at Area 5 evolved from a desktop RI/FS to one in which geophysical fieldwork was conducted.

USEPA/GSA Property

A draft RI is being prepared and once finalized within USACE, will be submitted to NJDEP for review. Within this area, Area 18D was carved out for additional field work.

Mark Callaghan/CH2M HILL described the history of Area 18D. There was a burial trench containing inert munitions. During construction of the Beechwood property, the trench was discovered and was treated as part of the Beechwood development (now called Centerplace at Edison). Everything found was inert - there were no explosives. Remediation stopped at the fence-line of that property. USACE wanted to see if the trench line continued into USEPA and the college property, and therefore, did digital geophysical mapping (DGM) to find the extent of the trench. The College already suspected there might be something under their parking lot and asked USACE to investigate that too. Therefore, USACE had CH2M HILL do an advanced investigation to determine whether things “look” like munitions, without digging them up in an intrusive investigation.

Undeveloped Wetlands Area

Just south of Raritan Center is an undeveloped wetlands area where USACE completed a Phase 1 field survey using DGM to see where munitions might be buried. In Phase 2, the team then went out and dug things up. In October, the team will go out again and collect soil samples. All of the information will be compiled into an RI report and submitted to USACE, with an FS shortly thereafter. Then a PP and DD will be prepared after the RI/FS is approved by NJDEP. Throughout each step of the process, the public has opportunity to review and comment on EACH document. USACE replies to comments.

Site-wide Hazardous and Toxic waste and Munitions RI/FS Study

This investigation is similar to the undeveloped wetlands area, but covers more areas. There are 12 investigation areas which are undergoing the same process as the undeveloped wetlands area. This investigation was discussed further in Mark Callaghan’s presentation.

FY 2014 milestones

Ms. Pietro presented the FY 2014 milestones summary slide, which she indicated basically shows that USACE and its consultants doing a lot of work throughout Raritan, and still have a lot to do.



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Mr. Robert Spiegel, Edison Wetlands Association (EWA) asked Ms. Piettro to clarify what was meant by “evacuation event in Sayreville” as shown on the slide. Ms. Piettro responded that in 2012, USACE found an historical report showing where dredge materials had been deposited on the south side of the river. Looking at a large map on a poster, she indicated the green areas on the map showing the dredge spoils areas.

Mr. Spiegel asked whether there might have been material related to explosions that took place on the former Raritan Arsenal property. Ms. Piettro replied that there was not enough energy in those explosions for material to be deposited on the south side of the river. She elaborated that the Arsenal tended to delineate a 4000-foot explosives area (as determined in an old report to Congress). However, USACE worked with experts on a white paper and determined that, based on the munitions that were used at the Raritan Arsenal and what was used to detonate them, the maximum fragmentation distance was 974 feet. This work resulted in a smaller circle on the map.

Mr. Spiegel then asked whether the potential munitions in Sayreville were related to what he described as a huge explosion in 1923 when a nitrous cellulose plant blew up and blew down the ammunition storage buildings. He was told that event affected Area 10, where CH2M HILL has also been doing investigations.

Mr. Spiegel went on to ask about other explosions that occurred in the area, including two trains that blew up in Thomas Edison Park and a fire involving white phosphorous. Mr. Callaghan commented that he would cover more on the ongoing munitions investigation and what was found in the various areas as part of his presentation.

Mr. Spiegel also asked about the USACE doing work involving a magnet in the wharf area and Mr. Callaghan again responded that that would be covered as part of his presentation.

Ms. Piettro then returned to the original question about the Sayreville evacuation. CH2M HILL identified anomalies on the Sayreville side of the river that had to be physically dug up to see if they were munitions or scrap metal. USACE and CH2M HILL worked closely with Sayreville officials for months in advance to select a date that would work well for local residents. On June 9th, residents from 73 homes were asked to leave their homes between 9:00 a.m. and 3:00 p.m. while field staff conducted an intrusive investigation. The area investigated was all in the wetlands, but a 450-foot safety arc around the investigation area included these homes. There was no digging on private residential property.

Mr. Spiegel asked whether the investigation was focused on the Sheffield Mews property. Ms. Piettro replied that it was not. Sheffield Mews did not give USACE right of entry, so no work was done on their property.

Ms. Piettro concluded that USACE evacuated people on that one day in Sayreville, did the intrusive investigation work, and didn't find any munitions. Everyone was able to return to their homes that afternoon and USACE is finished with work on that side of the river.



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Mr. Spiegel asked how many anomalies were investigated and how many were found. Mr. Callaghan recommended that Ms. Piettro finish her presentation and then he would get into more details on the munitions investigation in his presentation.

2015 milestones

Ms. Piettro continued with her presentation, showing more work planned in FY2015 as USACE moves through the investigation process on the various sites.

Funding

USACE has spent about \$88 million to date, with another \$2M allocated in 2013. The 2014 “books” are still open, depending on ongoing investigations and reports. The cost to complete is estimated to be \$31.7 million.

CERCLA Process

Ms. Piettro showed a slide that diagrams the CERCLA process for investigation and remediation, and pointed out that most of the properties under investigation are in the Remedial Investigation phase and will go through the Feasibility Study, Proposed Plan, and Record of Decision phases.

Mr. Spiegel asked whether this is the same CERCLA process used by USEPA and was told yes, that all federal agencies use the same CERCLA process. Mr. Spiegel then asked whether ATSDR (the Agency for Toxic Substances and Disease Registry) would be brought in. Mr. Callaghan replied that ATSDR is typically only consulted for large active bases, often before the CERCLA process starts.

Mr. Spiegel explained that he was asking because ATSDR is required by Congress to do a health consultation at every Superfund site. So if USACE is using USEPA’s CERCLA process, would ATSDR get involved?

Mr. Callaghan clarified that is not USEPA’s CERCLA process, but rather, the Federal government’s process. The same CERCLA process is followed by the Federal government at all sites (Army Corps of Engineers, Navy, Air Force, Marines, Coast Guard, etc.), but Raritan Arsenal is not a Superfund site. At this site, USACE is the lead agency.

Mr. Brett Frazier from USACE in Huntsville clarified that there is a slight difference in that USACE is also looking at munitions.

Mr. Spiegel asked whether USEPA was involved as a regulator or because they are a property owner. Mr. Frazier replied that USEPA’s involvement varies at different sites, but at Raritan Arsenal, they are involved as a property owner.

Mr. Spiegel then commented that the Edison Health Department is also involved and looks at potential impacts to public health, and inquired whether there are other health agencies involved or whether USACE has health experts involved.



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Mr. Jay Elliott, representing Edison Township, replied that it is a bit of a different process because this investigation is munitions-based; it is more of a removal than a cleanup per se. Issues such as indoor air quality are different and multiple agencies get involved, but not with a removal action in undeveloped wetlands areas. Edison Township is more involved for safety reasons related to ongoing development – if someone wants to do construction, then they are required to have oversight because of potential munitions issues. Any intrusive action that will disturb more land requires oversight.

Mr. Frazier added that an RI/FS does include a human health assessment, which goes to the NJDEP for their review.

Mr. Spiegel asked why the NJDEP was involved but not the state health department. Mr. Elliott replied that the state health department has a very narrow focus. When NJDEP was created, environmental health issues were moved to the NJDEP from the health department.

Mr. Spiegel asked whether the state health department works under contract to ATSDR and Mr. Elliot replied that they do on certain projects.

3Rs Ordnance Safety

Ms. Pietro continued her presentation by reviewing the slide on ordnance safety, describing the “3 Rs” – recognize, retreat, and report.

Presentation/Munitions Remedial Investigation (RI)

Mark Callaghan, Project Manager for CH2M HILL, started his presentation with the 12 specific areas of focus for the munitions RI and explained the three phases of investigation fieldwork (see **Attachment 3**). Based on questions that had been asked in the meeting so far, he decided to give a more detailed presentation that was prepared for an earlier stakeholder meeting. The handout provided at the public meeting was a more general presentation, but Mr. Callaghan pointed out that the more detailed presentation had already been emailed to Mr. Spiegel for the stakeholder meeting earlier that day.

Mr. Callaghan began his presentation by pointing out that the focus of the remedial investigation is to characterize the nature and extent of munitions on 12 specific areas of the former Raritan Arsenal. The slide included the words “complete a MEC hazard assessment” and Mr. Spiegel asked what that was. Mr. Callaghan explained that with volatile organic compounds in soil, you can do a human health assessment for acute or chronic exposure. But for munitions, exposure is only acute, so you do not do the same type of risk assessment – it is not based on duration of exposure like a regular risk assessment. Exposure to bombs is instant, and therefore the risk assessment approach is different. For a munitions and explosives of concern (MEC) hazard assessment, you look at what munitions are there and what the risk is from those.

Mr. Frazier added that a Department of Defense (DoD) agency developed the MEC assessment process, and it is still in a trial basis to a certain extent. DoD hasn’t decided whether it is the



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process that will always be used. The MEC hazard assessment process has some limitations, such as that it doesn't work for MEC found underwater.

Mr. Spiegel asked if just one explosive is found, the MEC hazard assessment is triggered, and Mr. Frazier confirmed that is correct. He also stated that in some cases, you may decide to do a MEC hazard assessment if you find fragments suggesting that munitions were used in the area.

Mr. Callaghan then continued with his presentation, showing the specific areas of focus on a map and providing an overview of the phased approach to the munitions investigation. In Phase 1, they used DGM to locate buried metallic objects. In Phase 2, they dug up and identified the metallic objects found in the DGM survey to and see what they are, and in Phase 3 (October), they will sample soil for munitions compounds where munitions were found.

Phase 1 was conducted in November 2013. They first cut vegetation, then cleared the surface and picked up metallic items that could interfere with the DGM. No munitions items were found during surface clearance.

Mr. Spiegel asked if that process was used everywhere, including in Sayreville, and Mr. Callaghan confirmed that it was. He clarified that they work in transects, because they are covering a huge area for the investigation, and there are gaps between the transects. They have 100% coverage within the transects and found nothing on the surface.

Mr. Callaghan then provided more details about the Phase II intrusive investigation, which started in January. Unexploded ordnance (UXO) technicians relocated the mapped anomalies and excavated them with hand tools to identify whether they are munitions debris or cultural debris. If they are munitions, they are inspected to determine whether they are inert or need to be destroyed in place. During the investigation, exclusion zones around the area are identified for safety. They completed the intrusive investigations in Areas 10, 12 (terrestrial and aquatic), Area 13 (terrestrial and aquatic), and the Dredge Spoils Area (including the Sayreville site).

Mr. Spiegel asked for clarification of terrestrial versus aquatic. Mr. Callaghan replied that for the aquatic investigation, the DGM is completed within the river. Mr. Spiegel asked whether there were limitations to how deep you can scan over land versus in water, and Mr. Frazier replied that the technology is the same for both. Using DGM in water doesn't change how deep you can scan. The actual depth varies somewhat, but is typically 3-4 feet. Small items can't be detected as deeply and large items can be detected much deeper.

Mr. Spiegel also asked whether they purposely buried things to ground-truth the technology and Mr. Callaghan confirmed that he is talking about a calibration technique used to test the equipment. They take an industry standard object (ISO), bury it in certain place, and then when doing the DGM, they run the equipment over these known locations in the morning before starting, and again in the afternoon (sometimes as much as four times per day) to make sure the instruments are working properly.



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Mr. Spiegel asked whether there were any problems with the instrument calibration, and Mr. Callaghan confirmed that they did have problems when they first started in January. They weren't finding anything in many locations when they tried to dig up anomalies. They determined that there had been some "noise" that was intrinsic to the DGM machine; it would cause something looking like an anomaly when it actually wasn't. Therefore, in January, they went back out with the DGM and re-mapped all anomalies to correct the problem.

Area 10

Mr. Callaghan described the results of the Phase 2 investigation in Area 10, which is the fenced-off area of Thomas Edison Park. Of the 135 anomalies that were selected statistically, 9 items were munitions or munitions fragments, with nothing live. Everything else was miscellaneous scrap metal, such as pieces of pipe, pieces of steel, etc.

Mr. Spiegel asked whether the items that were found were French rifle grenades. Mr. Callaghan responded that the munitions items found in Area 10 were a fuse, expended grenades, and hand grenade fragments. Mr. Spiegel asked whether French rifle grenades were found there previously, and Mr. Callaghan confirmed that they were.

Area 12

Mr. Callaghan described that in Area 12, of the 194 anomalies selected for intrusive investigation, 12 were identified to be munitions or munition fragments. Two of these were considered unsafe to move and were blown in place. Mr. Spiegel asked what those were and Mr. Callaghan replied that they were French rifle grenades. Every other anomaly was scrap metal.

For Area 12, they also did transects to identify anomaly clusters in the water. Five anomaly clusters were selected for intrusive investigation, but 4 of them were too close to the high power Neptune cable. Mr. Spiegel asked whether there was an alternate way to address that, and Mr. Callaghan replied there was not. However, the chances that there are munitions there are slim because the cable is trenched in. Neptune did underwater sonar when they buried the cable and found nothing. There are records of ammunition finds during dredging activities.

Mr. Spiegel asked whether they were warned in case they do any additional work on the cable and Mr. Callaghan said not specifically, but they are the only ones qualified to work on the cable. *[Note: In September 2013, USACE briefed Neptune Power about the upcoming munitions investigation.]* The 50 megawatt cable provides 20% of the power to Long Island and there is a 50-meter buffer zone around it. Mr. Spiegel asked how deep it is, and Mr. Callaghan replied that it is 4-6 feet below ground.

Area 13

Mr. Callaghan described the results of the Phase 2 investigation for Area 13, the wharf and the land next to it. Of the 221 anomalies selected, 2 items were identified to be munitions



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fragments – a 37 mm round and a discharged shotgun shell, completely unrelated to past DoD activities on the property. Everything else was scrap metal.

Mr. Spiegel asked whether this was what the big magnet was used for, and Mr. Callaghan confirmed that they used the magnet for the Area 13 aquatic work. For that, 17 locations of anomaly clusters were selected as well as 10 randomly selected locations underneath the former wharf itself, since they cannot use DGM next to a wharf covered in metal. One item they found under the wharf was actually an old car. All anomalies were scrap metal.

Mr. Callaghan showed pictures of what this investigation looked like. They used a large electromagnet, but weren't getting good results with it, and replaced it with a clamshell bucket and one of the largest excavators that exists.

Mr. Spiegel asked whether it was a closed or open clamshell. Closed doesn't let the water run out. Mr. Callaghan confirmed that it was closed. They used GPS to be able to put the clamshell down in the exact location of an anomaly cluster. Then they pulled up the sediment, put it onto a grate with a barge underneath it, and rinsed water through it so the mud would go down and back into the river, leaving the metal behind.

Mr. Spiegel asked whether they tested the mud to make sure they weren't releasing contaminated sediments into the river, and Mr. Callaghan replied that there was no need to because the purpose was to find any munitions within the sediment. Mr. Spiegel commented that they missed a good opportunity to test the sediment. He asked whether this is a part of the river that has not been dredged, and Mr. Callaghan replied that Area 13 has been dredged many times.

Area 18D

For Area 18D, rather than conducting an intrusive investigation, they used advanced classification technology (TEMTADS) to look at subsurface anomalies and determine what they are. TEMTADS is the most advanced system available for this work. They used it to look at subsurface anomalies and found 18 potential targets of interest, which look like potential munitions – they might not be, but they look like they could be. They also found non-targets of interest, and some that were inconclusive. Typically, they would then dig up all targets of interest and ones that are inconclusive. Using the technology minimizes the amount of intrusive work (digging) they have to do.

Mr. Spiegel questioned whether the technology has the same limitation as DGM of about 4 feet deep, and Mr. Callaghan replied that it actually can "look" a little deeper, as well as provide the exact depth of the item.

Mr. Spiegel asked whether they compared the results to earlier aerial photos from when the Arsenal was in operation, and Mr. Callaghan confirmed that they have looked at earlier aerial photos. There is no evidence of anything, including a trench. Area 18D is an area that Middlesex Community College had asked about before when putting in some utilities. Mr. Spiegel



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questioned the shape of the investigation area, and Mr. Callaghan replied that the College specifically requested USACE to look at this one acre. No intrusive investigation was done, at the request of the college.

Mr. Spiegel asked what the next steps are for this area, and Mr. Callaghan replied that the parking lot acts as an institutional control to prevent access to any potential munitions. In the future, Middlesex Community College would need to contact USACE if they're doing any work in the area. Mr. Spiegel asked why nothing more is being done, and Mr. Callaghan replied that the college requested no further work because it is a brand new parking lot.

Mr. Elliott (Edison Township) clarified that the college would have to have further oversight and testing during any construction in that area.

Mr. Spiegel asked whether the technology could identify the targets of interest, and Mr. Callaghan, using Table G-18D from a report, confirmed that they were some 155s and some 105s. Mr. Spiegel then asked what the "other" category on the chart referred to, and Mr. Callaghan replied that it was something that looked like a munition, but couldn't be classified based on the library of all munitions. Mr. Spiegel asked what the file was that contained this table, and Mr. Callaghan replied that it is part of a report documenting all of the TEMTADS advanced technology results. Mr. Spiegel asked whether it included the QA/QC results discussed earlier, and Mr. Callaghan replied that the QA/QC is for regular DGM, not the TEMTADS advanced technology.

Mr. Spiegel then asked how new the advanced technology is and how many times it has been used. Mr. Callaghan responded that it has been used for about the past three years. The only two in existence are one owned by the Naval Research Lab and one owned by USACE. This is the first time TEMTADS has been used for the former Raritan Arsenal. There is a demonstration project going on in San Luis Obispo (California) and regulators from different agencies are going there in August to see it. Mr. Callaghan asked if there were any other questions about the TEMTADS technology and there were none.

Mr. Spiegel asked whether there were any explosives found in the wharf area, and Mr. Callaghan responded that there were not. This is what was expected, given that the wharf is an area where people would load munitions, not bury them. Mr. Spiegel stated that there were rumors about sailors who didn't want to finish their work and would kick things off the boat. Mr. Callaghan acknowledged that certainly could have happened and may be how munitions got onto the Sayreville side of the river in the one specific area where they were found previously. Munitions were somehow deposited in a part of the river that was then dredged and deposited on Sayreville side of the river, and found in the 1990s during sewer construction work.

Mr. Spiegel then mentioned a bomb that he found on the Sayreville side of the river one time. He said that he reported it to USACE and they took it away, and asked whether Mr. Callaghan had ever seen a picture of it. Mr. Callaghan stated that he had not.



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DSA 1 – FedEx parking lot

Of the 205 anomalies selected for investigation, 6 were munitions or munitions fragments and the rest was scrap metal.

DSA 2 – Quality Warehouse parking lot

The team used advanced technology for the anomalies within the parking lot to minimize disruption. Of the 255 anomalies that were selected for investigation, 8 items were identified as munitions or munition fragments; everything else was scrap metal.

Mr. Spiegel asked what happened to the munitions and munitions fragments that were found. Mr. Callaghan replied that only two of the munitions needed to be blown up – the two French rifle grenades found in Area 12. The rest, along with the munitions fragments, were packed into a locked container and sent to a facility in Texas, where they are waiting to be shredded and melted down. When they have enough, USACE will send someone down to view that process, and then it becomes recycled metal.

DSA 3 – north of Area 12

Of the 125 anomalies investigated, none were munitions or munitions fragments. Everything found was scrap metal.

DSA 4 and DSA 6 – the “islands”

During DGM, 8 anomalies were detected on Areas DSA 4 and 5 were detected on Area DSA 6. However, they were unable to investigate these because the conditions are too unstable and unsafe to put anyone out there to dig them up. The islands are water and mud. In the summer, they look more like land because the phragmites are grown high, but in reality, they are mostly just mud. One worker sunk in the mud up to his chest. While they were not able to intrusively investigate these anomalies, it is highly unlikely that the anomalies are munitions.

DSA 5 – south of the river

A total of 228 anomalies were investigated. The transect spacing was much tighter in the area near the previous removal action, to ensure that it was successful. Given the proximity to residential areas, advanced technology was used on the anomalies closest to residents. NO munitions were found – just scrap metal.

Summary and discussion

Mr. Callaghan displayed a summary table of the MEC items found during the Phase 2 investigation and stated that a lot of work has already been done at the former Raritan Arsenal to remove munitions. Yes, there are still a few items out there, but not much.

Mr. Spiegel asked how USACE would deal with the limits of the technology (four feet deep) and Mr. Callaghan replied that is the industry standard and you're not going to get any better than that. With a munitions site, there is always the possibility that you could have missed



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something. For a site where you think there isn't anything, there would still be institutional controls to let people know that it was a munitions site and that something could still be found. Mr. Spiegel asked whether industrial controls would be in perpetuity and on the deed. Mr. Callaghan replied that they would not be included on the deed itself because USACE doesn't own the property.

Mr. Elliott added that about six months ago, there was a meeting with landowners with a similar presentation, focusing on the need for oversight if they are doing anything disturbing the ground out there. All the various properties owners and stakeholders were there. The idea is to refresh it periodically for people who may be doing work out there, even if property hasn't changed hands.

Mr. Spiegel asked whether the USACE would do more as technology improves and gets more sophisticated and able to detect at a deeper level. Or would USACE just "close the door?" The response was that USACE wouldn't just "close the door" but that the investigations are based on previous information that tells you what you expect to find. If they thought there was something 25 feet deep, they wouldn't have used DGM; they would have used another technology that picks up deeper things. There is no reason to believe there would be a need for additional work.

Mr. Frazier added that, under CERCLA, USACE has to do a Five-Year Review to make sure that the remedy is still considered protective. If there is a reason to believe that there is something in an area where they have already completed work, they would re-open the case for that area and start the CERCLA process all over again. When we're done with CERCLA process, we never close the door and walk away – there is always still the Five-Year Review process.

Mr. Spiegel then asked about the status for the rest of the project with regard to hazardous and toxic waste and whether a human health risk assessment (HHRA) and ecological risk assessment (ERA) have been completed. Mr. Callaghan replied that work has largely been completed and recalled that Ms. Pietro had reviewed the status of the RI reports for all the sites. For the munitions work, there will be both an HHRA and an ERA completed for each RI report that is done.

Mr. Spiegel asked when the HHRA and ERA would be ready for review. Mr. Callaghan replied the reports will be ready for the USACE in the fall. They are typically reviewed by USACE and the regulators, but not by the public. Members of the public could do a Freedom of Information Act (FOIA) request to get a copy, and they will be in the Administrative Record when final.

Mr. Spiegel stated that he has reviewed many of them and felt his organization's input would be very meaningful. With an area the size of this site, he emphasized that is important to understand the ecological and human health risk. He also stated that this property is part of a consent order with USEPA for a large-scale restoration, and ERA and HHRA are an important part of that.

Ms. Pietro replied that she would look into allowing them to review the documents.



**US Army Corps
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New York District

**Former Raritan Arsenal; Edison, New Jersey
Formerly Used Defense Site (FUDS)**

**Public Information Meeting
15 July 2014
Edison Municipal Complex • Edison Room (3rd Floor)
100 Municipal Boulevard • Edison, New Jersey**

Meeting Summary

Mr. Callaghan then continued his presentation with “Next Steps.” In certain areas, they will be doing soil sampling and analysis for munitions constituents, and will then prepare the RI report. Mr. Spiegel asked whether there was a work plan for that. Mr. Callaghan replied that the work plan had not yet been prepared. They are currently preparing a MEC Quality Assurance Project Plan Addendum for the munitions constituents in select locations.

Mr. Spiegel asked if that work covers only soil and not groundwater, and Mr. Callaghan replied that there is a separate groundwater operable unit.

Mr. Callaghan then concluded his presentation by stating that USACE remains committed to investigating these areas with utmost concern for public safety and with open communication with the public, stakeholders and local government.

Mr. Spiegel asked when the next public meeting would be. Ms. Pietro replied that it has not yet been set but might be in the November-December timeframe.

Mr. Spiegel asked whether USACE has done anything about the groundwater plumes. Ms. Pietro replied that they are included in an FS that goes to NJDEP soon for their review. Then there will be a Proposed Plan and a 30-day public comment period.

Mr. Spiegel asked for Anthony Cinque’s phone number at NJDEP, and Ms. Pietro stated that she would email that to him.

There were no other questions from the public, and the meeting was adjourned at 9:20 pm.

Attachment 1

Slides – Restoration Advisory Boards

What is a Restoration Advisory Board (RAB)?

Sandra L. Pietro

Project Manager

New York District

15 July 2014



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What is a Restoration Advisory Board (RAB)?

- Members provide individual advice to government decision makers
- Is NOT a decision-making body
- Is made up of representatives from community AND government agencies
- All members are equal
- Member selection
 - ▶ Community representatives: selection panel
 - ▶ Government representatives: selected by agencies



Purpose of the RAB

- Act as a forum for the discussion and exchange of information regarding cleanup between the district, regulatory agencies, and the community
- Provide an opportunity for stakeholders to participate in the cleanup process and provide input to decision makers
- Complement other community involvement initiatives



Mandatory Formation of a RAB

- The installation is closing and transferring property to the community;
- When at least 50 citizens have petitioned for a RAB.
- When federal, state, or local government requests formation of a RAB.
- When the Project Delivery Team (PDT) determines the need for a RAB.



Determining the need for a RAB

- It is the responsibility of the District Engineer where the Project Manager resides to determine when there is sufficient, sustained community interest to establish a RAB.
 - ▶ Use various community involvement techniques to identify and solicit interest in a RAB
 - ▶ If the community does not express interest in a RAB, document efforts taken to solicit interest and follow-up with procedures to monitor community interest on an ongoing basis (at least every 2 years).
 - Prepare a description of efforts made, results, and plans for future efforts and document it in the Public Involvement Plan and the information repository.



RAB Responsibilities

- Members provide individual advice on environmental restoration issues to USACE and regulatory agencies
- Conduct regular meeting; record minutes of the meeting
- Provide information to the community / Receive input from community
- Obtain information regarding the schedule, type, and status of environmental restoration activities
- Review and comment on environmental restoration documents
- Identify FUDS project requirements and recommend priorities among FUDS projects
- Develop a RAB mission statement
- Develop a RAB operating procedures
- RAB offers members and the community the opportunity to share their questions, concerns, and ideas with agencies involved in the cleanup



RABs members

- Federal government agency
 - ▶ USACE project manager
- State environmental agency
 - ▶ project (case) manager
- EPA region
 - ▶ project manager / facility manager
- Local (state, county) agencies
- Local and tribal governments
- Affected members of the local community



If there are any questions or concerns,
please contact Sandra L. Pietro, USACE
Project Manager

via phone at : (917) 790-8487

or via email at:

Sandra.L.Pietro@usace.army.mil



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Attachment 2 Slides – Project Status

Public Information Meeting

Former Raritan Arsenal

Formerly Used Defense Site (FUDS)

Edison, New Jersey

Sandra L. Piettro
Project Manager
USACE, New York District
15 July 2014



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Agenda

- Operable (Decision) units
 - ▶ Site-wide Groundwater (GW) / Indoor Air (IA)
 - Indoor Air
 - Vapor Mitigation Systems
 - GW Long Term Monitoring
 - GW / IA Feasibility Study
 - ▶ Middlesex County College property
 - ▶ Thomas Edison Park (includes Area 9, 10 & 19)
 - ▶ Commercial / Industrial Area
 - Area 5 (standalone area)
 - ▶ USEPA / GSA property
 - Area 18D (standalone area)
 - ▶ Undeveloped Wetlands Area
 - Multiple Areas – Remedial Investigation / Feasibility Study (RI/FS)
- FY 2014* Milestones
- FY 2015* Future Planned Activities
- Funding
- Questions

* FY 2014: 10/1/2013 – 9/30/2014

* FY 2015: 10/1/2014 – 9/30/2015

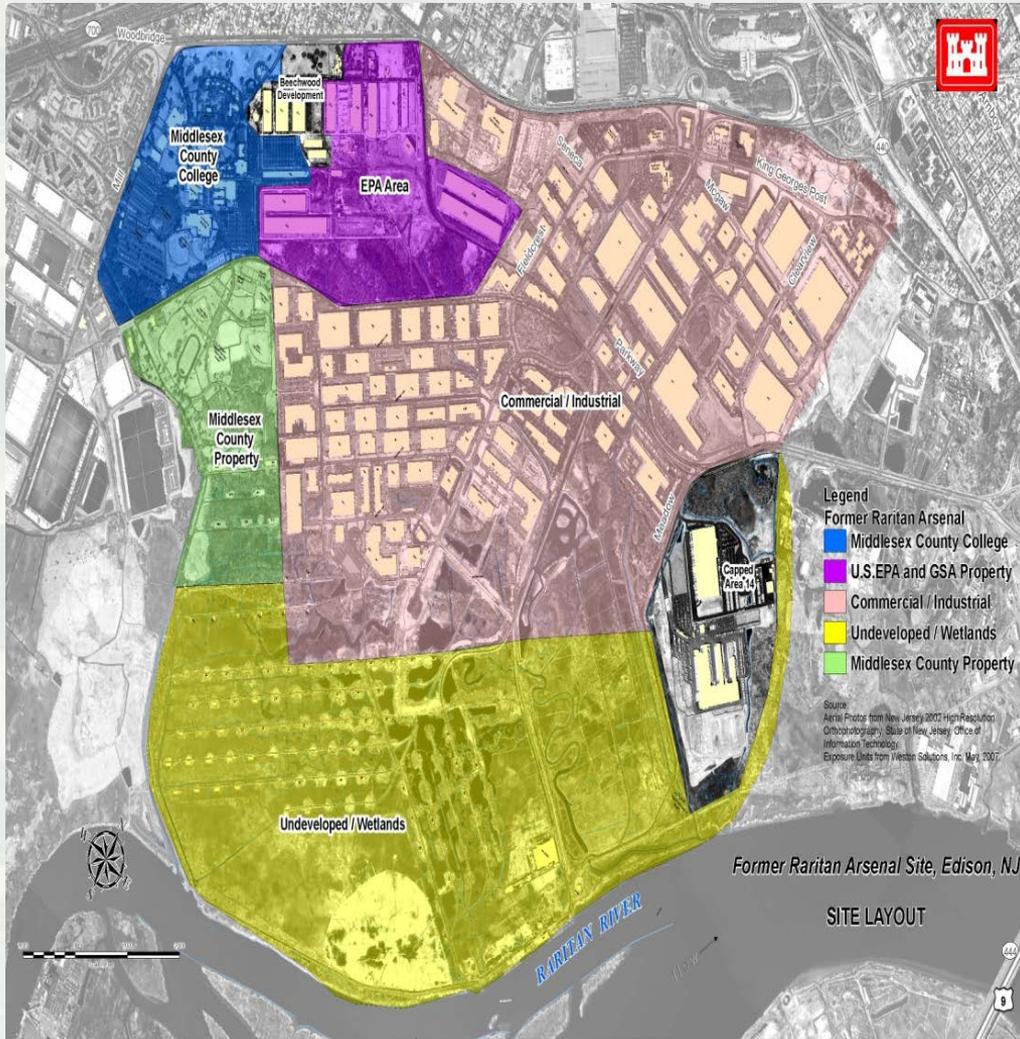


Site History

- Mission of Arsenal from 1917-1963
 - ▶ shipping and storage of ordnance material;
 - ▶ general supplies to other arsenals and military facilities;
 - ▶ stored, modified, and shipped military vehicles.
- Decontamination process completed in October 1963.
- Arsenal closed 1964
- Upon disposition, Arsenal consisted of 3,234 acres, approximately 440 buildings, 2.8 million square feet.
- Site-wide network of over 62 miles of roads and railways.
- Government officials and citizens proposed an orderly conversion of property from military to civilian use.
- Group recommended two-thirds of Arsenal be targeted for future industrial use.
- In 1964, GSA sold 2,360 acres to private landowners.
- EPA/GSA, Middlesex County College and Thomas Edison Park retained 840 acres of former Arsenal property.



Operable (Decision) Units

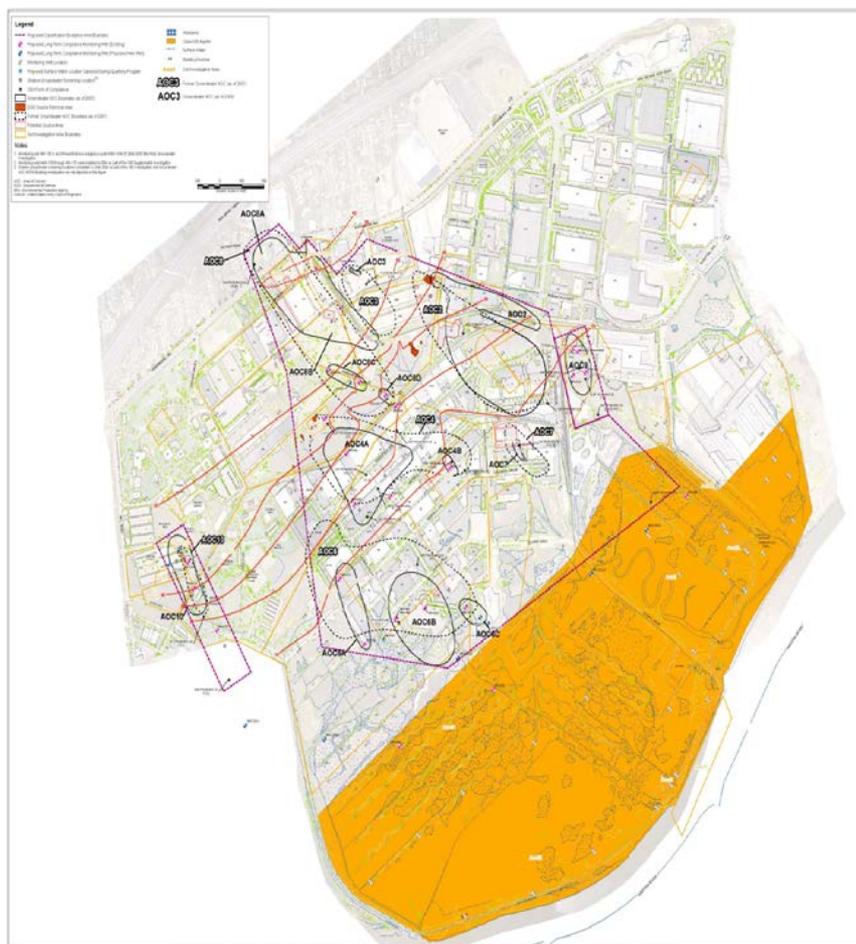


- Work at former Raritan Arsenal is organized into the following six (6) operable (decision) units:
 - Site-wide Groundwater / Indoor Air / Vapor Intrusion
 - Middlesex County College property
 - Thomas Edison Park property
 - Commercial / Industrial Area
 - USEPA / GSA property
 - Undeveloped Wetlands Area
 - subject to change as remedial investigations progresses



Groundwater

- Groundwater / Indoor Air / Vapor Intrusion – Feasibility Study
 - ▶ Evaluate the need for, and possible alternatives to address final remedial actions for the groundwater contamination at Areas of Concerns (AOCs):
 - AOCs – 2, 4A, 4B, 6A, 6B, 6C, 8A/B, 8C, 8D, 9 & 10
 - ▶ Status:
 - NJDEP review – fall 2014



Groundwater Long Term Monitoring

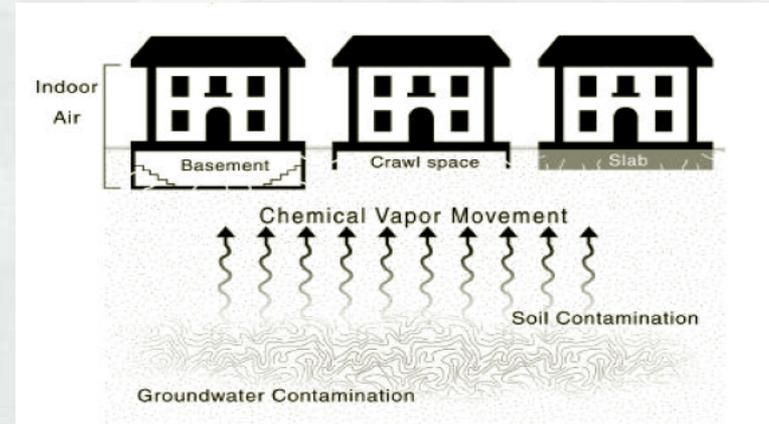
■ Status

- ▶ Monitor Groundwater Areas of Concerns (AOCs) for natural attenuation in the 6 AOCs (2, 4, 6, 8, 9 & 10);
 - Sampling schedule for monitored natural attenuation:
 - ▷ First round of sampling – Summer 2010 – completed
 - ▷ Second round of sampling – Summer 2012 – completed
 - ▷ Future sampling – every five (5) years for thirty years (until 2042)
 - Monitored natural attenuation is a technique used to monitor or test the progress of concentration of contaminants in groundwater are decreasing without human involvement.
- ▶ Based on previous sampling results showing decreasing concentration levels: 4 GW AOCs dropped from consideration (AOCs 1, 3, 5 & 7) – no further action is required
- ▶ Results are showing VOCs but there is evidence of attenuation; plumes are at or reaching steady-state condition

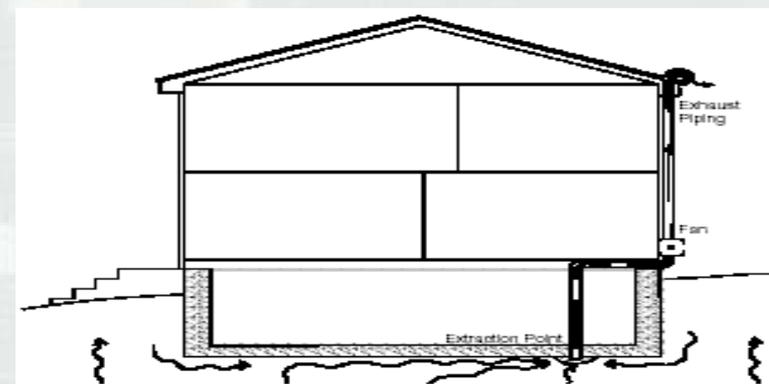


Indoor Air / Vapor Intrusion

- What is Vapor Intrusion: volatile chemicals can evaporate from groundwater and soil and may build up in the indoor air of nearby buildings
- What is vapor mitigation system: its designed to reduce the air pressure beneath the building and keep vapors that may collect beneath the building from entering into building.
- Status:
 - ▶ Monitoring 8 industrial buildings for volatile organic compounds (VOCs) in indoor air and sub-slab soil gas
 - ▶ These results are documented in the Indoor Air Quality Reports; currently up to report #9
 - ▶ Report #9 has been submitted to NJDEP for review



Subsurface Depressurization System



Middlesex County College property



- Generate a Remedial Investigation (RI) / Feasibility Study (FS) / Proposed Plan (PP) / Decision Document (DD)
 - Status:
 - A final Remedial Investigation report has been prepared
 - Submitted to NJDEP– June 2014
 - There will be no FS since there is no unacceptable risk;
 - PP / DD to be generated after RI is final;
 - Public Meeting will be hosted in the fall 2014
 - During the Proposed Plan, USACE will present the cleanup strategy for public review & comment



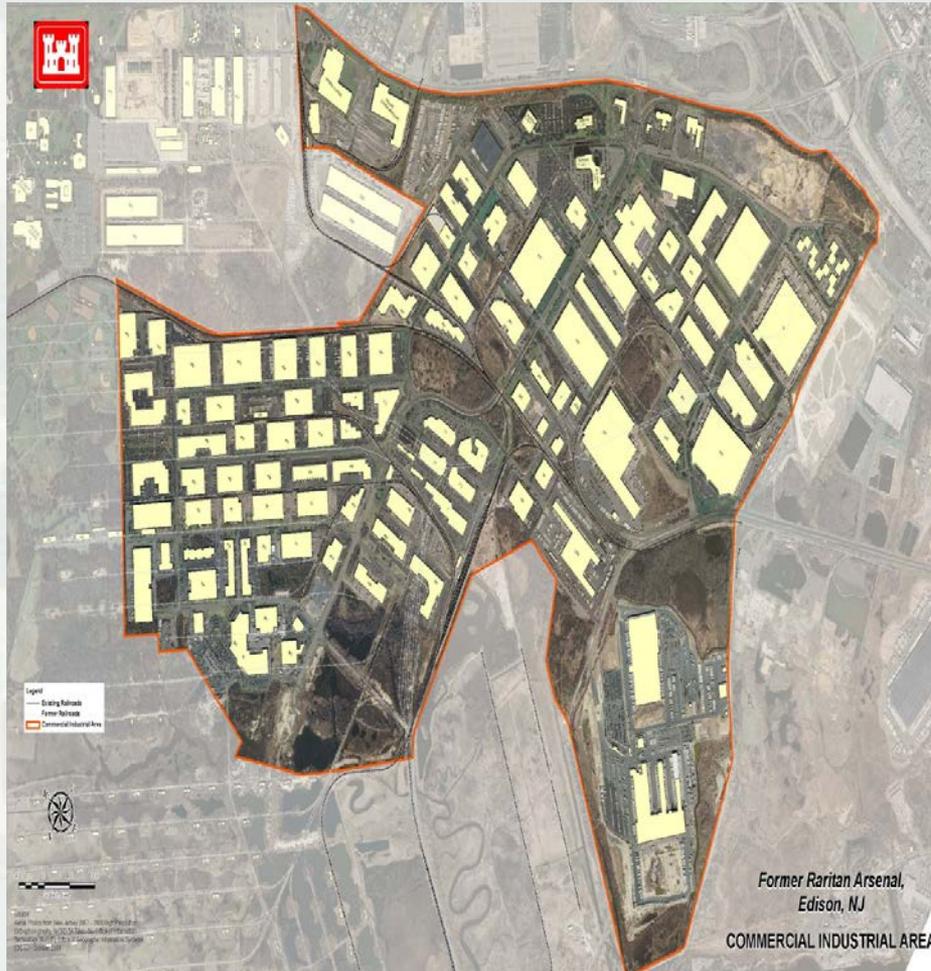
Thomas Edison Park / Area 9, 10, 19 property



- This property is being addressed under the Site-Wide HTW & MMRP Remedial Investigation / Feasibility Study
 - Generate a Remedial Investigation (RI) / Feasibility Study (FS) / Proposed Plan (PP) / Decision Document (DD)
 - Please refer to slide name: Site-Wide HTW & MMRP Remedial Investigation / Feasibility Study



Commercial / Industrial Area



- Generate a Remedial Investigation (RI) / Proposed Plan (PP) / Decision Document (DD)
 - Status:
 - A revised Pre-Draft RI submitted for USACE's review – Feb 2014
 - NJDEP will review – fall 2014;
 - Proposed Plan / Decision Document to be generated after Remedial Investigation / Feasibility Study is final;
 - During the Proposed Plan, USACE will present the cleanup strategy for public review and comment



USEPA / GSA property

(Area 1 and 18A thru G)



- Status
 - ▶ A revised Draft Remedial Investigation report submitted for USACE's review – May 2014;
 - ▶ Once completed, a Draft Final RI will be issued to NJDEP for their review – Fall 2014
 - ▶ Additional data gaps associated with Area 18D (addressed under the Site-Wide HTW & MMRP Remedial Investigation / Feasibility Study) which may be addressed as a separate operable unit



Undeveloped Wetlands Area

(Area 6, 6A, 6B, 11, 12, 13, 16)



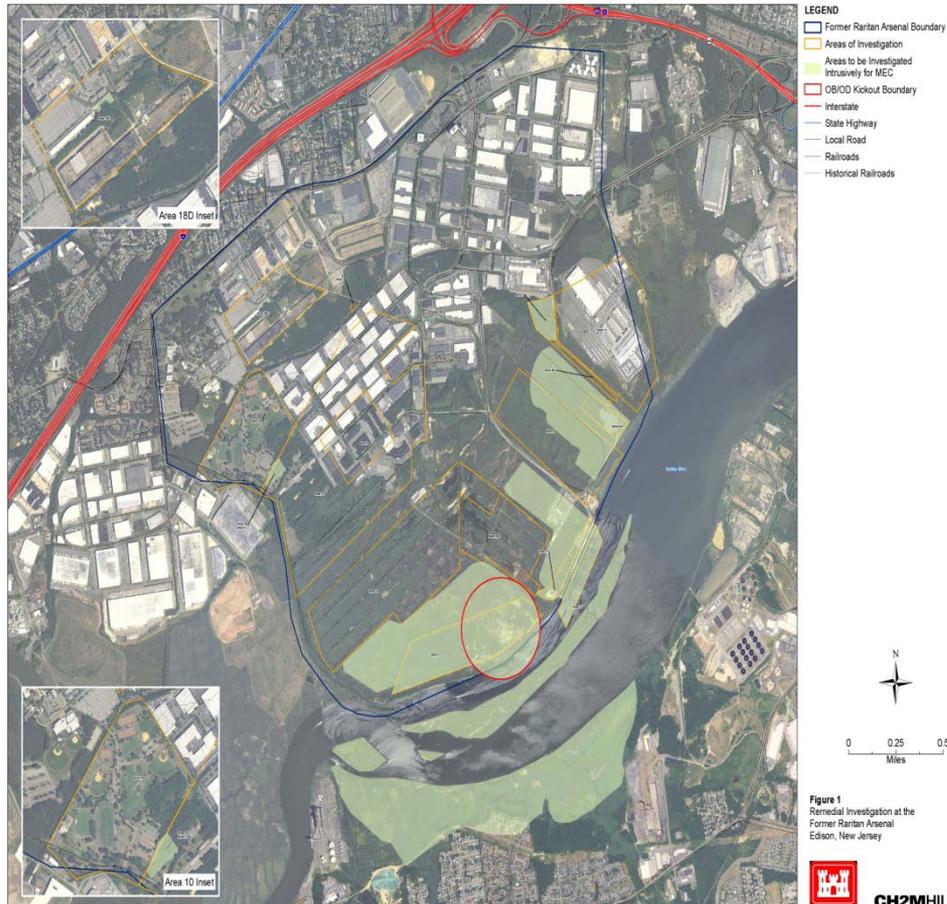
Status:

- ▶ Field work (investigation) – commenced Fall (Oct) 2013
 - Phase I: field survey – completed
 - Phase II: intrusive investigation – completed;
 - Phase III: background soil sampling event – commencing October 2014
- ▶ A Draft Remedial Investigation report submitted for USACE's review – fall 2014;
- ▶ FS to be developed by after RI report is completed;
- ▶ PP/DD to be generated after RI/FS is approved by NJDEP and final; and
- ▶ During the Proposed Plan, USACE will present the cleanup strategy for public review & comment



Site-wide HTW & MMRP Remedial Investigation / Feasibility Study

(12 Investigation areas: 1, 6, 6A, 6B, 10, 10 Part I, 11, 12, 13 (Pier), 16, 18D and 9/19)



■ Status:

- ▶ Field work (investigation) – commenced Fall (Oct) 2013
 - Phase I: field survey – completed
 - Phase II: intrusive investigation – completed
 - Phase III: background soil sampling event – commencing October 2014
- ▶ A Draft Remedial Investigation report submitted for USACE’s review – fall 2014;
- ▶ FS to be developed by after RI report is completed;
- ▶ PP/DD to be generated after RI/FS is approved by NJDEP and final; and
- ▶ During the Proposed Plan, USACE will present the cleanup strategy for public review & comment



FY 2014 Milestones

- Groundwater Compliance Monitoring Progress Report
- Feasibility Study – Groundwater / Indoor Air (Vapor Intrusion)
- Indoor Air Quality report #8
- Indoor Air Quality report #9
- Indoor Air Quality report #10
- Remedial Investigation Report – Area 5
- Remedial Investigation & Remedial Actions Summary Report – Middlesex County College
- Work Plan addendum: Site-wide Remedial Investigation (includes Phase 3 sampling)
- Commence fieldwork activities at various areas
- Stakeholders – Working Group Meetings – July and December 2014
- Public Information Meetings – July and December 2014
- Safety Coordination Meetings with Sayreville
- Evacuation event in Sayreville



FY 2015

Future Planned Activities

- Management Action Plan
- Proposed Plan – Groundwater / Indoor Air (Vapor Intrusion) for public comments
- Annual Indoor Air Quality report #9, 10, & 11
- Remedial Investigation & Remedial Actions Summary Report – USEPA / GSA property
- Remedial Investigation – Thomas Edison Park (Area 9, 10 & 19)
- Remedial Investigation & Remedial Actions Summary Report – Commercial / Industrial Area
- Proposed Plan – Middlesex County College
- Public Review period for Proposed Plan – Middlesex County College
- Decision Document – Middlesex County College
- Remedial Investigation Report – Area 5
- Remedial Investigation / Feasibility Study – Site-wide – Munitions and/or Hazardous, Toxic Waste
- Stakeholders – Working Group Meetings – March and October 2015
- Public Information Meetings – April and November 2015



Funding

- Raritan funding:
 - ▶ Funding spent: \$ 88.4 M
 - ▶ Allocated, 2013: \$ 2M
 - ▶ Allocated, 2014: \$ xxx
 - ▶ Planned, 2015: TBD
 - ▶ Cost to Complete: \$ 31.7 M*

* subject to change as remedial investigations progresses



The CERCLA Process

Removal Actions

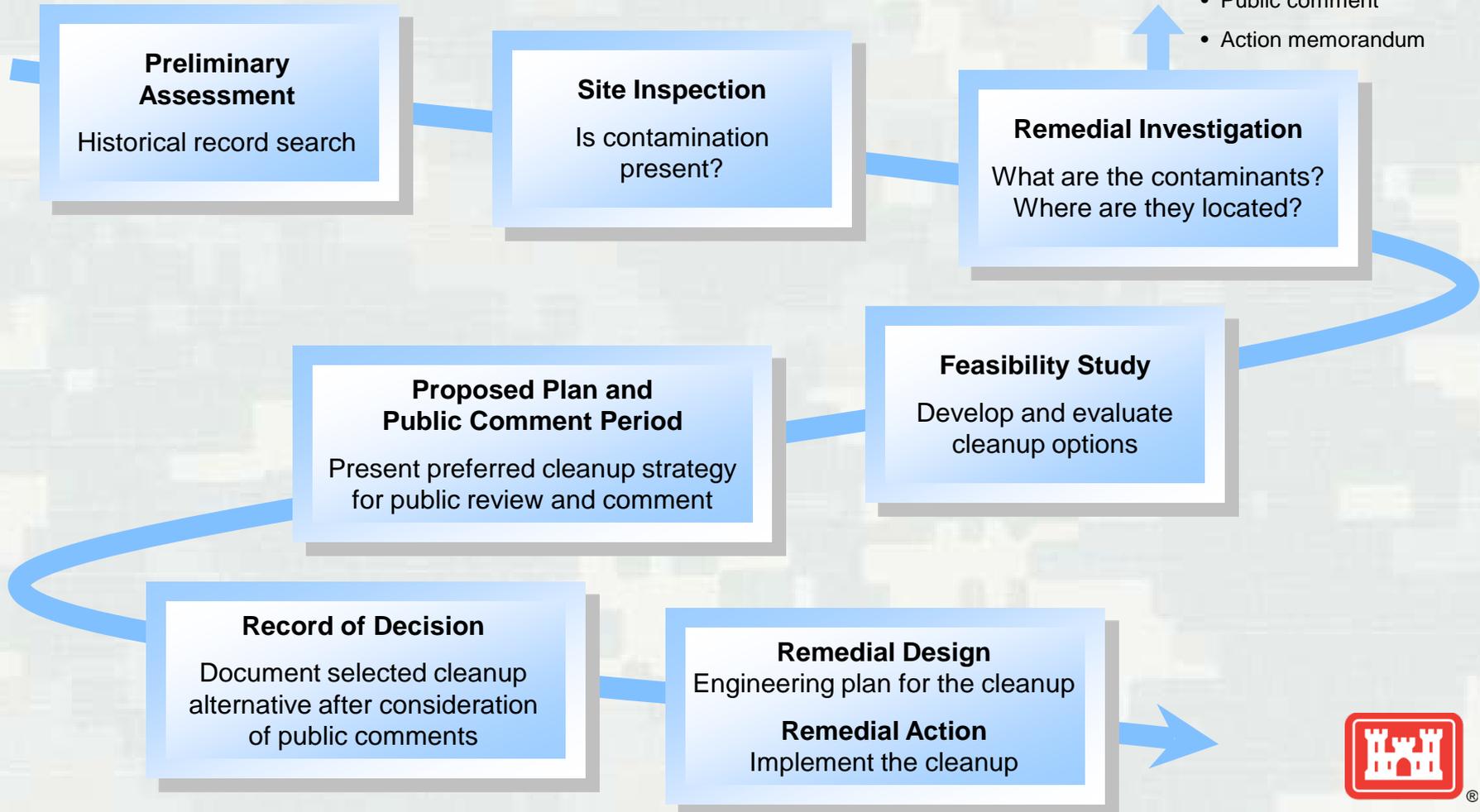
(this can occur at any phase)

Time-critical removal

- Action memorandum

Non-time critical removal

- Engineering evaluation/ cost analysis
- Public comment
- Action memorandum



MMRP (Ordnance) Safety Education

- The USACE remains committed to protecting public safety by reducing the risk presented by the presence of military munitions to the maximum extent possible.
- "3Rs" of explosives safety:
 - ▶ **RECOGNIZE** — when you may have encountered a munition
 - ▶ **RETREAT** — do not touch, move or disturb it, but leave the area
 - ▶ **REPORT** — call 911 and advise the police what you saw and where you saw it



For more information on the USACE's environmental cleanup activities, please visit the USACE's former Raritan Arsenal webpage at:

www.nan.usace.army.mil/Raritan



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Attachment 3

Slides – Munitions Investigation

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Former Raritan Arsenal Remedial Investigation



Presentation for Public Information Meeting – July 15, 2014

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 Nearly Complete

This presentation provides information about the progress and results of the munitions remedial investigation.

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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



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- June 2014

Phase III

- Sample soil for munitions compounds where munitions were found

October 2014



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

- Phase I started in November 2013.
- Vegetation was 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.
- No munitions item were discovered on the surface



Phase II – Intrusive Investigation (Jan – June 2014)



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



Phase II – Intrusive Investigation (January – June 2014)

- Intrusive investigations of anomalies were conducted in the following areas:
 - Area 10
 - Area 12 (Terrestrial and Aquatic)
 - Area 13 (Terrestrial and Aquatic)
 - Dredge Spoils Areas



Findings of Phase II Intrusive Investigation – Area 10

- 135 anomalies were selected for intrusive investigation
- 9 items were identified to be munitions or munition fragments
- All other anomalies that were dug up for investigation turned out to be various scrap metal items



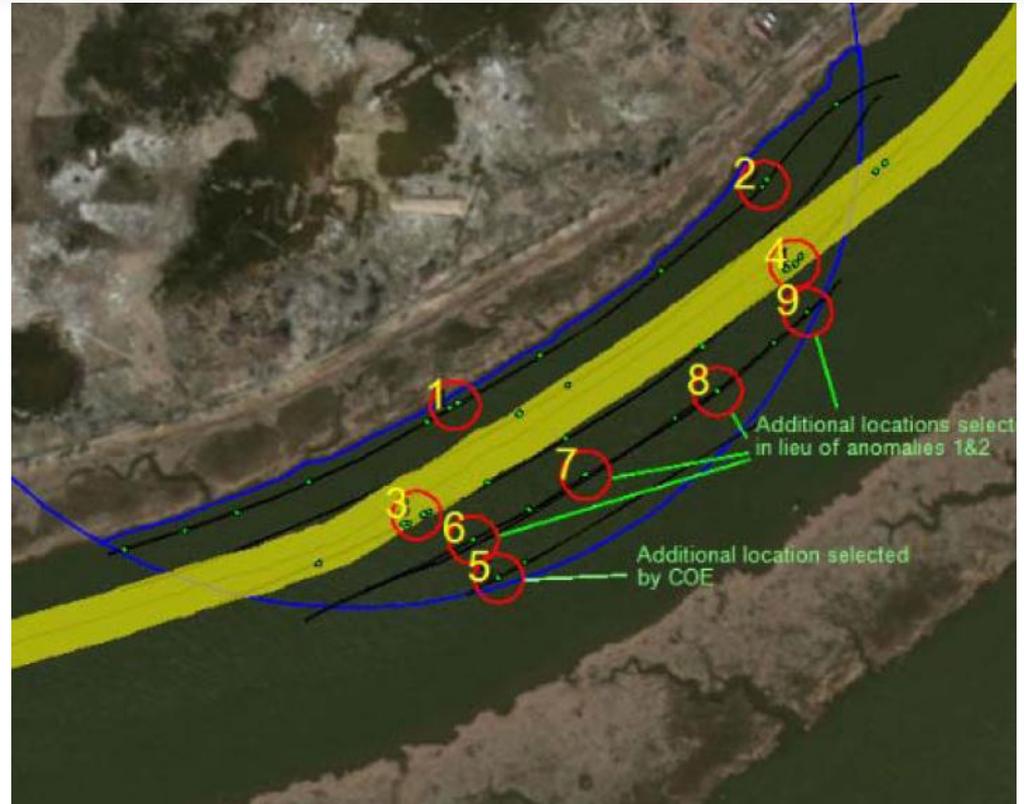
Findings of Phase II Intrusive Investigation – Area 12 (Terrestrial Investigation)

- 194 anomalies were selected for intrusive investigation
- 12 items were identified to be munitions or munition fragments
- 2 items were blown in place because they were determined to be potentially unsafe to move
- All other anomalies that were dug up for investigation turned out to be various scrap metal items



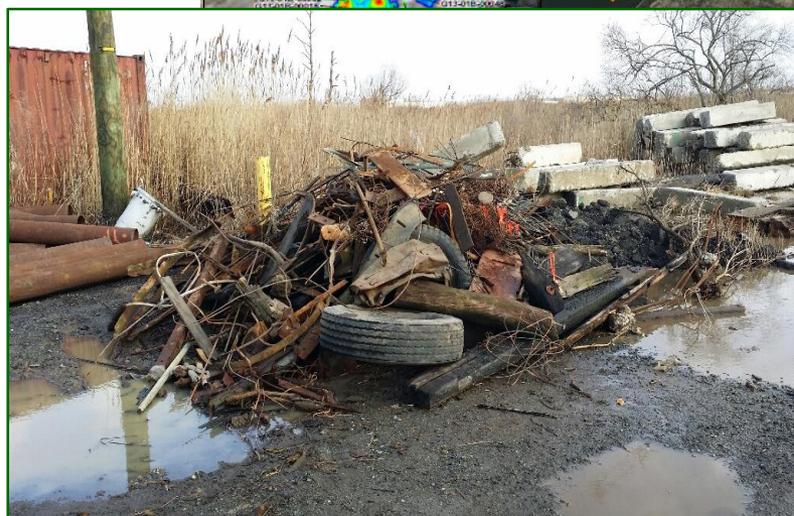
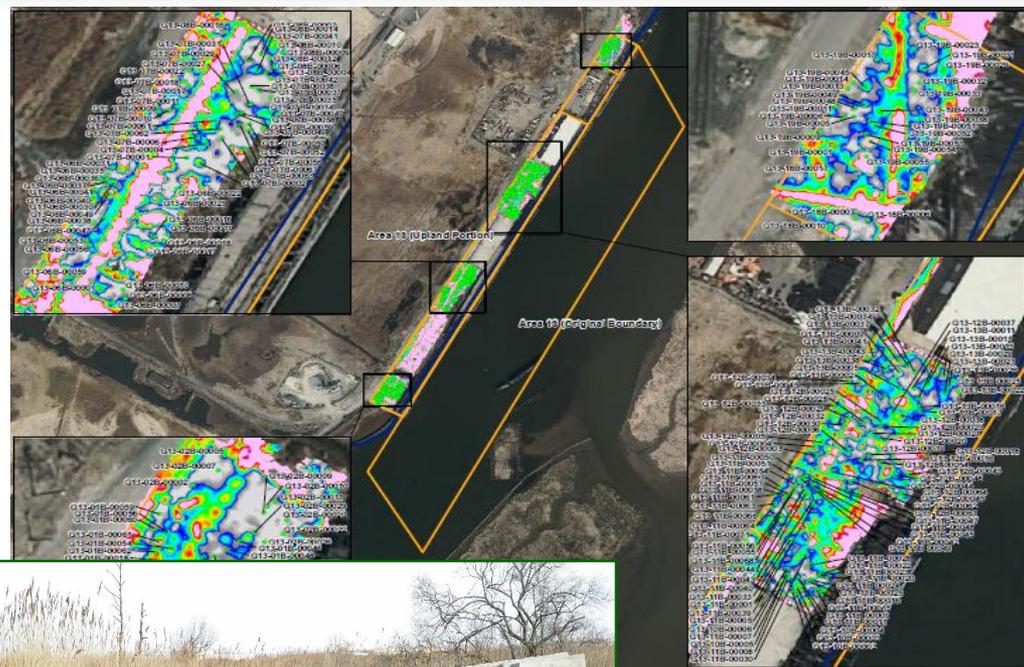
Findings of Phase II Intrusive Investigation – Area 12 (Aquatic Investigation)

- 5 locations of anomaly clusters were selected for intrusive investigation
- 4 locations could not be investigated as they were within the buffer zone of the high power Neptune RTS cable.
- All anomalies that were dug up for investigation turned out to be various scrap metal items



Findings of Phase II Intrusive Investigation – Area 13 (Terrestrial Investigation)

- 221 anomalies were selected for intrusive investigation
- 2 items were identified to be munition fragments.
- All other anomalies that were dug up for investigation turned out to be various scrap metal items

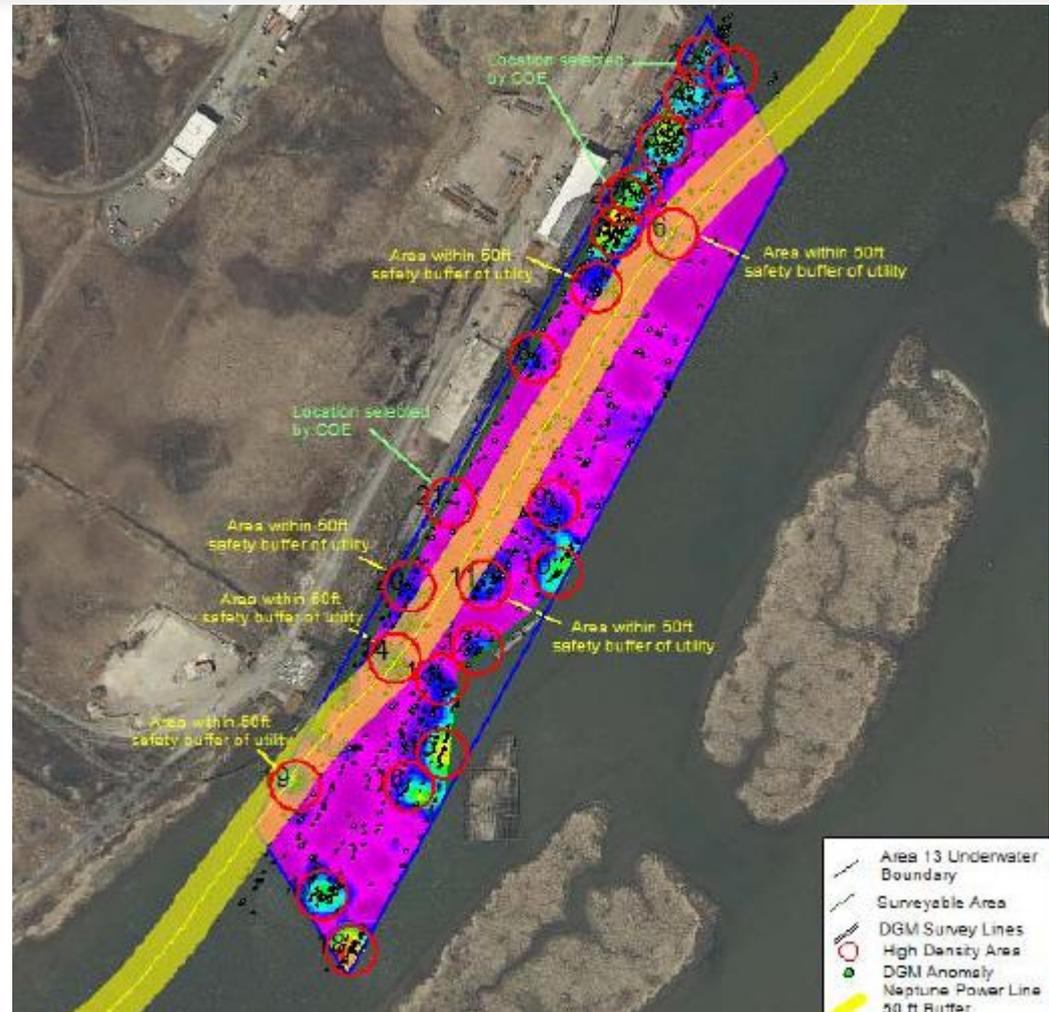


Scrap metal pile from Area 13



Findings of Phase II Intrusive Investigation – Area 13 (Aquatic Investigation)

- 17 locations of anomaly clusters were selected for intrusive investigation
- 10 randomly selected locations underneath the former wharf were also selected for intrusive investigation.
- All anomalies that were dug up for investigation turned out to be various scrap metal items

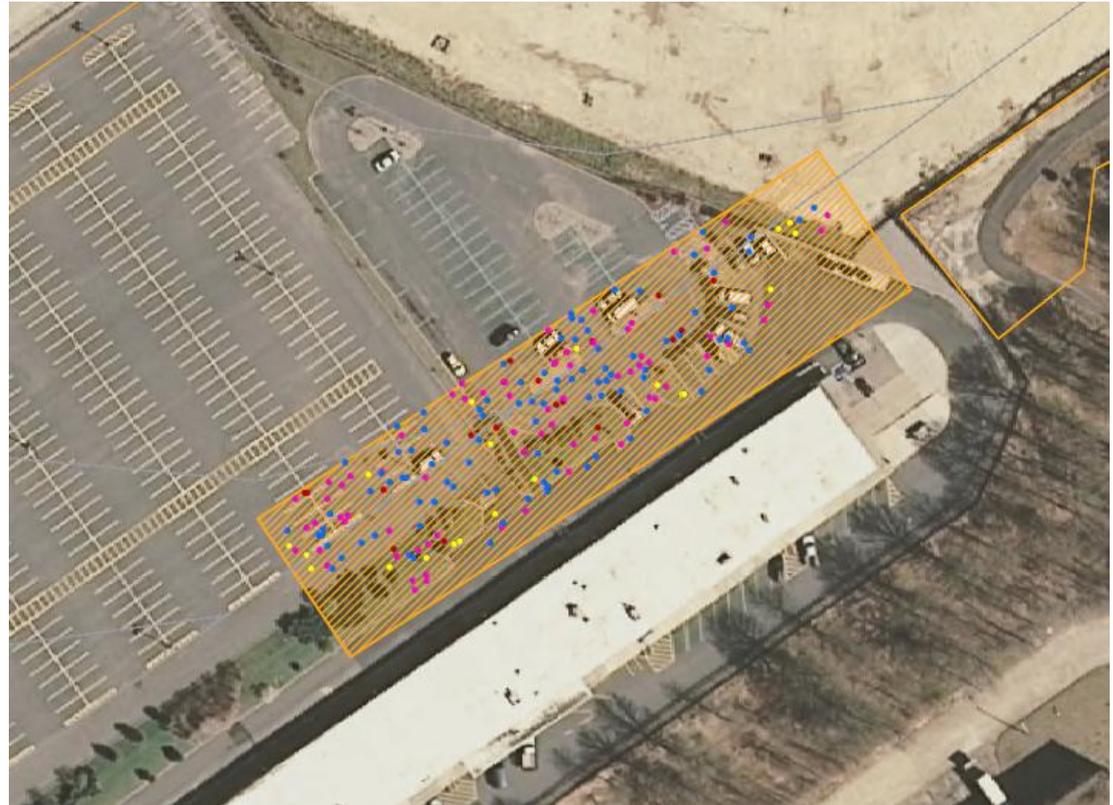


Findings of Phase II Intrusive Investigation – Area 13 (Aquatic Investigation)



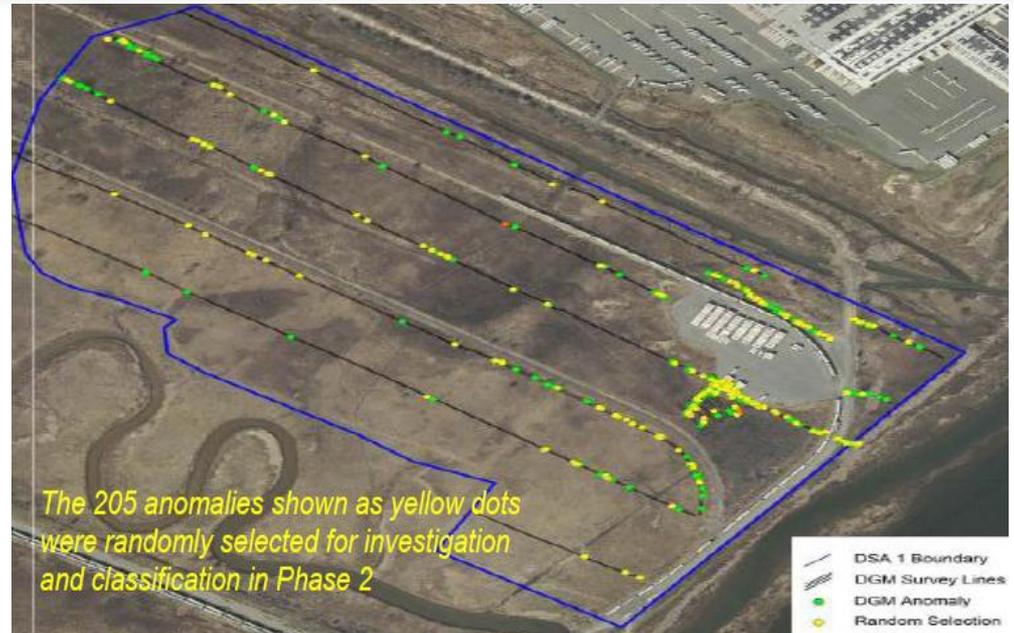
Advanced Classification Technology at Area 18D

- Rather than conducting an intrusive investigation at Area 18D (within MCC property) advanced classification technology was used to determine nature of the subsurface anomalies.
- 18 anomalies were classified as potential “Targets of Interest” – meaning that they look like munitions items.
- No intrusive investigation was performed at the request of MCC.



Findings of Phase II Intrusive Investigation – DSA #1

- 205 anomalies were selected for intrusive investigation
- 6 items were identified to be munitions or munition fragments
- All other anomalies that were dug up for investigation turned out to be various scrap metal items



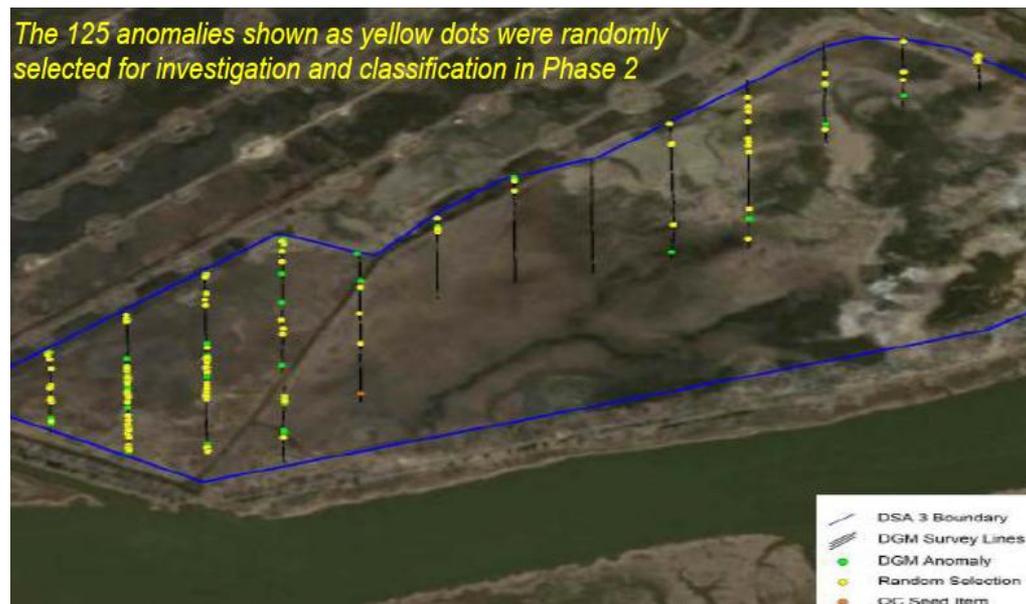
Findings of Phase II Intrusive Investigation – DSA #2

- 255 anomalies were selected for intrusive investigation
- Anomalies within the parking lot were also investigated with advanced classification technology (i.e., TEMTADS) to minimize disruption to tenants.
- 8 items were identified to be munitions or munition fragments
- All other anomalies that were dug up for investigation turned out to be various scrap metal items.



Findings of Phase II Intrusive Investigation – DSA #3

- 125 anomalies were selected for intrusive investigation
- No items were identified to be munitions or munition fragments
- All anomalies that were dug up for investigation turned out to be various scrap metal items.



Findings of Phase II Intrusive Investigation – DSA #4 and DSA #6 “The Islands”

- 8 anomalies were detected during the DGM at DSA #4, and 5 anomalies were detected at DSA #6.
- Due to the high water table, and concerns for personnel safety due to swampy conditions these anomalies were unable to be investigated.



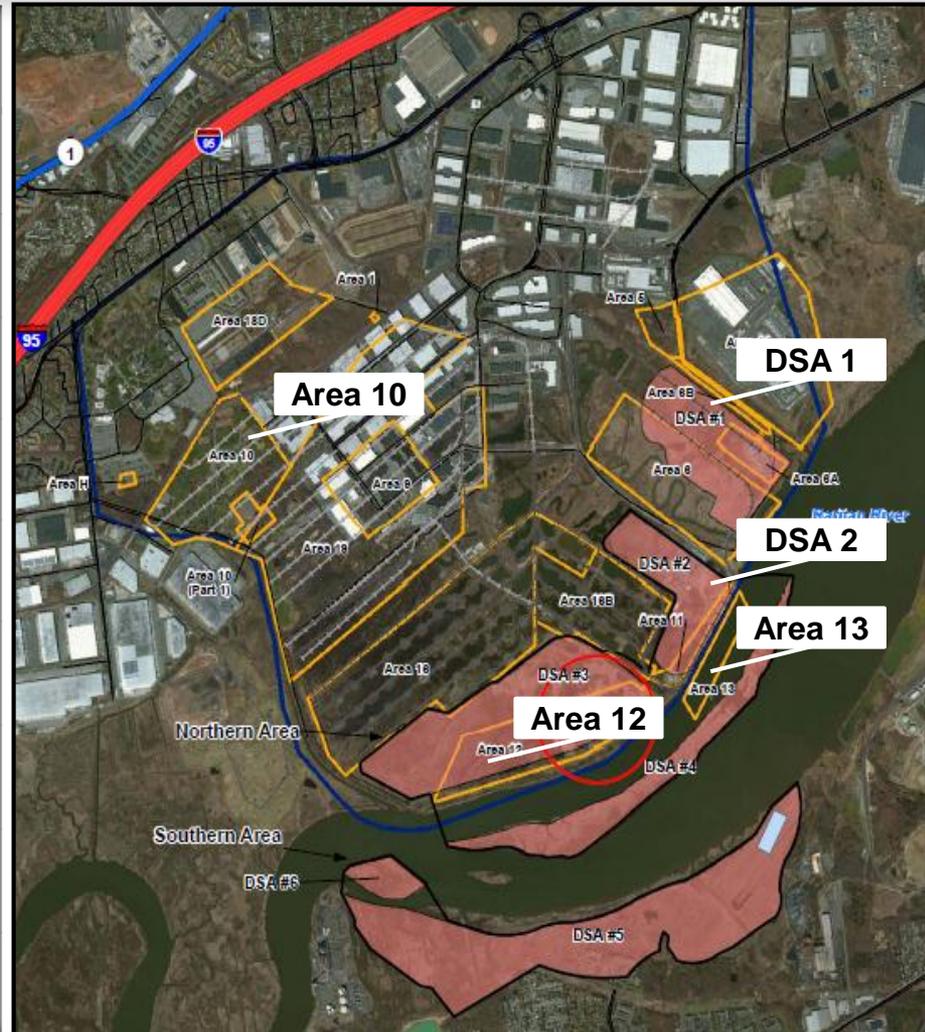
Findings of Phase II Intrusive Investigation – DSA #5

- 228 anomalies were selected for intrusive investigation.
- Advanced classification technologies (i.e., TEMTADS) was performed to minimize disruption to nearby residents.
- No items were identified to be munitions or munition fragments.
- All anomalies that were dug up for investigation turned out to be various scrap metal items.



Location of MEC Items Found

Area ID	Name of Area	Number of MEC Items
Area 10	Former Wastewater Treatment and Magazine Area	9
Area 12	Former Dredged Material and Explosive Detonation Area	12
Area 13	Submerged Dock Area	2
DSA 1	Dredge Spoils Area 1	6
DSA 2	Dredge Spoils Area 2	8
DSA 3	Dredge Spoils Area 3	0
DSA 4	Dredge Spoils Area 4	0
DSA 5	Dredge Spoils Area 5	0
DSA 6	Dredge Spoils Area 6	0



What's Next?

- Soil sampling and analysis for munitions constituents in select locations.
- Preparation of Remedial Investigation Reports to document the results of the investigations conducted.



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.

