FY2013

PHOENIX MILITARY RESERVATION

Army Defense Environmental Restoration Program

Installation Action Plan

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear cleanup program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), Phoenix Military Reservation (PMR), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and budgets for all major Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

Acronyms

AEDB-R	Army Environmental Database-Restoration
AOC	Area of Concern
COPC	Chemical of Potential Concern
DD	Decision Document
ER, A	Environmental Restoration, Army
FCA	Fire Control Area
FRA	Final Remedial Action
FS	Feasibility Study
FUDS	Formerly Used Defense Site
FY	Fiscal Year
IAP	Installation Action Plan
IMCOM	Installation Management Command
IRA	Interim Removal Action
IRP	Installation Restoration Program
K	thousand
LCA	Launch Control Area
LTM	Long-Term Management
LUC	Land Use Control
MCL	Maximum Contaminant Level
MDARNG	Maryland Army National Guard
MDE	Maryland Department of the Environment
MNA	Monitored Natural Attenuation
NPL	National Priorities List
PA	Preliminary Assessment
PBA	Performance-Based Acquisition
PBC	Performance-based Contract
PMR	AEDB-R designation for Phoenix Military Reservation
PP	Proposed Plan
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RD	Remedial Design
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbon
TRC	Technical Review Committee

Acronyms

USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command
USATHAMA	US Army Toxic and Hazardous Materials Agency
VOC	Volatile Organic Compound

Installation Information

Installation Locale

Installation Size (Acreage): 17
City: Phoenix/Jacksonville
County: Baltimore
State: Maryland
Other Locale Information

PMR is located approximately one-half mile west of Jacksonville, Maryland in northeastern Baltimore County. The reservation consists of two parcels of land: the fire control area (FCA) and the launch control area (LCA). The FCA and LCA each occupy approximately 17 acres of land and are one-half mile apart. They occupy two adjacent hilltops separated by a valley through which the Greene Branch stream flows (ESE, 1983). The area surrounding PMR is rural residential and farmland. The FCA is the Installation Restoration Program (IRP) site. The LCA is a formerly used defense site (FUDS) and is not further discussed in this document.

Installation Mission

There is no active mission at the PMR. The site is fenced and all buildings have been demolished.

Lead Organization

IMCOM

Lead Executing Agencies for Installation

Fort George G. Meade

USAEC

Regulator Participation

State Maryland Department of the Environment (MDE)

National Priorities List (NPL) Status

PHOENIX MILITARY RESERVATION is not on the NPL

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

The community has expressed no sufficient, sustained interest in a RAB.

Installation Program Summaries

IRP

Primary Contaminants of Concern: Volatiles (VOC)

Affected Media of Concern: Groundwater, Surface Water

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Planned	201810	201810	2019

5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
Phoenix Military Reservation	PMR-001

Cleanup Program Summary

Installation Historic Activity

The PMR property was developed in 1954 as a Nike Ajax missile site. In 1958, the site was modified to support Nike Hercules missiles. Active-duty Army personnel under the command of the Army Air Defense Command staffed the site until 1962 when the Maryland Army National Guard (MDARNG) assumed command. In 1966, the Nike missile program was terminated and the site remained relatively inactive until 1974 (ESE, 1983).

In 1974, the MDARNG was granted a five-year lease on the property and the improvements made by the US Army. The MDARNG used the facility as a year-round training ground for its Military Police Company. In 1979, the MDARNG requested, and was granted, a five-year extension. The MDARNG ceased active operations in 1982. The buildings were demolished shortly thereafter, and the site has been unoccupied since that time. Historical operations have resulted in environmental impacts.

Installation Program Cleanup Progress

IRP

Prior Year Progress: Groundwater was sampled to determine current groundwater concentrations at select wells to support remedial alternatives analysis for the development of a feasibility study (FS). A draft FS has been prepared and is currently under review.

Future Plan of Action: Complete the FS, prepare a proposed plan (PP) and decision document (DD), and begin to implement the site remedy.

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Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 4/3

Installation Site Types with Future and/or Underway Phases

1 Leach Field

(PMR-001)

Most Widespread Contaminants of Concern

Volatiles (VOC)

Media of Concern

Groundwater, Surface Water

Completed Remedial Actions (Interim Remedial Actions/ Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY
PMR-003	VEHICLE MAINTENANCE SHOP (REMOVED)	FRA	OTHER	1987
PMR-004	GENERATOR BUILDING (REMOVED)	FRA	OTHER	1987
PMR-001	FORMER SEPTIC SYSTEM	IRA	ALTERNATE WATER SUPPLY/WATER SUPPLY TREATMENT	1993
PMR-002	UNDERGROUND STORAGE TANK (REMOVED)	FRA	ALTERNATE WATER SUPPLY/WATER SUPPLY TREATMENT	1993

Duration of IRP

Date of IRP Inception: 198206

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201412/201412

Date of IRP completion including Long Term Management (LTM): 204501

IRP Contamination Assessment

Contamination Assessment Overview

The PMR has undergone numerous investigations over the past 25 years. During these investigations, a dissolved phase trichloroethene (TCE) groundwater plume has been observed extending off-site to the north and south. The plume is believed to be stable and is delineated by the competency of the bedrock and lineaments (geologic structural feature) to the east and west and by the Greene Branch stream to the north. Additional work is planned to better define the southern extent of the TCE plume.

A human health risk assessment was conducted for the potential for exposure to constituents detected in groundwater, soil, sediment and surface water samples. No chemicals of potential concern (COPCs) were identified in soil and sediment. Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were identified as COPCs in groundwater. Direct exposure via ingestion, dermal contact, and inhalation during potable use of the groundwater in a residential setting and indirect exposure via inhalation of vapors released (via vapor intrusion) from the groundwater into indoor air in a residential setting were evaluated.

The risk to adults is greater than the MDE acceptable cancer risk level. TCE is the predominant contributor to the risk estimate. In addition, TCE concentrations were greater than the federal maximum contaminant level (MCL) for drinking water in a number of groundwater samples.

Currently, there are no known complete exposure pathways; however, there remains the potential for a complete groundwater exposure pathway. Potential exposure to affected groundwater may be intentional or unintentional. Unintentional (on-site or off-site) there may be a possible complete exposure pathway to contaminated groundwater for a future construction worker. Intentional (off-site) use of the affected groundwater for drinking purposes. There are two small subdivisions south of the PMR that appear downgradient of the TCE plume and the homes there use groundwater as a potable resource. An additional monitoring well was installed and sampled to determine if TCE is migrating off-post into these sub-divisions. As a precautionary measure the Army sampled potable wells from homes in the two adjacent subdivisions and offered bottled water until the data shows their drinking water is safe for consumption. Two rounds of sampling was conducted and the results show no exceedences of federal drinking water standards. No homeowners accepted the Army's offer of bottled water. All other anticipated potential receptors and pathways have either been removed institutionally or are not complete pathways.

A draft FS, evaluating remedial options for addressing the remaining groundwater contamination, has been prepared and is currently under review.

Cleanup Exit Strategy

A conceptual site model is a basic description of how contaminants enter a system, how they are transported around within the system, and where routes of exposure to organisms and humans occur. As such, it provides an essential framework for assessing risks from contaminants, developing remedial strategies, determining source control requirements, and how to address unacceptable risks.

Additional site characterization work will be done to better refine the conceptual site model including sampling existing monitoring wells, installation of an additional monitoring well and sampling local homeowners' drinking water wells.

An FS to evaluate possible RA alternatives for groundwater is under review. Based on our current knowledge of the TCE plume and site conditions, monitored natural attenuation (MNA) with land use controls (LUCs) may be a viable remedy. The RA will continue until state acceptance is received. The number of monitoring wells used to monitor the TCE plume will decrease as the TCE plume diminishes in size; however, it's expected remedial action (operations) [RA(O)] will continue for an estimated 30 years.

IRP Previous Studies

	Title	Author	Date
1981			
	Domestic Well Sampling	Baltimore County Department of Health	JAN-1981
1983			
	Assessment of Contamination	Environmental Science and Engineering	JAN-1983
	Assessment of Ground Water Contamination Mitigation Alternatives	Environmental Science and Engineering	JAN-1983
1985			
	Remedial Action Alternatives Assessment	Environmental Science and Engineering	JAN-1985
1986			
	Demolition Sampling and Analyses	Princeton Aqua Science	JUL-1986
1988			
	Quarterly Groundwater Monitoring	US Army Toxic and Hazardous Materials Agency (USATHAMA)	JUN-1988
1992			
	Preliminary Assessment Report	Weston	MAR-1992
1999			
	Remedial Investigation/Focused Feasibility Study	Malcolm Pirnie/Berger	MAY-1999
2003			
	Field Sampling Plan	Malcolm Pirnie	OCT-2003
2005			
	Remedial Investigation Results Report	Malcolm Pirnie/Berger	MAY-2005
	Final Work Plan	Malcolm Pirnie	DEC-2005
2007			
	Internal Draft Phase 2 Technical Memorandum	Malcolm Pirnie/Berger	JAN-2007
2008			
	Draft Remedial Investigation	Malcolm Pirnie	JAN-2008
	Draft Final Remedial Investigation	Malcolm Pirnie	MAY-2008
2010			
	Draft Supplemental Remedial Investigation Work Plan	Arcadis	OCT-2010
2011			
	Final Supplemental Remedial Investigation Work Plan	Arcadis	JAN-2011
	Draft Community Involvement Plan	Arcadis	AUG-2011
2012			
	Final Community Involvement Plan	Arcadis	MAR-2012
	Final Remedial Investigation Report	Arcadis	NOV-2012
2013			
	Draft Focused Feasibility Study	ARCADIS	MAR-2013

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Installation Restoration Program

Site Descriptions

Site ID: PMR-001
Site Name: FORMER SEPTIC SYSTEM

STATUS

Regulatory Driver: CERCLA

RRSE: HIGH

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
PA	198206	198501
SI	198206	198501
RI/FS	200307	201310
RD	200901	201312
IRA	199304	199307
RA(C)	201303	201412
LTM	201501	204501

RIP Date: N/A

RC Date: 201412

SITE DESCRIPTION

The PMR is a former Nike Missile Battery, FCA site located approximately one-half mile west of Jacksonville, Maryland in northeastern Baltimore County. The site previously contained electronic equipment for target tracking, missile guidance, and fire control. Support structures included barracks, an administration building, a mess hall, water supply pump houses, a paint storage shed, motor pool, generator building, the corridor building (in which fire control was conducted), and a number of radar towers. The site is currently vacant; all structures were demolished and removed.

The site has undergone numerous investigations over the past 25 years. During these investigations, a VOC (TCE) groundwater contaminant plume was observed on the site and extending off-site to the north and south. The results of previous investigations show no apparent source areas remain; therefore, it is believed that any source material has diluted or degraded over time. Based on results of the 2008 draft final remedial investigation report, supplemental investigations are required to better characterize groundwater quality in the south of the site. The proposed supplemental investigations included installation of a deep well on-site, groundwater sampling from site-related monitoring wells and adjacent potable wells, and community outreach. The only off-site receptor risk is the potential future use of the aquifer for drinking purposes. Potable water samples were tested from down gradients homes and no analytes were detected or were detected below federal drinking water standards. All other current potential receptors and pathways have either been addressed institutionally or are not complete pathways. Based on the contaminant type, its known distribution, flow directions and potential risk to off-site receptors, the final remedial investigation report is being updated with a technical memorandum and a focused FS. Based on our current knowledge of the plume and site conditions, in situ groundwater chemical oxidation, and MNA with LUCs may be a viable remedy.

CLEANUP/EXIT STRATEGY

Additional site characterization work was done to refine the conceptual site model including sampling existing monitoring wells, installation of an additional monitoring well, and sampling local homeowners' drinking water wells. A draft FS has been prepared and is currently under review. Based on our current knowledge of the plume and site conditions MNA with LUCs and in-well remedial or similar technology may be a viable remedy. Cleanup will continue until state acceptance is received. The number of monitoring wells used to assess the TCE plume will decrease as the TCE plume diminishes in size; however, LTM is expected to continue for an estimated 30 years.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
PMR-002	UNDERGROUND STORAGE TANK (REMOVED)	199307	No Information Available
PMR-003	VEHICLE MAINTENANCE SHOP (REMOVED)	198704	No Information Available
PMR-004	GENERATOR BUILDING (REMOVED)	198704	No Information Available

IRP Schedule

Date of IRP Inception: 198206

Past Phase Completion Milestones

1985	
PA	(PMR-001 - FORMER SEPTIC SYSTEM, PMR-002 - UNDERGROUND STORAGE TANK (REMOVED), PMR-003 - VEHICLE MAINTENANCE SHOP (REMOVED), PMR-004 - GENERATOR BUILDING (REMOVED))
SI	(PMR-001 - FORMER SEPTIC SYSTEM, PMR-002 - UNDERGROUND STORAGE TANK (REMOVED), PMR-003 - VEHICLE MAINTENANCE SHOP (REMOVED), PMR-004 - GENERATOR BUILDING (REMOVED))
RI/FS	(PMR-002 - UNDERGROUND STORAGE TANK (REMOVED))
1987	
RA(C)	(PMR-003 - VEHICLE MAINTENANCE SHOP (REMOVED), PMR-004 - GENERATOR BUILDING (REMOVED))
RD	(PMR-003 - VEHICLE MAINTENANCE SHOP (REMOVED), PMR-004 - GENERATOR BUILDING (REMOVED))
1992	
RD	(PMR-002 - UNDERGROUND STORAGE TANK (REMOVED))
1993	
RA(C)	(PMR-002 - UNDERGROUND STORAGE TANK (REMOVED))
IRA	(PMR-001 - FORMER SEPTIC SYSTEM)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
PMR-001	FORMER SEPTIC SYSTEM	Phoenix Military Reservation	20131030

Final RA(C) Completion Date: 201412

Schedule for Next Five-Year Review: 2018

Estimated Completion Date of IRP at Installation (including LTM phase): 204501

PHOENIX MILITARY RESERVATION IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY14	FY15	FY16	FY17	FY18	FY19+
PMR-001	FORMER SEPTIC SYSTEM	RI/FS						
		RD						
		RA(C)						
		LTM						

Community Involvement

Technical Review Committee (TRC): None

Community Involvement Plan (Date Published): 201203

Restoration Advisory Board (RAB): No

Reason Not Established: The community has expressed no sufficient, sustained interest in a RAB.

Community Interest Solicited on: 201206

Efforts Taken to Determine Interest

The site is in a rural area of Maryland. The affected community is located immediately surrounding the site so the Army did direct mailings to the affected community.

Results

The community did not express sufficient interest to establish a RAB. Too few community members and no regulatory officials responded affirmatively to the Army's solicitations to establish a RAB.

Follow-up Procedures

Information on the site restoration will be provided to the community during the public meeting associated with the upcoming PP in 2013.

Additional Community Involvement Information

In approximately two years from June 2012, the Army will again solicit interest in establishing a RAB.

Administrative Record is located at

Fort George G. Meade
4215 Roberts Ave, Suite 320
Ft. Meade. MD 20755
301-677-9365

and

Cockeysville Branch Library
9833 Greenside Dr.
Cockeysville, MD 21030
410-887-7750

Information Repository is located at

Fort George G. Meade
4215 Roberts Ave, Suite 320
Ft. Meade. MD 20755
301-677-9365

and

Cockeysville Branch Library
9833 Greenside Dr.
Cockeysville, MD 21030
410-887-7750

Current Technical Assistance for Public Participation (TAPP): N/A

TAPP Title: N/A

Potential TAPP: N/A