

**FY2016**

**HOLSTON ARMY AMMUNITION PLANT**  
**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), the Holston Army Ammunition Plant (HSAAP), the executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules, and tentative budgets for all 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

AAP	Army Ammunition Plant
AEDB-R	Army Environmental Database - Restoration
AMC	Army Materiel Command
AOC	Area of Concern
AST	Aboveground Storage Tank
bgs	below ground surface
CAO	Corrective Action Order
CAP	Corrective Action Plan
CMI(C)	Correction Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMS	Corrective Measures Study
CS	Confirmation Sampling
cy	cubic yard
DD	Decision Document
DES	Design
ER,A	Environmental Restoration, Army
FAP	Facility Action Plan
FRA	Final Remedial Action
FS	Feasibility Study
ft	feet
FY	Fiscal Year
GW	Groundwater
HMX	Cyclotetramethylene tetranitramine
HSAAP	Holston Army Ammunition Plant
IAP	Installation Action Plan
IM	Interim Measure
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operation)
INV	Inventory
IRA	Interim Remedial Action
IRP	Installation Restoration Program
ISC	Initial Site Characterization
LTM	Long-Term Management
LTO	Long-Term Operations
LUC	Land Use Control
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
N/A	Not Applicable
NFA	No Further Action
NPL	National Priorities List
OSI	Ordnance Systems Inc.
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract

## Acronyms

POL	Petroleum, Oil and Lubricants
ppb	parts per billion
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDx	Cyclotrimethylenetrinitramine (Royal Demolition Explosive)
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RSL	Regional Screening Level
SB	Statement of Basis
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TDEC	Tennessee Department of Environment and Conservation
TN	Tennessee
TPH	Total Petroleum Hydrocarbon
TRC	Technical Review Committee
USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USATHAMA	US Army Toxic and Hazardous Materials Agency
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatiles Organic Compound
WWII	World War II

## Acronym Translation Table

### CERCLA

Preliminary Assessment(PA)

Remedial Investigation(RI)

Feasibility Study(FS)

Remedial Design(RD)

Remedial Action (Construction)(RA(C))

Remedial Action (Operation)(RA(O))

Long Term Management(LTM)

Interim Remedial Action(IRA)

### RCRA Underground Storage Tank (UST) Site Phase Terms

= Initial Site Characterization(ISC)

= Investigation(INV)

= Corrective Action Plan(CAP)

= Design(DES)

= Implementation (Construction)(IMP(C))

= Implementation (Operations)(IMP(O))

= Long Term Management(LTM)

= Interim Remedial Action(IRA)

# Installation Information

## Installation Locale

**Installation Size (Acreage):** 6000

**City:** Kingsport

**County:** Sullivan and Hawkins

**State:** Tennessee (TN)

## Other Locale Information

The HSAAP is located in the city of Kingsport in Sullivan and Hawkins Counties, TN and is approximately 6,000 acres.

## Installation Mission

The mission of the installation is to produce explosives for the Department of Defense. The primary explosives produced are cyclotrimethylenetrinitramine (RDX) [a research department explosive, also referred to as "cyclonite"] and cyclotetramethylene tetranitramine (HMX) [a high melting explosive, also referred to as "homocyclonite"] based explosives. These explosives are boxed or drummed and shipped to other plants to be loaded into munitions. Currently, the HSAAP does not have a storage mission. HSAAP is a government owned-contractor operated facility. The operating contractor is BAE Systems.

## Lead Organization

Army Materiel Command (AMC)

## Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE), Mobile District

BAE SYSTEMS OSI, Inc. (Ordnance Systems, Inc.)

## Regulator Participation

**Federal** US Environmental Protection Agency (USEPA), Region 4

**State** Tennessee Department of Environment and Conservation (TDEC)

## National Priorities List (NPL) Status

HOLSTON ARMY AMMUNITION PLANT is not on the NPL

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

RAB established 199909

## Installation Program Summaries

### IRP

**Primary Contaminants of Concern:** Explosives, Metals, Pesticides, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

**Affected Media of Concern:** Groundwater, Sediment, Soil

### CR

**Primary Contaminants of Concern:** Other (RDX)

**Affected Media of Concern:** Groundwater, Soil



# 5-Year / Periodic Review Summary

## 5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Underway	201510	201609	2016

## 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
Corrective Action Order Mod	CCHSAAP-41, HSAAP-03, HSAAP-08, HSAAP-13, HSAAP-26, HSAAP-33, HSAAP-37
SWMU 14 DD	HSAAP-03, HSAAP-22

## Land Use Control (LUC) Summary

**LUC Title:** LUCs 2013

**Site(s):** CCHSAAP-41, HSAAP-03, HSAAP-26, HSAAP-33, HSAAP-37

**ROD/DD Title:** Corrective Action Order Mod

**Location of LUC**

Multiple SWMUs

**Land Use Restriction:** Landfill restriction - Prohibit activities that would impact the LF cap (or cover system) and drainage system, Landfill restriction - Prohibit excavation on LF cap or cover system, Landfill restriction - Restrict construction of buildings that may interfere with LF cap or cover system, Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

**Types of Engineering Controls:** Signs

**Types of Institutional Controls:** Dig Permits, Education programs, Notations in Master Plan, Restrictions on land use

**Date in Place:** 200906

**Modification Date:** N/A

**Date Terminated:** N/A

**Inspecting Organization:** Installation

**Record of LUC:** Master Plan or Equivalent

**Documentation Date:** 201501

**LUC Enforcement:** Annual Inspections, 5 Year Reviews

**Contaminants:** PAH, PESTICIDES

**Additional Information**

N/A

# Cleanup Program Summary

## Installation Historic Activity

The HSAAP has been an active installation since 1942 with the exception of the period from 1946 to 1949 when it was inactive. The Holston Defense Corporation operated the installation from its inception until December 1998. The BAE/OSI was awarded the facility operations contract in 1999 and continues to operate the facility. In the fourth quarter of fiscal year (FY)04 a performance-based acquisition (PBA) contract was awarded for remediation at sites HSAAP-08, HSAAP-13, HSAAP-26, HSAAP-27, HSAAP-29, HSAAP-30, HSAAP-33, solid waste management unit (SWMU) 103 at HSAAP-37, SWMU 70 and AOCs F and I at HSAAP-38. At the 2006 IAP workshop new AOCs (AOC N and AOC O) were added to HSAAP-01 in the Installation Restoration Program (IRP). There are 130 magazines (referred to as X-magazines) that are used for temporary storage. There are 11 Y magazines, but explosive storage is not allowed in them at the present time due to their wooden structure. Currently, HSAAP does not have a storage mission.

## Installation Program Cleanup Progress

### IRP

**Prior Year Progress:** Exposed asbestos was removed/covered at SWMU 20 (HSAAP-33). Thirty six monitoring wells were sampled and six surface water samples were collected.

**Future Plan of Action:** A new PBA contract will be awarded and begin sampling in FY17. The existing PBA will finish execution of the final year of long-term management (LTM)/long-term operation (LTO) at the sites. The corrective action order (CAO) will be modified to close out HSAAP SWMU 25 (HSAAP-08) over the next two years. LTM will continue.

### CR

**Prior Year Progress:** The SWMU 3 (CCHSAAP-41) RCRA Facility Investigation (RFI) was approved by TDEC with institutional controls being the selected remedy on inactive buildings. RFI field work at CCHSAAP-42 (SWMU 109) is complete and an RFI report is being prepared.

**Future Plan of Action:** LTM is expected at SWMU 109 with signs and institutional controls. LTM at SWMU 3 will continue under the PBA.

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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: 30/24

## Installation Site Types with Future and/or Underway Phases

1	Contaminated Buildings (HSAAP-37)
1	Landfill (HSAAP-03)
1	Surface Disposal Area (HSAAP-26)
3	Surface Impoundment/Lagoon (HSAAP-08, HSAAP-13, HSAAP-33)

## Most Widespread Contaminants of Concern

Explosives, Metals, Pesticides, Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

## Media of Concern

Groundwater, Sediment, Soil

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

Site ID	Site Name	Action	Remedy	FY
HSAAP-15	BURNING GRND SOUTH OF MFG AREA	IRA	WASTE REMOVAL - SOILS	1986
HSAAP-28	LEAKING UST B-22	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1991
HSAAP-34	HEATING OIL LEAKING UST AT B-12, AREA A	IRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1993
HSAAP-29	LEAKING UST B-105	IRA	WASTE REMOVAL - SOILS	1994
HSAAP-17	PONDS (SODIUM NITRATE) 3 & 4	IRA	CAPPING	1996
HSAAP-37	GAS PRODUCER CONTAMINATION	IRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1997
HSAAP-22	LANDFILL AREA A - COAL TAR	FRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	1998
HSAAP-33	FORMER SOLVENT BURN TANK	IRA	CAPPING	1998
HSAAP-29	LEAKING UST B-105	IRA	AIR SPARGING	2001
HSAAP-37	GAS PRODUCER CONTAMINATION	FRA	INSTITUTIONAL CONTROLS	2004
HSAAP-37	GAS PRODUCER CONTAMINATION	FRA	WASTE REMOVAL - SOILS	2004
HSAAP-03	TAR (WWII) NEAR POND 3, AREA B TAR	FRA	INSTITUTIONAL CONTROLS	2005
HSAAP-03	TAR (WWII) NEAR POND 3, AREA B TAR	IRA	REMOVAL	2005
HSAAP-23	PRODUCTION AREA B DRAINAGE DITCHES	FRA	REMOVAL	2005
HSAAP-26	PESTICIDE AREAS NEAR B-105, B-148	IRA	WASTE REMOVAL - SOILS	2005
HSAAP-27	SANITARY LANDFILL WEST OF B-155, CLOSED	IRA	WASTE REMOVAL - SOILS	2005
HSAAP-29	LEAKING UST B-105	FRA	AIR SPARGING	2005
HSAAP-30	FIRING RANGES	FRA	OTHER	2006
HSAAP-38	MISC. STORAGE AREAS REQUIRING CONFIRM.	IRA	WASTE REMOVAL - SOILS	2006

## IRP Summary

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

Site ID	Site Name	Action	Remedy	FY
HSAAP-08	SURFACE IMPOUNDMENTS REQUIRING CONF	IRA	REMOVAL	2007
HSAAP-08	SURFACE IMPOUNDMENTS REQUIRING CONF	FRA	INSTITUTIONAL CONTROLS	2007
HSAAP-13	FLYASH LF,POND 1&2 SWMU 22,28,38,39	FRA	INSTITUTIONAL CONTROLS	2007
HSAAP-26	PESTICIDE AREAS NEAR B- 105,B-148	FRA	INSTITUTIONAL CONTROLS	2007
HSAAP-33	FORMER SOLVENT BURN TANK	FRA	INSTITUTIONAL CONTROLS	2007
HSAAP-33	FORMER SOLVENT BURN TANK	FRA	CAPPING	2007
PBC at Holston	PBC	FRA	OTHER	2007

### Duration of IRP

**Date of IRP Inception:** 198502

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 200709/200709

**Date of IRP completion including Long Term Management (LTM):** 204609

# IRP Contamination Assessment

## Contamination Assessment Overview

The HSAAP has a total of 30 AEDB-R sites of environmental concern. The sites include areas of contamination from removed underground storage tanks (UST), coal tar, sanitary and construction debris landfills, earthen ponds, a pesticide shop, burn areas, weapons and firing ranges, fire training sites, vehicle maintenance areas, former spill areas, and miscellaneous storage areas.

The PAHs (contained in coal tar), explosives, pesticides, and benzene, toluene, ethylbenzene, and xylene (BTEX) are the primary contaminants of concern at the HSAAP. The HSAAP has 110 SWMUs and 15 AOCs identified in the Resource Conservation and Recovery Act (RCRA) facility assessment (RFA). In May 1992 the US Army Toxic and Hazardous Materials Agency (USATHAMA) conducted a preliminary site inspection (SI) which confirmed the RFA findings.

The HSAAP has removed all regulated USTs. Three sites were found to be contaminated with POL (HSAAP-28, 29, and 34). A site-specific standard was requested for HSAAP-28 (Building 22), a solvent-vapor extraction system was operated at HSAAP-29 (Building 105) until August 2000, and no further action (NFA) is required at HSAAP-34, since heating oil contamination was adequately removed during excavation.

Investigations and interim removal actions addressing coal tar have also been completed at several HSAAP sites (primarily at HSAAP-03 and -37).

An extensive suite of chemical analysis has been performed on a site-wide groundwater monitoring network. This monitoring shows no indication of off-post groundwater contamination.

All IR sites achieved RIP/RC in FY07.

The TDEC finalized the modification to the CAO on Jan. 24, 2013. The modification identified the remedy as monitoring, reporting, institutional controls and inspections. Monitoring, reporting, well inspection, institutional controls and inspections were conducted in 2013 and 2014 in accordance with the CAO.

The first periodic review was completed in 2011.

## Cleanup Exit Strategy

Monitoring, reporting, well inspection, institutional controls and inspections will be completed in accordance with the CAO. LTM will include five-year reviews in 2016, 2021, 2026, 2031, 2036 and 2041.

## IRP Previous Studies

Year	Title	Author	Date
1975	Installation Assessment, HSAAP, TN. Las Vegas, NV. [Note: Also referred to as Environmental Photographic Interpretation Center (EPIC)]	Environmental Monitoring Systems Laboratory	JUN-1975
1979	Hazardous Waste Survey No. 81-26-8205-81, Phases 1 through 4	USATHAMA	JUL-1979
1980	Installation Assessment of Holston Army Ammunition Plant, Report No. 148	USATHAMA	JAN-1980
	Hazardous Waste Survey No. 81-26-8205-81, Phases 5 through 7	USATHAMA	MAR-1980
1981	Engineering Report on Investigation and Evaluation of Pollution Aspects of Abandoned Coal Tar Disposal Site, Area "A", Holston Army Ammunition Plant for Holston Defense Corporation, Kingsport, TN	Wegman, Leonard S., Inc	SEP-1981
1983	Phase 1, Hazardous Waste Study No. 37-26-0147-84, Summary of AMC Open Burning/Open Detonation Ground Evaluations	AEHA	JUN-1983
	Engineering Study of Hazardous Discharges from Munitions Production Facilities, Holston Army Ammunition Plant	Mason & Hanger-Silas Mason Co., Inc.	AUG-1983
1984	90 Percent Report, Pitch Trap Waste (Coal Tar) Solidification Evaluation	Environmental and Safety Designs, Inc.	AUG-1984
	90 Percent Report, Floodplain Feasibility Analysis Report	Environmental and Safety Designs, Inc.	AUG-1984
1985	Phase 3, Hazardous Waste Study No. 37-26-0147-84, Summary of AMC Open Burning/Open Detonation Ground Evaluations	AEHA	JUN-1985
	Industrial Hygiene Study No. 55-35-0100-85, Evaluation of Health Hazards at the Gas Producer [Applicable to the Hazards of the Buried Tar]	AEHA	JUN-1985
	Miscellaneous Reports Concerning Closing the Tar Disposal Site at Area A [HSAAP-22], the Rock Quarry Landfill [HSAAP-01], and Rock Dam Landfill	Holston AAP	JUN-1985
1986	Phase 5, Hazardous Waste Study No. 37-26-0593-86, Summary of AMC Open Burning/Open Detonation Ground Evaluations	AEHA	FEB-1986
	Report AMXTH-IR-A-148 (U)	USATHAMA	MAY-1986
	Report AMXTH-IR-A-148 (U)	USATHAMA	MAY-1986
	Update of Initial Installation Assessment of Holston Army Ammunition Plant	Unknown	OCT-1986
1987	Hazardous Waste Study No. 37-26-0779-87, Investigation of Soil Contamination at the Open Burning Area, HSAAP	AEHA	FEB-1987



## IRP Previous Studies

Year	Title	Author	Date
1987	Water Quality Engineering Study No. 32-24-0791-88, Evaluation of Alternative Industrial Wastewater Treatment Plant Sludge Disposal Methods, Holston AAP	AEHA	NOV-1987
1988	POL Contamination in Groundwater Near Industrial Landfill	AEHA	APR-1988
	Final Summary of Groundwater Consultation 38-26-0809-87	Unknown	APR-1988
1989	Holston AAP Investigation and Evaluation of Underground Storage Tanks	Corps of Engineers, Omaha District	SEP-1989
1991	Draft RCRA Facility Assessment of Holston AAP	A. T. Kearney, Inc.	AUG-1991
1992	Holston AAP, Building 22, Flashing Facility, Corrective Action Plan	USATHAMA	APR-1992
	Preliminary Site Inspection for Holston AAP, Site Inspection Report No. 91042	Advanced Sciences, Inc.	MAY-1992
	Hazardous Ranking System Score (HRS2) Summary Report for Holston AAP	Advanced Sciences, Inc.	JUL-1992
1993	Holston AAP, Building 105, Service Station, Corrective Action Plan and Environmental Assessment Report	USATHAMA	JAN-1993
	Geohydrologic Study No. 38-26-KT17-93, Former Solvent Burn Tank, Holston Army Ammunition Plant	USAEHA	JUN-1993
	Phase 2, Wastewater Management Study No. 32-24-H13Q-94, Industrial Wastewater Collection System Evaluation, Holston Army Ammunition Plant	USAEHA	NOV-1993
1994	Prefinal Environmental Assessment Report, Building 22 Area - Flashing Facility	RUST Environment & Infrastructure	OCT-1994
	Groundwater Assessment Nitrate Ponds 3 and 4, Holston Army Ammunition Plant	Geraghty & Miller, Inc.	DEC-1994
1995	Corrective Measures Study Report, Holston Army Ammunition Plant	Geraghty & Miller, Inc.	AUG-1995
1996	Survey Phase RCRA Facility Assessment No. 38-EH-5035-96, HSAAP	USACHPPM	JUL-1996
	Prefinal RCRA Facility Investigation Report, HSAAP SWMUs 14 & 15	U.S. Army Corps of Engineers, Savannah District	NOV-1996
1997	HSAAP, Groundwater Assessment Report and Annual Groundwater Monitoring Report	Brown and Root Environmental	FEB-1997
	RFA Release Assessment	USACHPPM	JUN-1997
	Groundwater Consultation No. 38-EH-5601-97, Relative Risk Site Evaluation	USACHPPM	SEP-1997
	Holston Closure Report, Former Solvent Burn Tank Unit	Brown & Root	DEC-1997

## IRP Previous Studies

Year	Title	Author	Date
1997		Environmental	
1998	Site Status Monitoring Report, Building 105 Service Station, HSAAP, Facility I.D. No. 0-370050	LAW	FEB-1998
1999	RCRA Facility Assessment Addendum	TDEC	JAN-1999
	Confirmation Sampling Work Plan	USACHPPM	JUN-1999
2000	Confirmation Sampling Report	USACHPPM	JUN-2000
	RCRA Facility Investigation (RFI) Work Plan	USACHPPM	JUN-2000
2001	Additional Confirmation Sampling Report for HSAAP	USACHPPM	APR-2001
	Draft RFI Report for SWMUs 004, 014, 103	USACHPPM	JUN-2001
2002	RCRA Facility Investigation Report for SWMU 026	USACHPPM	FEB-2002
	Final RCRA Facility Investigation Report for SWMUs 004, 014, 103	USACHPPM	FEB-2002
	Additional Confirmation Sampling Report for HSAAP	USACHPPM	MAR-2002
	RCRA Facility Investigation Report for Site-Wide Groundwater, April-June 2001 and January 2002,	USACHPPM	MAY-2002
	RCRA Facility Investigation Report for SWMU 096, Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	AUG-2002
	Draft RCRA Facility Investigation Report for SWMU 043, Burning Ground	USACHPPM	SEP-2002
	Second Semiannual Report	USACHPPM	OCT-2002
	Interim Measures Work Plan SWMU-096	USACHPPM	OCT-2002
2003	IM Report SWMU HSAAP-096 Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	JAN-2003
	Additional IM Report for Site-Wide Groundwater	USACHPPM	AUG-2003
	Additional IM Report Solid Waste Management Unit HSAAP-96 Producer Gas Building, Coal Tar Liquor Storage Tanks	USACHPPM	AUG-2003
2004	IM Report Site-Wide Groundwater Area B (Explosives Production Area)	USACHPPM	JAN-2004
	Additional IM Work Plan Site-Wide Groundwater Area B (Explosives Production Area)	USACHPPM	APR-2004
	RFI Report Site-Wide Ground Water 2-13 February	USACHPPM	MAY-2004
	RFI Work Plan SWMU HSAAP-020 Rock Quarry Landfill	USACHPPM	MAY-2004
	RFI Work Plan SWMU HSAAP-088 WWII Pesticide Rinsate Wash down Area	USACHPPM	JUL-2004

## IRP Previous Studies

2004	Title	Author	Date
	RFI Work Plan SWMU HSAAP-052 (Vehicle Wash Pad inside Building 105) and AOC-C Leaking UST B-105, Service Station	USACHPPM	AUG-2004
2005	Site Safety and Health Plan	Bay West	FEB-2005
	Site Contractor Quality Control Plan	Bay West	FEB-2005
	Site Sampling and Analysis Plan	Bay West	FEB-2005
	Site Quality Assurance Project Plan	Bay West	FEB-2005
	Site Investigation-Derived Waste Management Plan	Bay West	FEB-2005
	Well Plugging and Abandonment Plan	Bay West	FEB-2005
	Storm Water Management Plan	Bay West	FEB-2005
	Environmental Protection Plan	Bay West	FEB-2005
	Soil Erosion and Sediment Control Plan	Bay West	FEB-2005
	Interim Measures Field Work Order, SWMU 88 - Pesticide Washdown Area	Bay West	MAY-2005
	Project Management Plan, Rev. 02	Bay West	JUL-2005
	RFI Report, SWMU 51/52 - Drainage Ditch behind Vehicle Wash Pad Areas	Bay West	SEP-2005
	Interim Measures Report, SWMU 70 - Production Yard 12, Storage Area/Welding Pad (HSAAP-38), Bay West	Bay West	SEP-2005
	Interim Measures Report, SWMU 83 - Waste Thermal Treatment Units (HSAAP-27)	Bay West	SEP-2005
	RFI Report, SWMU 97 - Coal Tar along Rail Corridor from Area A to Area B (HSAAP-08)	Bay West	SEP-2005
	RFI Report, SWMUs 22,28,38,and 39 - Flyash Landfill, Sedimentation Pond, and Sodium Nitrate Ponds 1 and 2	Bay West/SAIC, Inc.	SEP-2005
2006	RFI/IM Report, AOC-I - Building 8 Explosives Testing Area	Bay West	JAN-2006
	RFI/IM Report, AOC-I - Building 8 Explosives Testing Area	Bay West	JAN-2006
	Interim Measures Report, SWMU 97, Coal Tar along Rail Corridor from Area A to Area B (HSAAP-08)	Bay West	JAN-2006
	RFI Report, SWMU 25 - Area B Tar Burial Site	Bay West/SAIC	FEB-2006
	IM Report, AOC-F - TPH in Soil near Manganese Ore Piles	Bay West	FEB-2006
	RFI/IM Report, HSAAP 30 - SWMUs 104, 105, and 206, Firing Ranges	Bay West	FEB-2006
	IM Report, SWMU 103 - Coal Tar Site, Ditch at Gas Producer Building	Bay West	FEB-2006
	RFI/IM Report, SWMU 98 - Coal Tar South of Sanitary Landfill	Bay West	FEB-2006
	RFI/IM Report for SWMUs 104, 105, and 106 - Firing Ranges	Bay West	FEB-2006
	IM Report, SWMUs 77/78/86/87 - Pesticide Areas Near Building 148	Bay West	APR-2006

## IRP Previous Studies

2006	Title	Author	Date
	RFI/IM Report, SWMU 88 - WWII Pesticide Wash Down Area	Bay West	APR-2006
	RFI Addendum Report, SWMU 20 - Rock Quarry Landfill	Bay West	JUN-2006
	IM Report, AOC-C - Former Underground Storage Tank at Building 105	Bay West/SAIC	SEP-2006
	RFI Report, SWMU 19/29 - Construction Debris Landfill and Sedimentation Pond	Bay West/SAIC	SEP-2006
	Fiscal Year 2005 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	SEP-2006
	RFI/IM Report, AOC-O - Coal Tar Near Building 20	Bay West	OCT-2006
2007			
	RFI Report, AOC-GW - Site-Wide Groundwater	Bay West	MAR-2007
	FY06 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	JUN-2007
	RFI Addendum Report, AOC-GW - Site-Wide Groundwater, Well at SWMU 25	Bay West	JUN-2007
	Summary Report, Inspections of SWMU 4 - Coal Tar Tanks Behind Building 8	Bay West	AUG-2007
	CM Report, AOC-GW - Site-Wide Groundwater	Bay West	AUG-2007
	RFI Addendum, AOC-C - Former Underground Storage Tank at Building 105	Bay West/SAIC	AUG-2007
	Revised RFI/IM Report, AOC-O, Coal Tar Near Building 20	Bay West	SEP-2007
2008			
	Fiscal Year 2007 Long-Term Monitoring/Long-Term Operations Report	Bay West/SAIC	APR-2008
	Summary Report - Inspections of SWMU 4 - Coal Tar Tanks behind Building 8	Bay West	JUN-2008
2009			
	Final Ramp-Down Plan for Holston Army Ammunition Plant	Bay West	FEB-2009
	FY08 Inspection Summary Report SWMU 4, Coal Tar Tanks Behind Building 8	Bay West	MAY-2009
	FY 08 Long-Term Monitoring/Long-Term Operations Report	Bay West	MAY-2009
	Final SWMU 108 Assessment Report for the AFRC Maintenance Shop Construction Area	Holston Army Ammunition Plant	JUN-2009
2010			
	FY 09 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	MAY-2010
	FY09 Summary Report for SWMU 4, Coal Tar Tanks Behind Building 8	Bay West	JUN-2010
	SWMU 4, Coal Tar Behind Building 8, Coal Tar Removal Report	Bay West	DEC-2010
2011			
	FY 10 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	APR-2011
	April 2011 Coal Tar Inspection and Test Pit Completion Report, SWMU 4, Coal Tar Behind Building 8	Bay West	JUL-2011

## IRP Previous Studies

	<b>Title</b>	<b>Author</b>	<b>Date</b>
<b>2011</b>	First Periodic Review Report for Holston Army Ammunition Plant	Corps of Engineers, Mobile	SEP-2011
<b>2012</b>	FY 11 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	MAR-2012
<b>2013</b>	FY 12 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	APR-2013
	Final Interim Measures Report, SWMU 25 - Area B Tar Burial Site	Bay West	SEP-2013
<b>2014</b>	FY013 LTM/LTO Operations Report for Holston Army Ammunition Plant	Bay West	MAY-2014

**HOLSTON ARMY AMMUNITION PLANT**  
**Installation Restoration Program**  
**Site Descriptions**

Site Name: TAR (WWII) NEAR POND 3, AREA B TAR

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199102.....	199108
RFI/CMS.....	200101.....	200505
IRA.....	200307.....	200504
CMI(C).....	200505.....	200505
LTM.....	200506.....	204609

RIP Date: N/A

RC Date: 200505

SITE DESCRIPTION

SWMU 14 was moved from HSAAP-22 to this site. SWMU 14 is located just across Wilcox Drive to the west of Area A's main production area. The landfill is 40 to 50 ft north of the South Fork of the Holston River. The site is approximately 3 acres, with depths of 10 to 15 ft, and was used from 1949 to 1978. Discrete coal tar masses have been observed on the bank of the South Fork of the Holston River, along the northwest side of this landfill. An RFI was conducted in FY01 to determine the amount of coal tar along the bank and assess the potential for migration of coal tar from the landfill to the river. The report confirmed the location of the coal tar masses and concluded that migration has not occurred from buried coal tar. The discrete coal tar masses on the riverbank are likely discards from dumping. The RFI report was submitted to the TDEC and was approved.

In August 2003, tar that had breached the SWMU 14 landfill cap was removed and the cap was repaired. Under PBA contracts awarded in 2004 and 2012, a semiannual inspection program was instituted. In 2005, 10 tons of coal tar were removed, and in 2008, 6 tons of coal tar were removed. In 2010, 3 cubic yards (cy) of coal tar were removed. 4 cy of coal tar were removed from two locations following the inspections in 2012. No coal tar was observed in 2013 or 2014.

SWMU 26 is located between Sodium Nitrate Ponds 3 and 4 at Area B. When or for how long the site was used as a dumping ground is unknown. The RCRA Part B application states that during World War II (WWII) approximately 178 cy of coal tar were dumped down the railroad embankment and covered with either clay or mixed soil and railroad ballast. Small trees and undergrowth covered the site. The buried coal tar at SWMU 26 was discovered in the mid-1980s during replacement of a 36-inch water main. At that time, the excavated tar was removed, solidified, and disposed of in the sanitary landfill. The initial discovery revealed a site referred to as the WWII Tar Site, which is approximately 300 ft by 100 ft; however, as the actual dumping area could have extended throughout the length of the railroad track (about 2 miles at Area B and 6 miles in the corridor), the size or number of sites is unknown. Tar has also been found inside Pond 3 (considered part of the same material) and in the area behind Building 200 (HSAAP 01). All of these sites are off the embankment of the same rail line. A SWMU 26 RFI report was written in 1996 prior to issuance of CAO. A follow-up RFI was conducted to define the limits of the SWMU and assess release potential. The report identified the presence of one large mass (73,000 square feet) and one small mass (9,300 square feet) of coal tar buried at the site, to a maximum depth of 4 ft. Soil contamination is limited to the area that contains buried coal tar. Groundwater data does not indicate a release of hazardous constituents from these coal tar masses. The RFI report was submitted to the TDEC and was approved.

At SWMU 26, 75 cy of coal tar were removed in 2003 and 2007, 8 cy of coal tar were removed under the PBA contract. A small area had to be seeded with grass in 2013 and 2014 due to bare spots caused by the previous removals.

This site formerly included the Tar Burial Site (SWMU 25), SWMUs 97, 98, and 102. In 2002 SWMUs 25, 97 and 98 were moved from this site to HSAAP-08, because of their similarity to one another. In 2002, SWMU 102 was moved to HSAAP-22, because of its close proximity to the other sites and its NFA status.

The statement of basis (SB) support documents were revised and resubmitted to the TDEC for SWMUs 14 and 26, one in June 2007 and one in April 2009; respectively. TDEC finalized the modification to the CAO on Jan. 24, 2013. Institutional controls and inspections are conducted in accordance with the CAO.

**Site ID: HSAAP-03**

**Site Name: TAR (WWII) NEAR POND 3,AREA B TAR**

## **CLEANUP/EXIT STRATEGY**

The final remedies for SWMUs 14 and 26 are institutional controls and inspections. Institutional controls and inspections will be required in FY16 and beyond.

The site is funded under the PBA contract at Holston site. The current PBA contract covers LTM through 2016. A new PBA contract will be awarded at the end of 2016 to cover LTM after 2016.



**Site Name: SURFACE IMPOUNDMENTS REQUIRING CONF**

**STATUS**

**Regulatory Driver:** RCRA

**RRSE:** HIGH

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA.....	199102.....	199108
CS.....	199709.....	200101
RFI/CMS.....	200409.....	200703
IRA.....	200604.....	200702
CMI(C).....	200702.....	200703
LTM.....	200710.....	201712

**RIP Date:** N/A

**RC Date:** 200703

**SITE DESCRIPTION**

This site was formerly titled 'Surface Impoundments Requiring Confirmation'. The funding for this site was placed in the PBC at Holston site in 2004. The area includes:

- Area B Tar Burial Site (SWMU 25),
- coal tar along the Area A-Area B Corridor (SWMU 97) and
- coal tar contamination south of the closed sanitary landfill (SWMU 98).

In 2002, SWMUs 25, 97 and 98 were placed in HSAAP-08 because of their similarity to one another. HSAAP-08 formerly included the Area B Coal Pile Sedimentation Pond (SWMU 27), the Fly Ash Landfill Sedimentation Pond (SWMU 28), the former nitric acid neutralization basin (SWMU 30), the former nitric acid neutralization basin (SWMU 33), an unlined spill pond (SWMU 35), a lined spill pond (SWMU 36), and the A-1 equalization basin (SWMU 42).

The following actions were also taken in 2002:

- SWMU 27 was moved to HSAAP-036 because it is an active site and is not eligible for Environmental Restoration, Army (ER,A) funding.
- SWMU 28 was moved to HSAAP-20 because it is regulated under the RCRA Solid Waste Program.
- SWMU 35 was moved to HSAAP-33 because of the consolidation of site-wide groundwater investigation. TDEC approved the NFA in June 2008 for SWMU 35. The RDX contamination in the associated well is part of AOC-GW.
- SWMUs 30, 33, 36, and 42 were moved to HSAAP-11 because they are classified as NFA.

The Area B Tar Burial Site (SWMU 25) is located on the west end of Area B, just to the east of the closed industrial landfill (HSAAP04/SWMU 17) off Road 1932. The closed site is 15 ft wide, 75 ft long and about 10 ft deep. This site contains approximately 60 cy of coal tar from Area A gas producers. The pit received coal tar from 1978 to 1980 when it was closed and covered with clay. Another 2 ft of clay was added in 1985. Grass is growing as a final cover at the site. The tar is considered a solid waste with hazardous constituents. The RFI consisting of soil sampling and soil borings was completed in 2005. An RFI report was completed in February 2006. The TDEC approved the RFI in March 2006. Subsequent to an inspection, an interim measure (IM) resulted in the removal of 24 tons of coal tar and clay cap repair. An SB support document was accepted by the TDEC in July 2007. An IM was completed at SWMU 25 in 2013. A total of 2,158 tons of coal tar and contaminated soil were removed. The site was restored to original condition. Soil samples indicated no analytes above residential levels. TDEC approved that the site will be NFA after the CAO is modified. A request to modify the CAO is anticipated in 2017. Until the CAO is modified institutional controls and inspections will be maintained at the site.

In 1999, coal tar along the Area A-Area B Corridor (SWMU 97) was identified by the TDEC as coal tar contamination along the Area A-Area B corridor. This unit covers the potential areas where coal tar may have been indiscriminately dumped in the past. An RFI consisting primarily of a visual inspection was conducted in FY05. An IM removed 2 yards of tar. In 2005, the RFI report was submitted and approved. In January 2006, an IM report was submitted to the TDEC and was approved in February 2006. In July 2007, an SB support document for NFA was accepted by the TDEC.

**Site ID: HSAAP-08**

**Site Name: SURFACE IMPOUNDMENTS REQUIRING CONF**

Coal tar contamination south of the closed sanitary landfill (SWMU 98) was identified by TDEC in 1999 as coal tar contamination south of the closed sanitary landfill, SWMU 17. This unit consists of individual small coal tar waste that was indiscriminately dumped on the ground surface on the south side of the road leading to the rock quarry. An RFI consisting primarily of a visual inspection was completed in FY05. An IM was performed in May 2005 during which approximately 35 cy of coal tar were removed. In February 2006, an RFI/IM report was submitted to TDEC. In March 2006, TDEC approved the RFI/IM report. In July 2007, an SB support document for NFA was accepted by TDEC.

### **CLEANUP/EXIT STRATEGY**

The CAO will be modified to close-out HSAAP SWMU 25 (HSAAP-08) over the next two years. Modification of the CAO is anticipated to begin in 2016. Institutional controls and inspections will be maintained at the site until the CAO is modified.

Site Name: FLYASH LF,POND 1&2 SWMU 22,28,38,39

**STATUS**

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives

Media of Concern: Sediment

Phases	Start	End
RFA.....	199102.....	199108
RFI/CMS.....	200301.....	200609
CMI(C).....	200612.....	200709
LTM.....	200710.....	204609

RIP Date: N/A

RC Date: 200709

**SITE DESCRIPTION**

This site is located north of Building D-10 in Area B and lies south of Road 1921 and just north of the main line railroad. The site contained two ponds (SWMUs 38 and 39) and was initially used from 1969 to 1972 for liquid sodium nitrate storage. The ponds had a storage volume of 11.1 million gallons and 9 million gallons, respectively. They were closed in the 1970s. Overlying these SWMUs is a sedimentation pond for the fly ash landfill (SWMU 28), and a RCRA closed fly ash landfill (SWMU 22) (5.5 acres, 182,410 cy capacity). The fly ash landfill (SWMU 22) and the sedimentation pond (SWMU 28), are regulated under TDEC's Solid Waste Division. In fall 1997, the landfill was closed.

SWMUs 22 and 28 are regulated as RCRA closed landfills and are inspected semiannually by TDEC's Johnson City Field Office. TDEC allows the inspection of SWMU 22 and 28 to suffice for SWMU 38 and 39. Also, mowing is completed as part of the SWMU 22 and 28 operations.

An RFI was completed and submitted to TDEC in September 2005. In October 2005, TDEC approved the RFI. An SB support document was accepted by TDEC in September 2007. TDEC finalized the modification to the CAO on Jan. 24, 2013. The modification identified the remedy as institutional controls and inspections for the site. Institutional controls and inspections are conducted in accordance with the CAO. These inspections are completed by BAE because this site overlaps with another site. Therefore, there are no costs associated with this site.

**CLEANUP/EXIT STRATEGY**

The final remedy for SWMUs 22, 28, 38, and 39 are institutional controls and inspections. SWMUs 22 and 28 are regulated under the TN solid waste rules. Institutional controls and inspections will be required in FY16 and beyond.

Site Name: PESTICIDE AREAS NEAR B-105,B-148

STATUS

Regulatory Driver: RCRA
RRSE: HIGH
Contaminants of Concern: Pesticides
Media of Concern: Groundwater, Soil

Table with 3 columns: Phases, Start, End. Rows include RFA, CS, RFI/CMS, IRA, CMI(C), LTM, RIP Date, and RC Date.

SITE DESCRIPTION

The following SWMUs are adjacent to Building 148:
- Pesticide Rinsate Pre-filter Tank (SWMU 77),
- Pesticide Rinsate Septic Tank (SWMU 78),
- Pesticide Drain Field (SWMU 86),
- Pesticide Wash Down Area (SWMU 87).

After the mid-1970s, HSAAP began the practice of using pesticide container diluents for additional spray work the next day or disposing of it on the same sites where the original material was used (reference letter, Department of the Army, HSAAP, Kingsport, TN S: Installation Pest Management Program Survey No. 61-0505-17, HSAAP, Kingsport, TN, 6-10 December 1976, for Commander, US Army Material Development and Readiness Command, ATTN: DRCSG, 5001 Eisenhower Ave., Alexandria, VA, Oct. 3, 1977.)

The Pesticide Drain Field (SWMU 86) is 50 ft wide and 50 ft long and is now vegetated. The drain field and septic system (Pesticide Rinsate Septic Tank - SWMU 78) were constructed during the early- to mid-1970s. The floor drain inside Building 148 was plugged prior to 1980 and the drain in the concrete catch basin outside of the building was plugged in 1984. The only waste the drain field received was from hand washing in the sink inside Building 148. Pesticide fluid was not disposed of in the sink. There were approximately 1,050 gallons of pesticide-contaminated water remaining in the septic tanks.

Pesticides and herbicides associated with Building 148 were detected in soil and groundwater samples collected from SWMUs 77, 78, 86, and 87. The groundwater is addressed in site-wide groundwater, AOC-GW (HSAAP-33).

The RFI was conducted in 2003 at SWMUs 77, 78, and 86. Pesticide contamination appears confined to the immediate area of the site. There is no off-site contaminant migration in the groundwater.

In 2004 a source removal was conducted and the residual tank liquids, the tanks and associated piping were removed. In 2005, an IM was performed; it included limited drain field soil removal. The drain field soil was excavated to below industrial and above residential action levels. A total of 325 cy of contaminated soil were removed and 37,000 gallons of contaminated water was treated at the Kingsport Wastewater Plant (the water consisted of runoff and rainfall).

In April 2006, an IM report was submitted to TDEC. In May 2006, TDEC approved the IM report. In July 2007, an SB support document was accepted by TDEC.

The WWII Pesticide Equipment Wash Down Area (SWMU 88) is located in the Area B shop area, south of Road 1966, and southwest of the Service Station (Building 105). The unit consists of a pit filled with 6-inch cobbles. The depth of the pit is approximately 2.5 ft and the surface dimensions are about 20 ft wide by 35 ft long. Between the 1940s and the early-1970s the unit was used to rinse off pesticide dispersing equipment.

**Site ID: HSAAP-26**

**Site Name: PESTICIDE AREAS NEAR B-105,B-148**

Four soil samples were collected from two soil borings conducted at SWMU 88 as part of the FY99 confirmation sampling at HSAAP. Pesticides and herbicides were detected in all four samples. Petroleum hydrocarbons were detected in one sample. The results of this sampling, as reported in the November 1999 confirmation sampling work plan, indicate that pesticides, herbicides, and petroleum product have been released to the subsurface soils at the unit and may impact groundwater quality. A 2005 IM removed approximately 310 cy of pesticide and petroleum contaminated soil.

In April 2006, an RFI/IM report was submitted to TDEC and was approved in May 2006. In July 2007, an SB support document was accepted by TDEC. TDEC finalized the modification to the CAO on Jan. 24, 2013. The modification identified the remedy as institutional controls and inspections for the site.

Institutional controls and inspections are conducted in accordance with the CAO.

## **CLEANUP/EXIT STRATEGY**

The final remedy for SWMUs 77, 78, 86, 87, and 88 are institutional controls and inspections which will be required in FY16 and beyond.

The site is funded under the PBC at Holston site. The current PBA contract covers LTM through 2016. A new PBA contract will have to be awarded at the end of 2016 to cover LTM after 2016.

Site Name: FORMER SOLVENT BURN TANK

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Petroleum, Oil and Lubricants (POL), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199102.....	199108
CS.....	199306.....	199306
RFI/CMS.....	199509.....	200609
IRA.....	199801.....	199802
CMI(C).....	200409.....	200709
LTM.....	200710.....	204609

RIP Date: N/A

RC Date: 200709

SITE DESCRIPTION

The groundwater RFI work for all SWMUs has been combined into this AEDB-R site. In 2002 the Closed Sanitary Landfill West of B-155 (SWMU 18), the Construction Debris Landfill (SWMU 19), the Rock Quarry Landfill (SWMU 20), a sedimentation pond for the sanitary landfill (SWMU 29), and the unlined spill pond (SWMU 35) were incorporated with the former solvent burn tank (SWMU 50) in HSAAP-33 because of the consolidation of the groundwater monitoring into the site AOC-GW. The site-wide groundwater monitoring program consists of semiannual monitoring of 27 wells across the installation.

Multiple data collected over seven years generally show no unexpected results with the exception of a high level of explosives detected in monitoring well MW-99.

In March 2007, an RFI report was submitted and was approved by TDEC in June 2007. In June 2007, an RFI addendum (SWMU 25-groundwater investigation) was submitted and also approved by TDEC. In August 2007, a corrective measures report was submitted to TDEC and it was approved in September 2007. Final acceptance of an SB support document was received from TDEC in September 2008.

The closed sanitary landfill west of B-155 (SWMU 18) is located in Area B. The 3-acre area is registered with the county and was used from 1967 to 1984; it was closed on August 1984. Approximately 2,160 cy of trash, garbage, bagged asbestos, empty pesticide containers, and fluorescent light bulbs were landfilled at this site. Groundwater monitoring results indicate mercury levels above action levels. The landfill cover will be maintained as necessary. Results of sampling indicate mercury in MW-70 above the maximum contaminant level (MCL). LTM will continue on well MW-70 as part of the AOC-Groundwater final remedy. An SB support document was accepted by TDEC in December 2009.

The Construction Debris Landfill (SWMU 19) unit is located in Area B, south of the existing Sanitary Landfill (SWMU 17). It was placed upon the former site of the sedimentation pond for the Sanitary Landfill (SWMU 29). In 1984 the base of the pond collapsed due to flooding. TDEC allowed the facility to fill the area with uncontaminated construction debris. At the time of the visual SI, the area was covered with a large pile of wood. In December 2006, an RFI was approved by TDEC. In September 2007, an SB support document was accepted by TDEC. Small pieces of asphalt were removed from the site in FY14.

The Rock Quarry Landfill (SWMU 20) is a 2-acre, limestone quarry located at the west end of Area B, adjacent to the Holston River. The site was used as a demolition landfill in the 1940s during construction of the installation. It was closed in 1983 and is registered in Hawkins County as a closed landfill. This site contains 6 cy of concrete containing explosives from a production building. Other material disposed of in the landfill includes construction and demolition wastes. In October 2005, an RFI was submitted to TDEC and it was approved by TDEC in December 2005. In August 2006, an RFI addendum was approved by TDEC. In September 2007, an SB support document was accepted by TDEC. Sinkholes, ruts and vegetative cover were repaired in 2014.

Soil at SWMUs 77, 78, 86, 87, and 88 is addressed under HSAAP-026. Soil at SWMU 4 and SWMU 96 is addressed under HSAAP-037.

**Site ID: HSAAP-33**

**Site Name: FORMER SOLVENT BURN TANK**

Site-wide groundwater is addressed under the AOC-GW final remedy. On Jan. 24, 2013 TDEC finalized the modification to the CAO. The modification identified the remedy as monitoring, reporting and well inspection for AOC-GW and institutional controls and inspections for SWMUs 18, 19/29 and 20.

In 2013 and 2014, monitoring, reporting, well inspection, institutional controls and inspections were conducted in accordance with the CAO. Minor repairs to monitoring well casings were completed in 2014.

The first periodic review was completed in 2011. Under HSAAP-33, subsequent reviews will be in 2016, 2021, 2026, 2031, 2036 and 2041.

## **CLEANUP/EXIT STRATEGY**

The final remedy for AOC-GW site-wide groundwater is monitoring, reporting, well inspection, institutional controls and inspections. These items will be required in FY16 and beyond.

The final remedy for SWMUs 18, 19/29 and 20 are institutional controls and inspections.

Institutional controls and inspections will be required in FY16 and beyond.

These sites are funded under the PBC at Holston site. The current PBA contract covers LTM through 2016. A new PBA contract will be awarded at the end of 2016 to cover LTM after 2016.

The second periodic review will be required in 2016.

Site Name: GAS PRODUCER CONTAMINATION

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	199101.....	199108
CS.....	199507.....	199712
RFI/CMS.....	200101.....	200312
IRA.....	199612.....	199702
CMI(C).....	200407.....	200409
LTM.....	200509.....	204609

RIP Date: N/A

RC Date: 200509

SITE DESCRIPTION

SWMU 96 was the location of the producer gas building coal tar liquor storage tanks located between Building 10 and the cooling coils in Area A. The unit consisted of aboveground storage tanks (AST) and was closed when the producer gas building ceased operations. The tanks and concrete wall structure were removed in 1996. A soil removal action was completed in 1997.

Soil samples collected in 2002 showed concentrations of benzo[a]pyrene and other SVOCs exceeded remediation goals. The groundwater samples showed arsenic and benzene concentrations slightly exceeded the MCLs for drinking water.

In June 2002, TDEC issued an IM order. In October 2002, four monitoring wells were installed as an IM to address concerns over potential migration to the nearby Holston River. A delay in the Army's initial response resulted in the issuance of a notice of violation. In spring 2003 a geophysical survey was conducted in the area between the producer gas building and the Holston River that identified bedrock fractures and degraded groundwater. In August 2003, three monitoring wells were installed in the bedrock fractures. At the same time, additional soil data was collected. This soil data confirmed the presence of coal tar/liquor mass in the soil beneath a portion of the exhauster building and the decanter building on the north side of the facility.

In 2003, an IM was conducted in which the former exhauster building and decanter structures were demolished, and 719 cy of contaminated soil were removed. The soil was excavated down to the top of the bedrock between 8 and 10 ft below ground surface (bgs). Soil samples showed that SVOC contamination, exceeding industrial based preliminary remediation goals, remains along the north sidewall and at the northeast bottom corner of the excavation. The railroad line (north) and the footers of Building 10 (east) hindered further excavation. LTM/LTO is underway. A revised SB support document was submitted to TDEC in April 2009.

The coal tar tanks (SWMU 4) consisted of the steel ASTs that were located behind Building 8 in Area A. The tanks stored coal tar and coal tar liquor which was generated at Building 10. The tanks were removed from the site in 1996. Coal tar waste spillage from the tanks has contaminated the soil at the site. An RFI was completed in February 2002. The report determined that there is a buried discrete coal tar mass in place, and it is exposed at the surface. In August 2003, the buried coal tar mass and associated concrete retaining basin were removed. In April 2009, a revised SB support document was submitted to TDEC.

In 2009, coal tar was discovered adjacent to Building 8. In 2010, 17 cy of coal tar were removed and eight test pits were dug revealing further coal tar contamination at the site. In 2011, 12 additional test pits were dug to delineate the coal tar and 8 cy of coal tar were removed. Coal tar remains in the SWMU approximately 3 ft bgs. The tar is at least 2 ft thick in some places.

The coal tar site (SWMU 103) is located on the south side of the Area A steam plant. The unit consisted of a ditch that extended from the rear of Building 8, originating at SWMU 4, to the Holston River. In the 1970s, an AST for filtered water was moved over a portion of the unit. An IM for SWMU 103 was performed in FY05 and 6 cy of coal tar were removed. In March 2007, a final SB support document was approved by TDEC. In 2012, 15 gallons of coal tar were removed from the top of the slope and a few cubic ft were removed from a trench installed during water line repair operations.



**Site ID: HSAAP-37**

**Site Name: GAS PRODUCER CONTAMINATION**

In Jan. 24, 2013 TDEC finalized the modification to the CAO. The modification identified the remedy as institutional controls and inspections for the three sites. Institutional controls and inspections are conducted in accordance with the CAO. In 2013 and 2014, coal tar in small amounts was removed from the sites.

### **CLEANUP/EXIT STRATEGY**

The final remedy for SWMUs 4, 96 and 103 are institutional controls and inspections. Institutional controls and inspections will be required in FY1 and beyond.

These sites are funded under the PBC at Holston site. The current PBA contract covers LTM through 2016. A new PBA contract will be awarded at the end of 2016 to cover LTM after 2016.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
HSAAAP-AOCO	Area of Concern O - Coal Tar Burial	200709	Revised RFI/IM recommending NFA was submitted and approved by TDEC in September 2007. The SB support document accepted by TDEC.
HSAAP-01	MISC. LANDFILLS	200507	SWMUs 19 and 20 were moved from this site to HSAAP-033 in 2003 because of the consolidation of the RFI for site-wide groundwater. SWMU 21 was moved from this site to HSAAP-027 in 2002 because of its close proximity. AOC-H was moved to HSAAP-020 in 2002 because of its close proximity and NFA status.
HSAAP-04	ACTIVE SANITARY LANDFILL	199108	Not eligible for ER,A/BRAC funding.
HSAAP-11	NITRIC ACID SPILL POND	199102	HSAAP-11 includes SWMU 30, SWMU 33, SWMU 36, SWMU 37 and SWMU 42. The January 2013 CAO modification documents that SWMUs 30, 33, 36 and 42 are NFA based on the following documentation: SWMU 30 and 42: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00" SWMU 33 and 36: "Confirmation Sampling Report determines no releases; NFA approval DSWM - 6/5/08" SWMU 37 is considered active and not eligible for ER,A/BRAC funding.
HSAAP-12	TAR BURIAL PIT AREA B	200001	The site originally included SWMU 25. SWMU 25 has been moved to HSAAP-08.
HSAAP-15	BURNING GRND SOUTH OF MFG AREA	200304	HSAAP-15 includes SWMU 43, 44, 45, 47, 48 and 49. The January 2013 CAO modification documents that SWMUs 43, 48 and 49 are NFA based on the following documentation: "RFI Report; NFA approval from DSWM - 12/18/08" SWMUs 44 and 47 have institutional controls and inspections. SWMUs 45 is considered active and not eligible for ER,A/BRAC funding.
HSAAP-16	BUILDING 8 EXPLOSIVES TESTING AREA	199108	HSAAP-16 includes AOC-I. The January 2013 CAO modification documents that AOC-I is NFA based on the following documentation: "Interim Measures Report; NFA approval from DSWM - 2/23/06".
HSAAP-17	PONDS (SODIUM NITRATE) 3 & 4	199606	HSAAP-17 includes SWMUs 40 and 41. The January 2013 CAO modification documents that SWMUs 40 and 41 are NFA based on the following rationale: "Did not contain hazardous constituents. Closed by TDEC Division of Water

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			Pollution Control in 1980s."
HSAAP-19	STP E OF MFG AREA	199108	HSAAP-19 includes SWMU 89. The January 2013 CAO modification documents that SWMU 89 is NFA based on the following documentation: "NFA per EPA RFA Report (A.T. Kearny) 8/30/91."
HSAAP-20	FLY ASH LANDFILL, AREA B, CLOSED,	200001	Not eligible for ER,A/BRAC funding.
HSAAP-21	AERATION POND AREA A	199803	HSAAP-21 includes SWMUs 12 and 13. The January 2013 CAO modification documents that SWMUs 12 and 13 are NFA based on the following documentation: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-22	LANDFILL AREA A - COAL TAR	199803	HSAAP-22 includes SWMUs 15 and 102. The January 2013 CAO modification documents that SWMUs 15 and 102 are NFA based on the following documentation: SWMU 15: "Interim Measures Report: NFA Approval DSWM - 10/23/07". SWMU 102: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-23	PRODUCTION AREA B DRAINAGE DITCHES	200509	HSAAP-23 includes SWMU 2, AOC A, B and G. The January 2013 CAO modification documents that SWMU 2, AOC A, B and G are NFA based on the following documentation: SWMU 2: "Confirmation Sampling determined no releases; NFA approval from DSWM - 8/13/04". AOC A, B and G: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-25	PESTICIDE DRAIN FIELD NEAR BLDG 148	199812	All SWMUs have been moved into HSAAP-026.
HSAAP-27	SANITARY LANDFILL WEST OF B-155, CLOSED	200609	NFA letter from TDEC dated Oct. 13, 2005.
HSAAP-28	LEAKING UST B-22	199612	HSAAP-28 includes AOC-E. The January 2013 CAO modification documents that AOC-E is NFA based on the following documentation: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-29	LEAKING UST B-105	200709	TDEC approved NFA in FY07.
HSAAP-30	FIRING RANGES	200609	NFA letter received from TDEC dated Apr. 26, 2006.
HSAAP-34	HEATING OIL LEAKING UST AT B-12, AREA A	199604	HSAAP-28 includes part of AOC-E. The January 2013 CAO modification

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			documents that AOC-E is NFA based on the following documentation: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-36	ACTIVE COAL PILE SOUTH OF B-200, STM PLT	199108	Not eligible for ER,A/BRAC funding.
HSAAP-38	MISC.STORAGE AREAS REQUIRING CONFIRM.	200609	HSAAP-38 includes AOC F, SWMUs 60 and SWMU 90. The January 2013 CAO modification documents that that AOC F and SWMUs 60 and 90 are NFA based on the following documentation: AOC F: "Interim Measures Report; NFA approval DSWM - 3/14/06". SWMUs 60 and 90: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-39	PAST SPILL SITES /LOADING SITES	199108	HSAAP-39 includes AOC K and L. The January 2013 CAO modification documents that AOC K and L are NFA based on the following documentation: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
HSAAP-40	SANDBLASTING/LOADING AREAS	200012	HSAAP-40 includes SWMU 9, 10, 82, 93, 94 and 95. The January 2013 CAO modification documents that these SWMUs are NFA based on the following documentation: "Confirmation Sampling Work Plan determined no releases; NFA approval from DSWM - 2/14/00".
PBC at Holston	PBC	201603	This PBC site was originally used to track the combined requirements of open sites included in the PBC contract. In FY16, the PBC site was closed and all requirements are tracked under each site.

# IRP Schedule

Date of IRP Inception: 198502

## Past Phase Completion Milestones

### 1986

IRA (HSAAP-15 - BURNING GRND SOUTH OF MFG AREA)

### 1991

INV (HSAAP-28 - LEAKING UST B-22)

IRA (HSAAP-28 - LEAKING UST B-22)

ISC (HSAAP-28 - LEAKING UST B-22)

RFA (HSAAP-01 - MISC. LANDFILLS, HSAAP-03 - TAR (WWII) NEAR POND 3, AREA B TAR, HSAAP-04 - ACTIVE SANITARY LANDFILL, HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF, HSAAP-11 - NITRIC ACID SPILL POND, HSAAP-12 - TAR BURIAL PIT AREA B, HSAAP-13 - FLYASH LF, POND 1&2 SWMU 22,28,38,39, HSAAP-15 - BURNING GRND SOUTH OF MFG AREA, HSAAP-16 - BUILDING 8 EXPLOSIVES TESTING AREA, HSAAP-17 - PONDS (SODIUM NITRATE) 3 & 4, HSAAP-19 - STP E OF MFG AREA, HSAAP-20 - FLY ASH LANDFILL, AREA B, CLOSED,, HSAAP-21 - AERATION POND AREA A, HSAAP-22 - LANDFILL AREA A - COAL TAR, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-25 - PESTICIDE DRAIN FIELD NEAR BLDG 148, HSAAP-26 - PESTICIDE AREAS NEAR B-105, B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED, HSAAP-29 - LEAKING UST B-105, HSAAP-33 - FORMER SOLVENT BURN TANK, HSAAP-36 - ACTIVE COAL PILE SOUTH OF B-200, STM PLT, HSAAP-37 - GAS PRODUCER CONTAMINATION, HSAAP-38 - MISC. STORAGE AREAS REQUIRING CONFIRM., HSAAP-39 - PAST SPILL SITES /LOADING SITES, HSAAP-40 - SANDBLASTING/LOADING AREAS)

CS (HSAAP-29 - LEAKING UST B-105)

### 1992

RFA (HSAAP-30 - FIRING RANGES)

### 1993

CS (HSAAP-33 - FORMER SOLVENT BURN TANK)

IRA (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

CAP (HSAAP-28 - LEAKING UST B-22)

### 1995

ISC (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

### 1996

DES (HSAAP-22 - LANDFILL AREA A - COAL TAR)

RFI/CMS (HSAAP-22 - LANDFILL AREA A - COAL TAR)

INV (HSAAP-34 - HEATING OIL LEAKING UST AT B-12, AREA A)

IRA (HSAAP-17 - PONDS (SODIUM NITRATE) 3 & 4)

### 1997

IRA (HSAAP-37 - GAS PRODUCER CONTAMINATION)

### 1998

CS (HSAAP-21 - AERATION POND AREA A, HSAAP-30 - FIRING RANGES, HSAAP-37 - GAS PRODUCER CONTAMINATION)

CMI(C) (HSAAP-22 - LANDFILL AREA A - COAL TAR)

IRA (HSAAP-33 - FORMER SOLVENT BURN TANK)

### 1999

CS (HSAAP-25 - PESTICIDE DRAIN FIELD NEAR BLDG 148, HSAAP-26 - PESTICIDE AREAS NEAR B-105, B-148)

### 2000

CS (HSAAP-01 - MISC. LANDFILLS, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES)

RFA (PBC at Holston - PBC)

**2001**

- RFI/CMS (HSAAP-40 - SANDBLASTING/LOADING AREAS)
- IRA (HSAAP-29 - LEAKING UST B-105)
- CS (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF)

**2003**

- RFI/CMS (HSAAP-15 - BURNING GRND SOUTH OF MFG AREA)

**2004**

- RFI/CMS (HSAAP-37 - GAS PRODUCER CONTAMINATION, PBC at Holston - PBC)
- CMI(C) (HSAAP-37 - GAS PRODUCER CONTAMINATION)

**2005**

- IRA (HSAAP-03 - TAR (WWII) NEAR POND 3, AREA B TAR, HSAAP-26 - PESTICIDE AREAS NEAR B-105, B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED)
- RFI/CMS (HSAAP-01 - MISC. LANDFILLS, HSAAP-03 - TAR (WWII) NEAR POND 3, AREA B TAR, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-29 - LEAKING UST B-105)
- CMI(C) (HSAAP-03 - TAR (WWII) NEAR POND 3, AREA B TAR, HSAAP-23 - PRODUCTION AREA B DRAINAGE DITCHES, HSAAP-29 - LEAKING UST B-105)

**2006**

- RFI/CMS (HSAAP-AOCO - Area of Concern O - Coal Tar Burial, HSAAP-13 - FLYASH LF, POND 1&2 SWMU 22,28,38,39, HSAAP-26 - PESTICIDE AREAS NEAR B-105, B-148, HSAAP-27 - SANITARY LANDFILL WEST OF B-155, CLOSED, HSAAP-30 - FIRING RANGES, HSAAP-33 - FORMER SOLVENT BURN TANK, HSAAP-38 - MISC. STORAGE AREAS REQUIRING CONFIRM.)
- CMI(C) (HSAAP-30 - FIRING RANGES)
- RFA (HSAAP-AOCO - Area of Concern O - Coal Tar Burial)
- IRA (HSAAP-38 - MISC. STORAGE AREAS REQUIRING CONFIRM.)

**2007**

- CMI(C) (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF, HSAAP-13 - FLYASH LF, POND 1&2 SWMU 22,28,38,39, HSAAP-26 - PESTICIDE AREAS NEAR B-105, B-148, HSAAP-33 - FORMER SOLVENT BURN TANK, PBC at Holston - PBC)
- LTM (HSAAP-AOCO - Area of Concern O - Coal Tar Burial)
- IRA (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF)
- RFI/CMS (HSAAP-08 - SURFACE IMPOUNDMENTS REQUIRING CONF)
- CMI(O) (HSAAP-29 - LEAKING UST B-105)

**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
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**Final RA(C) Completion Date:** 200709

**Schedule for Next Five-Year Review:** 2016

**Estimated Completion Date of IRP at Installation (including LTM phase):** 204609

## HOLSTON ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-03	TAR (WWII) NEAR POND 3,AREA B TAR	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-08	SURFACE IMPOUNDMENTS REQUIRING CONF	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-13	FLYASH LF,POND 1&2 SWMU 22,28,38,39	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-26	PESTICIDE AREAS NEAR B-105,B- 148	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-33	FORMER SOLVENT BURN TANK	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
HSAAP-37	GAS PRODUCER CONTAMINATION	LTM						

**HOLSTON ARMY AMMUNITION PLANT**  
**Army Defense Environmental Restoration Program**  
**Compliance Restoration**



## CR Summary

**Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count:** 2/0

### Installation Site Types with Future and/or Underway Phases

- 1 Surface Disposal Area  
(CCHSAAP-42)
- 1 Surface Impoundment/Lagoon  
(CCHSAAP-41)

### Most Widespread Contaminants of Concern

Other (RDX)

### Media of Concern

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY
CCHSAAP-41	Catch Basins and Aprons	FRA	INSTITUTIONAL CONTROLS	2015

### Duration of CR

**Date of CR Inception:** 199504

**Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC):** 201806/201806

**Date of CR completion including Long Term Management (LTM):** 204709

## CR Contamination Assessment

### Contamination Assessment Overview

At the CCHSAAP-41 site, 10 catch basin units had RDX soil contamination above industrial RSL (industrial RSL=28 milligrams per kilogram (mg/kg)) and five catch basin units had RDX soil contamination above residential RSL (residential RSL=6 mg/kg), but below industrial RSL. The 10 catch basins with soil contamination above industrial RSL were D-1, 8, E-1, 5, H-1, 2, 3, 8, 9, 10. The five catch basins with RDX above residential RSL were D-2, E-2, 9, G-9, and J-3.

The H-series buildings had the highest concentrations; H-8 had 70,000 mg/kg, H-1 had 2100 mg/kg, H-3 had 690 mg/kg, H-2 had 680 mg/kg, H-9 had 310 mg/kg, and H-10 had 75 mg/kg.

There are groundwater plumes with RDX concentrations within the production area located around H-8 (1700 parts per billion (ppb)), H-2 (540 ppb), and H-3 (260 ppb). The groundwater is monitored under AOC-GW. The plumes are relatively stationary and are estimated to remain within the boundary of HSAAP for more than 500 years. The groundwater flows toward the Holston River. There were 49 buildings with catch basins that had either non-detects or concentrations of RDX below the residential RSL.

An RFI is ongoing to delineate contamination at Buildings D-1, 2, 8, E-1, 2, 5, 9, G-9, H-1, H-2, H-3, H-8, H-9 and H-10. On Jan. 24, 2013, TDEC finalized the modification to the CAO. The modification identified the remedy as institutional controls and inspections for the site.

An RFI was completed for CCHSAAP-41 in 2015. Institutional controls and inspections were the recommended outcome of the RFI. The inspections have been implemented on interim until the next CAO modification formally documents the remedy.

### Cleanup Exit Strategy

Institutional controls and inspections will continue for CCHSAAP-41. The RFI will be completed for CCHSAAP-42. Both sites will be included in the next CAO mod.

## CR Previous Studies

2012	Title	Author	Date
	Supplemental Confirmation Sampling Report For Solid Waste Management Unit 3	Science Applications International Corporation SAIC	FEB-2012

# **HOLSTON ARMY AMMUNITION PLANT**

## **Compliance Restoration**

### **Site Descriptions**

# Site ID: CCHSAAP-41

## Site Name: Catch Basins and Aprons

### STATUS

**Regulatory Driver:** RCRA  
**Contaminants of Concern:** Other (RDX)  
**Media of Concern:** Groundwater, Soil

Phases	Start	End
RFA.....	199504.....	199609
CS.....	201103.....	201205
RFI/CMS.....	201205.....	201503
CMI(C).....	201402.....	201507
LTM.....	201507.....	204609

**RIP Date:** N/A  
**RC Date:** 201507

### SITE DESCRIPTION

A catch basin includes the apron, channels and settling basis for explosive waste at each explosives manufacturing building. It is a concrete pad that generally has a 4-inch curb used to capture any waste explosives around the explosives production buildings.

The catch basin apron, trenches and settling pits vary in size. They are listed as SWMU 3 in the TDEC CAO. The characteristic of the waste was stated to be explosives waste. There were no catch basins in Area A that captured waste explosives; therefore none of the Area A secondary containment areas are classified as catch basins. Some buildings have up to six catch basins while other production buildings have none. For simplification one explosive waste collection unit has been assigned to each production building that handled or produced explosives and has a catch basin structure. The waste collection unit includes all apron channels, and catch basins at that building.

In Area B there are 103 buildings with catch basins that captured and collected waste explosives. These buildings are D-1, 2, 3, 5, 6, 7, 8, 9, 10; E-1 through 10; G-1 through 10, H-1 through 10; I-1 through 10; J-1 through 10; K- 1, 3, 5, 7, 9, 10: L-1m through 10; M-1 through 10; N-1 through 10; O-1, 2, 5, 7, 9; B-3, 5, and 11. Of these 103 catch basin units 37 are still active, and 66 are inactive. The active catch basins are D-5,10; E-3, 4, 6, 7, 10; G-4, 5, 6, 7, 10; H-4, 5, 6, 7; I-5, 6; K-3, 5; L-1M, 3, 4, 5, 6, 8; M-4, 5, 6; N-3, 4, 5, 6, 7, 8; O-3, B-3. The inactive catch basins are D-1,2,3,6,7,8,9; E-1,2,5,8,9; G-1,2,3,8,9; H-1,2,3,8,9,10; I-1,2,3,4,7,8,9,10; J-1, 2, 3, 4 through 10; K-1,7,9,10; L-2,7,9,10; M-1,2,7,8,9,10; N-1,2,9,10; O-1,5,7,9; B-5,11, K-10. The inactive catch basins have been inactive since at least the 1970s. There are plans to reactivate G-3 or G-8, J-3 and possibly E-5.

Fourteen buildings scheduled for demolition have catch basins: B-5, E-1, H-1, 3, 8, 10, I-10, J-6, 10, K-7, L-10, O-1, and O-7. Buildings H-10, I-10, J-10, and L-10 were demolished in 2011. Buildings E-1, H-1, H-3, and H-8 were demolished in 2012.

Buildings H-2, H-9, and K-10 were demolished in 2014.

The soil near the inactive catch basin units was sampled in 2011 for potential explosives contamination. Ten catch basin units had RDX soil contamination above industrial RSL (24 mg/kg): D-1, 8, E-1, 5, H-1, 2, 3, 8, 9, and 10. Five catch basin units had RDX soil contamination above residential RSL (5.6 mg/kg), but below the industrial RSL: D-2, E-2, 9, G-9, and J-3.

Through 2012 and 2014, an RFI at Buildings D-1, 2, 8, E-1, 2, 5, 9, G-9, H-1, 2, 3, 8, 9 and 10 was completed. In 2012, confirmation sampling was completed at K-10. The buildings with confirmed release of explosive waste and buildings that still need confirmation sampling will have LUCs, which will require signs, inspections and maintenance of a cover over the sites. The remedy will be completed after the contaminated soil is covered with gravel. In October 2014, the RFI report was submitted to TDEC.

An NFA was approved by TDEC for the catch basin units where the confirmation samplings showed no soil contamination above the residential RSL (D-3, 6, 7, 9, E-8, G-1, 2, 3, 8, I-1, 2, 3, 4, 7, 8, 9, 10, J-1, 2, 4 through 10, K-1, 7, 9, L-2,7,9,10, M1, 2, 7, 8, 9, 10, N-1, 2, 9, 10, O-1, 5, 7, 9, B-5, 11).

**Site ID: CCHSAAP-41**  
**Site Name: Catch Basins and Aprons**

The active catch basins are planned for confirmation sampling when they are scheduled for demolition or at the time of plant closure.

Site ID: CCHSAAP-41  
Site Name: Catch Basins and Aprons

On Jan. 24, 2013 TDEC finalized the modification to the CAO. The modification identified the remedy as institutional controls and inspections for the site.

In March 2016 a Facility Action Plan (FAP) meeting was held. During the meeting it was decided that SWMU 3 should be broken down into sub-SWMUs per building(3a, 3b, etc.) This breakdown and movement of each building to the appropriate table will occur with the next permit mod.

## **CLEANUP/EXIT STRATEGY**

Institutional controls and inspections will continue for CCHSAAP-41. This site will be included in the next CAO mod where the remedy and SWMU designation will be changed. As any active production buildings are deactivated, they will be sampled and added to this site.

**Site ID: CCHSAAP-42**  
**Site Name: World War II Coal Tar Site 2**

**STATUS**

**Regulatory Driver:** RCRA  
Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)  
Media of Concern: Groundwater, Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
RFA.....	201403.....	201407
RFI/CMS.....	201408.....	201612
CMI(C).....	201612.....	201806
LTM.....	201806.....	204709

**RIP Date:** N/A  
**RC Date:** 201806

**SITE DESCRIPTION**

SWMU 109 is located in Area B, on the flood plain of the Holston River, south of the steam plant and railroad track in the explosives production area, west of the former Sodium Nitrate Ponds 3 and 4 and SWMU 26 WWII Coal Tar. The topography of the unit is relatively flat. The surface is vegetated with numerous trees in the northern section. An old man-made cooling channel is located in the center of the coal tar that is on the ground surface. A drainage ditch flows into the channel from the south near the observed coal tar. Also, the cooling channel flows into an active cooling channel approximately 650 ft to the west.

The coal tar likely came from the Producer Gas Plant, Building 10, in Area A. The producer gas plant was operated from 1943 until January 1993 to convert bituminous coal into low British thermal units gas that was used as a combustion fuel for the acetic anhydride process furnaces in Building 7, Area A. The by-product of the coal gasification process, which is coal tar, contains phenols, PAHs, and may contain other light fraction hydrocarbons.

Coal tar was observed at three locations at the site. The area of observed coal tar north of the cooling channel is approximately 12 ft wide by 27 ft long. Coal tar in the channel measures approximately 12 ft wide by 55 ft long. An area of coal tar measuring 2 ft wide by 10 ft long is located south of the channel. The three locations of coal tar on the surface are located within an area approximately 150 ft by 90 ft; however, the area of buried coal tar may be larger.

In addition to the observed coal tar there are numerous linear subsidence features in the field southwest of the observed coal tar. The subsidence areas are approximately 20 ft wide by 450 ft long. In 2014, six hand auger borings were completed at the site.

There was no coal tar or other buried material encountered in the boring completed in the subsidence areas. TDEC requires that an RFI be conducted in accordance with the CAO.

An RFI report is being generated and preliminary fieldwork results were presented to TDEC at the March 2016 FAP meeting. Based on these results, TDEC has stated that institutional controls and signs will be required for this site. Once the RFI is approved, the site will be added to the Land use control implementation plan and a CAO mod will be requested.

**CLEANUP/EXIT STRATEGY**

The RFI was initiated in 2014 and is currently underway.

## Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
There are no NFA sites			



## CR Schedule

**Date of CR Inception:** 199504

### Past Phase Completion Milestones

**1996**

RFA (CCHSAAP-41 - Catch Basins and Aprons)

**2012**

CS (CCHSAAP-41 - Catch Basins and Aprons)

**2014**

RFA (CCHSAAP-42 - World War II Coal Tar Site 2)

**2015**

RFI/CMS (CCHSAAP-41 - Catch Basins and Aprons)

CMI(C) (CCHSAAP-41 - Catch Basins and Aprons)

### 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
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**Final RA(C) Completion Date:** 201806

**Schedule for Next Five-Year Review:** 2016

**Estimated Completion Date of CR at Installation (including LTM phase):** 204709

## HOLSTON ARMY AMMUNITION PLANT CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
CCHSAAP-41	Catch Basins and Aprons	LTM						
SITE ID	SITE NAME	PHASE	FY17	FY18	FY19	FY20	FY21	FY22+
CCHSAAP-42	World War II Coal Tar Site 2	RFI/CMS						
		CMI(C)						
		LTM						

## Community Involvement

**Technical Review Committee (TRC):** None

**Community Involvement Plan (Date Published):** 200708

**Restoration Advisory Board (RAB):** RAB established 199909

**RAB Adjournment Date:** 200505

**RAB Adjournment Reason:** There is no longer sufficient, sustained community interest.

### Additional Community Involvement Information

The first RAB meeting was held on Oct. 18, 1999. Approximately 15 to 25 people representing the Army, TDEC, and local citizens attended. Public interest in a RAB was solicited in 2013 and there was no interest.

The RAB met once a year and on an as-needed basis. Past activities have included installation tours, training and corrective action discussions, video presentation of one of the SWMU sites, and an update from the US Army Center for Health Promotion and Preventive Medicine (USACHPPM). RAB members attended IAP workshops conducted in December 1999, September 2000, August 2001, April 2002, November 2002, September 2003, December 2004, and May 2005.

In FY03, a community involvement plan was prepared by the USACHPPM. The plan was finalized in the summer of 2007. The RAB has not met since May 2005 and is adjourned.

### Administrative Record is located at

4509 West Stone Drive, B159  
Kingsport, TN 37660  
Telephone No. (423) 578-6257

### Information Repository is located at

Kingsport City Library  
400 Broad Street  
Kingsport, TN 37660  
Telephone No. (423) 224-2539

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

**TAPP Title:** N/A

**Potential TAPP:** N/A

