



## The USACE's Sponsors Public Information Meeting to Discuss Project

The U.S. Army Corps of Engineers (USACE) invites you to attend an upcoming Public Meeting to learn about a number of cleanup activities the Former Raritan Arsenal, including recent ordnance removal actions; indoor air investigations currently underway and the progress being made toward site closure. Additional information about these site activities is summarized on this fact sheet. Please join us:

**Thursday, June 10, 2010 • 7:00 – 9:00 p.m.**  
**Edison Municipal Complex • Council Chambers**  
**100 Municipal Boulevard • Edison, New Jersey**

### Meeting Agenda

**7:00 p.m. – USACE Presentation**

**8:00 p.m. – Questions and Discussion**

For more information, please contact Sandra Piettro, USACE Project Manager, at 917-790-8487.

## Ongoing Indoor Air Monitoring

The USACE evaluated indoor air quality in 48 buildings ranging in size from 1,225 square feet up to 243,000 square feet for levels of volatile organic compounds. Many of the buildings house multiple tenants, such as light industrial, warehouse, mixed-use office space and daycare centers. Evaluations of all buildings are summarized in indoor air reports, Indoor Air Quality Reports #1 thru 4. The latest report (#5) on indoor air evaluations will be issued in July 2010.

### Current Status:

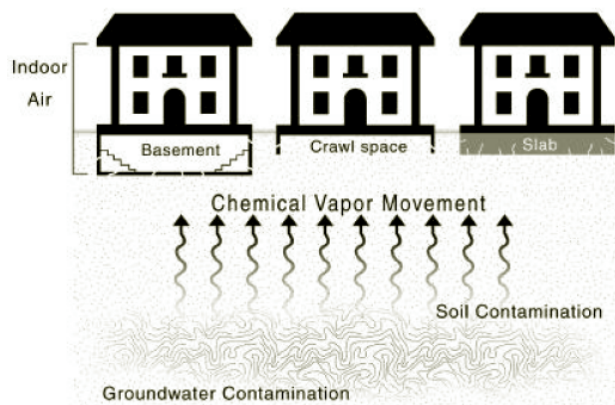
- 48 building evaluated
  - 38 buildings: Indoor air quality safe, no evidence of potential vapor intrusion
  - 10 buildings: Current monitoring efforts include sub-slab and indoor air
    - Indoor air quality safe in all 10 buildings
    - Potential vapor intrusion:
      - 1 building: Vapor intrusion not present; semiannual monitoring to confirm
      - 9 buildings: Mitigation system installed and monitored

The addresses of the 10 buildings currently undergoing USACE ongoing indoor air monitoring efforts include:

- 151 Fieldcrest Avenue
- 165 Fieldcrest Avenue
- 160 Fieldcrest Avenue
- Campus Plaza 4
- 102-168 Fernwood Avenue
- A series of EPA owned buildings (numbers 10, 18, 200, 205 and 209).

Most of these buildings are equipped with indoor air mitigation systems, and the USACE periodically monitors the air quality of these properties in cooperation with NJDEP. The USACE installed a sub-slab active depressurization system in one of the buildings stated above in September 2009. The results of this system's performance have been summarized in a report and issued to NJDEP for review.

## Vapor Intrusion



**Vapor intrusion can occur when vapors are present in the zone directly next to or under the foundation of the building, resulting in the seepage of those vapors into living spaces.**

Vapor intrusion occurs when gases from contaminated soil or ground water seep into cracks and holes in foundations or slabs of buildings and accumulate in basements, crawl spaces or living areas, as shown in the diagram below. A subsurface depressurization system, similar to a system to mitigate radon gas is an effective method to prevent vapor intrusion in affected buildings. A sub-slab depressurization system consists of PVC piping installed through the slab floor and a fan

connected to the piping. When the system is on, the fan acts a vacuum beneath the slab, pulling the vapors from the soil beneath the building into the pipe, where they are safely dissipated in outside air.

## Munitions Clearance, Area 12

Through the use of state-of-the-art technologies, the USACE has made advances to clear buried munitions from Area 12 at the former Raritan Arsenal. A new technical approach using digital geophysical mapping (DGM) has allowed the USACE to detect buried items and distinguish if they are potential munitions. Based on the results of this survey, munitions locations were then mapped using high-resolution global positioning system (GPS) data.

This approach has enabled the USACE to make significant improvements in the detection and evaluation of subsurface anomalies before they digging takes place. Furthermore, this has also allowed for the identification of an 86-acre area where anomalies were spaced at a great enough distance to give the removal contractor exact GPS coordinates for each location they were to dig, also resulting in a shorter time period to complete the removal action.

The DGM survey also identified areas with concentrations of potential ordnance anomalies in Area 12. Using this information, the USACE issued a request for proposal to complete ordnance removal in Area 12. USA Environmental, Inc. of Oldsmar, FL successfully bid for the project, and the current contract worth is \$3,788,797.72 in 2010. Work on this effort began in April 2009 and will continue through December 2010. It is expected that this effort will result in clearance work on 10.38 acres of the 24 acres in this area. The remaining acres will be cleared, subject to availability of funds. Work in the dense anomaly area began at the eastern end of Area 12 and is proceeding in a generally westward direction.

During a previous removal effort, a total of 264 items were found that contained explosives in Area 12. Another 1,111 items included munitions debris, typically parts of munitions that had been destroyed using explosives. Most of the munitions recovered from Area 12 date to the period between World Wars I and II. All items containing explosives were safely destroyed and all metals were recycled.



*Aerial shot of Area 12 - Former Raritan Arsenal – Edison, New Jersey*

The USACE remains committed to protecting public safety by reducing the risk presented by the presence of military munitions to the maximum extent possible. Future ordnance removal operations will be conducted as funding is available. While these operations reduce the risk of encountering munitions items in the future, they cannot eliminate that risk entirely. For that reason, USACE recommends that ordnance construction safety support services are included in all development plans where digging will take place in area that areas previously contained ordnance.

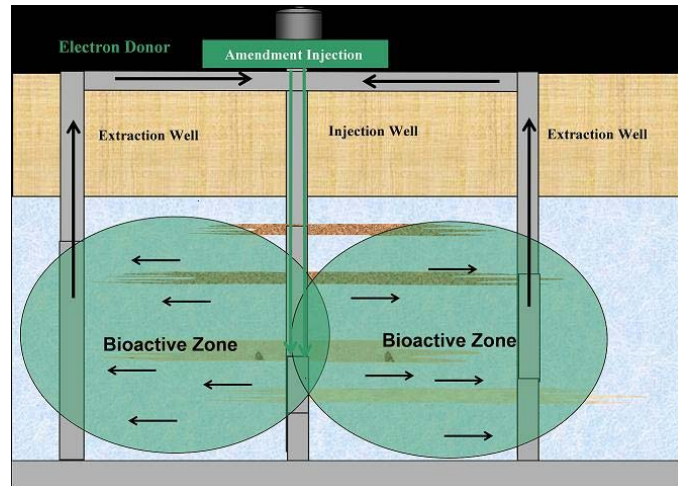
## Groundwater

A groundwater remedial action work plan (GWRAP) was completed in July 2008 and identifies a number of locations, identified as Areas of Concern (AOCs), requiring evaluation and monitoring. This work plan and report addressed known DOD-related groundwater concerns (except Area of Concern No.2 and 8A/B) and recommended Monitored Natural Attenuation (MNA) as the preferred remedial method. MNA is the sum of natural processes that leads to the monitored reduction of contaminant concentrations in groundwater over time. The primary objective of MNA is to demonstrate that natural processes will reduce those concentrations in groundwater to levels below regulatory standards before a point of compliance, such as an off-site receptor, is reached.

This report concluded MNA is a feasible remedial alternative for areas of concern (AOC)'s 4A, 4B, 6A, 6B, 6C, 8C, 8D, 9, and 10, with a recommendation for long-term monitoring for a Classification Exception Area (CEA) that encompassed all AOCs within the former Raritan Arsenal. The report recommended No Further Action for AOC's 3, 7, and 4B, and received NJDEP approval for AOC's 3 and 7, with a request to sample one well for AOC 4B. AOC's 2 and 8A/B were excluded from the GWRAP due to of ongoing source

investigations, groundwater treatability work and indoor air monitoring. These areas will be addressed under a separate GWRAWP in the future, and the results will be shared with the community.

USACE commence to install long term monitoring wells and commence the groundwater sampling effort as outlined in the USACE approved Groundwater RAWP, dated July 2008. The primary groundwater contaminants of concern at each AOC (except AOC 9) are chlorinated volatile organic compounds, primarily TCE (trichloroethylene) and PCE (perchloroethylene) and their breakdown products.



*This graphic demonstrates how a bioaugmentation treatment system adds microbes to an area of contamination in groundwater to increase the rate at which the contaminant is broken down into harmless compounds.*

For Groundwater AOC 2, the USACE completed post injection monitoring of the pilot tests and will be completing a report in Summer 2010 that outlines the results of the pilot tests treatability study to address groundwater in the source area (near EPA Buildings 255 and 256) and in the area down gradient of the site (165 Fieldcrest Avenue). Results to date indicate reduction in AOC 2 contaminants. The results of the pilot tests treatability study will be summarized in a report and issued to NJDEP for review.

## Soil Investigation at Area 18E

A draft remedial investigation work plan and site-specific sampling and analysis plan for Area 18E and adjacent EPA buildings was issued to NJDEP for review in September 2008. NJDEP completed its review in May 2009 and agreed with the elements of the work plan. The work plan calls for delineating VOCs and metals in soil, both vertically and horizontally. The investigation will determine whether VOCs and

polychlorinated biphenyls (PCBs) have impacted specific soil AOCs which had not been investigated previously. The investigation results will show if contaminated soil identified within Area 18E has impacted groundwater within Groundwater AOC 8. The initial phase of the investigation consisted of Geoprobe soil sampling activities, Geoprobe shallow groundwater sampling activities, soil borings and the installation of monitoring wells.



*Site map of Area 18E and adjacent EPA buildings*

The results from this initial sampling show the delineation of VOCs and metals in soil, both vertically and horizontally, at former soil sample locations, resulting in the need for additional testing. The results of the investigation have been generated into a remedial investigation report and will be issued to NJDEP for review in July 2010.

## Fiscal Year 2009 Milestones

The following list presents a summary of recently completed site activity:

- Area 4: Remedial Action construction completed; Deed Notice submitted to NJDEP.
- Submittal of Annual Indoor Air Quality Report #4 to NJDEP and landowners.
- Draft of Human Health Risk Assessment in final development.
- Completion of Final Baseline Ecological Risk Assessment in March 2008, followed by Ecological Risk Management Action report to be contracted in FY 2010.

## Fiscal Year 2010 Milestones

The following list presents a summary of recently completed site activity:

- Generate a USACE – Raritan Arsenal webpage

## Fiscal Year 2010 Planned Future Activities

The following list presents the future plans for the site.

- Continue monitoring indoor air and sub-slab at select buildings
- Continue ordnance removal actions in Area 12
- Continue efforts in the Area 18E Soil Investigation
- Continue pilot test study of remedial systems in groundwater of AOC 2.
- Perform Groundwater Long Term Monitoring Program & Well Abandonment
- Prepare Final Ecological Risk Management Plan
- Prepare Site-wide Soil – Human Health Risk Assessment
- Prepare Groundwater site-wide – Feasibility Study
- Prepare Site-wide Soil – Record of Decision
- Area 5: Commencement of Project Close-Out (PCO) to document formal close out for chemical warfare material (CWM) project.
- Revise Management Action Plan
- Update Community Relations Plan

## About the Formerly Used Defense Sites Program

Congress established the Formerly Used Defense Sites (FUDS) Program in 1986 to clean up properties that were formerly owned, leased, possessed or used by the Army, Navy, Air Force or other defense agencies. The U.S. Army Corps of Engineers manages the FUDS Program. The New York District is responsible for various FUDS locations, including the Former Raritan Arsenal site, which is comprised of approximately 3,200 acres located along the Raritan River in the Townships of Edison and Woodbridge, Middlesex County, New Jersey, approximately 20 miles south of Manhattan.

## Site History: Operations Began in 1917

The Former Raritan Arsenal was used extensively for U.S. Army operations from 1917 to 1963. Operations included receipt, storage, and maintenance of ammunition shipped from other ordnance facilities or returned from overseas; renovation of ammunition designated for long-term storage; the salvage of outmoded or seriously deteriorated ammunition; ordnance research and development; and shipment and receipt of weapons. During operations, waste materials, including ordnance, were routinely buried on site as this was the standard method of disposal at that time. The arsenal was closed in 1963.

Following closure, areas of the site were identified for further study with respect to possible ordnance and explosives contamination. This preliminary remediation work resulted in many of the areas being surface cleared or partially decontaminated. More extensive investigations followed, including work under the FUDS program.

### For More Information, please contact the following:

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[www.nan.usace.army.mil/business/buslinks/raritan/index.htm](http://www.nan.usace.army.mil/business/buslinks/raritan/index.htm)