# PROPOSED PLAN

## FORMER RARITAN ARSENAL
## AREA 13

## FUDS PROJECT NO. CO2NJ008403
## EDISON TOWNSHIP, MIDDLESEX COUNTY, NEW JERSEY

**The Proposed Plan**

This **proposed plan** presents a no action decision for Area 13 at the Former Raritan Arsenal (FRA) located in Edison and Woodbridge Townships, New Jersey, and summarizes technical documents that demonstrate there are no unacceptable exposure risks for human health or the environment at the site. This proposed plan, prepared by the U.S. Army Corps of Engineers (USACE), provides a review of the investigations conducted of past storage and handling of munitions at Area 13, located within the FRA. This plan summarizes the USACE rationale for recommending no action at Area 13.

## INTRODUCTION

This proposed plan provides information to the public regarding investigations of munitions storage and handling at Area 13 within the FRA located in Edison and Woodbridge Townships, New Jersey (the "site"). This plan provides USACE's rationale for selection of the no action decision for Area 13, which is based on investigative and removal actions that demonstrate there are no unacceptable exposure risks for human health or the environment that require remedial action.

USACE, New York District, is the lead agency responsible for managing the project and provides required direction and guidance for its execution. The U.S. Army Engineering and Support Center, Huntsville, and USACE, New England District, provide technical support. The lead regulatory agency is the New Jersey Department of Environmental Protection (NJDEP). Federal environmental laws govern characterization and response activities at former federal facilities. Investigation and environmental restoration of the FRA has been conducted under the **Defense Environmental Restoration Program (DERP)–Formerly Used Defense Sites (FUDS)** [1]. The overall goal of DERP-FUDS is to achieve environmental restoration of the FRA and address potential human health and environmental risks associated with past Department of Defense (DoD) activities. The **Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA)**, a federal environmental statute, and the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** establish procedures for site investigation, evaluation, and remediation. USACE is required by DERP-FUDS to execute the environmental restoration program in accordance with CERCLA and NCP. USACE has been working within the framework of CERCLA to evaluate potential impacts from past activities at the FRA and identify appropriate remedial responses. NJDEP has been involved in this process. In accordance with federal law and regulations, state involvement is sought in the form of reviews and submission of potential Applicable or Relevant and Appropriate Requirements (ARARs) for constituents of concern (COCs) identified by the federal government. USACE has also been conferring with local stakeholders about community concerns regarding the site since 1990.

As the lead agency implementing the environmental response program for the FRA, USACE has prepared this proposed plan in accordance with CERCLA Section 117(a) and Section 300.430(f)(2) of the NCP to continue its community awareness efforts and to encourage public participation. After the public has had the opportunity to review and comment on this proposed plan, USACE will respond to the comments received during the public comment period, including any comments received during the

[1] Please refer to the Glossary of Terms on Page 14.

public meeting. The comments will be included in the responsiveness summary of the **Decision Document**. Information about the **public comment period** and the public meeting is shown below.

**Public Comments Are Requested**

**PUBLIC COMMENT PERIOD**

August 12 to September 14, 2019 (33 days, not to include start date)

Written comments on this proposed plan may be submitted to USACE during the comment period. Comment letters must be postmarked no later than September 14, 2019, and may be sent to Mr. Matt Creamer (USACE, New York District, Project Manager):

U.S. Army Corps of Engineers
Attn: Mr. Matt Creamer
2890 Woodbridge Avenue
Edison, NJ 08837

**PUBLIC MEETING**

August 20, 2019

USACE will host an information session from 7:00 to 8:00 p.m. at the Edison Senior Citizen Center, 2963 Woodbridge Avenue, Edison, New Jersey, to provide information and answer questions in an informal setting. This meeting will include a brief introduction and summary by USACE.

USACE will carefully consider all comments received from the public, and responses will be compiled into a responsiveness summary. The decision as to which action is appropriate for the site will be detailed in a Decision Document, which will include the responsiveness summary.

This proposed plan highlights key information from previous reports prepared for the site, including site characterization details provided in the **remedial investigation (RI)** reports. The **Administrative Record** file and other documents that support this proposed plan are available for review at the information repositories or through the USACE New York District website for the FRA:

http://www.nan.usace.army.mil/Raritan

**Information Repository:**
U.S. Army Corps of Engineers, New York District
2890 Woodbridge Avenue
Edison, NJ 08837

Central Information Repository
USACE New York District Office
26 Federal Plaza
New York, NY 10278

## SITE HISTORY AND BACKGROUND

The FRA is located on approximately 3,200 acres on the northern bank of the Raritan River in Middlesex County, New Jersey. A map depicting the location of the FRA is presented as Figure 1.

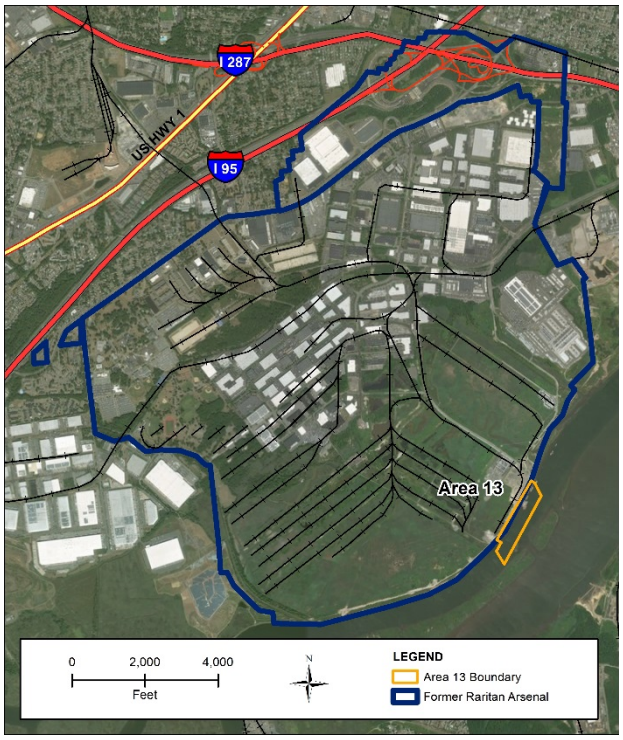


**Figure 1. Location of the Former Raritan Arsenal**

The majority of the FRA land area lies within Edison Township, with a portion of the site located in Woodbridge Township. It is bordered to the north and northwest by Woodbridge Avenue, to the southwest by Mill Road and the Industrial Land Reclamation Landfill, and to the east by the Raritan River.

The Raritan Arsenal was initially developed to facilitate military shipments during World War I.

The initial land purchased for development of the FRA consisted of tidal marsh, quarries, and farmland. The War Department purchased the land in December 1917, and construction of the Raritan Arsenal was underway by the beginning of 1918. Ordnance was first received at the Raritan Arsenal during the early phases of construction. On May 2, 1918, the Raritan Arsenal contained military facilities that included magazines, a railway network, locomotive houses, docks, warehouses, assembly and process buildings, administration buildings, storage buildings, and living quarters, and was declared operational (Weston Solutions, Inc. [Weston], 2007).

The principal function of the Raritan Arsenal was to store, handle, and ship various classes of ordnance and military supplies. Other activities and missions included assembly of automobiles, trucks, tanks, and motorized artillery; preservation, renovation, and manufacture of munitions; salvaging, linking, belting, clipping, packing, demilitarizing, and maintaining ammunition; requisition, research, and development of ordnance; military supply chain management; and troop training.

In March 1961, the DoD announced the proposed disposition of the Raritan Arsenal, and in 1964, the General Services Administration (GSA) began selling the FRA property. At the time of the disposition announcement, the FRA contained approximately 440 buildings and more than 62 miles of roads and railways. Since closure, the site has been redeveloped extensively, primarily for commercial and industrial uses, particularly in the northern portion of the facility.

The FRA currently constitutes one **munitions response site (MRS)** that includes several areas of interest that are in various states of investigation or remediation. Area 13 is located along the southeastern boundary of the former Arsenal immediately adjacent to and inclusive of a portion of the Raritan River that fronts the FRA (see Figure 1). Area 13 consists of 16.9 acres within the Raritan River and an additional 5.6 acres of upland area adjacent to the river.

Area 13 contained warehouses and a dock for loading and unloading ammunition from barges and ships during operations at the FRA. Historical documentation indicates that ordnance was lost or dumped in the Raritan River near the dock loading area (Dames & Moore, Inc. [Dames & Moore], 1993). There is no reported burial of munitions or disposal of dredge spoils on the land adjacent to the former dock area warehouses. The dock at Area 13 that was used for loading and unloading munitions is entirely made of wood and was mostly destroyed by a fire in the 1980s; however, remnants of the structure remain along the shoreline.

The area within the Raritan River fronting the dock was periodically dredged, and historical reports indicate that **munitions and explosives of concern (MEC)** items were observed in the dredged material during the dredging operations. In May 1923, for example, a suction dredge was used to dredge 1,200 feet of frontage along the arsenal docks to depths of 8 to 10 feet. The project was repeatedly delayed due to pipe and pump plugging caused by the number of grenades and boxes of grenades that were encountered (Dames & Moore, 1993). Additionally, in 1975, USACE increased the depth of the channel at this location by approximately 14 feet by dredging. The removed dredge material was disposed of in adjacent areas (Areas 11, 12, and 14). Since 1975, the Raritan River near Area 13 has been subject to periodic maintenance dredging, with the most recent event occurring in 1993.

The Archival Search Report (ASR) for the FRA indicates that an ammunition barge, the Frederick Star #9, sank at the Raritan dock on December 12, 1926 (Dames & Moore, 1993). The barge carried 33,282 pounds of 75-millimeter (mm) **munitions debris (MD)** and 3,600 3-inch anti-aircraft projectiles. A recovery effort was performed and on February 2, 1927, the Chief of Ordnance directed the Arsenal to inspect every box of ammunition retrieved from the sunken Frederick Star #9 (Dames & Moore, 1993). On February 4, 1927, the Arsenal notified the Chief of Ordnance that the salvage of 75-mm projectiles from the sunken barge was half completed. Most of the projectiles retrieved were still packed in their boxes; however, at least 26 projectiles were discovered to be loose. The ASR did not locate a final report that indicated whether all the ammunition on the sunken Frederick Star #9 was recovered.

The presence of MEC within Area 13 is likely a result of spillage during loading and unloading operations at the dock area. Some of the MEC contained within this area would have been removed by dredging and transferred elsewhere for disposal. There is no record of MEC disposal within the upland portion of Area 13, nor has this area been found to be underlain by dredge spoils.

A decontamination study of the FRA was conducted in 1963 as part of the decommissioning process. The study was begun under the direction of Raritan Arsenal personnel and was completed under the direction of personnel from Letterkenny Army Depot (LEAD) and the U.S. Army Materiel Command Safety Office. LEAD identified 17 areas within the FRA as potentially contaminated by ordnance-related activities. Although standard operating procedures for decontaminating the 17 areas were prepared, approved by the Safety Office, and carried out during closure of the FRA, no action was taken to retrieve suspected ammunition in this area as part of the 1964 decommissioning process (O'Brien & Gere Engineers, Inc. [O'Brien & Gere], 1989).

## SITE CHARACTERISTICS

Area 13 historically contained warehouses and a wooden pier for loading and unloading ammunition from barges and ships. The dock is oriented northeast-southwest and runs parallel to the shoreline of the Raritan River for approximately 2,150 feet. Piles and horizontal support timbers comprise most of what remains of the dock structure, which was damaged by a fire in the 1980s, and suffered storm damage, most recently from Hurricane Sandy in October 2012. Two buildings are actively used for industrial purposes in the approximately 5.6-acre terrestrial portion of Area 13, which slopes toward the pier. The remaining 16.9 acres of Area 13 lies within the Raritan River that fronts the FRA. Figure 2 shows the Area 13 site features.

### Physical and Environmental Setting

The geology beneath the FRA is characterized by an overburden layer, approximately 10 to 80 feet thick, composed of unconsolidated sediments and underlain by bedrock composed of shales, metamorphosed shales, and an igneous diabase sill. Bedrock is encountered at 18 to 47 feet below mean sea level (Roy F. Weston, Inc. [Roy F. Weston], 1996a).


**Figure 2. Area 13 Site Features**

Area 13 is composed primarily of fill materials brought in for the construction of the pier and warehouse area. Water depths outboard of the pier area range from approximately 15 to 40 feet deep (Roy F. Weston, 1996a).

The hydrogeology beneath the FRA is characterized by separate aquifers in the overburden and bedrock. Previous groundwater data indicate that the bedrock aquifer is not affected by activities associated with the FRA (Roy F. Weston, 1996b). Groundwater within both the overburden and bedrock aquifers flows generally southeastward toward the Raritan River. The depth to shallow groundwater in the overburden ranges from 2 to 30 feet below ground surface, and the saturated portions of this unit are relatively thin and discontinuous. In the southern marsh areas, and in the Area 13 portion of the FRA, shallow groundwater is typically within 2 feet of the ground surface (Weston, 2008a).

Currently there is no potable use of the groundwater on the site. All buildings at the FRA are connected to

municipal water, and groundwater is not expected to be used for potable use in the future (see *Summary of Site Risks* section).

## PREVIOUS INVESTIGATIONS AND ACTIVITIES

No munitions response investigations were conducted to characterize the nature and extent of MEC within the land and water portions of Area 13 prior to the RI conducted in 2014.

Similarly, no environmental sampling was conducted specifically for Area 13 prior to the RI. However, three of 13 sediment samples collected in the Raritan River during a 2008 baseline ecological risk assessment (BERA) were collected in the vicinity of the pier. The sediment samples were analyzed for a number of **munitions constituents (MC)** and hazardous and toxic waste (HTW) constituents, including explosives, polycyclic aromatic hydrocarbons (PAHs), and target analyte list metals. No explosives were detected in any of the sediment samples collected in the Raritan River or in any of the sediment samples collected from drainage ditches within the FRA boundary. Metals concentrations in sediments within the Raritan River were generally similar to those detected on the FRA. The highest concentrations of PAHs were detected in the Raritan River adjacent to the dock and could be attributed to a fire at the dock that occurred in the 1980s (Weston, 2008b). The BERA reported no ecological risks directly attributable to MC-related operations at the FRA.

Additionally, two surface soil samples, one subsurface soil sample, one sediment sample, and one surface water sample were collected within the Area 13 boundary in support of work performed for Area 11. The soil samples were collected to delineate the extent of the explosive compound pentaerythritol tetranitrate (PETN) that was detected in a soil sample collected within Area 11. PETN was not detected in the soil samples collected within the Area 13 boundary; however, low-level 2,6-dinitrotoluene (2,6-DNT) was detected in surface soil, and low-level 2,6-DNT and 2,4,6-trinitrotoluene (2,4,6-TNT) were detected in subsurface soil sampled from one location within the Area 13 boundary (Roy F. Weston, 1999). The detected concentrations of 2,6-DNT and 2,4,6-TNT did not exceed the referenced comparison criteria. Explosive compounds were not analyzed in the sediment sample and they were not detected in the co-located surface water sample.

Documents associated with the previous investigations are part of the information repository and are available for review at the location identified in this proposed plan. In addition, summaries of data, results, and recommendations associated with these reports were extracted from the individual reports and incorporated into a current RI report (CH2M HILL, Inc. [CH2M], 2018) to provide a comprehensive summary of the site-specific investigation activities conducted at Area 13. Activities and analysis associated with the current RI report are summarized in the following section.

### Remedial Investigation

A MEC field investigation for Area 13 was conducted from November 2013 to June 2014.

Digital geophysical mapping (DGM) was performed at 100 percent coverage of all accessible areas (2.2 acres) of the upland portion of Area 13. Three of the 5.6 upland acres of Area 13 are occupied by buildings and 0.4-acre was inaccessible due to ongoing tenant operations. A total of 522 point-source anomalies were identified along the DGM transects within the 2.2 upland acres of Area 13. Based on the statistical assessment performed, 221 of the 522 anomalies were preliminarily identified and three additional large anomaly areas were intrusively investigated to confirm if the anomalies were related to MEC and/or material potentially presenting an explosive hazard (MPPEH). Munitions-related items were recovered from two point-source anomaly locations. The munitions-related items consisted of an expended 37-mm armor-piercing projectile and an expended cartridge casing, both of which were classified as material documented as safe and thus present no explosive risk. The remaining anomalies contained construction debris and scrap metal (CH2M, 2018).

A clamshell bucket was used to intrusively investigate 10 equally spaced locations within and under the pier to address MEC in sediments in the immediate vicinity of and beneath the dock area. No MEC or MPPEH were recovered from the 10 locations along the pier. An underwater DGM survey was performed over 71 percent of the aquatic portion of Area 13. The remaining 29 percent portion was

not accessible due to strong currents and underwater hazards identified using high-resolution side-scan sonar. A total of 20 clusters of anomalies were identified along the DGM transects. Six of the identified anomaly clusters could not be investigated as they were located within 50 feet of the Neptune Regional Transmission System, a 65-mile underwater and underground high-voltage direct current transmission line that supplies power to Long Island and runs underneath the Raritan River directly through Area 13. Fourteen of the 20 identified anomaly clusters and an additional three selected locations were intrusively investigated. No MEC or MPPEH were recovered during intrusive investigation of the aquatic anomalies.

Because there were no releases known to have occurred, and because no MEC were recovered during the geophysical survey, a site-specific **human health risk assessment (HHRA)** was not conducted for Area 13. A facility-wide HHRA (Watermark Environmental [Watermark], 2009) and BERA (Weston, 2008b) have been conducted previously. Area 13 is in the undeveloped wetlands area that was evaluated in the HHRA. Data from the facility-wide investigation were used to complete a baseline HHRA for Area 13 to estimate the potential risks to human receptors associated with exposures to constituents detected in surface and subsurface soil, surface water, and sediment within Area 13. The potential receptors evaluated under a current land use scenario were recreational users/trespassers, industrial workers, and maintenance workers at the FRA. Development of the upland portion of Area 13 is anticipated, so future land use may change to a more active recreational or commercial use. Under a future land use scenario, the potential receptors evaluated included construction workers and hypothetical residents. Constituents of potential concern (COPCs) (arsenic and PAHs in soil and metals in surface water) evaluated for recreational users/trespassers were within acceptable limits. The estimated hazard indices (HIs) from exposure to site soil COPCs for future hypothetical child residents exceeded acceptable limits primarily due to arsenic and cobalt, constituents that also are associated with background soils and are not specific DoD activities. Therefore, no DoD-related COCs were identified for potential receptors under the future land use scenario for Area 13.

The majority of the calculated cancer risks and HIs was from chemicals that occur both in background and site media. The risk contributions from arsenic and PAHs are likely attributable to anthropogenic background levels and are related to former DoD activities from areas associated with historical application of arsenical-based herbicides and pesticides. The PAHs are likely from nonpoint anthropogenic sources such as vehicular traffic or asphalt pavements. The arsenic and PAHs detected in site soil were not the result of a CERCLA release during former operations at Area 13, which means that there is no authority to remediate them under the FUDS program. Furthermore, DoD-related constituents do not present an unacceptable risk for any of the exposure scenarios evaluated for current and foreseeable future land use conditions. Therefore, Area 13 was recommended for no action based on the results of the HHRA.

A BERA addendum was completed to evaluate the terrestrial upland portion of Area 13 potential for ecological risk from DoD-related activities. The site-wide BERA results (Weston, 2008b) did not indicate any site-related potential for ecological risk directly associated with Area 13. The terrestrial upland portion of Area 13 is highly developed and unlikely to support terrestrial receptors; however, three river sediment samples and three fiddler crab tissue samples were collected within the shoreline area. Concentrations of PAHs were highest at the Raritan River locations. Although there is no evidence that PAH contamination measured onsite could explain PAH levels observed at two of the Raritan River locations alongside the dock area, the significant fire at the dock in the 1980s may have potentially provided a source of this contamination. This fire occurred well after transfer of the property from the DoD into private ownership. While some pesticides and metals were detected in the fiddler crab tissue samples collected near Area 13, hazard quotient modeling of fiddler crabs to herons did not indicate significant risks relative to the estuarine reference area. Additionally, analysis of explosive compounds in the sediments sampled did not indicate any ecological risks when concentrations were compared to ecological screening benchmarks. Overall, no significant risk to ecological receptors exposed to sediments and prey items near Area 13 (excluding the open water portion) was identified. Because there

was no site-related potential for ecological risk associated with Area 13 DoD-related constituents, no further evaluation was recommended based on the BERA.

### RI Conclusions and Recommendations

Because no evidence of MEC contamination and no unacceptable risks associated with potential exposures to DoD-related COPCs were identified, the RI report did not recommend a **Feasibility Study (FS)** for Area 13. Based on the evaluation of data previously collected as presented in the RI report, no action was recommended for MEC or MC and HTW associated with Area 13.

## SCOPE AND ROLE OF THE ACTION

It was concluded in the RI report (CH2M, 2018) that MEC and DoD-related COPCs in soil, sediment, and surface water do not pose a threat to human health and the environment at the FRA. Therefore, this proposed plan proposes no action for Area 13.

## SUMMARY OF SITE RISKS

### Land Use

Area 13 encompasses a total of 22.5 acres on the southeast boundary of the FRA. Approximately 16.9 acres of Area 13 lies within the Raritan River. The 5.6-acre terrestrial portion of Area 13 includes approximately 3 acres of developed land occupied by the former dock and two large buildings, and 0.4-acre of land that is used for ongoing tenant operations. Land use within the terrestrial portion of Area 13 is currently primarily commercial/industrial and recreational. Current receptors include maintenance workers, industrial/commercial workers, recreational users/trespassers, and construction/utility workers. Development of the upland portion of Area 13 is anticipated, so future land use may change to a more active recreational or commercial use.

### Human Health Risks

The findings of the RI are consistent with the conceptual site model (CSM) that suggests the primary MEC release mechanism is from munitions lost or dumped in the Raritan River near the pier loading area, and that MEC in sediment have been removed through previous dredging operations. The data suggest that the MEC have been removed from this area so there is no longer an explosive risk at Area 13 and a MEC Hazard Assessment is not required.

The HHRA conducted during the RI did not identify an unacceptable risk associated with exposure of current or future receptors at Area 13 for COPCs associated with DoD releases.

### Ecological Risks

Because no physical evidence of MEC was identified within Area 13, MEC do not pose a threat to the environment, and the BERA and the BERA addendum did not identify any unacceptable risk to ecological receptors for COPCs associated with DoD releases from Area 13.

## CONCLUSIONS

Based on the results of the MEC, MC, and HTW characterization activities conducted at Area 13, no investigative or removal actions are necessary for Area 13. Therefore, no action for Area 13 is proposed.

It is USACE's judgment that no action is protective of public health or welfare and the environment from actual or threatened military releases of hazardous substances. NJDEP does not concur with no further action for MEC in Area 13 based on issues of non-concurrence.

USACE issues of non-concurrence with NJDEP include:

1) CERCLA vs. NJDEP Site Remediation and Waste Management Program

   NJDEP states that the investigation/remediation must comply with requirements of NJDEP's Site Remediation and Waste Management Program to achieve no further action. NJDEP also states that parts of Area 13 comprise tidal aquatic habitat, which falls under the jurisdiction of the New Jersey Tidelands Commission; thus, the rules and regulations of the Commission may factor into the determination of no further action for Area 13. It is a policy of the U.S. Army to implement munitions response actions under the Military Munitions Response Program in accordance with CERCLA and NCP. The determination of no further action is relative to

potential risk associated with MEC or MC, and not factors and issues outside of CERCLA.

2) Determination of No Further Action for MEC

NJDEP does not concur with USACE's determination of no further action for MEC in Area 13 based on the high volumes of MEC that were historically associated with Area 13 during past Arsenal operations and the MEC recovered from dredge spoils removed from Area 13 and placed within the dredge spoil areas. The lines of evidence supporting the no further action determination for Area 13 include the CSM that suggests that the high volume of munitions at the former Arsenal were moved through Area 13 during the loading and unloading of ships at the Area 13 dock; the presence of the dock in Area 13 prior to its use for Arsenal operations, which precludes placement of dredge spoils containing MEC in the terrestrial portion of Area 13; and the fact that no MEC items were recovered during the subject RI.

3) MC and HTW Evaluation

NJDEP requests a systematic and focused evaluation of potential ecological impacts from prior Arsenal operations at Area 13 and recommends a program of sediment coring in the Raritan River with comparison of the results to ecologically based risk-screening criteria. USACE contends that there is no documented historical release of chemical constituents in Area 13 that warrant further investigation, nor is there evidence of any current/ongoing sources for release based on results of the RI. For the terrestrial portion of Area 13, the developed nature of the area coupled with the CSM for historical use of the area and the RI finding of no MEC items does not support the need for further investigation. Similarly, in the aquatic portion of Area 13, a long history of maintenance dredging and sedimentation has occurred in the aquatic area since the Arsenal closed in 1963, and no MEC items were found during the RI.

The final decision presented in this proposed plan may be modified based on public comments and new information.

## COMMUNITY PARTICIPATION

One of the purposes of this proposed plan is to solicit comments from members of the public. USACE encourages the public to gain a more comprehensive understanding of the site and the activities that have been conducted there. USACE maintains the information repository and administrative record file for the FRA. Detailed information about the previous studies and restoration activities can be found in the reports and documents contained in the information repository located at the address below:

Information Repository:
U.S. Army Corps of Engineers, New York District
2890 Woodbridge Avenue
Edison, NJ 08837

Central Information Repository
USACE New York District Office
26 Federal Plaza
New York, NY 10278

Information can also be found through the USACE New York District website for the FRA: http://www.nan.usace.army.mil/Raritan

The ***public comment period*** for this proposed plan is August 12 to September 14, 2019.

**For further information on the proposed plan for Area 13, please contact:**

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## REFERENCES

CH2M HILL, Inc. (CH2M). 2018. *Area 13 Remedial Investigation Report, Former Raritan Arsenal, Edison, New Jersey*. July.

Dames & Moore, Inc. 1993. *Archival Search Report, Former Raritan Arsenal*. July.

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Roy F. Weston, Inc. 1996a. *Final Report of Investigation, Former Raritan Arsenal, Area 10 Investigation*. March.

Roy F. Weston, Inc. 1996b. *Final Site-Wide Hydrogeology Report, Former Raritan Arsenal, Phase 2 Remedial Investigation*. June.

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| 2,6-DNT | 2,6-dinitrotoluene |
| 2,4,6-TNT | 2,4,6-trinitrotoluene |
| ARAR | Applicable or Relevant and Appropriate Requirement |
| ASR | Archival Search Report |
| BERA | baseline ecological risk assessment |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CH2M | CH2M HILL, Inc. |
| COC | constituent of concern |
| COPC | constituent of potential concern |
| CSM | conceptual site model |
| Dames & Moore | Dames & Moore, Inc. |
| DERP | Defense Environmental Restoration Program |
| DGM | digital geophysical mapping |
| DoD | Department of Defense |
| FRA | Former Raritan Arsenal |
| FS | feasibility study |
| FUDS | Formerly Used Defense Sites |
| GSA | General Services Administration |
| HHRA | human health risk assessment |
| HI | hazard index |
| HTW | hazardous and toxic waste |
| LEAD | Letterkenny Army Depot |
| MC | munitions constituents |
| MD | munitions debris |
| MEC | munitions and explosives of concern |
| mm | millimeter |
| MPPEH | material potentially presenting an explosive hazard |
| MRS | munitions response site |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NJDEP | New Jersey Department of Environmental Protection |
| O'Brien & Gere | O'Brien & Gere Engineers, Inc. |
| PAH | polycyclic aromatic hydrocarbon |

| | |
|---|---|
| PETN | pentaerythritol tetranitrate |
| RI | remedial investigation |
| Roy F. Weston | Roy F. Weston, Inc. |
| USACE | U.S. Army Corps of Engineers |
| Weston | Weston Solutions, Inc. |

## GLOSSARY OF TERMS

**Administrative Record:** The Administrative Record (file) contains the documents that form the basis for the selection of a CERCLA response action and serves as a vehicle for public participation in selection of a response action. Pursuant to Section 9613(j)(1) of CERCLA, judicial review of any issue concerning the adequacy of any response action is limited to the contents of the Administrative Record. The Administrative Record includes the word file until the decision document is signed.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA):** The U.S. Congress enacted CERCLA, commonly known as Superfund, on December 11, 1980. This law created a tax on chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

**Defense Environmental Restoration Program (DERP):** Congressionally authorized in 1986, DERP promotes and coordinates efforts for the evaluation and cleanup of contamination at Department of Defense (DoD) installations and Formerly Used Defense Sites (FUDS). The DERP statue [10 U.S.C. 2701(a)] requires that the environmental restoration program be subject to, and in a manner consistent with, CERCLA and the NCP.

**Decision Document:** A generic term used to describe the documentation of the selection of a removal action, remedial action, or other type of environmental restoration action. Examples of decision documents include an action memorandum (i.e., a document describing a removal action selected in accordance with subpart 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan) and a record of decision.

**Feasibility Study (FS):** During the FS, the remedial investigation (RI) data are analyzed and remedial alternatives are identified. The FS serves as the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The CERCLA process does not require completion of an FS if evaluation of the RI data indicate there is no unacceptable risk to human health or the environment.

**FUDS Property:** Facilities or sites (property) that were under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances. Under DERP policy, the FUDS program is limited to those real properties that were transferred from DoD control prior to October 17, 1986. FUDS property can be located within the 50 states, District of Columbia, Territories, Commonwealths, and possessions of the United States.

**Human Health Risk Assessment (HHRA):** An HHRA evaluates the carcinogenic and noncarcinogenic risks presented by contaminants at a site for current and potential future property uses.

**Information Repository:** A repository, generally located at libraries or other publicly accessible locations in or near the community affected by the FUDS project, which contains accurate and up-to-date documents reflecting ongoing environmental restoration activities. The information repository may contain information beyond the scope of the administrative record because the documents in the administrative record relate to a particular response action selection decision at a site. This may include historical documents, public notices, public comments, and responses to those comments.

**Munitions Constituents (MC):** Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

**Munitions Debris (MD):** Remnants of munitions remaining after munitions use, demilitarization, or disposal.

**Munitions and Explosives of Concern (MEC):** Specific categories of military munitions that may pose unique explosive safety risks, such as unexploded ordnance, discarded military munitions, or MC, that are present in high enough concentrations to pose an explosive hazard.

**Munitions Response Site (MRS):** A discrete location within a munitions response area that is known to require a munitions response.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP):** Also referred to as the National Contingency Plan, it is a plan required by CERCLA and codified at 40 *Code of Federal Regulations* § 300 that provides a framework for responding to releases or threats of releases of hazardous substances and oil discharges.

**Proposed Plan:** A public participation requirement of CERCLA Section 117 in which the lead federal agency summarizes the preferred cleanup strategy, the rationale for the preference, the alternatives evaluated in the RI/FS, and any applicable or relevant and appropriate requirement waivers proposed for site cleanup. The proposed plan is issued to the public to solicit public review and comment on all alternatives under consideration.

**Public Comment Period:** A prescribed period during which the public may comment on various documents and actions taken by the government and regulatory agencies.

**Remedial Investigation (RI):** An in-depth study designed to gather data needed to determine the nature and extent of contamination at a CERCLA site.