FY2015

REDSTONE ARSENAL

Army Defense Environmental Restoration Program

Installation Action Plan

Printed 23 October 2015

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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), Redstone Arsenal (RSA), the Installation Management Command (IMCOM), 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

A/I	Active/Inactive
ABMA	US Army Ballistic Missile Agency
ADEM	Alabama Department of Environmental Management
AEDB-CC	Army Environmental Database-Compliance-related Cleanup
AEDB-R	Army Environmental Database-Restoration
AEIRG	Alabama Environmental Investigation and Remediation Guidance
AHWMMA	Alabama Hazardous Wastes Management and Minimization Act
ALDOT	Alabama Department of Transportation
AMC	Army Materiel Command
AMCOM	Aviation and Missile Command
AOC	Area of Concern
ARBCA	Alabama Risk Based Corrective Action
ARFO	Artillery Ammunition Returned from Overseas
ARS	Advance Range Survey
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
AUECA	Alabama Uniform Environmental Covenant Act
bgs	below ground surface
Bldg	Building
BRAC	Base Realignment and Closure
CAIS	Chemical Agent Identification Set
CAP	Corrective Action Plan
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CG	Chlorine Phosgene
CMI	Corrective Measures Implementation
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMIP	Corrective Measures Implementation Plan
CMS	Corrective Measures Study
COC	Contaminant of Concern
CR	Compliance Restoration
CTC	Cost-to-Complete
CTT	Closed, Transferred or Transferring
CVVA	2-Chlorovinyl Arsonous Acid (a breakdown product of lewisite)
CWM	Chemical Warfare Materiel
CWS	Chemical Warfare System
cy	cubic yard
D.O.T.	Department of Transportation
DCE	Dichloroethylene
DD	Decision Document
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DERP	Defense Environmental Restoration Program

Acronyms

DGM	Digital Geophysical Mapping
DIA	Defense Intelligence Agency
DMM	Discarded Military Munitions
DNAPL	Dense Non-aqueous Phase Liquid
DoD	Department of Defense
DOI	Department of Interior
DRMO	Defense Reutilization and Marketing Office
EOD	Explosive Ordnance Disposal
ER,A	Environmental Restoration, Army
ERH	Electrical Resistive Heating
FFA	Federal Facilities Agreement
FRA	Final Remedial Action
FS	Feasibility Study
ft	feet
FTA	Fire Training Area
FUDS	Formerly Used Defense Site
FY	Fiscal Year
GAF	General Aniline and Film Corporation
GCD	Gulf Chemical Depot
gpm	gallons per minute
GW	Groundwater
H	mustard
HMX	Cyclotetramethylenetetranitramine
HRS	Hazard Ranking System
HSB	Huntsville Spring Branch
HTRW	Hazardous, Toxic and Radioactive Waste
HTW	Hazardous and Toxic Waste
HVA	Huntsville Arsenal
IAP	Installation Action Plan
IM	Interim Measure
IMCOM	Installation Management Command
IRA	Interim Remedial Action
IRFA	Interim RCRA Facility Assessment
IROD	Interim Record of Decision
IRP	Installation Restoration Program
ISEB	In Situ Enhanced Bioremediation
ISP	Internet Service Provider
K	thousand
kg	kilogram
L	Lewisite
LF	Landfill
LSA	Limited Site Assessment
LTM	Long-Term Management
LUC	Land Use Control
MC	Munitions Constituent

Acronyms

MCL	Maximum Contaminant Level
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
mg/kg	milligrams per kilogram
MICOM	US Army Missile Command
mm	millimeter
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MOA	Memorandum of Agreement
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MSFC	George C. Marshall Space Flight Center
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NBA	Northern Burial Area
NC	Nitrocellulose
NDAA	National Defense Authorization Act
NFA	No Further Action
NPL	National Priorities List
OB	Open Burning
OD	Open Detonation
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense for Installations and Environment
OE	Ordnance and Explosives
ORAP	Operational Range Assessment Program
OSA	Open Storage Area
OU	Operable Unit
OWS	Oil/Water Separator
P&T	Pump-and-Treat
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PBA	Performance-Based Acquisition
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PLM	Professional Labor Management
PMC	Program Management Contract
POL	Petroleum, Oil and Lubricants
PP	Proposed Plan
PRG	Preliminary Remediation Goal
PRO	Petroleum Range Organics
PSA	Potential Source Area
PSV	Preliminary Screening Value
R&D	Research and Development
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)

Acronyms

RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RARE	Redstone Arsenal Rocket Engine
RAWP	Remedial Action Work Plan
RBSC	Risk-based Screening Concentration
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Triazacychlohexane
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RIP	Remedy-in-Place
ROD	Record of Decision
ROP	Redstone Ordnance Plant
RSA	Redstone Arsenal
SAC	Site Access Control
SED	Software Engineering Directorate
sf	square feet
SHPO	State Historical Preservation Office
SI	Site Inspection
SMF	Smoke Munitions Filling
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
SWDA	Solid Waste Disposal Act
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TAPP	Technical Assistance for Public Participation
TCA	Trichloroethylane
TCE	Trichloroethylene
TCRA	Time-Critical Removal Action
TDG	Thiodiglycol
TNT	Trinitrotoluene
TO	Task Order
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TSA	Temporary Storage Area
TVA	Tennessee Valley Authority
ug/L	micrograms per liter
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command
USATHAMA	US Army Toxic and Hazardous Material Agency
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance

Acronyms

VOC	Volatile Organic Compound
VSI	Visual Site Inspection
WMM	Waste Military Munitions
WP	White Phosphorus
WTP	Water Treatment Plant
WWII	World War II

Acronym Translation Table

CERCLA		RCRA
Preliminary Assessment(PA)	=	RCRA Facility Assessment(RFA)
Site Inspection(SI)	=	Confirmation Sampling(CS)
Remedial Investigation/Feasibility Study(RI/FS)	=	RCRA Facility Investigation/Corrective Measures Study(RFI/CMS)
Remedial Design(RD)	=	Design(DES)
Remedial Action (Construction)(RA(C))	=	Corrective Measures Implementation (Construction)(CMI(C))
Remedial Action (Operation)(RA(O))	=	Corrective Measures Implementation (Operation)(CMI(O))
Long Term Management(LTM)	=	Long Term Management(LTM)
Interim Remedial Action(IRA)	=	Interim Measure(IM)

CERCLA		RCRA Underground Storage Tank (UST) Site Phase Terms
Preliminary Assessment(PA)	=	Initial Site Characterization(ISC)
Remedial Investigation(RI)	=	Investigation(INV)
Feasibility Study(FS)	=	Corrective Action Plan(CAP)
Remedial Design(RD)	=	Design(DES)
Remedial Action (Construction)(RA(C))	=	Implementation (Construction)(IMP(C))
Remedial Action (Operation)(RA(O))	=	Implementation (Operations)(IMP(O))
Long Term Management(LTM)	=	Long Term Management(LTM)
Interim Remedial Action(IRA)	=	Interim Remedial Action(IRA)

Site Alias List

AEDB-R Site ID to Alias List

AEDB-R #	Alias
CCRSA-266	RSA-266
CCRSA-308	RSA-308
CCRSA-309	RSA-309
CCRSA-310	RSA-310
CCRSA-311	RSA-311
CCRSA-314	RSA-314
CCRSA-315	RSA-315
CCRSA-316	
CCRSA-317	RSA-317
CCRSA-319	
CCSWMU-003	RSA-003
CCSWMU-008	RSA-008
CCSWMU-009	RSA-009
CCSWMU-028	RSA-028
CCSWMU-030	RSA-030
CCSWMU-035	RSA-035
CCSWMU-116	RSA-116
CCSWMU-182	RSA-182
CCSWMU-216	RSA-216
CCSWMU-222	RSA-222
CCSWMU-240	RSA-240
CCSWMU-241	RSA-241
CCSWMU-242	RSA-242
CCSWMU-243	RSA-243
CCSWMU-245	RSA-245
CCSWMU-246	RSA-246
CCSWMU-247	RSA-247
CCSWMU-248	RSA-248
CCSWMU-268	RSA-268
CCSWMU-277	RSA-277
CCSWMU-283	RSA-283
CCSWMU-284	RSA-284
CCSWMU-286	RSA-286
CCSWMU-287	RSA-287
CCSWMU-288	RSA-288
CCSWMU-289	RSA-289
CCSWMU-290	RSA-290
CCSWMU-291	RSA-291
CCSWMU-293	RSA-293
CCSWMU-304	RSA-304
CCSWMU-305	RSA-305
CCSWMU-306	RSA-306
CCSWMU-E	RSA-E

Site Alias List

CCSWMU-F	RSA-F
MSFC-003-R-01	MSFC-003
MSFC-027	
MSFC-033A	MSFC-033A
MSFC-034	
MSFC-035	
PBCatRedstone	FY05 PBC
RSA-005	OU-02
RSA-010	
RSA-013	OBOD
RSA-014	OBOD
RSA-032	GCWD
RSA-045	PA3
RSA-048	DA
RSA-049	HA1
RSA-050	
RSA-053	DDT
RSA-054	DA
RSA-056	HA2
RSA-057	HA2
RSA-058	DDT
RSA-059	DA
RSA-060	DDT
RSA-065	GCWD
RSA-066-R-01	
RSA-067	GCWD
RSA-068-R-01	
RSA-069	GCWD
RSA-072-R-01	RSA-282
RSA-083	OFFSITE
RSA-087	OFFSITE
RSA-088	OFFSITE
RSA-095	OFFSITE
RSA-109	DEMIL
RSA-110-R-01	
RSA-112	DEMIL
RSA-113	DEMIL
RSA-114	DEMIL
RSA-115	
RSA-117	DDT
RSA-122	HA2
RSA-126	HA2
RSA-135H	SP

Site Alias List

RSA-139	HA2
RSA-140	DA
RSA-141-R-01	RSA-141
RSA-142	OFFSITE
RSA-143	Bldg 3240
RSA-145	GW
RSA-146	GW
RSA-147	GW
RSA-148	GW
RSA-149	GW
RSA-150	GW
RSA-151	GW
RSA-152	GW
RSA-153	GW
RSA-154	GW
RSA-155	GW
RSA-156	GW
RSA-157	GW
RSA-183	HA1
RSA-188	NP
RSA-194	NP
RSA-198	OFFSITE
RSA-199	NP
RSA-200	OFFSITE
RSA-201	NP
RSA-203	NP
RSA-204	OFFSITE
RSA-206	OFFSITE
RSA-208	SP
RSA-209	OFFSITE
RSA-210	SP
RSA-211	SP
RSA-212	SP
RSA-217	ROP SERVIC
RSA-218	ROP SERVIC
RSA-219	ROP SERVIC
RSA-220	ROP SERVIC
RSA-221-R-01	RSA-221
RSA-225	PA3
RSA-226	DA
RSA-227	DA
RSA-228	PA3
RSA-230	DA

Site Alias List

RSA-231	PA3
RSA-233	PA3
RSA-234-R-01	RSA-234
RSA-237	SP
RSA-238	HAMUST56
RSA-239	NP
RSA-249-R-01	RSA-249
RSA-250	HAMUST56
RSA-252	DDT
RSA-253	POL
RSA-255	GCWD
RSA-258	TA2
RSA-261	TA2
RSA-262	GCWD
RSA-263	POL
RSA-265	GCWD
RSA-269	TA2
RSA-271	POL
RSA-272	POL
RSA-274	SP
RSA-275	ROP SERVIC
RSA-276	POL
RSA-278-R-01	RSA-278
RSA-280-R-01	RSA-280
RSA-294-R-01	RSA-294
RSA-312-R-01	RSA-312
RSA-313-R-01	RSA-313

Installation Information

Installation Locale

Installation Size (Acreage): 38300
City: Huntsville
County: Madison
State: Alabama
Other Locale Information

The RSA occupies approximately 38,300 acres in Madison County, Alabama. The Department of Interior (DOI) owns approximately 4,100 acres of this property and the Tennessee Valley Authority (TVA) owns 2,900 acres. Another 1,841 acres in the interior of RSA comprise the George C. Marshall Space Flight Center (MSFC) of the National Aeronautics and Space Administration (NASA).

The RSA is bounded on the north and east by the city of Huntsville, on the west by the city of Madison, on the west and southwest by Wheeler National Wildlife Refuge, and on the south by the Tennessee River. Huntsville has a population of nearly 165,000; Madison County population is about 320,000. Approximately 330 military families reside in government quarters on RSA and approximately 34,000 government employees and contractors work at the facility.

Installation Mission

The primary mission of RSA is the development, acquisition, testing, fielding, and sustainment of aviation and missile weapon systems. Most of the installation tenants support this effort; however, RSA is also home to such diverse activities as training for handling explosives and ordnance devices, Defense Intelligence Agency (DIA) activities, and the production of iron carbonyl. The RSA is home to over 70 different tenant organizations.

Lead Organization

IMCOM

Lead Executing Agencies for Installation

US Army Corps of Engineers (USACE)

Mission & Installation Contracting Command (MICC)

Regulator Participation

Federal	US Environmental Protection Agency (USEPA), Region IV, Atlanta, Georgia US DOI, Fish and Wildlife Service, Decatur, Alabama
State	Alabama Department of Environmental Management (ADEM), Special Projects Office, Montgomery, Alabama Alabama Partnering Initiative (Risk Managers Partnering Agreement)

National Priorities List (NPL) Status

A score of 33.5 was recorded on 01-JUN-94.

Date for RA(C) Completion: 204901

Date for NPL Deletion: TBD

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 Information

Installation Program Summaries

IRP

Primary Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Perchlorate, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC), White Phosphorous

Affected Media of Concern: Groundwater, Other (Surface and Subsurface Soil), Sediment, Soil, Surface Water

MMRP

Primary Contaminants of Concern: Munitions and explosives of concern (MEC)

Affected Media of Concern: Soil

CR

Primary Contaminants of Concern: Metals, Perchlorate, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Affected Media of Concern: Groundwater, Soil

5-Year / Periodic Review Summary

5-Year / Periodic Review Summary

Status	Start Date	End Date	End FY
Complete	201104	201209	2012
Planned	201604	201709	2017

Last Completed 5-Year / Periodic Review Details

Associated ROD/DD Name	Sites
DECISION DOCUMENT FOR RSA-145	RSA-145
DECISION DOCUMENT FOR RSA-151	RSA-151
DECISION DOCUMENT FOR RSA-152	RSA-152
DECISION DOCUMENT FOR RSA-154	RSA-154
DECISION DOCUMENT FOR RSA-155	RSA-155
DECISION DOCUMENT FOR RSA-156	RSA-156
DECISION DOCUMENT FOR RSA-215	RSA-215
RECORD OF DECISION FOR RSA-049	RSA-049
RECORD OF DECISION FOR RSA-057	RSA-057
RECORD OF DECISION FOR RSA-146	RSA-146
RECORD OF DECISION FOR RSA-149	RSA-149
RECORD OF DECISION FOR RSA-150	RSA-150
RECORD OF DECISION FOR RSA-153	RSA-153

Results The installation wide groundwater and RSA-057 remedies are currently considered protective of human health and the environment.
Results at RSA-049 indicate that more groundwater data is needed in order to make a determination.

Actions The Memorandum of Agreement (MOA) with surrounding local and state governments is still being negotiated.
RSA-049: several wells could not be sampled due to a lack of water.
RSA-057: Vapor intrusion had not been investigated at the site.

Plans Continue coordination with surrounding government agencies to establish a final MOA document.

Replacement wells are being proposed for monitoring at RSA-049.

An evaluation of vapor intrusion will occur prior to construction at RSA-057

Recommendations and Implementation Plans:

The installation-wide groundwater land use controls (LUC) included the development of an MOA with the cities of Huntsville and Madison and with Morgan County. To date, none of these have been finalized; however, RSA continues to meet the intent of this control by working closely with the surrounding communities to ensure that drinking water wells are not installed within the boundary of the land-use controls.

Based upon the fiscal year (FY) 2012 monitoring well inspections, needed repairs were identified for well RS-262. The Army and ADEM in accordance with the permit modified the monitoring network to utilize newly installed overburden monitoring well RS1973 as a replacement for damaged monitoring well RS262, which was subsequently abandoned in November 2012. Monitoring well 148-RS1973 was installed in 2011 for the RSA-148 Resource Conservation and Recovery Act (RCRA) facility groundwater investigation.

No structures were erected on RSA-049 or RSA-057 during this period. Therefore, there was no need to evaluate the potential for vapor intrusion or to use engineered controls to prevent it. Some additional evaluation of vapor intrusion has occurred in the groundwater sites.

Land Use Control (LUC) Summary

LUC Title: Groundwater IROD

Site(s): RSA-145, RSA-146, RSA-147, RSA-148, RSA-149, RSA-150, RSA-151, RSA-152, RSA-153, RSA-154, RSA-155, RSA-156, RSA-157

ROD/DD Title: Installation-wide Groundwater IROD

Location of LUC

Installation-wide control on the use of groundwater, including seeps and springs

Land Use Restriction: Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment

Types of Engineering Controls: Markers, Signs

Types of Institutional Controls: Construction Permit, Deed Notices, Deed Restrictions, Dig Permits, Notations in Master Plan, Restrictions on Groundwater Withdrawal

Date in Place: 200907

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: N/A

LUC Enforcement: Annual Inspections, 5 Year Reviews, Markers, Transferee Reporting

Contaminants: METALS, NITRATE/NITRITE, NITROAROMATICS, ORGANICS, PCBs, PESTICIDES, PETROLEUM HYDROCARBON, VOC

Additional Information

N/A

LUC Title: LUC for RSA-049

Site(s): RSA-049

ROD/DD Title: RECORD OF DECISION FOR RSA-049

Location of LUC

RSA-049 site boundary. North of Digney Rd., West of Toftoy.

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 - Prohibit installation of utility system lines through the site, Landfill restriction - Restrict access to the site, Landfill restriction - Restrict construction of buildings that may interfere with LF cap or cover system, Landfill restriction - Restrict plantings that interfere LF cap or cover system (roots that penetrate the cap or cover system), Landfill restriction - Restrict vehicular traffic, Media specific restriction - Prohibit, or otherwise manage excavation, Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - Mitigation area(s) protection, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Fences, Signs

Types of Institutional Controls: Construction Permit, Deed Restrictions, Dig Permits, Notations in Master Plan, Restrictions on Groundwater Withdrawal, Restrictions on land use

Date in Place: 200805

Modification Date: N/A

Land Use Control (LUC) Summary

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 200805

LUC Enforcement: Annual Inspections, 5 Year Reviews, Markers, Transferee Reporting

Contaminants: METALS

Additional Information

N/A

LUC Title: RSA-057 Land use control

Site(s): RSA-057

ROD/DD Title: RECORD OF DECISION FOR RSA-057

Location of LUC

RSA-057, 1700 ft. South-southwest of intersection of Patton and Martin Roads.

Land Use Restriction: Media specific restriction - Prohibit, or otherwise manage excavation below a specified depth, Media specific restriction - prohibit use of groundwater for consumption or domestic purposes, Media specific restriction - restrict drinking water well installation, Media specific restriction - restrict withdrawal or use of groundwater for agricultural/irrigation purposes, Media specific restriction - restrict withdrawal or use of groundwater w/out treatment, Restrict land use - No daycare/hospital/school use, Restrict land use - No residential use

Types of Engineering Controls: Signs

Types of Institutional Controls: Construction Permit, Deed Notices, Dig Permits, Notations in Master Plan, Notices (in the grantor/grantee index, newspapers, etc.), Restrictions on land use, Zoning

Date in Place: 201101

Modification Date: N/A

Date Terminated: N/A

Inspecting Organization: Installation

Record of LUC: Master Plan or Equivalent

Documentation Date: 201101

LUC Enforcement: Annual Inspections, 5 Year Reviews, Markers

Contaminants: METALS

Additional Information

N/A

Cleanup Program Summary

Installation Historic Activity

The RSA is an active US Army installation and is currently home to the US Army Aviation and Missile Command (AMCOM) and various other tenant organizations. On Oct. 1, 2003 the US Army Garrison - RSA became part of the US Army Installation Management Agency (now the IMCOM) - Southeast Regional Office. The Redstone Army Garrison is responsible for the physical facilities and real property including environmental compliance and the Installation Restoration Program (IRP) associated with that property.

The land area of the present RSA includes three separate military facilities originally established in 1941: the Redstone Ordnance Plant (ROP) (later RSA), the Huntsville Arsenal (HVA), and the Gulf Chemical Warfare Depot. These three facilities worked together to produce conventional and chemical munitions for use during World War II (WWII) from 1942 to 1945. The responsibilities for weapon production were separated as follows:

HVA
HVA covered the largest area and was composed of three production plants (Plants No. 1, No. 2, and No. 3), an airfield and associated bomb and other test ranges, and administrative/support areas. The three plants produced a variety of chemical warfare materiel (CWM). Both Plant No. 1 and Plant No. 2 produced chemical warfare agents [mustard gas (H) and lewisite (L)], chlorine phosgene (CG), and white phosphorous (WP). Later tear/vomit gas (adamsite) was produced in a plant south of the original Plant No. 3 boundary and thionyl chloride (TC) in a plant northwest of the Plant No. 2 chlorine facility. Plant No. 3 produced smoke munitions and gel-type incendiaries. Ultimately, HVA became the sole manufacturer of colored smoke munitions. During WWII more than 27 million items of chemical munitions were produced.

To support the development and proof testing of munitions, HVA included an airfield and test ranges for aerial bombing, mortar and other munitions testing. These areas were located on the northwest and western portion of the current facility. Over 8 million pounds of munitions were dropped or fired at these test range areas.

Since the facilities were designed to be self-sufficient, each facility had a power plant and sewage treatment facilities as well as other administrative and support facilities (motor pool, warehouses, etc.).

ROP
Munitions (artillery shells, mortars, bombs, etc.) were filled with CWM (H, L, WP, CG, smoke, gel-type incendiary material, etc.) at one of the three HVA facilities and then transported by railroad to ROP for final assembly, including installation of any fusing, burster tube, or other explosive configuration. The ROP also produced explosives items, primarily explosive blocks poured from tetryl or composition B. The ROP consisted of six assembly/production lines. Like the HVA, the open style construction enabled rapid change-over from production of one type of munitions item to another.

Prior to arrival at the ROP, the munitions casing was filled, but not explosively configured (weaponized). After final assembly of explosively configured munitions, they were transported to Gulf Chemical Depot (GCD) for storage in bunkers, igloos, and other structures meeting explosives-safety requirements.

From the depot, they were transported off-site by either railroad or ship from the dock area. There were two railroad classification yards that were used to load and assemble ordnance trains for movement. In January 1943, the name was changed to the RSA.

GCD
The GCD stored and shipped the munitions as well as bulk chemicals and equipment associated with decontamination. Numerous chemical manufacturing plants were operated at the three facilities to produce raw material for toxic agents, as well as to manufacture the agents themselves.

The depot facilities in 1942 included seven warehouses, 370 igloos, 55 aboveground magazines, and outdoor areas to store various types of ammunition, bombs, and chemicals. The toxic gas yard received 500,000 pounds of H as its initial shipment in early-1942. Shipments of phosgene, carbon tetrachloride, and WP followed.

The primary receipt and shipment location was the dock area located on the southwest corner of the facility. Immediately after WWII, the GCD stopped processing ammunition for shipment, and in turn became a focal point for the return of munitions from shipping ports or overseas. In November 1945, an average of 869 tons were received per day. The depot demilitarized, decontaminated, and stored surplus chemical munitions and agents, as well as captured German chemical agents.

Cleanup Program Summary

Installation Historic Activity

Between 1945 and 1949, all three military units reduced activities to standby status levels. On Jan. 15, 1947, the functions of the GCD were incorporated into those of the HVA, and subsequently the HVA was declared surplus. On March 31, 1949, the Army planned to sell HVA and designated the RSA as caretaker of the HVA properties. Due primarily to the nature of CWM produced at the facility and demilitarization/decontamination activities after WWII, a decision was made not to sell the facility.

In February 1949, the research and development (R&D) division, forerunner of the Ordnance Rocket Center, was established at RSA. The RSA was reactivated on June 1, 1949 to perform basic R&D in rocketry. The Chief of Ordnance designated RSA as the site of the Ordnance Rocket Center and the three separate facilities were combined in 1950 into the present day installation. On Oct. 28, 1949, the Secretary of the Army approved the transfer of the Ordnance R&D Division Sub-Office (Rocket) at Fort Bliss, Texas, to RSA. In 1956, the US Army Ballistic Missile Agency (ABMA) was created. The aerospace-related activities of ABMA were transferred to NASA in 1960 and the MSFC was established in the center of the RSA within the former HVA Plants Area. Real property, equipment, and personnel were transferred from the RSA to provide the MSFC with resources in 1960 per an executive order. The MSFC was instrumental in supporting space exploration, including the Mercury, Gemini, and Apollo programs of the 1960s and 1970s. Currently, the MSFC commands all Spacelab operations during space transportation system [(STS), e.g., space shuttle] missions and tests, and manufactures space vehicles and components.

On Aug. 1, 1962 the US Army Missile Command (MICOM), a major subordinate command of the US Army Materiel Command (AMC), was established at RSA. The MICOM was responsible for integrated commodity management of free rockets, guided missiles, ballistic missiles, target missiles, and associated equipment. The MICOM was also responsible for direction and control of assigned installations and activities, basic, and supporting research. On Oct. 1, 1997, the MICOM and the US Army Aviation and Troop Command were consolidated to form the AMCOM as part of a Base Realignment and Closure (BRAC) 1995 decision.

The military R&D efforts at RSA have been continually supported from 1949 to present by civilian contractors. The first government contracts were issued in 1949 to the Rohm and Haas Company and the Thiokol Corporation. Both contractors developed, manufactured, and tested solid propellant rocket motors and developed various types of rocket propellants in support of the Army, Navy, Air Force, and NASA. Rohm and Haas performed R&D on rocket and jet propulsion for various military programs. The Raytheon Company later conducted similar R&D activities, rocket motor assembly, and missile production in the buildings previously occupied by Rohm and Haas.

Chemical manufacturing facilities were constructed for the government contractors to provide materials for these R&D activities.

During WWII the area of RSA currently referred to as the RSA Rocket Engine (RARE) complex was the original pilot, and later production, plant for trinitrotoluene (TNT) shell loading lines. In 1949, a small portion of this complex was made available under a cost type contract to Thiokol Chemical Corporation for the experimental and developmental effort associated with solid propellant for the Army's tactical rocket motor program. The original contract was for Army programs only; however, in an effort to keep overhead costs under control, the Army later allowed Thiokol to contract with other government agencies, i.e., Navy, Air Force and NASA. This was later expanded to commercial and foreign military sales. These later agreements resulted in a contract lease arrangement whereby Thiokol was allowed to contract commercial or foreign sales that resulted in rental payment to the Army. This rent factor was based on a percentage of facilities used for support of such programs. Thiokol vacated these facilities in December 1996.

Subsequent to WWII, the chemical manufacturing facilities used to produce bulk chemicals for the war effort were leased by the Army to privately-owned firms for production of commercial chemicals and pesticides. The manufacturing of pesticides, including dichlorodiphenyltrichloroethane (DDT), began in 1948. The firms involved were the Alabama Chemical Company (manufacturer of DDT), Solvay Process Division of the Allied Chemical and Dye Corporation (intermediate chemical manufacturer), and John Powell and Company, Inc. (chemical blending, processing, formulating, and bagging). In 1954 Olin Mathieson Chemical Corporation acquired these firms and continued to produce pesticides until 1970. From 1970 to 1971, Olin Corporation, the principal DDT manufacturer, manufactured methoxychlor at the plant under a sub-lease. Reportedly, the average production of pesticides was approximately 12,500 tons per year.

The manufacture of DDT and other pesticides resulted in significant amounts of pesticide contamination as waste product. Thousands of pounds of contaminated wastes were buried in landfills throughout RSA. In addition to solid waste, large quantities of contaminated wastewater were discharged to surface water. In July 1979 the US Army initiated an extensive DDT abatement program. From July 1979 to August 1982, DDT wastes, including highly-contaminated soil and sediment, were excavated from the DDT manufacturing areas, the DDT drainage ditch, lagoon, and former DDT disposal sites.

Cleanup Program Summary

Installation Historic Activity

Approximately 10,500 cubic feet (ft) of pesticide-contaminated solid waste was placed in clay-lined disposal cells of the DDT waste soil landfill (RSA-107). The manufacturing plant structures were dismantled and demolished. In 1983 Olin Corporation began DDT cleanup procedures under a US Justice Department consent decree. This RA was officially completed in 1987. According to the documentation, DDT contamination was remediated at RSA-101, RSA-102, RSA-103, RSA-105, and RSA-106. A groundwater, surface water, and fish monitoring program will continue until residual levels of pesticides and their breakdown products are reduced to acceptable levels.

The basis for the Olin DDT-related remedial work was not consistent with current Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) risk assessment guidance for Superfund (RAGS) (USEPA, 2004) protocols, but was focused almost exclusively on human ingestion of fish. The nature and extent of contamination assessment did not include other raw or precursor chemicals such as chlorobenzene in soil, sediment, surface water or groundwater. No ecological risk assessments were performed.

Other former commercial operations included Stauffer Chemical Corporation, which produced chlorine and caustic chemical products, and currently, International Specialty Products, Inc. [formerly General Aniline and Film Corporation (GAF)], which operates an iron carbonyl production plant under a lease from the Army.

RSA is home to over 70 different tenant organizations. The primary mission of the installation is the development, acquisition, testing, fielding, and sustainment of aviation and missile weapon systems. Most of the installation's tenants support the aviation and missile weapon systems effort; however, Redstone is also home to such diverse activities as training for handling explosives and ordnance devices, DIA activities, and the production of iron carbonyl.

On May 31, 1994 RSA (US Army/NASA) was named to the final national priorities list (NPL) (Federal Register, Vol. 59, No. 103). The effective date was June 30, 1994. The hazard ranking system (HRS) score for RSA was 33.4. The NPL listing was fence to fence. The USEPA, Region 4, is the lead regulator for NPL activities on RSA.

Redstone is also operating under a hazardous waste facility permit issued by ADEM. The permit was originally issued on April 15, 1998 and was modified on Sept. 17, 2003. A renewed hazardous waste permit was issued to Redstone on Sept. 30, 2010. It requires all cleanup of hazardous waste sites to be done under the auspices of the Solid Waste Disposal Act (SWDA) corrective action regulations.

Prior to the issuance of the renewed permit, some of the hazardous waste sites on RSA were being addressed under CERCLA, for which USEPA, Region 4 is the lead regulator. Other hazardous waste sites on Redstone were being addressed under RCRA corrective action regulations per the permit requirements, for which ADEM is the lead regulator. Redstone still does not have a federal facilities agreement (FFA) in place due to ongoing RCRA/CERCLA issues. The USEPA issued a two-party FFA to the Army in March 2010 requesting the Army to sign. Because of the ongoing issues regarding RCRA/CERCLA integration and the imminence of the permit renewal, the Army chose to wait until the permit was issued to decide how to address the FFA. With the renewed permit requiring all cleanup under RCRA, the Army has proposed to the USEPA a version of the two-party FFA that does not include any sites under the direct control of the FFA because the sites are being addressed under the RCRA permit.

The following issues have had an impact on the scope and schedule for the restoration activities:
- the lack of an FFA and/or clear RCRA/CERCLA integration agreements for RSA,
- poorly identified potential source areas (PSA) during the early years of the restoration activities
- confirmation of significant perchlorate releases on RSA and subsequent delay in obtaining agreement between the Department of Defense (DoD) and the USEPA as to how to address these releases,
- the need to consider the wetland areas throughout RSA as integrator areas for the receipt of contamination from various sites,
- uncertain regulatory status of DDT manufacturing releases on RSA,
- very complex groundwater flow pathways due to karstic conditions and faulting at RSA, and
- the relationship between the Army and NASA in regard to Army-responsible sites located in the NASA-controlled MSFC.

Installation Program Cleanup Progress

IRP

Prior Year Progress: No further action (NFA) decisions were approved by ADEM on four sites (MSFC-053, RSA-138M, RSA-220, and RSA-272) in FY15. RFI reports were completed and approved by ADEM for seven sites (MSFC-027, RSA-005, RSA-199, RSA-201, RSA-204, RSA-255, and RSA-261). CMI work

plans or DES phases, were completed and approved by ADEM for two IR sites (RSA-035 and RSA-058). The corrective measure (construction) report for RSA-096 was approved by ADEM with no additional work required.

Future Plan of Action: For FY16 and FY17, RFI reports and corrective measure studies completions are projected for 84 and 63 IR sites, respectively. Corrective measures implementation work plans (DES phase) are projected to be submitted and completed at 39 IR sites. Corrective measures are projected to be completed at 11 IR sites.

MMRP

Prior Year Progress: RFIs continue at 11 MMRP sites: RSA-072-R-01, RSA-141-R-01, RSA-221-R-01, RSA-234-R-01, RSA-238-R-01, RSA-249-R-01, RSA-278-R-01, RSA-280-R-01, RSA-294-R-01, RSA-312-R-01, and RSA-313-R-01. RFI reports are projected to be completed for eight MMRP sites; RSA-072-R-01, RSA-141-R-01, RSA-221-R-01, RSA-234-R-01, RSA-238-R-01, RSA-249-R-01, RSA-280-R-01, RSA-294-R-01. IM nonintrusive and intrusive work plans continue to be developed for 10 sites as mandated by RSA's permit.

Future Plan of Action: RFI reports and corrective measure studies are projected to be completed for eight of the 11 MMRP sites; RSA-072-R-01, RSA-141-R-01, RSA-221-R-01, RSA-234-R-01, RSA-238-R-01, RSA-249-R-01, RSA-280-R-01, RSA-294-R-01.

CR

Prior Year Progress: NFA decisions for surface media were received from ADEM on four CCSWMU sites; CCSWMU-182, CCSWMU-243, CCSWMU-277, and CCSWMU-305. ADEM also approved the RFI report for CCSWMU-247 which requires a corrective measure. The corrective measures implementation plan (CMIP) (DES phase) is currently being developed for CCSWMU-247.

Future Plan of Action: For FY16 and FY17, RFI reports and corrective measure studies completions are projected for 30 and 16 CCSWMU sites, respectfully. Corrective measures implementation work plans [DES phase] are projected to be submitted and completed at six CCSWMU sites; CCSWMU-009, CCSWMU-242, CCSWMU-245, CCSWMU-268, CCSWMU-306, and CCSWMU-311; however, the Army has recommended an NFA for surface media at CCSWMU-268. A corrective measure is planned for completion at CCSWMU-035.

REDSTONE ARSENAL

Army Defense Environmental Restoration Program
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 240/147

Installation Site Types with Future and/or Underway Phases

3 Burn Area
(RSA-013, RSA-014, RSA-126)

1 Chemical Disposal
(RSA-050)

13 Contaminated Ground Water
(RSA-145, RSA-146, RSA-147, RSA-148, RSA-149, RSA-150, RSA-151, RSA-152, RSA-153, RSA-154, RSA-155, RSA-156, RSA-157)

1 Contaminated Soil Piles
(MSFC-033A)

37 Industrial Discharge
(MSFC-034, RSA-045, RSA-057, RSA-083, RSA-095, RSA-117, RSA-122, RSA-135H, RSA-142, RSA-183, RSA-194, RSA-198, RSA-199, RSA-200, RSA-201, RSA-203, RSA-204, RSA-206, RSA-208, RSA-209, RSA-210, RSA-211, RSA-212, RSA-225, RSA-231, RSA-233, RSA-237, RSA-238, RSA-239, RSA-250, RSA-252, RSA-258, RSA-261, RSA-263, RSA-269, RSA-274, RSA-275)

7 Landfill
(RSA-010, RSA-048, RSA-053, RSA-054, RSA-058, RSA-059, RSA-060)

1 Sewage Treatment Plant
(RSA-228)

3 Spill Site Area
(RSA-271, RSA-272, RSA-276)

16 Storage Area
(RSA-005, RSA-032, RSA-065, RSA-067, RSA-069, RSA-087, RSA-088, RSA-217, RSA-218, RSA-219, RSA-220, RSA-226, RSA-253, RSA-255, RSA-262, RSA-265)

4 Surface Disposal Area
(MSFC-027, RSA-109, RSA-140, RSA-230)

5 Surface Impoundment/Lagoon
(PBCatRedstone, RSA-049, RSA-056, RSA-115, RSA-139)

1 Underground Storage Tank
(RSA-143)

1 Washrack
(RSA-227)

Most Widespread Contaminants of Concern

Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Perchlorate, Pesticides, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC), White Phosphorous

Media of Concern

Groundwater, Other (Surface and Subsurface Soil), Sediment, Soil, Surface Water

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

Site ID	Site Name	Action	Remedy	FY
RSA-107	CLOSED DDT CONTAM.SOILS/DEBRIS LANDFILL	FRA	CAPPING	1982
RSA-107	CLOSED DDT CONTAM.SOILS/DEBRIS LANDFILL	FRA	FENCE OR OTHER SITE ACCESS CONTROL MEASURES	1982
RSA-101	ENCAPSULATED PESTICIDE CONTAM. SED. AREA	FRA	WASTE REMOVAL - SOILS	1987
RSA-101	ENCAPSULATED PESTICIDE CONTAM. SED. AREA	FRA	CAPPING	1987

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

Site ID	Site Name	Action	Remedy	FY
RSA-101	ENCAPSULATED PESTICIDE CONTAM. SED. AREA	FRA	WASTE REMOVAL - SLUDGES	1987
RSA-101	ENCAPSULATED PESTICIDE CONTAM. SED. AREA	FRA	DRAINAGE CONTROLS	1987
RSA-102	DISMANTLED PESTICIDE MFG. PLANT SITE	FRA	CAPPING	1987
RSA-102	DISMANTLED PESTICIDE MFG. PLANT SITE	FRA	DRAINAGE CONTROLS	1987
RSA-102	DISMANTLED PESTICIDE MFG. PLANT SITE	FRA	WASTE REMOVAL - SOILS	1987
RSA-102	DISMANTLED PESTICIDE MFG. PLANT SITE	FRA	WASTE REMOVAL - SLUDGES	1987
RSA-103	CAPPED PESTICIDE SETTLING LAGOON	FRA	CAPPING	1987
RSA-103	CAPPED PESTICIDE SETTLING LAGOON	FRA	WASTE REMOVAL - SOILS	1987
RSA-103	CAPPED PESTICIDE SETTLING LAGOON	FRA	DRAINAGE CONTROLS	1987
RSA-103	CAPPED PESTICIDE SETTLING LAGOON	FRA	WASTE REMOVAL - SLUDGES	1987
RSA-105	INACTIVE CLOSED DDT DRAINAGE DITCHES	FRA	WASTE REMOVAL - SLUDGES	1987
RSA-105	INACTIVE CLOSED DDT DRAINAGE DITCHES	FRA	DRAINAGE CONTROLS	1987
RSA-105	INACTIVE CLOSED DDT DRAINAGE DITCHES	FRA	WASTE REMOVAL - SOILS	1987
RSA-105	INACTIVE CLOSED DDT DRAINAGE DITCHES	FRA	CAPPING	1987
RSA-106	EARTHEN RETENTION DAMS FOR DDT MIGRATION	FRA	DRAINAGE CONTROLS	1987
RSA-106	EARTHEN RETENTION DAMS FOR DDT MIGRATION	FRA	WASTE REMOVAL - SOILS	1987
RSA-106	EARTHEN RETENTION DAMS FOR DDT MIGRATION	FRA	CAPPING	1987
RSA-106	EARTHEN RETENTION DAMS FOR DDT MIGRATION	FRA	WASTE REMOVAL - SLUDGES	1987
RSA-041	REMOVED USED OIL UST SITE, TANK #3636	FRA	REMOVAL	1992
RSA-039	REMOVED #2 FUEL OIL UST SITE, TANK #3338	FRA	REMOVAL	1993
RSA-043	REMOVED USED OIL UST SITE, TANK #3665	FRA	REMOVAL	1993
RSA-056	CAPPED ARSENIC WASTE PONDS-SOUTH	IRA	CAPPING	1995
RSA-038	REMOVED USED OIL UST SITE, TANK #3240D	FRA	REMOVAL	1996
RSA-040	REMOVED USED OIL UST SITE, TANK #3617	FRA	REMOVAL	1996
RSA-130	INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345	FRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1998
RSA-130	INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345	FRA	WASTE REMOVAL - SOILS	1998

IRP Summary

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

Site ID	Site Name	Action	Remedy	FY
RSA-056	CAPPED ARSENIC WASTE PONDS-SOUTH	IRA	INSTITUTIONAL CONTROLS	2001
RSA-143	UNDERGROUND STORAGE TANK SPILL SITE	FRA	CHEMICAL REDUCTION/OXIDATION	2004
MSFC-002	INACTIVE ABANDONED DRUM DISPOSAL SITE	IRA	REMOVAL	2007
RSA-146	GROUNDWATER UNIT GW-02	IRA	INSTITUTIONAL CONTROLS	2007
RSA-049	CAPPED ARSENIC WASTE LAGOONS-WEST	FRA	INSTITUTIONAL CONTROLS	2008
RSA-057	INACTIVE ARSENIC WASTE LAGOON-EAST	FRA	WASTE REMOVAL - SOILS	2008
RSA-229	FORMER PX SERVICE STATION	FRA	NATURAL ATTENUATION	2008
RSA-252	INCENDIARY BOMB FACILITY PLANT 2	IRA	WASTE REMOVAL - SOILS	2008
RSA-122	DISMANTLED LEWISITE MFG. PLANTS SITE	FRA	CAPPING	2011
RSA-122	DISMANTLED LEWISITE MFG. PLANTS SITE	FRA	WASTE REMOVAL - SOILS	2011
RSA-097	CHLORINATED-SOLVENT DISTILLATION UNIT 4	IRA	WASTE REMOVAL - SOILS	2012
RSA-138M	INACTIVE TEMPORARY STORAGE AREA	IRA	WASTE REMOVAL - SOILS	2013
RSA-150	GROUNDWATER UNIT 06	IRA	INSTITUTIONAL CONTROLS	2013
RSA-145	GROUNDWATER UNIT GW-01	IRA	INSTITUTIONAL CONTROLS	2014
RSA-096	CHLORINATED-SOLVENT DISTILLATION UNIT 3	FRA	IN-SITU SOIL TREATMENT	2015
RSA-096	CHLORINATED-SOLVENT DISTILLATION UNIT 3	FRA	THERMALLY ENHANCED SVE	2015

Duration of IRP

Date of IRP Inception: 197710

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 204901/205101

Date of IRP completion including Long Term Management (LTM): 205906

IRP Contamination Assessment

Contamination Assessment Overview

The cleanup program was initiated in 1970 when the US Army Environmental Hygiene Agency conducted a field survey to characterize the domestic and industrial waste being discharged from RSA and to determine if water pollution problems were being caused by the waste discharges. The study identified water pollution problems from two sewage treatment plants (STP), and discharges from Olin Corporation's DDT manufacturing operations.

In 1977, the US Army Toxic and Hazardous Material Agency (USATHAMA) completed the installation assessment which identified possible disposal areas. Pesticide contamination was confirmed and a decision subsequently made that RA was necessary. The resulting DDT cleanup program occurred at RSA between 1983 and 1988.

In September 1989, USEPA conducted an interim RCRA facility assessment (IRFA) at RSA and another at MSFC (which is operated by NASA). This study resulted in the identification of 110 sites at RSA and 77 sites at MSFC. Between 1989 and 1990, the US Army reevaluated the USEPA IRFA and identified additional sites on RSA, including property located on RSA that is owned by the TVA and the Wheeler Wildlife Refuge. A total of 286 sites were identified in this follow-on study. In addition, the PSA investigation has resulted in a number of sites being added to the program for a total of 471 sites. Additional sites were added due to areas removed from active ranges and a used oil tank/spill site for a total of 474 sites within RSA boundaries.

Of the 474 sites, the Army has responsibility for 390, Olin Chemical Corporation is responsible for one DDT site, one site is the internet service provider (ISP) facility and NASA is responsible for 83 sites. Some of the NASA sites are listed in the Army permit. All but six of the Army sites are covered under the RCRA permit. The Olin site is also listed in the permit, but deferred to the 1983 consent order. The permit lists the sites under the following tables:

- Table VI.2 RFI (176 sites)
- Table VI.3 NFA (166 sites)
- Table VI.4 Permitted storage and open burn(OB)/open detonation (OD) (11 sites)
- Table VI.5 IM (17 sites)
- Table VI.6 CMI (18 sites)
- Table VIII.1 LUCs (16 sites) and installation-wide groundwater

There is some overlap of sites between tables. The total number of sites listed in the permit is 383.

The IRP sites were originally organized into 20 operable units (OU). The arsenal was divided into OUs based on watershed locations, critical and sensitive ecological habitats, soil types, and land use. These 20 OUs continue to be used for surface media site purposes. Interpretation of investigative work conducted prior to 2002 was complicated by findings of contaminants in wells on multiple sites which did not appear to be related to site operational activities.

Based on this finding and the basic awareness of the potential for significant interconnection between groundwater at one location and groundwater at other locations in karst formations, an installation-wide hydrogeological study was initiated. The final site-wide karst hydrogeologic investigation, Phase I report of findings (Shaw 2003), which has become known as the karst report, documented the highly interconnected nature of groundwater at the facility and the potential for rapid and long distance contaminant transport. It also documented significant connection between groundwater and surface water.

These interconnections provide conduits for contaminant transfer from groundwater to surface media via springs and other artesian structures, as well as opportunities for contaminants in surface water to enter groundwater via sinkholes, features in losing reaches of streams and other mechanisms.

Based on these findings, a decision was made to separate surface media (primarily surface and subsurface soil) from groundwater. Thirteen groundwater sites have been established based on data from the karst report. This should allow more focused interpretation of surface media contaminants as posing either human or ecological risks from surface soil or sediment exposure pathways, or principal threat source material serving to contaminate groundwater locally or at a distance. Based on recent seismic and dye trace studies, some of the groundwater sites have been combined for a total of seven groundwater sites. An RSA groundwater cleanup strategy was developed and approved by the regulatory agencies in FY10.

In addition to the groundwater cleanup strategy, RSA has also prepared a strategy for cleanup of contaminated wetlands on the arsenal. This document describes how the Army intends to address wetlands on RSA.

As mentioned earlier, RSA currently does not have an FFA in place. In March 2010, due to ongoing RCRA/CERCLA issues

Contamination Assessment Overview

associated with the FFA, USEPA proposed an FFA that does not include the state as a signatory. The Army responded with a version of the FFA submitted to USEPA in March 2011 that does not require the sites covered under the permit to also be covered under the FFA.

Off-site migration of chlorinated solvents and perchlorate in groundwater has been confirmed along the eastern boundary of RSA. This contaminated groundwater surfaces in springs feeding an unnamed tributary that meanders off and on the installation along the eastern boundary, as it flows down to the Tennessee River. Both chlorinated solvents and perchlorate have also been detected in nested monitoring wells located along the Tennessee River.

Two pump-and-treat (P&T) facilities were installed in the 1990s to address the source areas of the off-site contamination along the eastern boundary; however, the plants treated only the chlorinated solvents, allowing perchlorate-laden effluent to be discharged to the Huntsville Spring Branch (HSB). Subsequent investigation indicated that the current configuration of the plants may not be optimal for containing the contaminated groundwater. Therefore, RSA began a study to determine if these plants could be used as an effective remedy for this area. The initial findings of this study were presented in the RSA-146 Phase I RI report (August 2005). A follow-on sampling initiative was begun in 2006 to determine whether or not the plants were containing the plumes. The study has been completed, and the indication is that the plants did not contain the chlorinated solvent plume or the perchlorate plume.

Another P&T facility, designed to treat a chlorinated solvent release, was located at an area along the Tennessee River. Like the contaminated groundwater along the eastern boundary, the groundwater in this area near the Tennessee River was also found to be a commingled plume, containing both chlorinated solvents and perchlorate. Like the other P&T facilities, no provisions for treating perchlorate had been included in the design. Therefore, the effluent was found to contain high levels of untreated perchlorate. Because the discharge from this plant was located at the Tennessee River, one mile upstream of the arsenal's drinking water intake, this plant has been shut down until decisions can be made in regard to perchlorate. Regulatory interest in RSA remains high, with both USEPA, Region 4 and ADEM participating in the restoration activities.

There are a number of complicating factors and uncertainties associated with the RSA IRP. They include:
- The lack of an FFA and/or clear RCRA/CERCLA integration agreements for RSA. The RCRA/CERCLA integration issues are of high importance to the program due to the hazardous waste facility permit in place at RSA. With the issuance of the RCRA permit in 2010, the cleanup program is transitioning primarily to RCRA oversight while trying to meet the substantive requirements of the NPL as best as possible.
- Poor identification of PSAs during the early years of the restoration activities. A major effort was put into identifying the PSAs on RSA during FY03 and FY04. All of the draft documents describing the historical search, site visits, and sampling were submitted to the regulatory agencies. Comments on the 51 remaining unresolved PSAs for the compliance cleanup program are currently being resolved between the ADEM and the Army. The status of all of the PSAs under the IRP has now been resolved.
- Confirmation of significant perchlorate releases on RSA and the subsequent delay of agreement between the DoD and the USEPA, as to how to address these releases, these issues have adversely affected the RSA IRP schedule. Many of the sites with the most significant chlorinated solvent releases have also been impacted by perchlorate releases.
- The need to use an integrator approach due to commingling of releases to groundwater, and the subsequent upwelling of the commingled plumes into wetlands and surface water bodies on RSA. The integrator concept is intended to establish common sampling points and points of compliance for records of decision (ROD) from the multiple sites. The effort to establish and develop the integrator approach was initiated in 2004 and continues to evolve as information is obtained and discussions are held. Boundaries were established in 2007 and a wetlands strategy was developed and approved in 2010; however, the use of the integrator areas was one of the tools developed under CERCLA protocols. Since the cleanup effort at RSA is transitioning to RCRA, the use of the integrators has been put on hold for the time being.
- The uncertain regulatory status of DDT manufacturing releases on RSA. A consent order was signed by Olin Chemical, the USEPA, and ADEM in 1983 for DDT contamination in the HSB and Indian Creek (IC) watersheds. The cleanup levels required by the consent order do not meet current CERCLA expectations for protection of human health and the environment. The former DDT manufacturing process and subsequent contamination are located on RSA. The DDT manufacturing areas and landfills are sites listed in the permit and are being addressed under RCRA. The migration of the DDT into the HSB and IC was deferred by the permit to the 1983 consent order.
- The very complex groundwater flow pathways, due to karstic conditions and faulting at RSA, have added to the uncertainty and complexity of the RSA IRP. The unpredictable nature of the groundwater flow pathways has significantly impacted the Army's ability to quickly and efficiently characterize and delineate groundwater contamination. Additionally, data indicate that contamination from off-site sources may also be affecting groundwater and surface water quality on RSA. A series of perimeter wells were installed to help determine if/where contamination from off-site sources may be entering the installation. Finally, data

Contamination Assessment Overview

from the wells along the Tennessee River was interpreted by regulators to indicate that contamination from RSA may be undercutting the river. A series of sampling events, at locations south of the Tennessee River, indicated that it is unlikely that contamination is migrating under the river. Additional boundary well flow-meter surveys and Tennessee River sampling were performed to confirm this, but the regulators are still requesting wells be established south of the river.

- The relationship between the Army and NASA, in regard to Army-responsible sites located in the NASA-controlled MSFC, has added a complicating factor to the RSA IRP. The MSFC is located in the heart of RSA. There is a need to clearly define responsibility for contamination, particularly in groundwater.

The RSA enjoys a very good relationship with the neighboring communities. To date, the public has been supportive of RSA's IRP efforts; however, very little public interest has been expressed for forming a RAB at RSA. The public is re-solicited on a biannual basis to determine if there is a sustained public interest in forming a RAB.

To date, RODs have been signed for the following sites: RSA-099, RSA-047, RSA-011, RSA-057, RSA-049, MSFC-002/087, RSA-056, RSA-139, RSA-122, RSA-183, RSA-094, and RSA-196 (which includes RSA-098). A remedy is in place to address petroleum contamination at RSA-143 under the state's UST regulations. Additionally, an interim record of decision (IROD) was signed to implement LUC for the groundwater underneath RSA. The following sites have also been closed either through an administrative letter or a decision document (DD) following a site investigation or removal action: RSA-B, RSA-084, RSA-108, RSA-130, MSFC-074, RSA-223, RSA-251, RSA-224, RSA-236, RSA-D, and MSFC-077. Three UST sites have also been closed through the state's Alabama risk based corrective action (ARBCA) program: RSA-229, RSA-232, and RSA-235.

Cleanup Exit Strategy

In an effort to organize and program the site restoration efforts in a more efficient manner, a grouping strategy for managing the RSA IRP was adopted in FY06. The grouping strategy was used to re-define the OUs at RSA in FY08. The site groupings were established primarily on the basis of historical processes and functions. The rationale for grouping by historical function is that the contaminants of concern (COC) and the release mechanisms and locations will be similar for the sites in a specific group. Many of the sites in a group also happen to be located in the same general geographical location on the arsenal. Smaller teams comprised of various members of the much larger Tier I team were established in 2007 to work sites within the groupings. Those teams worked well in FY08 to expedite the cleanup efforts. The program management contract (PMC) was awarded to Shaw E&I in August 2009. Shaw E&I was acquired by CB&I in 2013. The contract was novated to CB&I Federal Services in April 2014.

As part of the effort required under this contract, Shaw proposed a number of grouping strategies to achieve more cleanup efficiencies at RSA. The groupings were used to divide the sites into groups, which was helpful in assigning team members to work like-type sites. Although the specific groupings have not been maintained in any official capacity, the team members have tended to retain and work like-type sites. ADEM issued a hazardous waste permit renewal in 2010. This permit required all sites to be addressed under the RCRA Corrective Action program. The program has subsequently been transitioned to a RCRA program, with the exception of two public involvement opportunities. RSA continues to maintain public repositories in several locations on and off the arsenal. Additionally, a public announcement is made at the end of the RFI phase indicating the remedies considered and the preferred remedy that is being proposed to ADEM via a permit modification. These public involvement opportunities are not required by RCRA or the permit, but help RSA stay compliant with the National Contingency Plan since RSA has not yet been delisted from the NPL. Significant progress has been made under the permit to move sites to the corrective measures phase of the program and to close out sites.

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	Title	Author	Date
1959			
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1962			
	Redstone Arsenal Complex Chronology Part II: Nerve Center of Army Missilery, 1950-1962, Section A: The RSA Era (1950-55)	US Army	JAN-1962
	Redstone Arsenal, AL Report on Water Control Plans	USACE (Mobile District)	JAN-1962
	Redstone Arsenal Complex Chronology Part II: Nerve Center of Army Missilery, 1950-1962, Section B: The ABMA/AOMC Era (1956-1962)	US Army	NOV-1962
1966			
	Preliminary Engineering Report on Industrial Waste Treatment	Whitman, Requardt and Associates	JAN-1966
	Final Report Industrial Waste, Stream Pollution Survey RSA, AL	COE, Mobile District	FEB-1966
	NASA Waste Study, 1966	NASA	FEB-1966
1970			
	Sanitary Engineer Survey & Industrial Waste RSA, AL	US Army Environmental Hygiene Agency	MAY-1970
1972			
	Final Report - Conceptualization, Evaluation, Definition, and Development of a MSFC Environmental Quality Program	UAH & MSFC	MAY-1972
1974			
	Water Quality Monitoring Consultation No. 24-060-74/75 RSA, AL	US Army Environmental Hygiene Agency	APR-1974
1975			
	Master Plan Basic Information Maps	US Army	SEP-1975
1976			
	Potable/Recreational Water Quality and Wastewater Engineering Survey No. 24-0606-77 RSA, AL	US Army Environmental Hygiene Agency	AUG-1976
1977			
	Water Quality Monitoring RSA, AL	US Army Environmental Hygiene Agency	FEB-1977
	Water Quality Engineering Special Study - Miscellaneous Point Source Discharges	US Army Environmental Hygiene Agency	JUN-1977
	Water Quality Evaluation of Environmental Degradation from prior DDT Waste Disposal RSA, AL	US Army Environmental Hygiene Agency	JUN-1977
	Installation Assessment of Redstone Arsenal, AL, Record Evaluation Report # 118	Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration	DEC-1977
1978			
	Draft Environmental Impact Statement	US Army	MAY-1978
	Report of Site Investigation for DDT Landfill Site at RSA, AL	Testing, Inc.	OCT-1978
	Report of Evaluation and Recommendations for Calgon Corporation Carbon Absorption Facility, RSA, AL	Testing, Inc.	NOV-1978

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	Title	Author	Date
1979			
	Report of Geohydrology Characterization and Well/Lysimeter Installation at RSA, AL	Testing, Inc	JAN-1979
	Summary of DDT Contamination at RSA	RSA	JUL-1979
	Report of Geohydrology Characterization, Survey of Wells & Lysimeter Locations and Monitor Well Installation at RSA, AL	Testing, Inc	DEC-1979
	Infiltration/Inflow Analysis for Plant No. 4 (Subsystems: 5, 6, 7, 7A, 8, 9, and 10) Sewer System	Barge, Waggoner, Sumner & Cannon	DEC-1979
1980			
	Final Contract Report - Engineering and Environmental Study of DDT Contamination of Huntsville Spring Branch, Indian Creek and Adjacent Lands and Waters, Wheeler Reservoir, AL, Vol. I, II, & III	Water & Air Research, Inc	NOV-1980
1981			
	Preliminary Survey, DDT Abatement Program Monitoring and Surveillance RSA, AL	Hittman Associates, Inc.	JUN-1981
	Ground Water Monitoring Program	US Army MICOM	JUN-1981
	Report of Geohydrology Characterization, Survey of Wells and Monitor Well Installation at RSA, AL	Testing, Inc.	OCT-1981
1983			
	RSA Installation Restoration Program Summary, Final Report, Vol. I, II, & III	Water & Air Research, Inc	MAR-1983
	Ground Water & Surface Water Monitoring Program	US Army MICOM	MAR-1983
	Ground Water Quality Assessment RSA, AL	US Army Environmental Hygiene Agency	SEP-1983
1984			
	Phase I - Ground Water Quality Assessment RSA, AL	US Army Environmental Hygiene Agency	JUN-1984
	Historic Properties Report - Final Report July 1984	Building Technology Incorporated,	JUL-1984
	Surface Water and Ground Water Monitoring Data	US ARMY MICOM EMO	DEC-1984
1985			
	404/26A Permit Application for the Huntsville Remedial Action Plan RSA, AL	Waldemar S. Nelson and Company, Inc	JUN-1985
	Environmental Analysis for the HSV. Remedial Action Plan	Waldemar S. Nelson and Company, Inc	JUN-1985
	Technical Specifications for the Huntsville (Hsv.) Remedial Action	Waldemar S. Nelson and Company, Inc	JUN-1985
	Environmental Assessment and Permit Workbook on Refuse Fired Steam Plant Supplying 200 PSIG Steam to RSA, AL	Hayden-Wegman Consulting Engineers	JUL-1985
1986			
	Final Environmental Impact Study For Regulatory Actions Associated with the Olin Corp. Remedial Action Plan to Isolate DDT from the people and environment in the Hsv. Spring Branch - Indian Creek System, Wheeler Reservoir, AL	Water and Air Research, Inc	FEB-1986
	RSA Part B Permit and Application. Prepared by US Army MICOM, March 1986.	V.J. Ciccone & Associates, Inc	APR-1986

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	Title	Author	Date
1986			
	RCRA Closure Certification Report Shields Road Yard NASA-MSFC. Site OU15, RSA 32, Redstone Arsenal, Alabama	Harmon Engineering & Associates, Inc	JUN-1986
	Site MSFC-27 RCRA Closure Certification Report Shields Road Yard NASA-MSFC	Harmon Engineering & Associates, Inc	JUN-1986
	Report on the Remedial Action to Isolate DDT from people and the environment in the Hsv. Spring Branch - Indian Creek System, Wheeler Reservoir, AL (US v. Olin Corp. Consent Decree) May 31, 1983 - June 30, 1986	USEPA (Reg. IV)	JUL-1986
	404/26A Permit Application for the Huntsville Remedial Action Plan, Redstone Arsenal, AL, Lower Reach A	Waldemar S. Nelson and Company, Inc	SEP-1986
1987			
	Chemical Weapons Movement History Compilation	Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration	FEB-1987
	Geotechnical Requirements for Drilling, Monitoring Wells, Data Acquisition, and Reports	US Army Toxic & Hazardous Materials Agency	MAR-1987
	Chemical Weapons Movement History Compilation	William R. Brankowitz	APR-1987
	Final Standard Operating Procedures - Remedial Investigation / Feasibility Study, RSA, AL	P. E. LaMoreaux & Associates, Inc	JUL-1987
	Huntsville Spring Branch / Indian Creek Long-Term Monitoring Program Annual Report	Olin-Environmental Affairs Dept	AUG-1987
	Work Plan for Baseline Environmental Monitoring Study, US Army/ GAF Chemical Corp. HSV., AL Plant.	AWARE, Inc	OCT-1987
1988			
	Remedial Action Decision Document for the DDT Contaminated Areas on Redstone Arsenal	US Army Toxic & Hazardous Materials Agency	JAN-1988
	Baseline Environmental Monitoring Study US Army/GAF Chemical Corp. HSV, AL Pla	AWARE, Inc	MAR-1988
	Preliminary Assessment and Site Inspection for MSFC	Harmon Engineering & Associates, Inc	APR-1988
	Final Confirmation Report - Unit 3 Investigations Vol. I - VI. Sites 48, 49, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	P.E. LaMoreaux & Associates, Inc	JUL-1988
	Final Remedial Investigation Engineering Report for RSA, AL Unit 1- (DDT & Sanitary Land-fills) and Unit 2-(Open Burn/ Open Demolition Area) Vol. I - VII. Sites 10, 12, 13, 14, 131, 132, 133, Redstone Arsenal, AL	P.E. LaMoreaux & Associates, Inc.	SEP-1988
	Remedial Action Plans for RSA, AL - Unit 1 (DDT and Sanitary Landfills) and Unit 2 (Open	P.E. LaMoreaux & Associates, Inc	SEP-1988
	Surface Water and Ground Water Monitoring Data	US ARMY MICOM EMO	NOV-1988
1989			
	Preliminary Assessment of CERCLA Candidate Sites and Related Sites of Possible Environmental Significance - MSFC Hsv, AL	Harmon Engineering & Associates, Inc	FEB-1989
	RCRA Facility Assessment - Preliminary Review Report MSFC - Hsv., AL	A.T. Kearney, Inc	MAR-1989

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	Title	Author	Date
1989			
	MICOM Environmental Program Plan - RSA, AL	US Army MICOM EMO	MAR-1989
	Redstone Arsenal, AL Environmental Program	Redstone Arsenal	MAR-1989
	Ambient Air Quality Consultant - Redstone Arsenal Support Activity RSA, AL	US Army Environmental Hygiene Agency	MAR-1989
	Technical Escort Attachment Activities Huntsville, AL	Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restora	MAR-1989
	Upgrade - Confirmation Report and Assessment of Remedial Alternatives for Selected Unit 3 Sites (RSA): Vol. I (text); Vol. II (App. A); Vol. III (App. B); Vol. IV (App. B (cont.)); Vol. V (App. B (concluded)). Sites 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL.	P.E. LaMoreaux & Associates, Inc	APR-1989
	Results and Conclusions - Sampling Rounds 1-4 for RSA Unit 4 (Perimeter Wells) Investigations, Vol. I & II	P.E. LaMoreaux & Associates, Inc	MAY-1989
	Interim RCRA Facility Investigation of the MSFC Hsv., A	A.T. Kearney, Inc	JUL-1989
	Interim RCRA Facility Assessment of the RSA Hsv., AL	A.T. Kearney, Inc.	SEP-1989
	Soil and Gas Sampling Plan - RCRA Facility Investigation for RSA Hsv., AL	Geraghty & Miller	OCT-1989
	Surface Water and Groundwater Monitoring Data	US ARMY MICOM EMO	NOV-1989
	Draft Work Plan- RCRA Facility Investigation Unit 1 for RSA, AL	Geraghty & Miller	NOV-1989
1990			
	Environmental Baseline Assessment - Summary & Laboratory Reports, Vol. I, II, & III.	CH2M Hill, Inc	FEB-1990
	Procedures for Accomplishing Collection, Sampling, and Analysis Services, Revision 1, RSA, AL.	BAMSI, Inc	MAR-1990
	Huntsville Spring Branch / Indian Creek Long-Term Monitoring Program Annual Report No. 2.	Olin-Environmental Affairs Dept	APR-1990
	Final Safety, Health, and Emergency Response Plan for RCRA Facility Investigation	Geraghty & Miller, Inc	JUN-1990
	Final Work Plan - RCRA Facility Investigations at Unit 1, Unit 2, & Selected Unit 3 Areas. Sites 10, 12, 13, 14, 131, 132, 133, 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	Geraghty & Miller, Inc	JUN-1990
	Surface Water and Groundwater Monitoring Data	US ARMY MICOM EMO	NOV-1990
	Second Report on the Remedial Action to Isolate DDT from people and the environment in the Hsv. Spring Branch / Indian Creek System, Wheeler Reservoir, AL (US v. Olin Corp. Consent Decree), July 1,1986 - June 30, 1990	USEPA (Reg. IV)	NOV-1990
	First Quarterly Progress Report - RCRA Facility Investigations at Unit 1, Unit 2, & Selected Unit 3 Areas. Sites 10, 12, 13, 14, 131, 132, 133, 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	Geraghty & Miller Inc.	NOV-1990
1991			
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1991			
	54/55, 66, 68, Redstone Arsenal, AL		
	Identification and Evaluation of Potential SWMUs and Areas of Concern at RSA, AL.	Geraghty & Miller Inc	FEB-1991
	Huntsville Spring Branch / Indian Creek Long-Term Monitoring Program Annual Report No. 3.	Olin-Environmental Affairs Dept	APR-1991
	Groundwater Quality Assessment Report MSFC	ERC Environmental & Energy Services Co., Inc.,	JUN-1991
	Groundwater Quality Assessment Report for 4740 WPCF Volume I	ERC	AUG-1991
	RCRA Facility Investigation - Well Installation Report for SWMUs RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G).	USACE (Mobile District),	SEP-1991
	Final - Initial Sampling Plan for SWMUs RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G)	Engineering Science Inc.	SEP-1991
	Work Plan for Remedial Action Basement Area of Bldg. 5681	US COE, Omaha District	SEP-1991
	Air Toxics Transport Task Report	Physical Research, Inc	OCT-1991
	RCRA Facility Investigation - RFI Work Plan for RSA-58, 115, 116, 129, 140, and 14	Engineering Science Inc	NOV-1991
	RSA - RCRA Facility Investigation - Quality Control Summary Report Attachment IV Laboratory Data Phase I, Vol. I-VII.	Geraghty & Miller, Inc	DEC-1991
	RSA - RCRA Facility Investigation - Quality Control Summary Report Attachment I (A - E Quality Control Sheets) and Attachment II (Chain of Custody Records)	Geraghty & Miller, Inc	DEC-1991
1992			
	Quality Control Summary Report - Phase I - RCRA Facility Investigation at Units 1, 2, & 3	Geraghty & Miller, Inc	JAN-1992
	Final Preliminary Site Inspection for RSA, AL	Advanced Sciences, Inc	JAN-1992
	Final Draft Report - Review of Hsv. Spring Branch / Indian Creek Remedial Plan and Monitoring Program	Woodward-Clyde Consultants	JAN-1992
	Final - RCRA Facility Investigation - Health and Safety Plan for SWMUs RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G)	Engineering Science Inc	MAR-1992
	Industrial Waste Treatment Facility - Groundwater Quality Assessment Report for MSFC	CH2M Hill, Inc	APR-1992
	Final - Phase I Report - RCRA Facility Investigations at Unit 1, Unit 2, and Selected Unit 3 Areas, Vol. I & II. Sites 10, 12, 13, 14, 131, 132, 133, 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	Geraghty & Miller Inc	MAY-1992
	Huntsville Spring Branch / Indian Creek Long-Term Monitoring Program Annual Report No. 4	Olin-Environmental Affairs Dept	MAY-1992
	Final Project Report Remediation of the Basement Area of Building 5681	OHM Corp	JUN-1992
	Final Draft - Hazard Ranking System, Score Summary Report for RSA, AL.	Advanced Sciences, Inc	JUL-1992
	RSA - RCRA Facility Investigation - Quality Control Summary Report Phase II, Vol. I-IV Laboratory Data	Geraghty & Miller, Inc	NOV-1992
	Surface Water and Groundwater Monitoring Data	US ARMY MICOM EMO	NOV-1992
	RSA - RCRA Facility Investigation - Quality Control Summary Report Attachment III (Field Sampling Logs Phase I)	Geraghty & Miller, Inc	NOV-1992

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	Huntsville Spring Branch Hydrographic Map	Woodward-Clyde Consultants	DEC-1992
1993			
	RCRA Facility Investigation - Work Plan at MSFC	CH2M Hill, Inc	JAN-1993
	Corrective Measures Studies - Unit 1 (Waste Oil Pits & Closed Landfill) RSA, AL. Site 10, Redstone Arsenal, AL	Environmental Science & Engineering, Inc	JAN-1993
	Corrective Measures Studies - Unit 1 (Waste Oil Pits & Closed Landfill) RSA, AL. Site 10, Redstone Arsenal, AL	Environmental Science & Engineering, Inc	JAN-1993
	RCRA Facility Investigation - Phase I Report for SWMUs RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G), Volumes I & II (Vol. II contains analytical results).	Engineering Science Inc	FEB-1993
	Work Plan for Remedial Action Drum Removal	OHM Remediation Services Corp	FEB-1993
	Final - Work Plan Interim Corrective Measure Design at Unit 2, RSA, AL. Sites 12, 13, 14, 131, 132, 133, Redstone Arsenal, AL	Ebasco	FEB-1993
	RCRA Facility Investigation Addendums I and II to the RCRA Facility Investigation Work Plan for SWMUs RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G).	Environmental Science & Engineering, Inc	MAR-1993
	Quality Control Summary Report Phase II RCRA Facility Investigations at Unit 1, Unit 2, and Selected Unit 3 Areas. Sites 10, 12, 13, 14, 131, 132, 133, 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	Geraghty & Miller Inc	MAR-1993
	Corrective Measures Studies for RSA, AL, Draft Comments and Responses	Environmental Science & Engineering, Inc	MAR-1993
	Corrective Measures Studies for RSA, AL	Environmental Science & Engineering, Inc	APR-1993
	RCS 1383 Report for RSA	Environmental Science & Engineering, Inc	APR-1993
	Final Work Plan RCRA Facility Investigation of SWMUs RSA-99, 117, 130, RSA, AL	Ebasco	APR-1993
	Final Field Sampling and Chemical Data Acquisition Plan & Soil Boring and Monitoring - Well Installation Plan - RCRA Facility Investigation of SWMU RSA-130, RSA, AL	Ebasco	APR-1993
	Final Field Sampling and Chemical Data Acquisition Plan & Soil Boring and Monitoring - Well Installation Plan - RCRA Facility Investigation of SWMU RSA-117, RSA, AL	Ebasco	APR-1993
	Final Field Sampling and Chemical Data Acquisition Plan & Soil Boring and Monitoring - Well Installation Plan - RCRA Facility Investigation of SWMU RSA-99, RSA, AL	Ebasco	APR-1993
	Final Site Safety and Health Plan - RCRA Facility Investigation of SWMUs RSA-99, 117, 130, RSA, AL	Ebasco	APR-1993
	Final - Phase II Addendum - RCRA Facility Investigation at Unit 1, Unit 2, & Selected Unit 3 Areas. Sites 10, 12, 13, 14, 131, 132, 133, 49, 48, 53, 60, 59, 54/55, 66, 68, Redstone Arsenal, AL	Geraghty & Miller Inc	APR-1993

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	Title	Author	Date
1993			
	Draft Final - Corrective Action Management Plan for RSA, AL	Environmental Science & Engineering, Inc	MAY-1993
	Environmental Management Office - RCRA Facility Investigation for RSA, AL, Vol. I & II	MICOM Environmental Management Office	MAY-1993
	60% Submittal Construction Specifications - Interim Corrective Measure Design at Unit 2, sites 12, 13, 14, 131, 132, 133, RSA, AL	Ebasco	MAY-1993
	60% Submittal-System Design Analysis/Health & Safety Design Analysis - Interim Corrective Measure Design at Unit 2, sites 12, 13, 14, 131, 132, 133, RSA, AL	Ebasco	MAY-1993
	Final - Work Plan Interim Corrective Measure Design at RSA-G, site 142	Ebasco	JUN-1993
	Draft - Final Report - Rapid Response Contract, Vol. I & II, RSA, AL	OHM Remediation Services, Inc	JUN-1993
	Revised Draft Final Work Plan Interim Corrective Design at Unit 1, site 10, RSA, AL	Ebasco	AUG-1993
	Health and Safety Plan, RSA Hsv., AL	Layne Safety & Environmental Health Services	AUG-1993
	Storm Water Sampling Plan for NPDES Industrial Storm Water Discharge	USACE (Mobile District)	SEP-1993
	Draft Final Site Safety and Health Plan - Site Characterization Work Plan of SWMUs RSA-46, 47, 51, 56, 122, 139 at RSA, AL	Environmental Science & Engineering, Inc	SEP-1993
	Final Installation Community Relations Program, RSA, AL	Ebasco	SEP-1993
	Final Public Involvement and Response Plan During Installation Restoration Program Activities at Unit 2, RSA, AL	Ebasco	SEP-1993
	Review of Past Environmental Studies, RSA, AL	Advanced Sciences, Inc	NOV-1993
	Non-Stockpile Chemical Materiel Program Survey and Analysis Report	Program Manager for Non-Stockpile Chemical Materiel	NOV-1993
	Erosion and Deposition in Huntsville Spring Branch and Indian Creek	Woodward-Clyde Consultants	DEC-1993
	Report of Preliminary Site Contamination Assessment Proposed Branch Exchange Service Station	LAW Engineering	DEC-1993
1994			
	Surface Water and Groundwater Monitoring Data.	US ARMY MICOM EMO	JAN-1994
	Final Site Characterization Work Plan of SWMUs 46, 47, 51, 56, 122, and 139	Environmental Science & Engineering, Inc	FEB-1994
	Revised Final Work Plan Interim Measure Corrective Design at site RSA-49 (Area F	Ebasco	FEB-1994
	Final Report Development of Groundwater Monitoring Database Phase I Support Task, RSA, AL	Vista Technologies	FEB-1994
	Environmental Chemistry and Fate of Chemical Warfare Agents	Southwest Research, Inc.	MAR-1994
	Best Management Practice, US Army, MICOM EMO	US ARMY MICOM EMO	APR-1994
	Draft Final Work Plan to Prepare BRAs at 16 SWMUs, RSA, AL	Environmental Science & Engineering, Inc.	APR-1994
	Revised Final Work Plans Interim Corrective Measures Design at Unit 2, sites 12, 13, 14, 131, 132, 133, RSA, AL	Ebasco	MAY-1994

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1994

Title	Author	Date
Interim Remedial Design at sites RSA-56 and 139	USACE (Huntsville District)	MAY-1994
Final Work Plan Interim Corrective Measure Design at Unit 2, sites RSA-13, 14, 132, 133, RSA, AL	Ebasco	MAY-1994
Final Field Sampling and Analysis Plan - Test Well Installation at Unit 2, sites RSA-13, 14, 132, & 133, RSA, AL	Ebasco	MAY-1994
Final Site Safety & Health Plan Field Sampling Program at Unit 2, sites RSA-12, 13, 14, 131, 132, 133, RSA, AL	Ebasco	MAY-1994
Huntsville DDT Remedial Action Huntsville Spring Branch, Indian Creek, Long-Term Monitoring Program Annual Report No. 6.	Olin-Environmental Affairs Dept	JUN-1994
Final Characterization of Investigative Derived Wastes in Drums at Six RCRA Sites.	Engineering Science Inc	AUG-1994
Revised Final Work Plan to Prepare Baseline Risk Assessments at 16 SWMUs	USCOE, Huntsville District	SEP-1994
Final Work Plan to Prepare Feasibility Studies at RSA Unit1, Unit 2, and various sites in Unit 3.	Environmental Science & Engineering, Inc	SEP-1994
Final Work Plan Interim Corrective Measure Design at site RSA-10 (Unit 1)	Enserch Environmental Corp	OCT-1994
Final Field Sampling and Analysis Plan Test Well Installation at site RSA-10 (Unit 1), RSA, AL	Enserch Environmental Corp	OCT-1994
Final Site Safety & Health Plan Test Well Installation at site RSA-10 (Unit 1), RSA, AL.	Enserch Environmental Corp	OCT-1994
Revised Final Work Plan Interim Corrective Measure Design at site RSA-142 (RSA-G)	Enserch Environmental Corp	OCT-1994
Field Sampling and Analysis Plan / Site Safety and Health Plan - Test Well Installation at site RSA-142 (RSA-G).	Enserch Environmental Corp	OCT-1994
Draft Final Work Plan for Evaluating and Disposing of Investigative Derived Wastes	Vista Technologies	OCT-1994
MSFC Sites Proposed for No Further Action, sites MSFC-1, 6, 7, 11, 12, 13, 17, 18, 22, 23, 24, 25, 26, 28, 30, 31, 32, 37,	CH2M HILL	OCT-1994
Final Work Plan Field Sampling and Chemical Data Acquisition Plan Phase I Remedial Investigation of SWMUs RSA-126 and 134	Ebasco	NOV-1994
Final Site Safety and Health Plan Phase I Remedial Investigation of SWMUs RSA-126 and 134	Ebasco	NOV-1994
Final Public Involvement and Response Plan during Installation Restoration Program Activities at site RSA-49	Foster Wheeler Corp	NOV-1994
Final Public Involvement and Response Plan During Installation Restoration Program Activities at site RSA-10, Unit 1, RSA, AL	Foster Wheeler Corp	NOV-1994
Final Report Magnetometer Survey & Intrusive Operations - NASA Site 141, RSA, AL.	El Dorado Engineering, Inc	NOV-1994
95% Submittal Construction Specifications Interim Corrective Measure Design at site RSA-49, RSA, AL.	Ebasco	DEC-1994
Final Environmental Assessment for Redstone Arsenal.	Foster Wheeler Corp	DEC-1994
95% Submittal System Design Analysis Interim Corrective Measure Design at site RSA-49, RSA, AL	Ebasco	DEC-1994
95% Submittal Installation and Maintenance Plan/Health and Safety Design Analysis Interim Corrective Measure Design at site RSA-49, RSA, AL	Ebasco	DEC-1994

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1994			
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	Technical Review Committee Meeting #2	RSA	DEC-1994
	95% Submittal Construction Specifications Interim Corrective Measure Design at site RSA-13, RSA, AL	Foster Wheeler Corp	DEC-1994
	95% Submittal Health and Safety Design Analysis Interim Corrective Measure Design at site RSA-13, RSA, AL	Foster Wheeler Corp	DEC-1994
	95% Submittal Installation and Operation Plan Interim Corrective Measure Design at site RSA-13, RSA, AL	Foster Wheeler Corp	DEC-1994
	95% Submittal System Design Analysis Interim Corrective Measure Design at site RSA-13, RSA, AL	Foster Wheeler Corp	DEC-1994
	Hydrogeologic and Biologic Factors Related to the Occurrence of the Alabama Cave Shrimp (Palaemonias Alabamae) Madison County, Alabama-Bulletin 161	Rheams, Moser and McGregor	DEC-1994
1995			
	Final Site Safety and Health Plan Test Well Installation at site RSA-142 (RSA-G)	Foster Wheeler	JAN-1995
	US Army Chemical Demilitarization and Remediation Activity Non-Stockpile Chemical Materiel Program Implementation Plan	Department of the Army, Office of the Project Manager for Chemical Demilitarization and Installation Restoration	JAN-1995
	Installation Action Plan	MICOM Environmental Management Office	FEB-1995
	Installation Restoration Program Management Plan	MICOM Environmental Management Office	FEB-1995
	Final RCRA Facility Investigation Report for SWMUs RSA-58, 115, 116, 129, 140, 142, Vol. I & II	Engineering Science Inc	FEB-1995
	Invitation for Bid Water Treatment System, site RSA-13 (Open Burn / Open Detonation Area).	USACE (Savannah district),	FEB-1995
	Construction of Multilayer Clay Cap at Area F, site RSA-49 (Closed Arsenic Ponds Area).	USACE (Savannah district)	FEB-1995
	Confirmatory Sampling Report MSFC Sites MSFC-4, 5, 8, 9, 10, 36, 42, 61, 63, 64, 66, 67, 78, 83, RSA, AL	CH2M HILL	MAR-1995
	Final Technical Report , Test Well Installation at site RSA-13 (Unit 2), RSA, AL	Enserch Environmental Corp	MAR-1995
	Final Work Plan "Evaluating and Disposing of Investigative Derived Wastes for all RSA sites	Vista Technologies	MAR-1995
	Site Management Plan	CH2M Hill, Inc	MAR-1995
	Final RCRA Facility Investigation Report, RCRA Facility Investigation of SWMUs RSA-99, 117, 130, Vol. I & II, RSA, AL	Ebasco	APR-1995
	Final Report - Finding of No Significant Impact and Environmental Assessment for Interim Remedial Action at site RSA-13 (Open Burn/ Open Detonation Area).	USACE (Savannah district)	APR-1995
	Final Report Finding of No Significant Impact and Environmental Assessment for Interim Remedial Action at site RSA-49 (Closed Arsenic Impoundments).	USACE (Savannah district)	APR-1995
	Decision Document for Interim Remedial Action at site RSA-13, Open Burn / Open Detonation Area, RSA	USACE (Savannah district)	APR-1995
	Decision Document for Interim Remedial Action at site	USACE (Savannah district),	APR-1995

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1995			
	RSA-49, Closed Arsenic Ponds Area, RSA		
	Final Report Site Inspection Work Plan for RSA-84, 87, 88, 89, 104, 109, 110, 118,128, 141, 142, 143, A, B, C, D, E, F at RSA, AL	RUST	MAY-1995
	Final Site Safety and Health Plan TEU/EOD Plan for RSA-5, 32, 50, 52, 57, 61, 62, 63, 65, 67, 108, 112, 113, 114	RUST	JUN-1995
	Final Phase I Remedial Investigation Work Plan for RSA-5, 32, 50, 52, 57, 61, 62, 63, 65, 67, 108, 112, 113, 114	RUST	JUN-1995
	Redstone Arsenal Investigative Derived Wastes Disposal Activity Report	Environmental Science & Engineering, Inc	JUN-1995
	Decision Document for Removal Action at site RSA-130	AMCOM,	JUN-1995
	Final Submittal Interim Corrective Measures Design at site RSA-142, Installation and Operation Plan	Foster Wheeler Corp	JUN-1995
	Draft Final Baseline Risk Assessment for sites RSA-48, 49, 54/55, 59	Environmental Science & Engineering, Inc	JUL-1995
	Natural Resources Management Plan for Redstone Arsenal, Parts I, II, III, IV, V, VI for all RSA sites	US ARMY MICOM	JUL-1995
	Health and Safety Design Analysis for Interim Corrective Measures at site RSA-142	Foster Wheeler Corp	AUG-1995
	Construction of Multilayer Clay Cap at Area F, site RSA-49, Field Sampling and Analysis Plan	Vector Enterprises, Inc	AUG-1995
	Interim Holding Facility Plan, RSA Non-Stockpile Chemical Materiel	Program Manager for Chemical Demilitarization	AUG-1995
	Non-Stockpile Chemical Materiel Program Implementation Plan	Program Manager for Chemical Demilitarization	AUG-1995
	Final Submittal Interim Corrective Measures Design at site RSA-142, Construction Specifications	Foster Wheeler Corp	OCT-1995
	Final Design Analysis Report, Interim Corrective Measure Design at site RSA-142	Foster Wheeler Corp	OCT-1995
	Natural Heritage Inventory of RSA.	Nature Conservancy, Alabama Natural Heritage Program	OCT-1995
	Technical Report for Test Well Installation at site RSA-10	Foster Wheeler Corp	NOV-1995
	Final Supplemental RI/BRA Work Plan for sites RSA-99, 117, and 130	RUST	NOV-1995
	Field Program Technical Report Test Well Installation at site RSA-142	Foster Wheeler Corp	DEC-1995
	Disposal Report Evaluation and Disposal of Investigative Derived Wastes from sites RSA-58, 115, 116, 129, and 142	Vista Technologies	DEC-1995
	Finding of No Significant Impact/Environmental Assessment for Interim Remedial Action at site RSA-142	USACE, Savannah District	DEC-1995
	Internal Draft BRA for sites RSA-10, 53, and 6	ESE	DEC-1995
	Unit 4 Groundwater Sampling and Analysis Task for RSA	Vista Technologies	DEC-1995
1996			
	RCRA Facility Investigation Addendums I and II to the RCRA Facility Investigation Work Plan for SWMUs	Engineering Science Inc	JAN-1996

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Title	Author	Date
RSA-58, 115, 116, 129, 140 (Target Seeker Area), and 142 (RSA-G). Addendum II		
Final Site Characterization Report for sites RSA-46, 47, 51, 56, 122, and 139 (Group X1)	ESE	JAN-1996
Quality Control Summary Report for sites RSA-99, RSA-117, and RSA-130	Rust E&I	FEB-1996
Redstone Arsenal Extended Pump Test at site RSA-10	ICF Kaiser	FEB-1996
Report of Findings in Support of the Proposed Plan for Mitigation of site RSA-10	Foster Wheeler	MAR-1996
Final Work Plan, Field Sampling & Chemical Data Acquisition Plan, and Site Safety & Health Plan Phase I Remedial Investigation of SWMUs at sites RSA-126 and 134	Foster Wheeler	MAR-1996
Site Safety & Health Plan for Test Well Installation at site RSA-10	ICF Kaiser	APR-1996
Final Phase I Environmental Baseline Study Redstone Rocket Engine Assembly Facility South Plant	Brown & Root Environmental	MAY-1996
Final Comprehensive Work Plan Addendum for sites RSA-8, 9, 11 (Group C1), 45 (Group L8), and 82 (Group L14)	SAIC	MAY-1996
Installation Action Plan for Redstone Arsenal	MICOM Environmental Office	MAY-1996
Redstone Arsenal, site RSA-10, Remedial Investigation Feasibility Study	USCOE, Savannah district	MAY-1996
Final Site Inspection Work Plan for sites RSA-94, 95, 96, 97, and 9	Rust E&I	JUN-1996
Environmental Resource Document, Marshall Space Flight Center	CH2M Hill	JUN-1996
Huntsville DDT Remedial Action Huntsville Spring Branch Indian Creek Long-Term Monitoring Program Annual Report No. 8	Olin	JUN-1996
Working File and Sampling Data for Building 5681	US Army	JUN-1996
Draft Final General RI/FS Work Plan for Unit 2 and Group X4B, Sites 13, 14, 53, 60, 66, 68, 132, 133	Parsons	SEP-1996
Draft Final Unit 2 Site-specific Work Plan for RSA-13, 14, 132, and 133	Parsons	SEP-1996
Draft Final Group X4B Site-specific Work Plan for RSA-53 and 60	Parsons	SEP-1996
Draft Final Group X4B(u) Site-specific Work Plan for RSA-66 and	Parsons	SEP-1996
Surface and Groundwater Monitoring 1995	Northrup Grumman	OCT-1996
Hydrogeologic Evaluation of Landfill Site RSA-010	Geological Survey of Alabama	OCT-1996
Draft Final Remedial Investigation for sites RSA-126 and 134	Foster Wheeler	OCT-1996
Site Inspection Report for Redstone Arsenal Site Inspections Project Solid Waste Management Units, sites RSA-8, 9, 11 (Group C1), site RSA-45 (Group L8), and site RSA-82 (Group L14).	SAIC	OCT-1996
Final Waste Disposition Report for Site Inspections at RSA-8, 9, 11 (Group C1), RSA-45 (Group L8), and RSA-82 (Group L14)	SAIC	NOV-1996

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1996			
	Phase I Environmental Baseline Study - Redstone Arsenal Rocket Engine Facility North Plant	CRA	NOV-1996
	Final Report Development of Groundwater Monitoring Database	DEMP	NOV-1996
	RCRA Part B Permit Submittal for the Hazardous Waste Storage Area	Vista Technologies	DEC-1996
1997			
	Draft Final Work Plan to Conduct Baseline Risk Assessment and Feasibility Study at sites RSA-58, 115, 116, 129, and 140	Parsons ES	JAN-1997
	Environmental Assessment of the Natural Resources Management Plan	US Army MICOM	JAN-1997
	Draft Final Feasibility Study for sites RSA-49 and RSA-55/54	ESE	FEB-1997
	US E.P.A. Interchange File Format (IFF) Data for Solid Waste Management Units RSA-46, 47, 51, 56, 122, and 139	ESE	FEB-1997
	Draft Final Report of MSFC Background Sampling	CH2M Hill	FEB-1997
	Installation Action Plan for Redstone Arsenal	MICOM	MAR-1997
	Final Supplemental RCRA Facility Investigation Report for site RSA-115	Parsons	MAR-1997
	Group X4B Site Characterization Report (sites RSA 53 and 60).	Parsons	MAY-1997
	Investigation Derived Waste Disposal Report. Sites 46, 47, 51, 56/122/139, 49, 14, 142, and Perimeter Wells, Redstone Arsenal, AL	IT Corp	JUN-1997
	Draft Final Installation Wide Work Plan	IT Corp	JUN-1997
	RARE North Plant Phase II EBS Sampling and Analysis Plan and Site-Specific Safety and Health Plan	CH2M Hill	JUN-1997
	Installation-Wide Sampling and Analysis Plan	IT Corp	JUN-1997
	Group X4B(u) Site Characterization Report (sites RSA-66 and RSA-68)	Parsons	JUN-1997
	Site-specific Field Sampling Plan Attachments. Sites RSA-46, 47, 51/51S, 56/122/139, 49, 14, 142, Redstone Arsenal, AL	IT Corp	JUN-1997
	Site-specific Safety and Health Plan Attachments. Sites RSA-14, 142, 51/51S, 56/122/139, 49, Redstone Arsenal, AL	IT Corp	JUN-1997
	Final Site Inspection Work Plan for sites RSA-64, 69, and 70, MSFC-2, 3, 27, 34, 53, 55, 60, 65, 74, 77, 82, and D	Rust E&I	JUL-1997
	Draft Non-Stockpile Chemical Materiel Project Implementation Plan	US Army Project Manager for Non-Stockpile Chemical Materiel	JUL-1997
	Draft Final Supplemental Remedial Investigation/Baseline Risk Assessment Report for sites RSA-99, 117, and 130	Rust E&I	AUG-1997
	Draft Final Report of Findings Phase II Environmental Baseline Survey for the Redstone Arsenal Rocket Engine Facility, South Plant	CH2M HILL	AUG-1997
	Draft Final Site-Specific Safety and Health Plan Attachment for the Time-Critical Removal Action at site	IT Corp	AUG-1997

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Title	Author	Date
1997		
RSA-130		
Draft Final Work Plan for the Time-Critical Removal Action at site RSA-130, Operable Unit 9	IT Corp	AUG-1997
Draft Final Decision Document for No Further Action at site RSA-108, Rocket Impact Area Operable Unit 16	IT Corp	AUG-1997
Draft Final Decision Document for No Further Action at site RSA-B, Abandoned Army Propellant Manufacturing Building Operable Unit 11	IT Corp	AUG-1997
Draft Final Decision Document for No Further Action at site RSA-84, Temporary Storage Area Operable Unit 10	IT Corp	AUG-1997
Draft Baseline Water Quality Monitoring Program Report, First Quarterly Event of perimeter wells.	IT Corp	AUG-1997
Draft Final Screening Remedial Investigation Report for sites RSA-5, 32, 84, 87, 88, 89, 104, 108, 118, 143, A, B, C, D, E, and F	Rust E&I	SEP-1997
Draft Final Field Sampling and Analysis Plan for OU1 (site RSA-143).	ICF Kaiser	SEP-1997
Draft Final Field Sampling and Analysis Plan for OU-6a (site MSFC-74).	ICF Kaiser	SEP-1997
Final Proposed Plan for the Interim Record of Decision at Operable Unit 6 for site RSA-55/54, Closed Sanitary and Industrial Landfill	IT Corp	OCT-1997
Final Proposed Plan for the Interim Record of Decision at Operable Unit 5 for site RSA-49, Former Arsenic Ponds North	IT Corp	OCT-1997
Final Site-Specific Work Plan and Site-Specific Field Sampling Plan for RSA Screen Remedial Investigation at Operable Unit 2, Sites RSA-D, 5, 8, and 45	SAIC	OCT-1997
Site Safety & Health Plan for RSA Site Inspection Project at OU 2, Sites RSA-D, 5, 8, and 45	SAIC	OCT-1997
Final Proposed Plan for the Interim Record of Decision at Operable Unit 6A for site RSA-10	ICF Kaiser	OCT-1997
Draft Final Feasibility Study for sites RSA-48 and RSA-59	ESE	OCT-1997
Non-Stockpile Chemical Warfare Materiel Programmatic Environmental Impact Statement	DA Program Manager for Chemical Demilitarization	OCT-1997
Finding of Suitability to Lease, RSA Rocket Engine Facility North Plant	RSA	NOV-1997
Control Monuments	PDR	DEC-1997
Biological, Geological and Hydrological Investigations in Bobcat, Matthews, and Shelta Caves and Other Selected Caves in North Alabama, Bulletin 166	McGregor, O'Neil, Rheams, Moser and Blackwood	DEC-1997
1998		
Final Bedrock Monitoring Well Installation Work Plan for site RSA-142	Rust E&I	JAN-1998
Treatability Studies Report for site RSA-142, Degreaser at Building 7664	IT Corp	JAN-1998
Treatability Studies Report for site RSA-14, Contaminated Waste Trenches	IT Corp	JAN-1998
Initial Long-Term Monitoring Report Closed Arsenic Waste Lagoons, Area F, site RSA-49	IT Corp	JAN-1998
Draft Final Phase I Remedial Investigation Report for	Rust E&I	FEB-1998

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Title	Author	Date
sites RSA-50, 52, 57, 61, 62, 63, 65, 67, 109, 110, 112, 113, 114, and 128		
Operation and Maintenance Manual for the Groundwater Recovery and Treatment System Interim Corrective Measure at site RSA-13 (Volumes I and II)	WATEC	FEB-1998
Installation Action Plan for Redstone Arsenal, Alabama	US Army Aviation and Missile Command	MAR-1998
Draft Final Site Screening Remedial Investigation Report for sites RSA-94, 95, 96, 97, and 98	Rust E&I	MAR-1998
Installation Action Plan for Redstone Arsenal	AMCOM	MAR-1998
Bedrock Monitoring Well Installation Report for OU-10. Prepared by Rust E&I, March 1998.	IT Corp	APR-1998
Draft Final Report of Findings Phase II Environmental Baseline Survey for the Redstone Arsenal Rocket Engine Facility, North Plant, OU-10	CH2M Hill	APR-1998
Architectural Assessment of the World War II Military and Civilian Works, US Army Aviation and Missile Command	Panamerican Consultants, Inc	APR-1998
US Army Aviation and Missile Command Hazardous Waste Facility Permit	ADEM,	APR-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 6	IT Corp	MAY-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 7	IT Corp	MAY-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 18	IT Corp	MAY-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 8	IT Corp	MAY-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 10	IT Corp	MAY-1998
Interim Record of Decision Closed Sanitary and Industrial Landfill, sites RSA-55/54, OU-6	IT Corp	MAY-1998
Final Groundwater Monitoring Plan for site RSA-10	ICF Kaiser	MAY-1998
Draft Final Proposed Plan for the Interim Record of Decision at site RSA-99, Former Plating Shop, Building 7614 in Operable Unit 10	IT Corp	JUN-1998
Draft Final Closure Report Time-Critical Removal Action at site RSA-130, Operable Unit 9	IT Corp	JUN-1998
Final Modified Phase I Environmental Baseline Study for the Proposed FBI Training Center	PDR	JUN-1998
RSA OU-6A, site MSFC-74, Secondary Site Investigation Report.	USCOE, Savannah District	JUN-1998
Draft Final Remedial Investigation Report for Operable Unit	IT Corp	JUL-1998
Draft Final Field Sampling and Analysis Plan for site RSA-143 (OU-1), Secondary Investigation Phase II	ICF Kaiser	AUG-1998
Final Site Safety and Health Plan Amendment 1 to the Final Site Safety and Health Plan for Site MSFC-74 for site RSA-10 (OU-6A), Long Term Groundwater Monitoring Program.	ICF Kaiser	SEP-1998
Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 5	IT Corp	SEP-1998
Draft Final Baseline Risk Assessment Report for OU-13, OU-12 (RSA-140), and OU-7 (RSA-129 and	Parsons	SEP-1998

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	Title	Author	Date
1998			
	RSA-58), Volumes 1-3		
	Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 15	IT Corp	OCT-1998
	Draft Final Site Screening Remedial Investigation Report for sites RSA-64, 69, and 70, MSFC-2, 3, 27, 34, 53, 55, 60, 65, 74, 77, and 8	Rust E&I	OCT-1998
	Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 11	IT Corp	OCT-1998
	Redstone Arsenal, OU-6A, site MSFC-74, Secondary Site Investigation Report	USCOE, Savannah district	OCT-1998
	Draft Final Installation-Wide Safety and Health Plan for Site Investigation Activities	IT Corp	DEC-1998
	Baseline Water Quality Monitoring Program Report Volume I: Groundwater and Volume II: Surface Water	IT Corp	DEC-1998
	Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 5	IT Corp	DEC-1998
	Interim Record of Decision at site RSA-99, Former Plating Shop, Building 7614, OU-10	IT Corp	DEC-1998
1999			
	Draft Final Remedial Investigation/Feasibility Report for site RSA-10 (Operable Unit-6a).	ICF Kaiser	FEB-1999
	Redstone Arsenal site RSA-10 Remedial Investigation Feasibility Study	USCOE, Savannah District	FEB-1999
	Focused Feasibility Study Former Liquid Caustic Manufacturing Plant, site RSA-117	IT Corp	MAR-1999
	Redstone Arsenal Ecological Risk Assessment for OU-6A	USCOE, Savannah District	MAR-1999
	Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 17	IT Corp	APR-1999
	Draft Final Site-Specific Field Sampling Plan Attachments for Operable Unit 12	IT Corp	APR-1999
	Final Proposed Plan for the Record of Decision for Operable Unit 3	IT Corp	APR-1999
	Draft Final Design Basis Report and Report of Construction Activities for the Interim Remedial Action (IRA) at site RSA-14, Contaminated Waste Burn Trenches	IT Corp	APR-1999
	Final Decision Document for an Interim Remedial Action Soil Vapor Extraction Treatment System for site RSA-14, Inactive Unlined Earthen Open Burn Trenches in OU-14 Open Burn/Open Demolition Area	AMCOM	APR-1999
	Draft Final Supplemental Site Investigation at sites RSA-126 and RSA-134	SAIC	APR-1999
	Real Property Master Plan Land Use Anal	Parsons	APR-1999
	Redstone OU-14 Pump & Treat System	IT Corp	APR-1999
	Final Decision Document for an Interim Remedial Action for Design and Construction of a Clay Cap for sites RSA-56 and RSA-139, Closed Arsenic Waste Lagoons	AMCOM	MAY-1999
	Huntsville/Redstone Arsenal Document Research Project.	PHR Environmental Consultants	MAY-1999
	Draft Final Summary Baseline Human Health Risk Assessment RSA-50 (Operable Unit 17)	IT Corp	JUN-1999

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	Title	Author	Date
1999			
	Results of Well Performance and Pilot Groundwater Recovery Testing, sites RSA-95 and RSA-96, Operable Unit 10	IT Corp	JUN-1999
	Decision Document Fencing and Signs for OU-8 (sites RSA-52, 61, and 62), The Inactive Munitions Demilitarization & Chemical Disposal Area	AMCOM	JUN-1999
	Decision Document Interim Remedial Action Groundwater Pump-and-Treat System for RSA-96 (OU-10), Former Degreaser Unit and TCE/TCA Solvent Still 3	AMCOM	JUN-1999
	Decision Document Interim Remedial Action Groundwater Pump-and-Treat System for RSA-95 (OU-10), Former Degreaser Unit and TCE/TCA Solvent Still 2	AMCOM	JUN-1999
	Technical Memorandum for Geophysical Surveys and Groundwater Extraction Well Installation at Operable Unit 14	IT Corp	JUL-1999
	Decision Document For an Interim Remedial Action Fencing and Signage Installation for sites RSA-112, 113, and 128 (OU-7)	AMCOM	JUL-1999
	Decision Document for No Further Action at site MSFC-60 Drainage System for the Historic Redstone Test Site in OU-18	IT Corp	AUG-1999
	Final Evaluation of Groundwater Treatment Alternatives for sites RSA-95 and RSA-96 (OU-10)	IT Corp	AUG-1999
	Draft Final Summary Baseline Human Health Risk Assessment for site RSA-67 (Operable Unit 15).	IT Corp	AUG-1999
	Final Record of Decision for site RSA-10 (Operable Unit 6A)	ICF Kaiser	AUG-1999
	Draft Final Focused Feasibility Study for OU-13 (site RSA-115/116)	Parsons	AUG-1999
	Decision Documents for Institutional Controls Using Fence and Signage for Selected Sites Within OU-2 (site RSA-48), OU-6 (sites RSA-53, 54, 55, 56, 59, 60), and OU-15 (sites RSA-65, 66, 67, 68, 69, 70, 110)	AMCOM	AUG-1999
	Final Record of Decision for Operable Unit 3. Prepared by IT Corp, September 1999.	IT Corp	SEP-1999
	Redstone Arsenal OU-10 Poster Session	IT Corp	SEP-1999
	Redstone Arsenal, site RSA-10, Long-Term Pumping Test Summary Report, June 1996 - August 1999	US COE, Savannah District	SEP-1999
	Sampling and Analysis Plan OU-14 Groundwater Extraction and Treatment System (site RSA-13) and Soil Vapor Extraction and Treatment System (site RSA-14).	IT Corp	OCT-1999
	Redstone Arsenal Independent Technical Review (ITR) Final Recommendation Report for OU-14 (site RSA-13), OU-10 (site RSA-142), OU-7 (site RSA-58), OU-15 (site RSA-68), and OU-4 (site RSA-114).	USAEC	NOV-1999
	Final Army Decision Document for OU-10, site RSA-83	EMP-IR	DEC-1999
	Final Army Decision Document for OU-10, site RSA-97	EMP-IR	DEC-1999
2000			
	Draft Final Air Emissions Inventory and Compliance Demonstration for Operational and Proposed Soil and	IT Corp	JAN-2000

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Title	Author	Date
GW Remediation Systems for sites RSA-10, 13, 14, 95, 96, 97, and 142, Revision 1		
Draft Final Site-Specific Field Sampling Plan Attachments for sites RSA-122, RSA-126 and RSA-139, OU6b	IT Corp	FEB-2000
Draft Final Supplemental Remedial Investigation for OU-14 (sites RSA-13, 14, 132, and 133)	IT Corp	MAR-2000
Installation Action Plan 2000	EPW-EQ-IR	MAR-2000
Activities Supporting Attempt to form a Restoration Advisory Board	IRP	MAR-2000
Redstone Arsenal site RSA-143 (OU-1), Technical memorandum for OU-1 Groundwater Contaminant Plume Source Delineation	USCOE, Savannah District	MAR-2000
Draft Final Supplemental Remedial Investigation Report, site RSA-46, OU 12, VOL I and II	IT Corp	APR-2000
Wheeler Permits for fence construction, quarterly monitoring and sampling	US Fish & Wildlife	APR-2000
Draft Final Site Investigation Report for OU-10, sites RSA-87, 88, 89	IT Corp	MAY-2000
Draft Final Installation Wide Work Plan for Fencing and Trench Marker Installation for OU 4-8, 15 and 17	IT Corp	MAY-2000
Land Use Control Memorandum of Agreement at RSA	EPA, ADEM, and RSA	MAY-2000
Draft Final Action Memorandum for Time Critical Removal Action at site RSA-66, OU 1	IT Corp	JUN-2000
Remedial Investigation and Baseline Risk Assessment for OU-2 (sites RSA-D, 5, 8, 45, and 48).	SAIC	JUN-2000
Alabama Risk-Based Corrective Action Plan OU-1, site RSA-143	IT Corp	JUN-2000
Proposed Plan for RSA-50, OU-17	IT Corp	JUL-2000
Environmental Restoration Summary for OU-14 (sites RSA-13, 14, 132, and 133) through August 2000	IT Corp	AUG-2000
Summary of Findings and Recommendations for Decision for the Former Stauffer Chemical Company Plant (site MSFC-55) and the Surface Drainage Ditch and Infiltration Area near Building 4241 (site MSFC-65).	IT Corp	AUG-2000
White Paper Review and Reevaluation of Human Health Risk Assessment; Results and Discussion of Target Organ Analysis and Comparison to Background, site RSA-99, Former Plating Shop, OU-10.	IT Corp	AUG-2000
Operation and Maintenance Manual Groundwater Treatment System at site RSA-13, Volumes 1 & 2	IT Corp	AUG-2000
Draft Final Site Investigation Report for OU-11, RSA-A, C, 82, 135H and 144 and the Supplemental Bedrock Groundwater Investigation	IT Corp	SEP-2000
Engineering and Construction Cost Evaluation for Treating Groundwater from site RSA-142, OU-10	IT Corp	SEP-2000
Third Report on the Remedial Action to Isolate DDT from People and the Environment in the Huntsville Spring Branch-Indian Creek System in Wheeler Reservoir, Alabama.	EPA	SEP-2000
Draft Final Installation-Wide Ordnance and Explosives Management Plan for Support of Hazardous, Toxic and	IT Corp	NOV-2000

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Title	Author	Date
Radiological Waste Activities and Construction Activities		
Soil Vapor Extraction (SVE) Operation and Monitoring Report for site RSA-14, Northern Contaminated Waste Burn Trench, January 1999 to December 31, 1999	IT Corp	NOV-2000
Draft Final Design Basis Report for a TCRA, closed South Arsenic Waste Ponds (site RSA-56) and Former Arsenic Trichloride Manufacturing and Disposal Area (site RSA-139W	IT Corp	DEC-2000
Draft Final Action Memorandum and Work Plan for a TCRA, Closed South Arsenic Waste Ponds (site RSA-56) and Former Arsenic Trichloride Manufacturing and Disposal Area (site RSA-139W).	IT Corp	DEC-2000
Draft Final Interim Remedial Action Operation and Maintenance Manual OU-10 Groundwater Recovery and Treatment System	IT Corp	DEC-2000
Long-Term Groundwater Monitoring Report for site RSA-10 - July 1999 Sampling Event	US COE, Savannah District	DEC-2000
Technical memorandum for Health Effects Assessment for Ammonium Perchlorate	IT Corp	DEC-2000

2001

Draft Final Remedial Investigation Report for site RSA-53, OU-6A	USAEC	JAN-2001
Draft Final Closure Report, Time-Critical Removal Action at site RSA-66, Inactive Ash Disposal Site, OU-15	IT Corp	JAN-2001
Final Proposed Plan Fact Sheet for the Inactive Closed Construction Debris Rubble Fill at site RSA-59, OU-6	IT Corp	JAN-2001
TVA Permit for Fence Work at OU-15	TVA	JAN-2001
Final Background Distributions of Naturally Occurring Inorganic Constituents in Groundwater. (Revised Oct 2001)	IT Corp	JAN-2001
Geophysical Investigation Plan for Sites RSA-71, RSA-72, RSA-73, and RSA-74	USCOE, Mobile District	JAN-2001
Huntsville DDT Remedial Action at Huntsville Spring Branch Indian Creek	Olin	FEB-2001
Redstone Arsenal Basic Information Maps	EPW-EQ-IR	MAR-2001
Redstone Arsenal 2001 Installation Action Plan	EPW-EQ-IR	MAR-2001
OU-5 Industrial Sewer Lines Videos	IT Corp,	MAR-2001
Air Stripper Test Summary and Recommendations for sites RSA-95, RSA-96, and RSA-142 Groundwater Treatment Plants	IT Corp,	APR-2001
CD of the posters for the Redstone Arsenal Public Information Meeting and Open House held at the Sparkman Center on May 22, 2001	IT Corp	MAY-2001
Installation-wide Karst Slide Presentation of May 22, 2001 Public Meeting	IT Corp	MAY-2001
Internal Draft Scoping Document, Sites OU-6b and 6d	Shaw	MAY-2001
Interim Remedial Action Quarterly Monitoring Report May 2000-December 2000, sites RSA-96/96 Groundwater Recovery and Treatment System	IT Corp	MAY-2001

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	Title	Author	Date
2001			
	Screening Remedial Investigation and Baseline Risk Assessment for OU-2 sites	US COE, Savannah District	MAY-2001
	Time-Critical Removal Action Construction Report for site RSA-56, Closed Arsenic Waste Ponds, and site RSA-139, Former Arsenic Trichloride Manufacturing and Disposal Area (OU-6B).	IT Corp	MAY-2001
	Final Work Plan for Groundwater Treatment Plant Modifications at site RSA-142	IT Corp	JUN-2001
	Treatability Study Quarterly Monitoring Report January 2001-March 2001, OU-10, sites RSA-95/96, Groundwater Recovery and Treatment System	IT/Shaw Corp	JUN-2001
	Treatability Study Quarterly Monitoring Report January 2001-March 2001, OU-10, site RSA-142, Groundwater Recovery and Treatment System	IT/Shaw Corp	JUL-2001
	US Army Active/Inactive Range Inventory	AMC	JUL-2001
	Draft Final Site-Specific Safety and Health Plan for the Remedial Investigation at OU-10 sites	IT Corp	JUL-2001
	Treatability Study Quarterly Monitoring Report April 2001-June 2001, OU-10, sites RSA-95/96, Groundwater Recovery and Treatment System	IT/Shaw Corp	OCT-2001
	CD of OU-10 Slide Presentation from October 23, 2001 Public Meeting	IT Corp	OCT-2001
	CD of the posters for the Redstone Arsenal (OU-10) Public Information Meeting and Open House held October 23, 2001	IT Corp	OCT-2001
	Field Sampling and Analysis Plan for site RSA-10/OU-6A Long-Term Groundwater Monitoring Program	IT Corp	OCT-2001
	Treatability Study Quarterly Monitoring Report April 2001-June 2001, OU-10, site RSA-142, Groundwater Recovery and Treatment System	IT/Shaw Corp	NOV-2001
	Technical and Business Proposal Central RSA Dye Trace Studies and Seismic Surveys, Perchlorate Treatability Study, Base-wide Spring Evaluation Continuous Surface Water and Groundwater Monitoring, and OU-10 Remedial Investigation	Shaw	DEC-2001
2002			
	Treatability Study Quarterly Monitoring Report July 2001-September 2001, OU-10, sites RSA-95/96 Groundwater Recovery and Treatment System	IT/Shaw Corp,	JAN-2002
	Final Central Redstone Arsenal (OU-5, 6, 7, 18) Dye Trace Study Field Sampling and Analysis Plan and Safety and Health Plan Addendum	Shaw	JAN-2002
	Redstone Arsenal 2002 Installation Action Plan	Engineering & Environment, Inc.	FEB-2002
	Huntsville DDT Remedial Action Huntsville Spring Branch Indian Creek Long-Term Monitoring Program Annual Report No. 14	Olin Corporation	FEB-2002
	Treatability Study Quarterly Monitoring Report July 2001-September 2001, OU-10, site RSA-142 Groundwater Recovery and Treatment System	IT/Shaw Corp	FEB-2002
	Redstone Arsenal Project Review Meeting	IT/Shaw Corp	FEB-2002
	Treatability Study Quarterly Monitoring Report October 2001-December 2001, OU-10, sites RSA-95/96,	IT/Shaw Corp	APR-2002

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	Title	Author	Date
2002			
	Groundwater Recovery and Treatment System		
	Treatability Study Quarterly Monitoring Report October 2001-December 2001, OU-10, site RSA-142, Groundwater Recovery and Treatment System	IT/Shaw Corp	APR-2002
	Redstone Arsenal Natural Resources Management Plan	RASA	MAY-2002
	Redstone Arsenal Implementation Plan, FY2002	IT/Shaw Corp	JUN-2002
	Safety Submission Volumes I & II, site RSA-14	Foster Wheeler	AUG-2002
	Closed, Transferring and Transferred Range/Site Inventory Report	Malcolm Pirnie	SEP-2002
	Site-Specific Safety and Health Plan Pre-Corrective Action Sampling Activities, site RSA-143, Underground Storage Tank Spill Site	IT/Shaw Corp	SEP-2002
	Technical and Business Proposal CERCLA Investigation	IT/Shaw Corp	SEP-2002
	Treatability Study Quarterly Monitoring Report May 2000-December 2000, OU-10, site RSA-146, Treatment Plant #2	Shaw	OCT-2002
	Final Design Basis Report for site RSA-146 Treatment Plant #2 for the Treatability Study at OU-10	Shaw	OCT-2002
	Construction Report for the RSA-146 Treatment Plant #2 for the Treatability Study at OU-10	IT Corp	OCT-2002
	Presentation Posters Redstone Arsenal Public Meeting, 23 October 2003	Shaw	OCT-2002
	Appendix C Site Safety and Health Plan Amendment	Bhate	NOV-2002
	Confirmatory Sampling of Solid Waste Management Units	Bhate	NOV-2002
	Environmental Baseline Study Southern Bypass Route	EMR	DEC-2002
2003			
	Redstone Arsenal Fact Sheet Issue 13	Shaw	FEB-2003
	Permit Application for Class V Underground Injection Control (UIC) Permit Application for Site RSA-143, OU-1	Shaw	MAR-2003
	Redstone Arsenal 2003 Installation Action Plan	Shaw	MAR-2003
	Final Exit Pathway Monitoring Well Installation Work Plan	IT Corp	APR-2003
	Final Seismic Surveys of OU-18, OU-5, OU-6, OU-7, OU-14 and Work Plan and Safety and Health Plan Addendum for Seismic Surveys at OU-5, -6, -7, -14, and -18	Shaw	APR-2003
	Redstone Arsenal World War II Resource Study	New South Associates	APR-2003
	Redstone Arsenal Environmental Site Access Control Program	US Army Garrison	MAY-2003
	Decision Document for site RSA-143, Underground Storage Tank Spill Site	DES	MAY-2003
	Final Time-Critical Removal Action Closeout Report Fencing and Trench Marker Installation, Select Sites in OU-4 through 8, 12, 15, and 17	Shaw	MAY-2003
	Final Site-wide Karst Hydrogeologic Investigation,	Shaw	JUN-2003

IRP Previous Studies

	Title	Author	Date
2003			
	Phase I Report of Findings.		
	Supporting Backup for DODIG Audit of FY02 Environmental Liabilities of Select Sites	Shaw	JUL-2003
	Redstone Arsenal Program Review		AUG-2003
	Final Site-Specific Health and Safety Plan for site RSA-122 Phase II Remedial Investigation, Dismantled Lewisite Manufacturing Plants Site	Shaw	SEP-2003
	Final Site-Specific Safety and Health Plan Attachment, Remedial Investigation at site MSFC-2	Shaw	SEP-2003
	Final Closeout Report Non-Time Critical Removal Action at site RSA-49, Cap Installation Over the Former Arsenic Ponds, OU-5	Shaw	SEP-2003
	Final Site-Specific Safety and Health Plan Supplemental Remedial Investigation at site RSA-53 and RSA-60, OU-6A	Shaw	SEP-2003
	Final Issuance of Modification No. 1 AHWMMA Hazardous Waste Storage/SWMU Corrective Action/Subpart X Permit	ADEM	SEP-2003
	Final Supplemental Information Relevant to Fact Sheet 20 for Updating the Administrative Record File for Time-Critical Removal Actions, Non-Time-Critical Removal Actions, and Treatability Studies at RSA	Shaw	OCT-2003
	Final Site-Specific Safety and Health Plan Attachment for Corrective Action Activities site RSA-143, Underground Storage Tank Spill Site	Shaw	OCT-2003
	Work-to-Date Summaries for Multiple Sites: April-June 2002, November 2002, and May-June 2003	Shaw	OCT-2003
	Presentation Posters Redstone Arsenal Public Meeting, 23 October 2003	Shaw	OCT-2003
	Final Methodology for the Comparison of Site and Background Data	Shaw	NOV-2003
	Public Health Assessment for RSA and MSFC	ATSDR	NOV-2003
	Final Site-Specific Safety and Health Plan for the Remedial Investigation at OU-10 Sites.	Shaw	DEC-2003
2004			
	Final Treatability Study Technical Work Plan for Groundwater and Soil at OU-10	Shaw	JAN-2004
	Final Base-wide Spring/Seep Sampling Plan and Health and Safety Plan Addendum	Shaw	JAN-2004
	Final Site-Specific Safety and Health Plan Supplemental Remedial Investigation at site RSA-10, OU-6A	Shaw	JAN-2004
	Final Activity Specific Safety and Health Plan, Surface Water and Sediment Background Study	Shaw	JAN-2004
	Seismic Reflection Profiling Project at OU-5, 6, 7 and 18	Shaw	JAN-2004
	Site RSA-146 Site-Specific Field Sampling Plan Attachment, Potential Source Area Investigation, Limited Site Assessments	Shaw	MAR-2004
	Geophysical Survey at the Marshall Space Flight Center, sites SA-12 and SA-13	Technos, Inc	MAR-2004
	Revision 1, Submittal of Draft Activity-Specific Safety and Health Plan and Activity-Specific Munitions and	Shaw	APR-2004

IRP Previous Studies

2004

Title	Author	Date
Explosives and Concern (MEC) and Site-Specific Safety and Health Plan Attachments, Investigation of Potential Source Areas, Limited Site Assessments		
Redstone Arsenal 2004 Installation Action Plan	RSA	APR-2004
Final Site-Specific Field Sampling Plan Pre-Corrective Action Sampling Activities, site RSA-143, UST Spill Site	Shaw,	JUN-2004
Final Supplemental Remedial Investigation Report RSA-99, Abandoned Plating Shop Tanks and Sump, OU-10	Shaw	JUL-2004
Community Relations Plan	Shaw	JUL-2004
Final Base-wide Spring/Seep Sampling Report of Findings	Shaw	JUL-2004
Final Site-Specific Field Sampling Plan Attachment, Supplemental Remedial Investigation at site RSA-10, OU-6A	Shaw	JUL-2004
Final Site-Specific Field Sampling Plan Surface Water and Sediment Background Study	Shaw	JUL-2004
Final Perchlorate Treatability Study Summary Report Prospective Treatment Alternatives for Groundwater, Soil, and Surface/Spring Water	Shaw,	JUL-2004
Final Continuous Surface Water Monitoring Report 2000-2002	Shaw	JUL-2004
NASA Site Management Plan	NASA	SEP-2004
Draft Final Technical Memorandum Limited Indoor Air and Soil Gas Sampling Investigation at MSFC.	CH2M Hill	SEP-2004
Final Record of Decision site RSA-99, Abandoned Plating Shop Tanks and Sump, Building 7614, OU-10	Shaw	SEP-2004
Site RSA-143 Free Product Recovery Report (September 2004)	DPW-EM-IR	SEP-2004
Contaminants in the Subsurface: Source Zone Assessment and Remediation	National Research Council	NOV-2004
Final site RSA-114 Safety Submission	Tetra Tech	NOV-2004

2005

SWMU Assessment Report RSA-223, RSA-224, RSA-225, RSA-226 and RSA-227.	Shaw	JAN-2005
Potential Source Area Investigation Report	Shaw	JAN-2005
Draft RSA-146 Potential Source Area Investigation Report	Shaw	JAN-2005
Second Resubmittal of the Draft FFA for RSA	RSA	FEB-2005
Draft Revision 1 RI Report for RSA-011, OU-10, Former Sewage Treatment Plant #1.	Shaw	FEB-2005
Draft Cap Effectiveness Report for RSA-049	Shaw	FEB-2005
Long Term Groundwater Monitoring Trend Analysis Report for RSA-010, OU-6A	Shaw	MAY-2005
SWMU Assessment Report RSA-228, RSA-229, RSA-230, RSA-231, RSA-232, RSA-233, RSA-235, and RSA-236.	Shaw	MAY-2005
Final Site-Specific Safety and Health Plan Attachment for RSA-143, OU-1 Free-Product Delineation.	Shaw	MAY-2005

IRP Previous Studies

2005

Title	Author	Date
Public Health Assessment for RSA and MSFC	ATSDR	JUL-2005
Draft-Final Phase II Remedial Investigation/Feasibility Study Report for RSA-057, Inactive Arsenic Waste Lagoons, East, OU-6B	Shaw	SEP-2005
Limited Site Assessments Addendum: Supplemental Assessments.	Shaw	SEP-2005
Final MSFC-074 Secondary Site Investigation Report, OU-6A	Shaw	OCT-2005
Draft-Final Remedial Investigation Report for RSA-011, OU-10 Former Sewage Treatment Plant #1.	Shaw	OCT-2005
Draft Demonstration Plan for Permeable Mulch Biowall for Anaerobic Bioremediation of Perchlorate in Groundwater at Site RSA-013 (OU-14).	Parsons	OCT-2005
Draft Site-Specific Field Sampling Plan Attachment for Supplemental RI at RSA-097, Solvent Degreaser Distiller at Bldg 7726	Shaw	NOV-2005
Draft Phase II RI Report for RSA-122, Dismantled Lewisite Manufacturing Plant Sites, OU-6B.	Shaw	NOV-2005
Draft Addendum to Site-wide Remedial Investigation/Feasibility Study Work Plan to Address Additional Sampling at OU-3 at MSFC	NASA/CH2M Hill	NOV-2005
Draft Proposed Plan for RSA-057, Inactive Waste Lagoons East, OU-6B	Shaw.	DEC-2005
Draft RI Report for RSA-087, Temporary Storage Area at Bldg 7368, OU-10	Shaw.	DEC-2005
Draft RI Report for RSA-094, Solvent Degreaser Distiller at Bldg 7625, OU-10	Shaw.	DEC-2005
Draft RI Report for RSA-088, Temporary Storage Pad at Bldg 7625, OU-10	Shaw.	DEC-2005
Report of Limited Environmental Site Assessment Huntsville Southern Bypass	MACTEC	DEC-2005

2006

Draft Site-Specific Field Sampling Plan for RI at RSA-058, Inactive Rubble Fill and Waste Pile. OU-7.	Shaw	JAN-2006
Draft RI Report for MSFC-002, Drum Disposal Area, and MSFC-087, Inactive Cyanide Lagoon, OU-18	Shaw	JAN-2006
Final Community Relations Plan	Shaw	MAR-2006
RSA-146 Perimeter Groundwater Monitoring Work Plan	Shaw	APR-2006
Final Report of Geophysical Survey to Investigate Geologic and Karst Conditions MSFC.	Technos	APR-2006
Draft Record of Decision Surface Media at RSA-057, Inactive Arsenic Waste Lagoons, East OU-6		APR-2006
Draft RSA-150, 153, 154, and 155 Potential Source Area Investigation Report	Shaw	APR-2006
Final Statement of Basis/Proposed Plan RSA-057, Inactive Arsenic Waste Lagoons-East, OU-6.	Shaw	MAY-2006
Final Phase II Remedial Investigation/Feasibility Study Report RSA-057, Inactive Arsenic Waste Lagoons, East, OU-6	Shaw	MAY-2006
Addendum to the Draft-Final Site-Specific Field Sampling Plan Attachment Phase II Remedial Investigation at RSA-183 Former Lewisite Plant 1 Lines 1 and 2, OU-5.	Shaw	JUN-2006

IRP Previous Studies

	Title	Author	Date
2006			
	Redstone Arsenal 2006 Installation Action Plan	RSA and USAEC	SEP-2006
2007			
	Video Survey of the Abandoned Industrial Sewer at RSA-183	Shaw E&I	JAN-2007
	Final Cap Effectiveness Report RSA-049, Capped Arsenic Waste Ponds - West, OU-5	Shaw E&I	MAY-2007
	Final Investigation Work Plan for RSA-229, RSA-232 and RSA-235	Shaw E&I	JUN-2007
	Final Site-Specific Field Sampling Plan for Remedial Investigation, RSA-142, Chlorinated Solvent Spill Including Buildings 7663-7665, 7676-7684 and Associated Sewer Lines, OU-10	Shaw E&I	JUN-2007
	Final Site-Specific Field Sampling Plan for Remedial Investigation, RSA-196, Test Stand and Cleaning Building, OU-10	Shaw E&I	JUN-2007
	Final Site-Specific Field Sampling Plan, Remedial Investigation, RSA-096, Solvent Degreaser Distiller at Building 7740, OU-10	Shaw E&I	JUN-2007
	Final Remedial Investigation Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment for RSA-011, Former Sewage Treatment Plant No. 1, OU-10	Shaw E&I	JUL-2007
	Final Statement of Basis/Proposed Plan for Surface Media at RSA-011, Former Sewage Plant No. 1, OU-10	Shaw E&I	JUL-2007
	Final Proposed Plan, Interim Remedial Action for Installation-Wide Groundwater	Shaw E&I	JUL-2007
	Final Focused Feasibility Study/Statement of Basis/Proposed Plan for Surface Media, RSA-049, Capped Arsenic Waste Ponds - West, OU-5	Shaw E&I	JUL-2007
	Final Removal Action Work Plan MSFC-002: Inactive Abandoned Drum Disposal Site and MSFC-087: Inactive Cyanide Lagoon, OU-18	Shaw E&I	AUG-2007
	Final Record of Decision for Surface Media at RSA-011, Former Sewage Treatment Plant No. 1, OU-10	Shaw E&I	AUG-2007
	Final Record of Decision for Surface Media at RSA-057, Inactive Arsenic Waste Lagoons - East, OU-6	Shaw E&I	AUG-2007
	Final Indoor Air Vapor Instrusion Evaluation, Supplement to the Final Phase II Remedial Investigation/Feasibility Study Report, RSA-057, Inactive Arsenic Waste Lagoons - East OU-6	Shaw E&I	AUG-2007
	Final Phase II Remedial Investigation, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment for RSA-122, Dismantled Lewisite Manufacturing Plant Sites, OU-6, Volume 1 and 2 Replacement Figures	Shaw E&I	AUG-2007
	Final Record of Decision for Surface Media at RSA-049, Capped Arsenic Waste Ponds - West, OU-5	Shaw E&I	AUG-2007
	Final Interim Record of Decision, Interim Remedial Action for Installation-Wide Groundwater	Shaw E&I	SEP-2007
	Final Record of Decision for RSA-047, Former Chemical Training Facility, OU-3	Shaw E&I	SEP-2007
	Final Remedial Investigation Report, Baseline Human Health Risk Assessment and Screening-Level	Shaw E&I	SEP-2007

IRP Previous Studies

	Title	Author	Date
2007			
	Ecological Risk Assessment for RSA-183 (Formerly Part of RSA-049), Former Lewisite Plants 1 and 2, OU-5, Volume 1 & 2 Replacement Figures		
	Final Preliminary Risk Evaluation (PRE) for RSA-223, Former Railroad Classification Yard	Shaw E&I	SEP-2007
	Closure Administrative Letter for Surface Media at RSA-223	Shaw E&I	SEP-2007
	Closure Letter and Well Abandonment Letter for RSA-232 and RSA-235	Shaw E&I	SEP-2007
	Final Site-Specific Field Sampling Plan for Remedial Investigation RSA-144, Chlorinated-Solvent Distillation Unit 6, OU-11.	Shaw	OCT-2007
2008			
	Draft Tennessee River Surface Water Sampling Plan	Shaw	JAN-2008
	Draft Remedial Investigation Report, RSA-196, Test Stand and Cleaning Building, OU-10	Shaw	JAN-2008
	Draft Site Management Plan	Shaw	JAN-2008
	Draft Remedial Investigation Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment RSA-142, Chlorinated Solvent Spill Including Buildings 7663-7665, 7676-7684 and Associated Sewer Lines OU-10.	Shaw	JAN-2008
	Draft Final Remedial Investigation RSA-097, Solvent Degreaser Distiller at Building 7726 and RSA-089, Temporary Storage Pad at Building 7726.	Shaw	JAN-2008
	Draft Remedial Investigation Report, RSA-096, Solvent Degreaser Distillation at Building 7740, OU-09.	Shaw	FEB-2008
	Final Site-Specific Field Sampling Plan Attachment for the Expanded Site Investigation MSFC-077, Former Burn Pit Area, OU-18.	Shaw	FEB-2008
	RSA-200 Stage I Data Summary and Recommendations for Stage II Investigation Activities.	Shaw	FEB-2008
	Preliminary Summary of Supplemental Remedial Investigation Findings for the RSA-138M Building 7722 Storage Pad and Sump; Building 7721 Aluminum Paste Mixer/Ferric Chloride Grinding; and Building 7724 Degreasing and Propellant Mixing Facility OU-9.	Shaw	FEB-2008
	Draft Closeout Report for the Time Critical Removal Action RSA-252: Building 5681, Former Oil Incendiary Filling Plant, OU-6.	Shaw	FEB-2008
	Final Closure Report for Non-Time Critical Removal Action at MSFC-002/087: Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18.	Shaw	FEB-2008
	Final Tennessee River Surface Water Sampling Plan.	Shaw	FEB-2008
	Final Statement of Basis/Proposed Plan for Surface Media at MSFC-002/087: Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18.	Shaw	FEB-2008
	Final Remedial Action Work Plan for RSA-057, Inactive Arsenic Waste Lagoons-East.	Shaw	MAR-2008
	Draft Focused Feasibility Study for RSA-122, Dismantled Lewisite Manufacturing Plant Sites; RSA-056, Closed Arsenic Waste Ponds and RSA-139 Former Arsenic Trichloride Manufacturing Disposal	Shaw	MAR-2008

IRP Previous Studies

2008

Title	Author	Date
Area.		
Draft Focused Feasibility Study for RSA-183, Former Lewisite Manufacturing Plants 1 and 2.	Shaw	MAR-2008
Draft Final Underground Storage Tank Corrective Action Plan RSA-143, OU-1.	Shaw	MAR-2008
Letter transmitting the Commencement of Remedial Action Activities RSA-057, Inactive Arsenic Waste Lagoons.	Shaw	MAR-2008
Letter transmitting the RSA-251 Request for No Action.	Shaw	MAR-2008
Final Statement of Basis/Proposed Plan for Surface Media MSFC-002/087: Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, Rev.1, OU-18.	Shaw	MAR-2008
Final RSA-146 Phase I Remedial Investigation Report.	Shaw	APR-2008
Final Remedial Investigation Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment for MSFC-002/087: Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18.	Shaw	APR-2008
Final Record of Decision for Surface Media at MSFC-002/087: Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, OU-18.	Shaw	MAY-2008
Final Remedial Investigation Report, Baseline Risk Assessment and Screening-Level Ecological Risk Assessment, RSA-094, Solvent Degreaser Distiller at Building 7625, OU-10.	Shaw	MAY-2008
Notification of Remedial Action Activities Schedule for RSA-057, Inactive Arsenic Waste Lagoon.	Shaw	JUN-2008
MSFC-077 Former Burn Pit Area, OU-18, Request for No Action.	US Army Garrison-Redstone	JUL-2008
Final Statement of Basis/Proposed Plan for Surface Media at RSA-094, Chlorinated Solvent Distillation Unit 1, OU-10.	Shaw	JUL-2008
Final Statement of Basis/Proposed Plan for Surface Media at RSA-196, Test Stand and Cleaning Building, OU-10.	Shaw	JUL-2008
Final Remedial Investigation Report, Baseline Risk Assessment and Screening-Level Ecological Risk Assessment, RSA-097, Solvent Degreaser Distiller at Building 7726 and Former RSA-089, Temporary Storage Pad at Building 7726.	Shaw	JUL-2008
Final Expanded Site Investigation Report MSFC-077, Former Burn Pit Area, OU-18	Shaw	AUG-2008
Request for No Further Action for RSA-229, Former PX Service Station (UST ID No. 15057-089-002590, Release No. UST-07-06-03) Redstone Arsenal.	US Army	SEP-2008
MSFC-077, Former Burn Pit Area, OU-18, Request for No Action.	Shaw	SEP-2008
Final Site Investigation Report and Preliminary Risk Evaluation for RSA-224, Former Ton Container and 55-Drum Storage Area.	Shaw	SEP-2008
Final Site Investigation Report and Preliminary Risk Evaluation for RSA-D, Former Paint Shop (Building 3546) and Storage Shed.	Shaw	SEP-2008

IRP Previous Studies

	Title	Author	Date
2008			
	Final Site Investigation Report and Preliminary Risk Evaluation for RSA-236, Former Grenade Packing & Assembly, Building 3563.	Shaw	SEP-2008
2013			
	See Appendix A to IAP- Previous Studies FY09-Feb13	Redstone Arsenal	FEB-2013

REDSTONE ARSENAL

Installation Restoration Program

Site Descriptions

Site ID: MSFC-027
Site Name: INACTIVE WASTE ACCUMULATION AREA
Alias: None

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199510	199809
RFI/CMS	200906	201510
DES	201503	201603
CMI(C)	201609	201710

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

MSFC-027 is located on approximately 24 acres, in the northern part of MSFC. When initially designated as the M-1 Waste Accumulation Area, the site was approximately 4 acres consisting of a soil, gravel, and partially asphalt-paved area surrounded by a chain-link fence. Additional historical information indicated that this general area was an above ground storage tank (AST) farm for fuel oil and ethanol which supported production of ethylene in the manufacture of mustard. With this information, the MSFC-027 boundary was enlarged to capture 11 former ASTs bringing the site to its current 24 acre size. In 1960, MSFC took control of the western portion of the site (which is within the MSFC boundary) and the eastern portion of the site (outside the MSFC boundary) in the early to mid-1960s. There is one NASA site located within the MSFC-027 site boundary (MSFC-081) and one partially within the site boundary (MSFC-083). The OU-6 NASA RI report addresses these sites and NASA assumes full responsibility.

A hazardous waste facility permit pursuant to the Alabama Hazardous Wastes Management and Minimization Act (AHWMMA) was issued Sept. 30, 2010 and Modifications No. 1, No. 2, and No. 3, dated Oct. 3, 2012, April 19, 2013, and Nov. 26, 2013, respectively. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with the Alabama Environmental Investigation and Remediation Guidance (AEIRG) and ARBCA guidelines.

RFI data for this site have been obtained from numerous investigations. Sampling targeted potential contaminant source areas identified during reviews of historical information, visual inspections, and been based on existing sample data. The MSFC-027 RFI report Revision 1, which was approved by ADEM on Aug. 25, 2014.

Arsenic, polychlorinated biphenyls (PCB) and dichlorodiphenyltrichloroethane residues associated with on-site soil piles pose an unacceptable health risk to commercial/industrial or residential receptors and may pose a threat to ecological receptors from exposure to these soils. These soils will require an RA.

A screening-level vapor intrusion evaluation showed that volatile organic compound (VOC) concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

Dye trace studies have indicated rapid transport from this site downgradient within RSA-148. Chlorinated hydrocarbons have been detected in the groundwater; however, the groundwater contamination will be addressed by NASA.

CLEANUP/EXIT STRATEGY

A CMS, statement of basis, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is excavation of soil piles. Groundwater will be addressed by NASA.

Site ID: MSFC-033A
Site Name: Surface Soils East of Bldg 4816
Alias: MSFC-033A

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201010	201012
RFI/CMS	201205	201609
CMI(C)	201606	201710
LTM	201711	204711

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

MSFC-033A is an area where soil was inadvertently relocated from a portion of site MSFC-033, which is a site included on the FFA for Marshal Space Flight Center. NASA site MSFC-033 was a waste accumulation area for the MSFC Maintenance and Supply Operations area at the Redstone Army Airfield Buildings 4815, 4816, and 4817. The unit was an approximately 3 foot by 16 foot concrete apron adjacent to Building 4815. Waste handled included waste mineral spirits and lube oil, waste sand blast residue and waste JP-4 fuel. Wastes were collected and transferred to the MSFC Hazardous Waste Storage Facility before off-site disposal. MSFC-033 is no longer present and has been covered by an addition to Building 4815. During the construction of this building addition in 2011, soils from MSFC-033 were relocated immediately adjacent to the eastern wall of the addition, which resulted in the creation of Army site MSFC-033A. MSFC-033A is located on the east side of Building 4815 which is adjacent to the Redstone Army Airfield runway.

To evaluate the nature and extent of potential contaminants at MSFC-033A, surface soil and subsurface soil samples were collected and PAH compounds were identified as exceeding soil screening levels. This area was identified as a new RCRA solid waste management unit (SWMU) in December 2010 as requested by ADEM. The fieldwork has been completed and the RFI Report, Rev 0 is under review.

CLEANUP/EXIT STRATEGY

The RFI, CMS, statement of basis, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs to prevent digging or excavation under the existing Building 4815 and the adjacent concrete generator/AC pad and no further action for groundwater.

Site ID: MSFC-034
Site Name: FORMER CHEMICAL PRODUCTION AREA
Alias: None

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198910	199009
CS	199510	199909
RFI/CMS	200906	201804
DES	201703	201807
CMI(C)	201901	202006
CMI(O)	202006	202506
LTM	202506	205506

RIP Date: 202006

RC Date: 202506

SITE DESCRIPTION

Site MSFC-034 is located on approximately 54 acres, in the northern part of MSFC. This site includes all plants associated with WWII HAS mustard production and filling facilities, not just the 4481 sump (as previous listed). There are 24 USTs (16 ethanol and eight fuel oil) associated with the production and filling facilities believed to still be in place at the site. Mustard scrubbing and decontamination facilities and potential PCBs from transformers are additional areas of concern. Sampling indicates subsurface soils and groundwater have been impacted with chemical agents and their degradation products, VOCs (carbon tetrachloride), and PAHs. The exact source of the release is unknown, but may be related to industrial sewer lines or fluid storage tanks. In 1959, MSFC took control of these buildings. There are five NASA sites located within the MSFC-034 site boundary including the industrial sewer system. The superstructures of buildings 4471 and 4481 were sampled for mustard in 2012 with no detections. The buildings were demolished leaving their foundations and floor slabs.

A Phase I and Phase II RFI work plan were finalized and executed in 2013 for hazardous and toxic waste (HTW).

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy is electrical resistance heating (ERH), monitored natural attenuation (MNA) and LUCs. Groundwater will be addressed under this site.

Site ID: PBCatRedstone
Site Name: FY05 PBC
Alias: FY05 PBC

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Phases	Start	End
RFA	200412	200503
RFI/CMS	200412	201809
LTM	201810	204809

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

This site is used to track the funding of performance-based acquisitions (PBA); engineering, munitions and explosives of concern (MEC), and CWM support; and Logistics Support for non-IM IR sites. A separate site, RSA-234, is used to track support related to suspect MEC and CWM located on non-IM MR sites. Support for IM sites is included separately in the cost-to-compete (CTC) for the individual IM sites. Agency support is provided through the US Army Corps of Engineers Savannah District and the Hazardous, Toxic and Radioactive Waste (HTRW) Center of Expertise; US Army Engineering and Support Center, Huntsville; ECBC; CARA; and IEOC.

The PMC was awarded in FY09 and includes several task orders to complete program management and remediation services at RSA. The contract is set to expire at the end of FY20. A contract was awarded in FY05, but was completed in FY15.

FY09 PMC Task Order 0001 included achieving an approved DD, remedy-in-place (RIP), or response complete (RC) at 119 sites, and to perform LTM/RAO at two additional sites. The program management tasks described in the basic contract was also included in Task Order 0001. The period of performance for this task order ended in FY14.

Task Order 0002 was funded in FY11 to achieve an approved DD, RIP, or LTM for six RSA sites.

Task Order 0003 of the PMC includes installation-wide groundwater monitoring for FY12-FY15 as well as site-specific monitoring at RSA-049 and RSA-057 during CMI-O [RA(O)].

Task Order 0004 was funded in FY12 to complete RFIs at 31 sites not previously under contract.

Task Order 0005 was funded in FY12 to achieve RIP at one site and complete a RFI at one site not previously under contract.

Task Order 0006 was funded in FY12 to complete RFIs at 30 sites previously in Task Order 1 and complete a RFI at one site not previously under contract.

Task Order 0007 was funded in FY12 to complete IM at five sites (MSFC-003-R-01, MSFC-035, RSA-112, RSA-113, and RSA-114).

Task Order 0008 was funded in FY12 to complete RFIs at 14 sites and achieve RIP/RC at 14 sites which were previously in Task Order 0001.

Task Order 0009 was funded in FY13 to perform LTM at 12 sites that were on previous contracts.

Task Order 0010 was funded in FY12 to complete Phase II IM work plans at three sites which were previously in Task Order 0001.

Task Order 0011 was funded in FY13 to complete Phase II IM work plans at three sites which were previously in Task Order 0001.

Site ID: PBCatRedstone
Site Name: FY05 PBC
Alias: FY05 PBC

Task Order 0012 was funded in FY13 to perform RFIs at eight groundwater sites that were on previous contracts.

Task Order 0013 was funded in FY13 to perform RFIs at 11 sites that were not previously under contract in an existing task order to this contract.

Task Order 0014 is projected to be awarded in FY15 to obtain RIP/RC at 13 sites that were previously under contract in an existing task order to this contract.

Task Order 0015 is projected to be awarded in FY15 to obtain RIP/RC at 22 sites that were previously under contract in an existing task order to this contract.

CLEANUP/EXIT STRATEGY

There are two distinct PBAs associated with this AEDB-R site: FY05 PBA and FY09 PBA.

Please see the individual sites for contract affiliation, cleanup strategies, media of concern, and COC.

Site ID: RSA-005
Site Name: INACTIVE WASTE ACCUMULATION AREA
Alias: OU-02

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	198903	198904
CS	199510	199609
RFI/CMS	200909	201503
DES	200909	201510
CMI(C)	200909	201704

RIP Date: N/A

RC Date: 201704

SITE DESCRIPTION

RSA-005 is a former 0.2-acre waste accumulation area in the northeast portion of RSA, west of Patton Road and north of Neal Road. Two buildings are currently present on the north portion of the site. Building 3630 is approximately 12 ft by 11 ft and is used for paint storage, and a temporary unnumbered building approximately 10 ft by 8 ft is used for storage of industrial oils which are in the process of being moved to Building 3630. Just east of the site boundary is RSA-287, which encompasses Building 3634 (vehicle maintenance and formerly a component storage warehouse) and RSA-006, which was a paint spray booth in the southern portion of Building 3634. Concentrations of lead were detected in soil exceeding action levels. For a period of approximately 10 years, drums were stored on the ground surface in a 25 sf earthen unlined area next to Building 3630. These drums contained lube oils, paints, thinners, used oil filters, used antifreeze, and shop rags that were generated during maintenance operations at the motor pool. Drums are no longer stored at this site.

A hazardous waste facility permit was issued on Sept. 30, 2010 pursuant to AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The RFI report was approved by ADEM on July 30, 2014 and required the development of the CMIP for the surface media. The groundwater received an NFA.

CLEANUP/EXIT STRATEGY

A CMS, DD, permit modification, DES, and CMI(C) will be completed. It is anticipated that a corrective measure of soil excavation and disposal will be required for surface media. No further action will be required for groundwater.

Site ID: RSA-010
Site Name: CLOSED UNLINED SANITARY LANDFILL
Alias: None

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	199310	201703
DES	201701	201801
CMI(C)	201807	201911
CMI(O)	201911	204911

RIP Date: 201911

RC Date: 204911

SITE DESCRIPTION

RSA-010 is a closed unlined sanitary landfill comprising 66 acres in the central portion of RSA. This inactive, closed landfill was constructed in 1973 and used for disposal of household, administrative and industrial waste including waste lube oil, fuel oil sludge in the northern portion and sewage treatment grease trap solids, household waste, paper products, hospital infectious waste, construction debris, asbestos, and ash from incinerated paper in the closed sanitary trenches in the southern and remaining portions of the site. Wastes were stored in trenches that were later covered with a thin layer of soil. The currently closed RSA-107 DDT Waste Soils Landfill was part of the original 68.5 acres at the northwest corner of RSA-010 before becoming a RCRA SWMU in 1978. A 43.4-acre construction and demolition landfill (ADEM Permit No. 45-03) is currently operational at the site within the closed sanitary landfill site boundary. The sanitary landfill was closed in 1992. The chemicals of potential concern previously detected in soils during past investigations at RSA-010 included VOCs, metals, SVOCs and low-level polynuclear aromatic hydrocarbons, especially in the waste oil pit area, low level pesticides, and a PCB hit. Impact to groundwater consisted primarily of VOCs, primarily trichloroethylene (TCE) and its breakdown products.

RFI data for this site were obtained from numerous investigations since 1988; however, RFI data collection currently underway addresses the previous older data no longer viable under ADEM approval criteria. Recent and planned sampling target potential contaminant source areas and previously identified data gaps. RFI fieldwork is in progress at RSA-010, and the Rev 0 RFI report is underway.

RSA-010 is located in an extreme downgradient position relative to a number of known upgradient source areas. Groundwater at RSA-010 is contaminated with VOCs consistent with these known source areas. The delineation of these upgradient sites and their relative contribution to the plumes observed at RSA-010 is a critical component with regard to remedial decision making at this site.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) will be completed and LTM initiated. The anticipated remedy is excavation of waste material that is present in the saturated zone, consolidation and capping of these wastes, long-term monitoring of groundwater and cap effectiveness and LUCs.

Site ID: RSA-013
Site Name: UNLINED INACTIVE OPEN BURN PADS
Alias: OBOD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199109
RFI/CMS	200910	201702
DES	201609	201801
CMI(C)	201807	201908
LTM	201908	204908

RIP Date: N/A

RC Date: 201908

SITE DESCRIPTION

RSA-013 is located on TVA property that RSA has an MOA to use and within an operational range. TVA has to approve all plans for this site. RSA-013 covers an approximate 5 acres, and is located near the southwest corner of RSA, south of McAlpine Road, and northeast of the Tennessee River. The site consists of an open burn area where chlorinated solvents, solvent-contaminated materials, waste rocket motor propellant, and scrap metal were incinerated on the ground surface. The resulting ash was disposed of at the RSA-014 ash field, and RSA-066. The flashed metal was salvaged. The site also includes the former RSA-132 popping furnace area and the former RSA-133 rocket motor washout rack and sump area. A groundwater pump-and-treat system was operated from 1997-2000 for VOC contamination. High levels of perchlorate have been detected in the groundwater. unexploded ordnance (UXO) is potentially present at the site. (RSA-013-R-01 has been opened but is listed as RC because this site is on an active range.)

RFI data for this site were obtained from numerous investigations. Phase II RFI fieldwork was completed. Preliminary results indicate elevated concentrations of VOCs, nitroaromatics, and perchlorate present in soil which likely will pose a human health risk and/or a threat of leaching to groundwater and are expected to require an action.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is soil removal with off-site disposal and LUCs. Groundwater will be addressed under RSA-151.

Site ID: RSA-014
Site Name: UNLINED INACTIVE BURN TRENCHES
Alias: OBOD

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199109
RFI/CMS	200906	201702
DES	201609	201802
CMI(C)	201808	201912
LTM	201912	204912

RIP Date: N/A

RC Date: 201912

SITE DESCRIPTION

RSA-014 is located in the southwest corner of RSA, south of McAlpine Road, northeast of the Tennessee River. RSA-014 consists of two noncontiguous parcels identified as RSA-014 North and RSA-014 South. RSA-014 North was added to the RSA-014 footprint based on PSA recommendations. RSA-014 South is located just outside and adjacent to TVA property, and is approximately 9.8 acres in size. Two open trenches, 150 to 200 ft long, 35 ft wide, and about 6 to 12 ft deep, were used to incinerate solid materials contaminated with rocket propellant, waste solvents, and solvent-contaminated materials. A soil vapor extraction (SVE) system was operated from 1999 to 2000 for VOC contamination. Maximum TCE concentrations of 6,250 milligrams per kilogram (mg/kg) were in the soils beneath the northern trench. The southern trench soil sample indicated the presence of TCE, but in lower concentrations. Evidence exists that chemical munitions were disposed of at this site. 1,4-Dithiane and oxathiane have been detected in soil samples collected from the site. These contaminants have not been addressed in soils to date. UXO is present at the site. (RSA-014-R-01 has been opened but is listed as RC because this site is on an active range.) RSA-014 North is located north of the burn trenches and reportedly was used as a disposal area for beryllium and small quantities of laboratory and production waste. It is 9.7 acres in size. Perchlorate and metals were detected in subsurface soils at RSA-14 North.

RFI data for this site were obtained from numerous investigations. Phase II RFI fieldwork is presently underway. Preliminary results indicate that elevated concentrations of VOCs, nitroaromatics, and perchlorate are present in soil which likely will pose a human health risk and/or a threat of leaching to groundwater and are expected to require an action.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is soil excavation with off-site disposal, ERH, and LUCs. Groundwater will be addressed under RSA-151.

Site ID: RSA-032
Site Name: INACTIVE SCRAP METAL STORAGE AREA
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB), Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199510	199709
RFI/CMS	200906	201608
DES	201606	201710
CMI(C)	201804	201905

RIP Date: N/A

RC Date: 201905

SITE DESCRIPTION

RSA-032 is located on 36 acres east of Shields Road and south of Buxton Road. The site is currently cleared in the center, with a gravel base and it is fenced and locked. Approximately 14 percent of the site is covered in wetlands, primarily in the northern and southern portions of the site. The site is located within the former GCWD with waste staging beginning in the 1940s. The site was later used beginning in the 1960s for waste and material storage. Within RSA-032 is MSFC-026 which was a hazardous waste storage area operated by NASA. Localized areas of soil impact by VOCs and PAHs/PCBs have been identified exceeding action levels. A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI.

The Rev 0 RFI report is underway and recommends a soil action. The groundwater for this site is being addressed under site RSA-146.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil excavation. Groundwater will be addressed under RSA-152.

Site ID: RSA-045
Site Name: SMOKE MUNITIONS PLANT 3
Alias: PA3

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198910	199009
CS	199510	199909
RFI/CMS	200906	201605
DES	201610	201802
CMI(C)	201808	201912

RIP Date: N/A

RC Date: 201912

SITE DESCRIPTION

Site RSA-045 is located east of Patton Road and north of Martin Road, in the north central parcel of RSA. RSA-045 is approximately 38.5 acres in size. Historical information indicates the site was used as an adamsite and tear gas filling plant. The site has been renamed "Smoke Munitions Plant 3" and was subsequently used through the 1950s as smoke munitions filling (SMF) Line 3.

The majority of the buildings at RSA-045 were constructed in the 1940s and 1950s to initially support munition and later fuse modification activities. Former operations consisted of tear gas munitions production from December 1943 to May 1944. The plant was used for filling grenades with chloroacetophenone (CN) (tear gas) and adamsite (DM) (vomit gas) mixed with CN. CN/DM agents were not manufactured at RSA; they were brought in by rail and filled in grenades, mortars [4.2-inch and 81-millimeter (mm)] and shells (155-mm) at the plant. M-7 CN grenades and M-6 CN-DM grenades were produced at this plant. Additionally, the M-1 fuse was manufactured at SMF 3. In the 1950s, following the use of the facility for munitions production, several buildings at RSA-045 may have been used for fuse modifications for 4.2-inch and 81-mm mortars and 155-mm shells.

RFI data for this site were obtained from numerous investigations beginning in 1990. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. Based on site size and usage, four discrete units were identified and evaluated (e.g., N&E, human health risk). The RFI fieldwork is completed at RSA-045, and the Rev 0 RFI report was submitted to ADEM on Jan. 31, 2014. ADEM comments request additional delineation of groundwater. The Rev 1 RFI Report is scheduled to be submitted to ADEM on May 14, 2015.

Data indicate that a historical release of pesticides and PAHs has occurred in relation to three of the four areas, but the lateral and vertical extent of contamination has been defined.

Three types of pesticides and one PAH in soils require additional action before the Northern Area can be released for residential use.

Several types of PAHs in soils require additional action before the Soil Fill Area or the Operations Area can be released for residential use.

A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater are unlikely to pose an unacceptable health threat to occupants of future buildings.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil excavation with off-site disposal. Groundwater will be addressed under RSA-145.

Site ID: RSA-048
Site Name: INACTIVE CLOSED SANITARY LANDFILL
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199509
RFI/CMS	200509	201111
DES	201212	201707
CMI(C)	201801	201907
LTM	201907	204907

RIP Date: N/A

RC Date: 201907

SITE DESCRIPTION

RSA-048 is located north of the old railroad bed, east of Patton Road, west of McDonald Creek, and north of Martin Road in the northeast portion of RSA. This disposal area is approximately 4.5 acres and fenced. It was active from 1947 through the early 1950s and received construction rubble. Limited previous sampling indicates the presence of industrial waste constituents. The nature and extent of these waste materials is unknown. The disposal area was not capped, but has a thin layer of soil covering the waste piles/trenches. Low levels of semi-volatile organic compounds (SVOC), lead and chromium have been confirmed in the soil. Environmental concerns are driven by the potential of contaminant release from the disposal of sanitary waste in the wetland. The RCRA Corrective Measures Plan was issued in September 2012. A subsequent comment letter from ADEM indicated that active remedy would be required to remediate the site. A Rev 2 CMIP work plan was submitted in May 2014 and comments requiring more characterization were received from ADEM in December 2014.

CLEANUP/EXIT STRATEGY

A DD, DES, CMI(C) will be completed and and LTM initiated. The anticipated remedy is excavation with on-site disposal and capping with LUCs and groundwater monitoring. Groundwater will be addressed under this site.

Site ID: RSA-049
Site Name: CAPPED ARSENIC WASTE LAGOONS-WEST
Alias: HA1

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles (SVOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199010	199609
RFI/CMS	199610	200709
CMI(C)	200710	200809
LTM	200810	204508

RIP Date: N/A

RC Date: 200809

SITE DESCRIPTION

RSA-049 is located south of Neal Road at the Toftoy Thruway intersection. It is approximately 12.5 acres and consists of three closed and capped unlined industrial waste lagoons used during the early-1940s for the disposal of arsenic-contaminated waste generated from lewisite manufacturing operations.

In 1999, an engineered cap with an impermeable liner was designed and constructed over the lagoon. The focused FS/statement of basis/proposed plan (PP) was finalized in July 2007. In September 2007, the Final Record of Decision (ROD) was signed, which identified adoption of the engineered cap, LUCs, and long-term monitoring as the final remedy for the site.

CLEANUP/EXIT STRATEGY

LUCs are necessary for the site. The CTC includes five-year reviews, cap and fence maintenance, and LUCs.

Site ID: RSA-050
Site Name: INACTIVE MUNITIONS DEMIL & DISPOSAL AREA
Alias: None

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC), White Phosphorous

Media of Concern: Soil, Surface Water

Phases	Start	End
RFA	198910	199004
CS	199005	199009
RFI/CMS	199510	201705
DES	201612	201712
CMI(C)	201806	201911

RIP Date: N/A

RC Date: 201911

SITE DESCRIPTION

RSA-050 is an inactive 18-acre munitions demilitarization and disposal site located in the western portion of RSA, south of Martin Road within the safety arc for Test Area 6. The site was active in the 1940s and 1950s for the demilitarization of high explosives, white phosphorus, and mustard gas, and potentially for mustard burial. All but 1-acre of the site lies within RSA-074 (High Explosive Impact Test Site, Area D) and is immediately south of RSA-254 (range 1 Bombing Targets).

A draft final RI was submitted in 1998 for the site. A final PP recommending no action for RSA-050 was submitted in July 2000 followed by preparation of an IROD. The final IROD was prepared and submitted for USEPA signature in February 2001. USEPA noted concerns about the adequacy of the site characterization effort in their final review of the IROD. In September 2001 the Army rescinded the IROD and agreed to pursue further investigation at the site. A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to AHWMMA, requiring an RFI be completed for the site.

The RFI work plan is being revised to incorporate ADEM comments on the geophysical data collection quality control.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is excavation of soil piles. Groundwater will be addressed under RSA-150.

Site ID: RSA-053
Site Name: INACTIVE SANITARY & INDUSTRIAL LANDFILL
Alias: DDT

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	200501	201107
DES	200906	201304
CMI(C)	200906	201605
LTM	201606	204606

RIP Date: N/A

RC Date: 201605

SITE DESCRIPTION

RSA-053 is a closed unlined landfill located near the geographical center of RSA, east of RSA-010, north of Huntsville Spring Branch, west of Patton Road, and south of Mills Road. The site is bounded by the Wheeler Wildlife Refuge to the south. The landfill is approximately 41 acres and is comprised of trenches and pits that were used to dispose of industrial and sanitary wastes. It was active from 1963 to 1973 and received household, administrative, sanitary, and industrial wastes. In the northern area of the site are several inactive waste oil pits and a suspected pesticide burial pit. An approximately 2ft-thick soil layer covers the refuse in most of the trenches. The site fencing was completed in 2001. Soil and groundwater contamination includes VOCs (primarily chlorobenzene), SVOCs, metals, and residual pesticides. The bulk of the contamination is due to former DDT manufacturing processes. The original RSA-053 southern site boundary was included in the DDT Migration Abatement Program conducted from 1977 to 1982. Pesticides were excavated from the site and placed in disposal cells at RSA-107. It appears that the southern portions of the trenches may be inundated by groundwater on a seasonal basis. The site has been broken down into three different study areas: northern disposal area, trenches, and the remaining area within site boundaries. The final RI report was approved by ADEM on Aug.14, 2009.

The CMIP was approved by ADEM on Sept. 20, 2012. The CMS(C) included ERH, and the excavation of waste in water. The excavated waste was placed in the northern disposal area and completed with a low permeability RCRA subtitle D landfill cover. The corrective measures report is being prepared.

CLEANUP/EXIT STRATEGY

A CMI(C) will be completed and LTM initiated. Groundwater will be addressed under RSA-148.

Site ID: RSA-054
Site Name: INACTIVE SANITARY & INDUSTRIAL LANDFILL
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: LOW

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

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	200509	201111
DES	200509	201304
CMI(C)	200509	201612
CMI(O)	201502	204602

RIP Date: 201612

RC Date: 204602

SITE DESCRIPTION

RSA-54/55 is a single landfill comprising 45 acres in the central portion of RSA. This inactive, closed landfill was used during the 1960s and 1970s for disposal of household, administrative and industrial waste. Wastes were disposed of in trenches that were later covered with a thin layer of soil. Wastes containing DDT were buried at various locations in the landfill between 1968 and 1973. These wastes were later excavated and moved to the DDT Waste Soils Landfill at RSA-107. The site was fenced in 2001.

Pesticides were detected in the soil and chlorobenzene was detected in the groundwater.

Since RSA-054 and 055 are made up of one landfill which will be funded under RSA-054. RSA-055 will be considered RC in AEDB-R.

During the RI scoping, the team agreed that the previous RFI, human health and ecological risk assessments had satisfied the requirements of an RI report and that the next document produced would be an FS. The final FS was completed in 2010. ADEM issued an administrative letter in December 2010 indicating that a corrective measures implementation work plan should be produced. The corrective measures implementation work plan was completed and fieldwork began in 2013. Waste was excavated from underneath Fowler Road and from the portion of the landfill south of Fowler Road. This waste was consolidated with the landfill north of Fowler Road and capped. The corrective measures were completed in July 2014. The final remedy supports future land use for the north area for parking and greenspace. The excavated south area supports future facility expansion, which may include expansion of the Prototype Integration Facility. The Rev 0 CMI closure report has been submitted to ADEM.

CLEANUP/EXIT STRATEGY

The closure report will be completed. LTM will be conducted long term. LTM consists of cap maintenance, groundwater monitoring, and administration of LUCs.

Site ID: RSA-056
Site Name: CAPPED ARSENIC WASTE PONDS-SOUTH
Alias: HA2

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	200509	200909
IRA	199506	200102
CMI(C)	201707	201808
LTM	201808	204808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

RSA-056 is a 4.5-acre area, located in the east-central part of the arsenal, north of Viper Road, west of Meteorology Road, and east of Calibration Road. It was an open, unlined surface impoundment that received arsenic-contaminated industrial waste sludge and wastewater from lewisite manufacturing activities in the early-1940s. In the 1960s, the lagoons received demo debris from the lewisite manufacturing facilities. Due to a Notice of Violation issued in 1992 from ADEM for high levels of arsenic in a bordering stream, a 4.5-acre area was capped with compacted clay in 1995. The RFI report was completed in 1996. High levels of arsenic were found in the soils and sediment. The site was fenced and the soil (clay) cap was extended in 2001 to cover the entire contaminated area. A combined FS for RSA-056, RSA-122, and RSA-139 was completed in 2009. The ROD was signed in September 2009. The final RA work plan (RAWP) was initially submitted in July 2010. A hazardous waste facility permit was issued Sept. 30, 2010.

Due to an issue with the Alabama Uniform Environmental Covenant Act (AUECA), ADEM did not approve the final RAWP. Revisions to the RAWP were submitted in January 2011, July 2011, January 2012 and June 2012 to address ADEM comments. At this point ADEM requested that the RAWP be converted into a CMIP. The CMIP was submitted in December 2013. A revision to the CMIP was submitted in November 2014 to address ADEM comments. Comment resolution is underway.

CLEANUP/EXIT STRATEGY

A CMIP/, DES, CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-146.

Site ID: RSA-057
Site Name: INACTIVE ARSENIC WASTE LAGOON-EAST
Alias: HA2

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	198910	199004
CS	199005	199509
RFI/CMS	200301	200709
CMI(C)	200705	200802
CMI(O)	200802	201302
LTM	201302	204602

RIP Date: 200802

RC Date: 201302

SITE DESCRIPTION

RSA-057 is an 8 acre site, located in the east-central part of the arsenal, west of Patton Road and south of Martin Road and was designed as a surface impoundment, but was also used as a former lewisite production waste disposal area. Lewisite raw materials were disposed of at an acetylene sludge lagoon (currently bermed on three sides) and in a smaller arsenic sludge lagoon to the northwest. Low levels of arsenic and VOCs were detected in the groundwater. Based on site operational history it is believed that the VOCs originate from other areas such as RSA-122.

Arsenic and mercury are the primary contaminants in the soil.

In May 2006 the RI/FS and the PP were finalized. In September 2007, the final ROD was signed, which specified excavation and off-site disposal, followed by LUCs as the remedy for the site. The RA fieldwork was completed in 2008.

In 2014, a request to remove the groundwater monitoring portion of the LTM was accepted by ADEM. The LUCs for industrial use only remain in effect.

CLEANUP/EXIT STRATEGY

An RA, which included excavation and off-site disposal of soils, was completed in 2008. LUC inspections and reporting are necessary for an indefinite period.

Site ID: RSA-058

Site Name: INACTIVE CLOSED RUBBLE FILL & WASTE PILE

Alias: DDT

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199010	199409
RFI/CMS	200601	201112
DES	201205	201503
CMI(C)	201205	201606
LTM	201608	204608

RIP Date: N/A

RC Date: 201606

SITE DESCRIPTION

RSA-058 is approximately 34 acres and is located east of Patton Road. McDonald Creek and Huntsville Spring Branch border it on the east and south, respectively. This landfill received incineration ash from demilitarization operations, rubble (e.g., concrete blocks and slabs, tires, 55-gallon drums, five-gallon cans, metal debris), damaged PCB transformers and building materials from a nearby Olin DDT manufacturing site. The site was fenced in 2001. Surface water and groundwater from this site drain into the Wheeler Wildlife Refuge. Both Huntsville Spring Branch and McDonald Creek are main drainage channels for the city of Huntsville. Pesticides, SVOCs, VOCs, metals and explosives were found in the soil and sediments. All RI fieldwork has been completed. A draft RI report was submitted in September 2007.

A hazardous waste facility permit was issued on Sept. 30, 2010 pursuant to the AHWMMA re-classifying the site under the RCRA program. An FS was prepared recommending excavation and off-site disposal of contaminated soil in conjunction with LUCs as the preferred remedy. A Rev 2 CMIP (equivalent to the DES) was submitted to the ADEM on Nov. 14, 2014. The groundwater is being address under the groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

A DD, DES, and CMIP will be completed and LTM initiated. The anticipated remedy is excavation of approximately 10,000 cubic yards (cy) and off-site disposal of contaminated soil and implementation of LUCs (consisting of an environmental use restriction and fish monitoring to determine when they are safe to eat). Groundwater will be addressed under RSA-145.

Site ID: RSA-059

Site Name: INACTIVE CLOSED CONSTRUCTION RUBBLE FILL

Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	200509	201111
DES	201211	201707
CMI(C)	201801	201907
LTM	201907	204907

RIP Date: N/A

RC Date: 201907

SITE DESCRIPTION

RSA-059 is located in the central portion of RSA, south of Mills Road, and west of Patton Road. It is bounded on the north, east, and south sides by wetlands. RSA-59 is a closed unlined landfill previously used for disposal of rubble, construction debris (primarily railroad ties), sanitary and industrial waste. It was intermittently active from the late-1940s to the mid-1970s. Originally, the site was a fill borrow area for early construction activities. A thin layer of soil covers the landfill waste and the site is well vegetated with grasses, small trees, and brush. The site has not been capped and no remediation has occurred. During recent investigations, the size was determined to be greater than the original 12 acres, but the entire landfill has not been delineated. The site was partially fenced in 2001. The southeastern boundary could not be fenced due to wetland nature of lower area. Low concentrations of VOCs were detected in groundwater, and a coal disposal area (likely source of PAHs) was discovered.

The RCRA corrective measures plan was issued in September 2012. A subsequent comment letter from ADEM indicated that active remedy would be required to remediate the site. A Rev 2 CMIP work plan was submitted in May 2014 and comments were received from ADEM in December 2014 requiring additional characterization.

CLEANUP/EXIT STRATEGY

A DD, DES, CMI(C) will be completed and LTM initiated. The anticipated remedy is excavation with on-site disposal and capping with LUCs and groundwater monitoring. Groundwater will be addressed under this site.

Site ID: RSA-060
Site Name: INACTIVE SANITARY & INDUSTRIAL LANDFILL
Alias: DDT

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Metals, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199309
RFI/CMS	200601	201508
DES	201205	201511
CMI(C)	201205	201705
LTM	201705	204712

RIP Date: N/A

RC Date: 201705

SITE DESCRIPTION

RSA-060 is a closed unlined landfill located near the geographic center of RSA, southeast of RSA-053, north of the Huntsville Spring Branch, and south of Mills Road. It is downgradient of the former Olin pesticide manufacturing plant. A large portion of the site is within the Wheeler National Wildlife Refuge. The landfill is approximately 22 acres. This site consists of several covered disposal unlined trenches, running northeast-southwest, which were used for sanitary and industrial waste disposal. Pesticides (off-spec products from the Olin manufacturing facility) were also buried throughout the site.

Soil is contaminated with VOCs (primarily chlorobenzene), SVOCs , metals and pesticides including dichlorodiphenyldichloroethane, dichlorodiphenyldichloroethylene and DDT. These same pesticides are also present in sediments.

The final RI was completed in June 2009. A hazardous waste facility permit was issued on Sept. 30, 2010 pursuant to AHWMMA. Table VI.6 of the permit stipulates that this site complete a CMIP.

The CMS is being completed and the CMIP is in progress.

CLEANUP/EXIT STRATEGY

A CMS, DD, DES, permit modification, and CMI(C) will be completed and LTM initiated. The CMI(C) will likely involve excavation, consolidation, capping of waste and LUCs. Groundwater will be addressed under RSA-148.

Site ID: RSA-065
Site Name: FORMER CHEMICAL DRUM STORAGE AREA
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Other (CWM)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199510	199709
RFI/CMS	201012	201610
CMI(C)	201610	201710
LTM	201710	204710

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

RSA-065 is located in the southern part of the Arsenal south of Buxton Road within the floodplain of the Tennessee River and is located within an operational range. RSA-065 is a 147-acre, fenced area used for above ground drum storage for chemical warfare agents, including lewisite and mustard gas during the 1940s and 1950s. The chemical materials were shipped off-post for disposal, or were demilitarized at other locations at RSA. The site is generally flat with numerous rectangular storage cells, with each cell occupying about 200 square feet (sf). The storage cells create a grid pattern over the site and are clearly visible on aerial photographs. Water has been impounded on the site by beavers resulting in the development of marshy areas. The site was fenced in 2001. During the SI, low levels of metals were detected in surface water and elevated levels of TCE and carbon tetrachloride were detected in groundwater. In 2004, it was decided that the potential CWM would be addressed as part of this site. A hazardous waste facility permit issued on Sept. 30, 2010 pursuant to the AHWMMA, requires that an RFI be completed for this site in accordance with Table VI.2.

The Rev 1 RFI report is underway.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-152.

Site ID: RSA-067
Site Name: FORMER CHEMICAL DRUM STORAGE AREA
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals, Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199110	199509
RFI/CMS	200906	201610
CMI(C)	201610	201710
LTM	201710	204710

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

RSA-067 is an inactive 45-acre drum storage area used in the 1940s and 1950s for aboveground storage of mustard gas. Originally, the site was separated into storage cells by unlined earthen berms, rail car tracks, and/ or trails. RSA-067 is located in the southern part of RSA, adjacent to another former chemical agent storage area, RSA-065 and within an operational range. Most of the northern part of this area is wooded. The majority of the unit is inundated with water. The site was fenced in 2001.

A phosgene container was discovered at the site. In 2004, it was decided that the potential RCWM would be addressed as part of this site. A hazardous waste facility permit issued on Sept. 30, 2010 pursuant to the AHWMMA, requires that an RFI be completed for this site in accordance with Table VI.2.

The Rev 1 RFI report is underway.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-152.

Site ID: RSA-069
Site Name: FORMER CHEMICAL DRUM STORAGE AREA
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198910	199009
CS	199510	199809
RFI/CMS	200906	201610
CMI(C)	201610	201710
LTM	201710	204710

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

RSA-069 is located on 80 acres west of Patton Road and south of Buxton Road. The site is heavily wooded with a large percentage (90 percent) covered in wetlands. The site was used in the 1940s and 1950s for above ground drum storage of H and L. Chemical agents were stored in 1-ton steel containers and 55-gallon steel drums. The site contains approximately 170 square storage cells, each about 200 sf with earthen berms. The site was fenced in 1949-1950 and then re-fenced in 2001 as part of a time critical removal action (TCRA) due to potential CWM. Currently, the site is located within operational Range 0701 and access is controlled by the Army's site access control (SAC) program.

The VOCs and CWM breakdown products were found in the groundwater, but the source cannot be conclusively attributed to this site. H breakdown products have been detected in overburden and bedrock groundwater to the south of the site. TCE has been detected in the northeast section of the site at high levels in groundwater.

Currently, there is no distinction between RSA-069 and RSA-070. Therefore, site RSA-070 was listed as RC in AEDB-R, and any additional needed action will be addressed under RSA-069. The storage area now occupies approximately 72 acres.

The Rev 1 RFI report is underway.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-152.

Site ID: RSA-083
Site Name: INACTIVE SPRAY PAINT BOOTH SUMP
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198810	198909
CS	199510	201101
RFI/CMS	200906	201602
DES	201403	201707
CMI(C)	201609	201805
CMI(O)	201805	201905
LTM	201905	204905

RIP Date: 201805

RC Date: 201905

SITE DESCRIPTION

RSA-083 consists of approximately 5.9 acres within the former Thiokol North Plant area. The site consists of Building 7344 as well as a sump associated with a former water-curtain paint operation carried out at the building. Building 7344 is the only building at RSA-083. It was constructed in 1960 as a large-missile casing spray-painting facility. The excess paint mist emissions were collected on a water-curtain unit and the surface of the sump. They were then re-circulated, collected, and contained in drums. Supernatant was discharged to a septic tank and drainage system located in the northwest corner of the site. TCE was the primary solvent used for these activities. Building 7344 is currently being used as a guided missile research facility. Historical sampling at RSA-083 included analyses for VOCs, SVOCs, pesticides/PCBs, metals, PAH compounds, perchlorate, and explosives. VOCs are the only contaminants of concern at RSA-083. TCE was detected in groundwater at a concentration of 13,000 µg/L (in well K83-RS709) in 2009, continuing a declining trend, from a high of 170,000 µg/L in 1997. This steady TCE decrease has been accompanied by increases in the concentrations of TCE degradation products cis-1,2-dichloroethylene (DCE) and vinyl chloride in the same well, suggesting that natural attenuation is actively reducing contaminant concentrations in site groundwater. Stable-to-decreasing concentrations in nearby wells suggest that the groundwater plume is not migrating.

RFI data for this site were obtained from numerous investigations. The RFI report Rev 0 was submitted to ADEM in April 2013. Data as provided in the Rev 0 RFI report indicate the following:

- A recommendation of no action for surface media at the site is appropriate.

- This site is isolated from the commingled plumes of RSA-146. Therefore any required actions for groundwater at this site cannot be handed off to the groundwater unit.

- ADEM has determined that additional groundwater delineation is necessary. VOCs in groundwater will require further action.

- A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C), and CMI(O) will be completed and LTM initiated. The anticipated remedy for groundwater is in situ chemical oxidation followed by MNA. No further action is anticipated for soils.

Site ID: RSA-087
Site Name: INACTIVE PROPELLANT WASTES STORAGE PAD
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199410	199909
RFI/CMS	200301	201208
DES	200912	201311
CMI(C)	200912	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

RSA-087 is located at Building 7368 and consists of two concrete pads (200 sf) which were used to store drummed cuttings from finished perchlorate propellant. New sheds and storage pads were added adjacent to the older pads at a later date. Although the groundwater underneath the pads is contaminated with TCE, this site is not the source area. A former degreaser, located at Building 7368 (RSA-95), appears to be the source of the TCE contamination. Groundwater will be addressed under RSA-146.

Additional sources of perchlorate have been identified to the north and northwest of RSA-087 as RSA-196 and RSA-198, following completion of the PSA effort. The draft RI report was submitted in December 2005. Perchlorate and TCE were found in soil and groundwater at the site.

The corrective measures implementation work plan was completed in 2013. Fieldwork was completed in August 2014 during which 8,485 tons of perchlorate contaminated soils were excavated and disposed of off post.

RSA-087, 088, and 089 were all used for waste storage. These sites are located in the east central portion of the arsenal at the former RARE Facility North Plant. These units provided temporary waste storage for plant waste generation points either on concrete pads or as designated spaces on asphalt for 1.3 explosive class waste propellants. Prior to RARE North Plant operations, these areas were part of ROP burster and assembly lines. The areas investigated as RSA-87, 88, and 89 represent the waste storage pads associated with specific activities related to the solid rocket manufacturing, testing and research.

The corrective measures report is being prepared for site RSA-087.

CLEANUP/EXIT STRATEGY

A corrective measures final report will be completed. Because soil contamination was excavated to unrestricted use standards, no additional action will be required for surface media. Groundwater will be addressed as part of the RSA-146 groundwater site.

Site ID: RSA-088
Site Name: INACTIVE PROPELLANT WASTES STORAGE PAD
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199410	199909
RFI/CMS	200301	201208
DES	200912	201311
CMI(C)	200912	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

RSA-88 is located at Building 7625 and consists of a concrete pad (200 sf) which was used to store drummed cuttings from finished perchlorate propellant. A newer shed and pad were added on at a later date. This location rather than the degreaser in Building 7625 (RSA-94) appears to be the source of the TCE and perchlorate plumes in this area.

The corrective measures implementation work plan was completed in 2013. Fieldwork was completed in July 2014 during which approximately 1,500 cy of perchlorate contaminated soils were excavated and disposed of off post.

RSA-87, 88, 89 were all used for the same purpose. These sites are located in the east central portion of the Arsenal at the former RSA Rocket Engine Facility North Plant. These units provided temporary waste storage for plant waste generation points either on concrete pads or as designated spaces on asphalt for 1.3 explosive class waste propellants. Prior to RARE North Plant operations, these areas were part of ROP burster and assembly lines. The areas investigated as RSA-87, 88, and 89 represent the waste storage pads associated with specific activities related to the solid rocket testing research only.

The corrective measures report is being prepared.

CLEANUP/EXIT STRATEGY

The corrective measures final report will be completed. Because soil contamination was excavated to unrestricted use standards, no additional action will be required for surface media. Groundwater will be addressed as part of the RSA-146 groundwater site.

Site ID: RSA-095
Site Name: CHLORINATED-SOLVENT DISTILLATION UNIT 2
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199510	199609
RFI/CMS	200501	201202
DES	200906	201311
CMI(C)	200906	201801

RIP Date: N/A

RC Date: 201801

SITE DESCRIPTION

RSA-095 (Chlorinated Solvent Distillation Unit 2, Building 7368) consists of approximately 10 acres located in the southeastern portion of RSA in the former Thiokol North Plant area, within groundwater unit RSA-146. Building 7368 was built by the Army in 1945 for use as part of the Line 1 burster loading facility. In the early-1950s, Thiokol began using the facility as a rocker motor manufacturing facility, including a solvent degreaser/distillation unit where rocket motor casings were cleaned. Propellant casting also took place in the northern part of this facility. Industrial trench drains in the building discharged to a sump, which emptied into an unlined ditch. The building was demolished by 2008.

A hazardous waste facility permit pursuant to AHWMMA was issued Sept. 30, 2010 and Modifications No. 1, 2, and 3, dated Oct. 3, 2012, April 19, 2013, and Nov. 26, 2013, respectively.

The CMIP is complete and approved by ADEM. Fieldwork to include installation of the ERH remedy and excavation and removal of soils is underway. Groundwater contamination associated with this site will be addressed under RSA-146.

CLEANUP/EXIT STRATEGY

The CMI(C) and CMI(O) will be completed. The selected remedy is ERH. This treatment is designed to treat TCE contaminated soil and dense non-aqueous phase liquid (DNAPL) source material in the vadose and saturated zones. Additionally, perchlorate-contaminated soil in the vadose zone will be excavated and disposed of off-site.

Site ID: RSA-109
Site Name: FORMER CHEMICAL MUNITIONS STAGING AREA
Alias: DEMIL

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198811	198909
RFI/CMS	199510	201712
DES	201708	201808
CMI(C)	201902	201912
LTM	202001	204912

RIP Date: N/A

RC Date: 201912

SITE DESCRIPTION

RSA-109 is an inactive 10-acre area which was used as a staging area in support of mustard gas production during the early-1940s and as a demolition dump for the disposal of materials from the chemical manufacturing plants in the late-1940s. Rubble, bricks, and ceramic charcoal columns remain in soil piles at the site. The piles are in two separate areas; one in the northwest portion of the site and the other in the southeast portion of the site. Access restrictions to the site apply based on association with TA-1. The site is also identified as a moderate/high probability for discovering CWM and MEC.

RFI data for this site have been obtained from numerous investigations at this site from sampling that has targeted potential contaminant source areas identified during reviews of historical information and existing data collection. Phase I RFI fieldwork was conducted between March and May 2012. Data indicate the following:

- PAHs and metals (arsenic, lead, and mercury) were detected in soil at concentrations exceeding residential preliminary screening values (PSV). Lateral and vertical extent of contamination has not been determined.

- One VOC, one PAH, and one nitroaromatic were detected in groundwater at concentrations exceeding tap water PSVs.

- Based on information from the Phase I RFI sampling, a Phase II work plan was prepared in September 2012 to address identified data gaps.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is soil excavation and LUCs. Groundwater will be addressed under RSA-149.

Site ID: RSA-115
Site Name: INACTIVE EAST SIDE BLOWDOWN LAGOON
Alias: None

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199109
RFI/CMS	201205	201612

RIP Date: N/A

RC Date: 201612

SITE DESCRIPTION

Inactive East Side Blowdown Lagoon (RSA-115) is located in the southern portion of the arsenal, south of Buxton and Pershing Roads, on the eastern side of Test Area 5 (an operational range). This area was a rocket motor test stand and blowdown lagoon and is about 7,500 sf. The site had an unlined holding basin that contained discharged cooling water during test firings of rocket motors from the adjacent Attitude Test Stand 8887. The wastewater was held in the lagoon until it evaporated and/or percolated through the soil. The cooling water mixed with the rocket motor exhaust containing unsymmetrical dimethyl hydrazine as the primary active fuel ingredient and red fuming nitric acid as the primary oxidant. The lagoon has an earthen berm and is surrounded by small pine trees. The lagoon was last used during horizontal test firing at the test stand during the 1960s. The site was first investigated in 2006 as part of the PSA investigation for the RSA-156 groundwater site. RFI is underway.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for soil and groundwater.

Site ID: RSA-117
Site Name: FORMER LIQUID CAUSTIC MFG. PLANT SITE
Alias: DDT

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Pesticides, Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198810	198909
CS	198910	199009
RFI/CMS	200906	201708
DES	201707	201811
CMI(C)	201905	202401
CMI(O)	202101	205101

RIP Date: 202401

RC Date: 205101

SITE DESCRIPTION

RSA-117 consists of the following nine surface sites and the underlying groundwater unit (RSA-147), which contains concentrations of VOCs characteristic of phase-separated product: Former Liquid Caustic Manufacturing Plant (RSA-117, original); Former Chlorine Manufacturing Plant; Former Brine Processing Plant; Former GAF Discharge (RSA-104); Former Ammonia Lagoon (RSA-118); Former DDT Manufacturing Plant/Thionyl Chloride Plant (RSA-102); Former DDT Settling Pond (RSA-103); Old and New DDT Drainage Ditches (RSA-105); and the New DDT Drainage Ditch Check Dams (RSA-106).

Operations within the RSA-117 site boundary include conveyance of wastewater containing DDT, metals, chlorinated organics, oils, ammonia, acids, caustics, and possibly PCBs through ditches and sewers from various manufacturing facilities; manufacturing of chlorine, caustic, and hydrogen from salt utilizing asbestos-diaphragm-cell technology. The potential exists at RSA-117 for several release points, including the brine processing area, cell building, including rectifier (mercury-arc) room and transformers, liquefaction area, caustic evaporator area, other PCB-containing electrical equipment, buried sewer or the inlet/outlet ditches and lagoon for discharges of wastewater from the GAF facility, chlor-alkali plant and drainage ditches that conveyed DDT wastewater from the Olin Chemical DDT Plant. Site-related contaminants identified from previous investigations include PCBs in the surface and subsurface soils at the Former Liquid Caustic Manufacturing Plant; pesticides in the surface water, soil, and sediments in the DDT ditches; chlorobenzene in the groundwater south of the DDT Manufacturing Areas and the Former Liquid Caustic Manufacturing Plant; TCE in the groundwater at RSA-104; and mercury in the soils at the Former Brine Processing Plants.

RSA-102, RSA-103, and RSA-106 are listed as sites requiring no further action in Table VI.3 of the RCRA permit (2010).

The Rev 0 RFI report is underway.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for soil is excavation and off-site disposal, capping, thermal treatment, chemical oxidation, LUCs, and groundwater monitoring.

Site ID: RSA-122
Site Name: DISMANTLED LEWISITE MFG. PLANTS SITE
Alias: HA2

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	198810	198909
CS	198910	199309
RFI/CMS	200301	200909
DES	201009	201701
CMI(C)	200509	201808
LTM	201808	204808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

RSA-122 consists of approximately 51 acres located in the east central part of RSA, north of Viper Road and west of Meteorology Road. This site was a lewisite manufacturing (Plant No. 2) during the mid-1940s. This area consisted of 4 production lines. Line 3 and Line 4 were active while Line 5 and Line 6 were never operational for the production of Lewisite; however, the Line 5 area was used for decontamination of the 1 ton containers used for lewisite storage and transportation.

Subsequent development has partitioned the site. It is an active area with testing, measurement, and diagnostic equipment (Building 5435) and other operations. Disposal lagoons associated with this manufacturing area are identified as RSA-056, RSA-057, and RSA-139. Line 3 and Line 4 discharged to RSA-056. Line 5 and Line 6 were constructed to discharge to RSA-057. The area also includes an arsenic trichloride manufacturing plant whose waste was discharged to RSA-139.

Mercury and arsenic contamination have been found in surface and subsurface soils as well as sediments. In the 2004 supplemental RI, 2-chlorovinyl arsonous acid (CVAA) was detected in subsurface soils at the waste collection pit. This is a highly industrialized area on the arsenal. This site also includes drainage for the entire area south across Mills Rd. ultimately to Huntsville Spring Branch. Site related contaminates have been detected in springs in a tributary that feeds into Huntsville Spring Branch. The spring's contamination will be addressed under RSA-147. The final RI report was produced in August 2007. The ROD was signed in September 2009. The final RAWP was initially submitted in July 2010. The fieldwork for the RA was initiated in November 2010 and was completed in July 2011. A hazardous waste facility permit was issued on Sept. 30, 2010.

Due to an issue with the AUECA, ADEM did not approve the final RAWP. Revisions to the RAWP were submitted in January 2011, July 2011, January 2012 and June 2012 to address ADEM comments. At this point ADEM requested that the RAWP be converted into a CMIP. The CMIP was submitted in December 2013. A revision to the CMIP was submitted in November 2014 to address ADEM comments. Comment resolution is underway.

CLEANUP/EXIT STRATEGY

A CMIP/DES and CMI(C) will be conducted and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-147.

Site ID: RSA-126
Site Name: INACTIVE OPEN BURN TRENCH
Alias: HA2

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199307	199609
RFI/CMS	200509	201707
IRA	200509	201611
CMI(C)	201707	202001
LTM	202001	205001

RIP Date: N/A

RC Date: 202001

SITE DESCRIPTION

RSA-126 consists of approximately 7 acres located near the geographical center of the arsenal, southwest of the intersection of Martin and Patton Roads. This site consists of a trench previously used for open burning. The trench is approximately 200 ft long by 20 ft wide based on surface geophysics previously conducted at the site. The trench is reportedly approximately 2 ft deep. No historical information is available regarding the types of materials burned or disposed in the trench. The 1996 RI report speculated that the construction methods and size of the trench at RSA-126 are similar to trenches at other RSA sites that were used for demolition/burning of demilitarized munitions and 55-gallon drums reportedly containing sulfurous sludge and possibly small quantities of mustard agent; however, other anecdotal evidence (e.g., close proximity of site to other historical RSA activities, apparent lack of ferrous metal in trench, lack of VOCs in groundwater) suggests that chemical agent demilitarization activities and drum burial did not occur at RSA-126. A long, narrow mound of soil is located at the west end of the trench, which is presumably the soil excavated from the trench. The site was fenced in 2001. Metals were detected in the soil.

A draft RI work plan was submitted in September 2008. Test pits were completed in 2009 in the trenches and mound. Only native soil was found in the mound, and construction debris (concrete, bricks, wire, etc.) was found in the trench. A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. A draft-final interim CMIP was submitted in April 2011 for proposed soil removal needed to achieve industrial reuse of the property. The Interim CMIP was revised in June 2012 and December 2012 to address the ADEM's comments.

A Rev 0 RCRA IM report was submitted to ADEM on Nov. 7, 2013. A Rev 0 RFI was submitted to ADEM on Dec. 18, 2013. A Rev 1 IM report was submitted to ADEM on May 5, 2014. ADEMs requested that their comments on the IM report be incorporated into the RFI report.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater is being addressed under RSA-147.

Site ID: RSA-135H

Site Name: INACTIVE SUMP FOR 1.1 PROPELLANT WASTES

Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
RFI/CMS	199510	201603

RIP Date: N/A

RC Date: 201603

SITE DESCRIPTION

This site is located on the west side of Building 7593 in the former RSA Rocket Engine South Plant. It is an inactive captive sump (no outlet) for containment of D.O.T. 1.1 propellant (explosive) wastes. The building was constructed in 1959 for cleanup of propellant de-aeration in the manufacturing of rocket propellant. RSA-135H collected building wash down water. The concrete-lined sump is 5 by 9 by 6 ft deep, and is covered by a wooden lid. The sump was periodically cleaned out and contents disposed of at the OB/OD area on Redstone. In 2004, the site boundary was expanded to include the waste storage pad (Building 7593 and 7594). The site is now 2.2 acres. The Rev 2 RFI report which recommended NFA for surface media was submitted to ADEM on Nov. 20, 2013 and is awaiting approval. Groundwater contamination will be addressed under site RSA-146.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for surface media. Groundwater will be addressed under RSA-146.

Site ID: RSA-139
Site Name: CAPPED ARSENIC WASTE POND-NORTH
Alias: HA2

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	198810	198909
CS	198910	199309
RFI/CMS	200509	200909
DES	201007	201701
CMI(C)	201011	201808
LTM	201808	204808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

Site RSA-139 consists of about half an acre located in the east-central part of the arsenal, north of Viper Road, west of Meteorology Road, and east of Calibration Road. It was an open, unlined surface impoundment that received waste discharge from arsenic trichloride manufacturing (included in RSA-122) facilities in the early-1940s. The site was capped with compacted clay and fenced in 1995. The soil/sediment contains high levels of metals, mainly arsenic.

A combined ROD for RSA-056, RSA-122, and RSA-139 has been signed under the FY05 PBA. The ROD was signed in September 2009. The final RAWP was initially submitted in July 2010. The fieldwork for the RA for fencing was initiated in November 2010 and was completed in July 2011. A hazardous waste facility permit was issued on Sept. 30, 2010.

Due to an issue with the AUECA, ADEM did not approve the final RAWP. Revisions to the RAWP were submitted in January 2011, July 2011, January 2012 and June 2012 to address ADEM comments. At this point ADEM requested that the RAWP be converted into a CMIP. The CMIP was submitted in December 2013. A revision to the CMIP was submitted in November 2014 to address ADEM comments. Comment resolution is underway.

CLEANUP/EXIT STRATEGY

A CMIP/DES and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-147.

Site ID: RSA-140
Site Name: INACTIVE DISPOSAL AREA
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	199110	199209
CS	199210	199309
RFI/CMS	200906	201510
DES	201503	201606
CMI(C)	201606	201706

RIP Date: N/A

RC Date: 201706

SITE DESCRIPTION

RSA-140 is an inactive disposal area located in the southeast corner of RSA, north of Buxton Road. The site covers slightly over 2 acres within the RSA-146 groundwater site. RSA-140 is located within the boundary of RSA-046, which is an active laser test range. Site access is posted as restricted and it is not manually controlled except for its location within the locked and gated portion of the test range. The site contains three debris piles that were covered with site soils after the RFI test trenching activities were completed in 2011. Additional minor debris is buried at shallow depth east of the access road but is not visible at the surface. There are no historical records documenting the purpose of the inactive disposal area. The debris piles at RSA-140 were discovered in 1991 during construction of a gravel access road across the laser test range facility. At the time, the debris was believed to have been from a former defense reutilization and marketing office (DRMO) disposal area in the late-1960s and early 1970s.

The RFI fieldwork was completed in May 2013 and the revision 1 RFI report was submitted to ADEM in June 2014. The RFI decision process evaluated potential threats resulting from soil-to-groundwater migration, direct contact risks to human health assuming unrestricted use, and threats to ecological receptors. The results of these three evaluations are summarized below:

A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater are unlikely to pose an unacceptable health threat to occupants of current or future buildings.

Cadmium, lead, Aroclor-1254, dieldrin, and several PAHs in debris piles soils require additional action before the site can be released as NFA.

Aroclor-1254 and several PAHs in non-debris pile area soils located adjacent to the debris piles require additional action before the site can be released as NFA.

TCE in groundwater is present from an upgradient source and will be addressed under an action related to this source of contamination. The groundwater LUC in place at RSA will prevent exposure and thus unacceptable risk from this exposure pathway.

Based on these results, corrective measures are warranted for surface and subsurface soil media at RSA-140 (debris pile area and non-debris area soils). The Army requested that ADEM move RSA-140 from Table VI.2 to Table VI.6 and list RSA-140 as a corrective measures implementation site for soil media, with a corrective measures implementation to be performed for groundwater as part of RSA-219.

CLEANUP/EXIT STRATEGY

An RFI, CMS, statement of basis, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is excavation of contaminated surface and subsurface soil. Groundwater will be addressed under RSA-219.

Site ID: RSA-142
Site Name: CHLORINATED-SOLVENT SPILL AREA
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	199110	199209
CS	199210	199509
RFI/CMS	200606	201202
DES	200906	201311
CMI(C)	200906	201805

RIP Date: N/A

RC Date: 201805

SITE DESCRIPTION

This site initially included vapor degreasing operations in former Building 7664. Additional buildings now included in the site are 7663 (146-PS-03A-14), 7676 (146-PS-03A-12), 7683 (146-PS-03EE), 7665 (146-PS-03A-08) and other associated facilities in the area. This area now includes a portion of the original ROP Burster Line 1. Subsequent Thiokol operations involved case prep, solid rocket motor loading and cleanup operations.

The degreaser unit at this site was a vapor degreaser unit with a distillation unit similar to the degreaser/distillation units at RSA-094 through 098. In 1989, a valve malfunction on the solvent reclamation still of the degreaser resulted in a reported spill of 30 gallons of TCE to a nearby ditch. Prior to connection to the sewer line, trench drains along the building feature discharged to the ditch and drained east toward the wetlands across East Line Rd. Data indicates significant releases of TCE and perchlorate to soil and groundwater. The degreaser building was removed in the late-1990s.

The RI work began early in the 1990s. There are significant levels of TCE and perchlorate in the soil.

In 2004, the site boundary was expanded to 9.2 acres. In 2006, the site boundary was adjusted to 8.7 acres. The final RI report was produced in the first quarter of 2008.

An ERH system was demobilized in August 2014 and was relatively successful. Twenty-nine of the 33 soil borings met remedial goals.

CLEANUP/EXIT STRATEGY

CMI(C) which will include additional thermal treatment for TCE contaminated soils and an excavation for perchlorate will be completed. Groundwater will be addressed under RSA-146.

Site ID: RSA-143
Site Name: UNDERGROUND STORAGE TANK SPILL SITE
Alias: Bldg 3240

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	199310	199409
CS	199410	199609
RFI/CMS	199610	201705
DES	200405	201805
CMI(C)	200405	202004
LTM	202004	205004

RIP Date: N/A

RC Date: 202004

SITE DESCRIPTION

This site includes the former CCSWMU-143 site. RSA-143 includes areas around two buildings, Building 3240 and Building 3234. Building 3240 area has been under investigation since 1993 and has a groundwater treatment system installed that is currently operating. Investigations at Building 3234 are ongoing.

The former RSA-143 site is located at the intersection of Goss Road and Vincent Drive and was a former Branch Exchange Service Station. Operations at Building 3240 included the use of four gasoline USTs from 1967 to 1995. Petroleum contamination was discovered near Building 3240 in 1993. A preliminary site contaminant assessment was performed in 1993, which confirmed the presence of soil and groundwater contamination. In 1996, the four gasoline USTs at Building 3240 and a waste oil tank located southeast of Building 3240 were closed and removed as part of a CERCLA action. CERCLA investigation results suggested that releases occurred from Building 3240. Corrective measures for the contamination associated with Building 3240 were implemented under the CERCLA program in August 2004, but now are regulated under RSA's RCRA permit. In 2004, upon initiation of the installation of the treatment system, free-product was encountered. Approximately 2.5 gallons of free-product was removed. A free-product delineation was completed in May 2005 and no additional free-product was found. In addition, the CAP was revised in 2007. The new UIC permit was issued in 2008 and was renewed in 2013. In March 2009 a dual phase extraction system was installed.

Ongoing monitoring at RSA-143, Building 3240 indicated that the existing treatment system needed enhancements. In addition, explosives were detected in groundwater in August 2014 at the site.

The installation convenience store (Building 3234) is located west of the existing site boundary, but is considered part of former CCSWMU-143. The convenience store currently operates three 12,000-gallon gasoline USTs which are located to the northwest of Building 3234. The release from Building 3234 was discovered in 1998 during the investigation of Building 3240 to determine upgradient extent; however, USEPA deferred future characterization and cleanup activities to the ADEM UST program. ADEM accepted both releases into the UST program in 2002.

In 2010 this site was listed on the RSA RCRA permit as a SWMU which requires the completion of an RFI. The RFI is underway.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for soil is excavation and off-site disposal. The anticipated remedy for groundwater is dual phase extraction.

Site ID: RSA-145
Site Name: GROUNDWATER UNIT GW-01
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199001	199102
CS	199406	199709
RFI/CMS	199710	201606
DES	201605	201711
IRA	200709	201402
CMI(C)	201805	202105
CMI(O)	202105	202405
LTM	202405	205405

RIP Date: 202105

RC Date: 202405

SITE DESCRIPTION

This groundwater unit incorporates 9,886 acres and includes the following active surface sites: RSA-003, 005, 008, 045, 048, 058, 112, 113, 128, 143, 228,230, 231, 233, 234, 248, 280, 283, 286, 287, 291, 293, 294, 305, 314, and 318. Current data indicate that off-post sources contribute to RSA-145 groundwater and surface water contamination. Groundwater contaminants surface through multiple springs, resulting in surface water contamination. TCE has been found to stay consistent at low levels along creeks as they flow through the arsenal. There are both losing and gaining reaches of stream segments. Based on these findings, the use of an integrator operable unit and perimeter well network will be required to evaluate the cumulative effects of these inputs.

In FY08, an upgradient perimeter well network was installed. Additional wells were installed during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM on May 3, 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI is due to ADEM in June 2015.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for groundwater is enhanced bioremediation and MNA.

Site ID: RSA-146
Site Name: GROUNDWATER UNIT GW-02
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Perchlorate, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199009	199102
CS	199406	199709
RFI/CMS	199710	202212
DES	202108	202212
IRA	200708	200709
CMI(C)	202306	202606
CMI(O)	202606	202906
LTM	202906	205906

RIP Date: 202606

RC Date: 202906

SITE DESCRIPTION

This groundwater site incorporates 6,613 acres and includes the following active surface sites: RSA-064, 083, 087, 088, 095, 135H, 140, 142, 188, 194, 198, 199, 200, 201, 203, 204, 206, 208, 209, 210, 211, 212, 217, 218, 219, 221-R-01, 237, 239, 271, 274, 275, 276, and 281. RSA-146 is the source of off-post groundwater and surface water contamination. TCE and perchlorate have been found in the groundwater and surface water. Several DNAPL sources are present. Contamination from the source areas is commingled and widespread. The drinking water for this area comes from the Tennessee River.

In July 2005, the Phase I RI was submitted to USEPA and ADEM. Comments were received in FY07, and the final Phase I RI was submitted in April 2008. A Phase II RI field investigation was initiated during 2009.

Supplemental RFI sampling was conducted between 2010 and 2013. Indoor air vapor intrusion issues on post were evaluated during the RFI and found not to be a problem. The Rev 0 RFI report was submitted to ADEM on April 16, 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI is due to ADEM on Nov. 25, 2015.

To date the RFI has identified 24 areas that have groundwater concentrations that need to be actively addressed.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DD, permit modification, DES, CMI(C), and CMI(O) will be completed. The anticipated remedy for groundwater is enhanced bioremediation at 23 hot spots and ERH at one hot spot, followed by MNA.

Site ID: RSA-147
Site Name: GROUNDWATER UNIT GW-03
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	199710	201711
DES	201704	201808
IRA	200709	201402
CMI(C)	201902	202003
CMI(O)	202003	202303
LTM	202303	205303

RIP Date: 202003

RC Date: 202303

SITE DESCRIPTION

This groundwater unit incorporates 1300 acres and includes the following surface sites: RSA-030, RSA-054, RSA-055, RSA-056, RSA-057, RSA-059, RSA-102, RSA-103, RSA-104, RSA-105, RSA-106, RSA-117, RSA-118, RSA-122, RSA-126, RSA-139, RSA-225, RSA-226, RSA-227, RSA-277, RSA-290, CCSWMU-304 and RSA-F.

Groundwater contamination is manifesting through localized plumes of VOCs, metals, and pesticides. Many of the plumes are isolated, of limited extent, and tied to specific surface media and are being addressed under the surface media site. Other plumes are comingled and addressed under this site (RSA-147).

Groundwater contaminants surface through multiple springs, resulting in surface water contamination. Several springs discharge chlorinated solvent contamination to Huntsville Spring Branch. Based on an evaluation of the groundwater data within RSA-147 during 2007, the Army recommended to USEPA and ADEM that sufficient data were available to prepare an RI report. The regulators approved the Army's recommendation, and the draft RI report was submitted in May 2010. In regulatory comments on the draft RI report and subsequent meetings, ADEM and the USEPA indicated that additional groundwater data are required to complete the investigation.

Additional fieldwork was completed and the Rev 0 RFI Report is scheduled to be submitted to ADEM on June 26, 2015.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed. The anticipated remedy for the groundwater is in situ enhanced bioremediation at RSA-054 followed by MNA for the plumes at RSA-054 and RSA-226.

Site ID: RSA-148
Site Name: GROUNDWATER UNIT GW-04
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	199710	201711
DES	201704	201808
IRA	200709	201402
CMI(C)	201902	202003
CMI(O)	202003	202303
LTM	202303	205303

RIP Date: 202003

RC Date: 202303

SITE DESCRIPTION

This groundwater site incorporates 3600 acres and includes the following surface sites: MSFC-035, RSA-010, RSA-028, RSA-049, RSA-053, RSA-060, RSA-061, RSA-062, RSA-114, RSA-183, RSA 222, RSA-249, RSA-250, RSA-252, RSA-317, and RSA-E. This groundwater site drains to Huntsville Spring Branch, within the boundaries of the Wheeler National Wildlife Refuge. The primary contaminants of concern are chlorinated solvents, arsenic, and chlorobenzene. Several plumes of chlorinated solvents in this groundwater site are commingled with plumes from NASA's MSFC. Several springs discharge elevated concentrations of chlorinated solvent contamination into Huntsville Spring Branch. This site is likely to be significantly impacted by contamination originating at MSFC. Army sites within MSFC in some cases overlie the broader NASA-MSFC plumes, and contribute to the commingled groundwater contamination. Based on an evaluation of the groundwater data within RSA-148 during 2007, the Army recommended to USEPA and ADEM that sufficient data were available to prepare an RI report. The regulators approved the Army's recommendation, and the draft RI report was submitted in May 2010. In regulatory comments on the draft RI report and subsequent meetings, ADEM and the USEPA indicated that additional groundwater data are required to complete the investigation.

Additional fieldwork was completed and the Rev 0 RFI report is due to ADEM on June 26, 2015.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed. The anticipated remedy is chemical oxidation and enhanced bioremediation at RSA-183 followed by MNA throughout the plume.

Site ID: RSA-149
Site Name: GROUNDWATER UNIT GW-05
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	199710	201711
DES	201704	201808
IRA	200709	201402
CMI(C)	201902	202003
CMI(O)	202003	202303
LTM	202303	205303

RIP Date: 202003

RC Date: 202303

SITE DESCRIPTION

This groundwater site incorporates 3900 acres and includes the following surface sites: MSFC-003-R-01, MSFC-027, MSFC-053, MSFC-034, RSA-009, RSA-052, RSA-063, RSA-109, RSA-141, and RSA-264. Numerous commingled plumes, originating from NASA activities, extend throughout this groundwater site, with discharge to springs along Huntsville Spring Branch within Wheeler National Wildlife Refuge. The presence of a threatened small fish species (Alabama Darter) increases the ecological concern. Based on an evaluation of the groundwater data within RSA-149 during 2007, the Army recommended to USEPA and ADEM that sufficient data were available to prepare an RI report. The regulators approved the Army's recommendation, and the draft RI report was submitted in May 2010. In regulatory comments on the draft RI report and subsequent meetings, ADEM and USEPA indicated that additional groundwater data are required to complete the investigation.

Because MSFC comprises a large portion of RSA-149, the Army's strategy initially was to incorporate the findings of NASA's OU-3 RI, once approved by ADEM and USEPA, into the RFI for RSA-149 groundwater; however, because that report has not been completed, the Army is proceeding with delineating releases only related to Army responsible surface media sites.

Additional fieldwork has been completed and the Rev 0 RFI report is due to ADEM on June 26, 2015.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed. The anticipated remedy is MNA and LUCs.

Site ID: RSA-150
Site Name: GROUNDWATER UNIT 06
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200401	200406
CS	200410	200709
RFI/CMS	200906	201602
DES	201509	201702
IRA	200709	201306
CMI(C)	201708	201808
LTM	201808	204808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

The RSA-150 groundwater unit is located in the north-central and western portions of the installation. Active surface sites include: MSFC-033A, CCSWMU-035, RSA-050, CCRSA-051, RSA-253, RSA-278-R-01 (off post), RSA-072-R-01, CCSWMU-284, and CCRSA-315. Portions of Test Area 3 and Test Area 6 are also located above this groundwater site. There is evidence of petroleum and solvent contaminants migrating to this site from off-post sources.

In FY08, an upgradient perimeter well network was installed. Additional wells were installed during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM in May 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI was submitted to ADEM on Aug. 12, 2014. The RFI recommends groundwater monitoring and LUCs.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DD, DES, permit modification, CMI(C), will be completed and LTM will be initiated. The anticipated remedy is groundwater monitoring and LUCs.

Site ID: RSA-151
Site Name: GROUNDWATER UNIT GW-07
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Perchlorate, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	199710	201804
DES	201712	201906
IRA	200709	201402
CMI(C)	201912	202204
CMI(O)	202104	202404
LTM	202404	205404

RIP Date: 202204

RC Date: 202404

SITE DESCRIPTION

RSA-151 is a groundwater unit located in the southwestern portion of the installation along the Tennessee River. Active surface sites incorporate 570 acres and include: RSA-013/132/133, RSA-014, and RSA-110-R-01. Investigations have identified a large chlorinated solvent/perchlorate plume. Wells installed along the boundary of the arsenal near the Tennessee River detected elevated levels of contamination, but samples from the river did not indicate contamination. The presence of archeological sites and the need for chemical agent screening in some areas has increased the complexity and cost of investigations. There is an active range with this site. A pump-and-treat system was operated (to treat VOCs) in this area from 1997-1999 and was shut down because of perchlorate issues.

ADEM required that additional wells be installed on the south side of the Tennessee River to determine if contamination flows beneath the river. Additional wells were installed at RSA-151 during the 2011 Phase I and the 2013 Phase II RFI field investigations, including wells on the south side of the river. Results from the first sampling event indicate that contamination does not flow beneath the river. The Rev 0 RFI report was submitted to ADEM on November 12, 2013. ADEM comments were received in July 2014. The Rev 1 RFI report is due to ADEM on Oct. 8, 2015.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be ERH, in situ enhanced bioremediation (ISEB), passive reactive barriers, MNA and LUCs including the protections provided by the existing interim ROD for installation-wide groundwater.

Site ID: RSA-152
Site Name: GROUNDWATER UNIT GW-08
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	199710	201710
DES	201611	201806
IRA	200709	201402
CMI(C)	201811	202004
LTM	202004	205004

RIP Date: N/A

RC Date: 202004

SITE DESCRIPTION

The RSA-152 groundwater unit incorporates 890 acres and includes the following active surface media sites: RSA-032, RSA-065, RSA-066-R-01, RSA-067, RSA-068-R-01, RSA-069/070, and RSA-255, RSA-263, and RSA-265. The groundwater contains elevated levels of chlorinated solvents, as well as detectable breakdown products of mustard agent. This unit is located along the Tennessee River. Little characterization had been done in this groundwater site until recently due to the amount of UXO on the surface/subsurface and the remote location on the arsenal. The presence of archeological sites and the need for chemical agent screening in some areas has increased the complexity and cost of investigations.

Additional wells were installed at RSA-152 during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM on Sept. 13, 2013. Additional fieldwork is being planned to address ADEMs comments. The Rev 1 RFI report is due to ADEM in 2016.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be chemical oxidation, MNA and LUCs including the protections provided by the existing interim ROD for installation-wide groundwater.

Site ID: RSA-153
Site Name: GROUNDWATER UNIT 09
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200401	200406
CS	200410	200709
RFI/CMS	200906	201602
DES	201509	201702
IRA	200709	201402
CMI(C)	201708	201808
LTM	201808	204808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

RSA-153 is a groundwater unit located on the western side of RSA. Active surface sites include: RSA-312-R-01 and RSA-313-R-01.

In FY08, an upgradient perimeter well network was installed. Additional wells were installed at RSA-153 during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM on May 29, 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI was submitted to ADEM on Aug. 15, 2014 and recommended groundwater monitoring and LUCs.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C) will be completed, and LTM initiated. The anticipated remedy is groundwater monitoring and LUCs.

Site ID: RSA-154
Site Name: GROUNDWATER UNIT 10
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Pesticides, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200401	200406
CS	200410	200709
RFI/CMS	200906	201702
DES	201607	201712
IRA	200709	201402
CMI(C)	201806	201910
LTM	201910	204910

RIP Date: N/A

RC Date: 201910

SITE DESCRIPTION

RSA-154 is a groundwater unit located in the south-central part of RSA. Historical and current activities at this site include missile firing and detonation on test ranges. This unit incorporates 3,300 acres and includes the following active surface media sites CCRSA-257, RSA-258, RSA-262, CCSWMU-268, RSA-269, and CCRSA-310.

Additional wells were installed during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM on Aug. 14, 2013. ADEM comments were received. Additional fieldwork is underway to address ADEM comments. The Rev 1 RFI is due to ADEM on 2016.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be enhanced bioremediation, chemical oxidation, MNA and LUCs including the protections provided by the existing interim ROD for installation-wide groundwater.

Site ID: RSA-155
Site Name: GROUNDWATER UNIT 11
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200401	200406
CS	200410	200709
RFI/CMS	200906	201702
DES	201607	201712
IRA	200709	201402
CMI(C)	201806	201910
LTM	201910	204910

RIP Date: N/A

RC Date: 201910

SITE DESCRIPTION

RSA-155 is a groundwater unit consisting of 1600 acres located in the southwestern part of RSA bordering the Tennessee River. Historical activities at this unit include materials transfer and storage, as well as destructive testing of munitions. This unit includes active surface media site CCSWMU-288.

Additional wells were installed during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM oin Aug. 13, 2013. ADEM comments have been received. The Rev 1 RFI is due to ADEM in 2016.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be MNA and LUCs.

Site ID: RSA-156
Site Name: GROUNDWATER UNIT GW-12
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	199006	199102
CS	199407	199709
RFI/CMS	200510	201604
DES	201511	201705
IRA	200709	201402
CMI(C)	201711	201812
LTM	201812	204812

RIP Date: N/A

RC Date: 201812

SITE DESCRIPTION

RSA-156 is a groundwater unit that includes the CCAWMU-116 surface media site. This groundwater unit is located along the Tennessee River in the southernmost portion of the arsenal. In addition to the RSA-116 static test stand, the unit contains hundreds of igloo-style magazines used for storage of explosives, conventional munitions, and chemical munitions (historically), as well as various small-scale testing and conditioning facilities.

Additional wells were installed during the 2011 Phase I and the 2013 Phase II RFI field investigations. The Rev 0 RFI report was submitted to ADEM on July 11, 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI was submitted to ADEM on June 26, 2014 and recommends MNA and LUCs.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be MNA and LUCs.

Site ID: RSA-157
Site Name: GROUNDWATER UNIT 13
Alias: GW

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200401	200406
CS	200410	200801
RFI/CMS	200906	201604
DES	201511	201705
IRA	200709	201402
CMI(C)	201711	201812
LTM	201812	204812

RIP Date: N/A

RC Date: 201812

SITE DESCRIPTION

RSA-157 is a groundwater unit with three active surface media sites: RSA-115, CCRSA-266, and CCSWMU-289. This groundwater unit is located along the Tennessee River in the southeastern portion of the arsenal. In addition to the RSA-115 status test stand, the CCRSA-266 magazine area, and the CCSWMU-289 water treatment sludge beds, this unit contains dozens of igloo-style magazines used for storage of explosives, conventional munitions, and chemical munitions (historically).

Additional wells were installed during the 2011 Phase I RFI field investigation. The Rev 0 RFI report was submitted to ADEM on July 11, 2013. ADEM comments have been received and responses were prepared. The Rev 1 RFI was submitted to ADEM on June 26, 2014 and recommended MNA and LUCs.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, DD, permit modification, CMI(C), and CMI(O) will be completed for the groundwater site. It is anticipated that the final remedy will be MNA and LUCs.

Site ID: RSA-183
Site Name: FORMER LEWISITE PRODUCTION FACILITY
Alias: HA1

STATUS

Regulatory Driver: RCRA

RRSE: HIGH

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals

Media of Concern: Sediment, Soil

Phases	Start	End
RFA	198910	199009
CS	199010	199609
RFI/CMS	200301	200909
DES	201007	201705
CMI(C)	201008	201904
LTM	201904	204904

RIP Date: N/A

RC Date: 201904

SITE DESCRIPTION

Site RSA-183 was created to include the lewisite manufacturing Line 1 and Line 2 with the exception of the capped arsenic waste lagoon (RSA-49). This site also includes the large drainage feature approximately 1.5 miles to the south that could have potentially received all drainage from both RSA-183 and RSA-49. RSA-183 is located south of Neal Road at the Toftoy Thruway intersection and covers approximately 140 acres. Portions of the area are presently used as a parking lot for a series of trailers and buildings including Building 4381.

The surface soils in the production areas are contaminated with arsenic and mercury. In the 2004 supplemental RI, CVAA was detected in subsurface soils at the waste collection pit and chlorinated solvents (carbon tet) was detected in the groundwater. The draft RI report was submitted to USEPA and ADEM in June 2005. Additional sampling was conducted based on the review of that RI. The final RI report was produced in September 2007. An FS was drafted in March 2008. The ROD was signed in September 2009. The final RAWP was initially submitted in July 2010. The fieldwork for the RA was initiated in August 2010 and was completed in September 2010. A hazardous waste facility permit was issued Sept. 30, 2010.

Due to an issue with the AUECA, ADEM did not approve the final RAWP. Two revisions to the RAWP were submitted to address ADEM comments. At this point ADEM requested that the RAWP be converted into a CMIP and additional confirmation sampling be completed. The CMIP was submitted in November 2011. The latest revision to the CMIP was submitted in September 2014 to address ADEM comments. Comment resolution is underway.

CLEANUP/EXIT STRATEGY

A CMI(P)/DES, CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-148.

Site ID: RSA-194
Site Name: PHYSICAL TEST LABORATORY & STORAGE
Alias: NP

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Perchlorate

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200501
RFI/CMS	200909	201503
DES	201403	201602
CMI(C)	201608	201712

RIP Date: N/A

RC Date: 201712

SITE DESCRIPTION

Building 7636 and 7637 were constructed in 1956 by Thiokol for use as a physical test laboratory (7636) and vacuum pump building (7637). Building 7636 remained a physical test lab until decommission in 1996. As a vacuum pump building, Building 7637 served as a "wet collector" for propellant dust generated in Building 7636. Building 7637 became a storage facility in support of Building 7636 operations during the late-1970s and early-1980s. From the early-1980s until 1996, Building 7637 was used as a mechanical equipment storage facility. For only a brief time during 1996, ammonium perchlorate was sieved for grinding operations in this facility. Documentation suggests that operations at the physical test laboratory in Building 7636 may have included degreasing, curing, motor or ingredient soaking, painting, and/or grinding. Three outbuildings (7637, 7638, and 7639) supported operations in Building 7636. Building 7638 was a second stage dry collection (filter system) location, but was also converted to a storage facility in the mid to late-1970s. Building 7639 is a small igloo that was used for storage of both propellants and explosives. During a visit in 1996, numerous bays were noted in the north end of Building 7636 with a laboratory and office facilities on the south end. Trench drains located outside of the building lead to a captive sump (RSA-137h) at the northwest corner of the building.

Reportedly, the propellant testing bays were washed out and wastewater would flow to the sump. The sump would then be pumped out and wastewater disposed of regularly. Another large sump was formerly located near the northeast corner of Building 7637. The sump had once drained to a culvert, but was no longer intact. Approximately 120 quart-size boxes of propellant were located in Building 7639. Two storage pads were observed nearby to the east and southeast (one of which is designated as RSA-176). In 2004, perchlorate was detected in the soil.

Rev 0 RFI for surface media was approved by ADEM on March 29, 2013. A CMS was completed in May 2014.

CLEANUP/EXIT STRATEGY

A DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy is soil excavation and ex situ treatment. Groundwater will be addressed under RSA-146.

Site ID: RSA-198
Site Name: THIOKOL EQUIPMENT/TOOL CLEANING FAC
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Perchlorate

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200501
RFI/CMS	200909	201503
DES	201501	201602
CMI(C)	201602	201707

RIP Date: N/A

RC Date: 201707

SITE DESCRIPTION

Building 7359 was constructed by Thiokol in 1967 to serve as a casting can, bowl, and equipment cleanout. Cleaning of the casting cans was completed by spraying a hot water-detergent-caustic solution into the cans at high pressures. Through this method, the propellant was washed from the can and trapped and collected in a filtering basket located over an explosive-type industrial containment basin. Reportedly, the collected propellant wastes were emptied daily. Degreasing operations were also performed; therefore, solvents were also used to clean at this facility. It is documented that two solvent storage tanks were located on-site, one 220-gallon tank and one 100-gallon tank. Two temporary storage areas (TSA), RSA-85 (formerly CCSMWU-085) and RSA-86 (formerly of the RCRA program), are located adjacent to Building 7359 and will be addressed under this site. These TSAs were identified in the 1991 RFI and added to the 1998 RCRA permit as SWMUs. These TSAs were used to store 1.3 propellant wastes and solvent wastes collected during cleanup activities. Each TSA originally consisted of a concrete pad with no runoff controls. During the early-1990s, each TSA was converted to an enclosed building with containment sumps (RSA-138C and RSA-138D). A third TSA (RSA-138E) is located northwest of the building. All RSA-138C, D, and E (SWMUs identified in permit) will be addressed under this site. Some of the highest concentrations of perchlorate were detected at RSA-85.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA.

Regulatory concurrence of the RFI report has been received, which recommended corrective measures for soil and groundwater being addressed as part of RSA-146. A CMS was completed on May 29, 2014. The CMS has identified soil removal with off-site disposal as the preferred alternative for the site to achieve NFA.

CLEANUP/EXIT STRATEGY

A DD and CMIP will be finalized. Soil removal will be conducted. Groundwater is being addressed under site RSA-146.

Site ID: RSA-199
Site Name: THIOKOL PROPELLANT MIX FACILITY #2
Alias: NP

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Perchlorate

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201504
DES	201502	201603
CMI(C)	201609	201801

RIP Date: N/A

RC Date: 201801

SITE DESCRIPTION

RSA-199, Propellant Mixing Facility No. 2, Building 7382, is an approximately 1.2-acre site located in the southeastern portion of RSA in the former Thiokol North Plant area, within groundwater unit RSA-146. Building 7382 was constructed by the Army in 1955 and used by Thiokol for propellant mixing. The building included a sump. The building has been demolished but the sump remains. Building 7382A was an underground control facility for remotely controlling mixing operations in Building 7382. No contaminant producing processes were known to have been conducted in this building, which remains at the site. Also on-site was a concrete waste storage pad (RSA-167).

From 1959 to 1996, the primary activity at Building 7382 was mixing of 420-gallon batches of propellant. The general procedure for propellant mixing at Thiokol was a stepped approach to make batches of 1.1 or 1.3 propellants at various quantities.

-Step 1 involved receiving the ground and dried oxidizer [ammonium perchlorate or cyclotetramethylenetetranitramine (HMX)] and the other ancillary ingredients from other facilities where they were prepped and pre-mixed.
-Step 2 involved combining the binder, ammonium perchlorate or HMX, metal powder, stabilizers, curing agents, and burn rate modifiers in large mixers to viscous slurry.
-Step 3 involved pouring the propellant slurry into casting cans.

1.1 and 1.3 propellants were mixed and then poured into casting cans at this facility. The greatest potential for release was related to the mixing process (i.e., overflow or spilling) and pouring of the propellant mixture from the mixers to the casting cans. It is possible, though undocumented, that the mixers were cleaned on-site. Building 7359 was the casting can cleanout and Building 7373 was the tooling cleanup, but there is no documentation of a separate mixer clean-up facility. Therefore, it is possible that solvents were used at this facility to clean propellants from the mixers once a batch was complete.

Regulatory concurrence of the RFI report received in February 2014 recommended corrective measures for perchlorate impacted soil. A CMS has been prepared and was submitted to the Army in June 2014. The CMS has identified soil removal with off-site disposal as the preferred alternative for the site to achieve NFA.

CLEANUP/EXIT STRATEGY

A DD, DES, permit modification and CMI(C) will be completed. The anticipated remedy for soil is excavation and off-site disposal. Groundwater is being addressed under RSA-146.

Site ID: RSA-200
Site Name: ROP LINE 5 AREA OPERATIONS FACILITY
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200501
RFI/CMS	200701	200907
DES	201107	201311
CMI(C)	200912	201707

RIP Date: N/A

RC Date: 201707

SITE DESCRIPTION

Buildings 7601, 7603, and 7608 were constructed in 1943 as part of the ROP Line 5, which was originally used for 155mm shell loading and assembly. After being acquired for use by Thiokol in 1950, Buildings 7601 and 7603 were used as a service facility for pilot line research operations and propellant mixing, respectively. Raw materials used in support of mixing and developmental operations were stored in Building 7608. From 1962 to 1982, Building 7603 was used as a laboratory to develop more efficient methods of production of rocket motors and propellant manufacturing. Activities in this facility would have included small-scale grinding [HMX, triazacychlohexane (RDX), and armor piercing], mixing, casting, cleaning, degreasing, curing, sand/grit blasting, painting, assembly, and testing. Buildings 7603 and 7608 were demolished in 2001.

Building 7610 was constructed in 1944. Buildings 7602 and 7610 were the burster service magazines at Line 5. After being acquired for use by Thiokol in the early-1950s, both buildings were used as curing ovens. Historical records indicate that until 1992 Building 7610 also was used for solvent storage.

Building 7619 was constructed in 1943 for use by ROP as a paint storage building. Following acquisition by Thiokol in 1950, it served as a shop building and gas station. Based on building use, paints, solvents, and fuel are assumed to have been stored at this facility. A historical engineering drawing for this building revealed the location of the former UST. The UST was removed in 1998.

Thiokol constructed Building 7616 between 1950 and 1954 for use as a maintenance services building. Miscellaneous carpentry and facilities activities were operated out of this facility. A can of PCB-containing ballasts was located in a room on the east side of the building. Miscellaneous electrical parts, shop equipment, 30-gallon drums of oil, and smaller containers of solvents were observed in a room on the east side of the building.

Building 7618 was built in 1958 and used by Thiokol in the 1960s and 1970s as a cleaning facility. It was most recently used to store janitorial supplies. Chemicals used included acetone, methylene chloride and various propellants and solvents.

The PSA effort for the Line 5 area indicated high levels of perchlorate in the soil and groundwater, in addition to TCE in groundwater only.

Soil contaminated with perchlorate and PAH have been excavated to allow for unrestricted use.

The remedial action is complete. Army is awaiting the corrective measures report which will recommend NFA. Groundwater is being addressed under RSA-146.

CLEANUP/EXIT STRATEGY

The remedial action is complete. Army is awaiting the CMR which will recommend NFA. Groundwater is being addressed under RSA-146.

Site ID: RSA-201
Site Name: THIOKOL RESEARCH LABORATORY
Alias: NP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201508
DES	201603	201707
CMI(C)	201801	201902

RIP Date: N/A

RC Date: 201902

SITE DESCRIPTION

Building 7632 was constructed by Thiokol in 1955 for use as a chemistry laboratory. While a number of laboratory experiments were conducted in the facility, operations in this facility also included propellant mixing and curing.

During a site visit, numerous pipe stubs were observed in the lab that were of an unknown purpose. It appeared that a boiler was previously located in the basement which would suggest that USTs or ASTs were/are located at this facility. Various oil stains were present on the floor of the building.

Floor drains were also located within the laboratory. These floor drains appeared to drain to an exterior sump located on the west side of the building. Three 2-foot by 2-foot concrete sumps with no outlets were visible on the west side of the building just outside of the propellant mixing bays. Located to the south were three small storage sheds (containing drummed wastes), a larger wood storage shed, and multiple concrete pads. A few empty drums and a 20-pound propane tank were noted along the side of the building. The drummed wastes in the storage shed consisted of 12 55-gallon drums of unknown contents, 10 130-gallon drums of waste propellant, and 25 smaller containers of materials such as acetone, petroleum free degreaser, and aerosols.

Two TSAs to the southeast are now being addressed as RCRA sites RSA-173 and RSA-174.

The Rev 0 RFI report recommending soil removal was approved on Oct. 24, 2014. The DES is underway.

CLEANUP/EXIT STRATEGY

A CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil excavation with off-site disposal. Groundwater will be addressed under RSA-146.

Site ID: RSA-203
Site Name: IGLOO AREA LOADING DOCK
Alias: NP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201508

RIP Date: N/A

RC Date: 201508

SITE DESCRIPTION

RSA-203, Igloo Area Loading Dock, Building 7351, consists of approximately 2.9 acres located in the southeastern portion of RSA in the former Thiokol North Plant area, in Test Area TA-10, within groundwater unit RSA-146. Building 7351 was constructed in 1942 and used as a shipping dock for materials and munitions. Thiokol acquired the building in 1950 continuing its use as a shipping dock and also using it for packout of assembled rocket motors, and loading onto rail cars or trucks for shipment. Building 7350 has been listed on historical building lists as a sewage lift station and an electrical outbuilding. Both buildings are currently used by the Army and are secure.

The Rev 1 RFI report recommending NFA for surface media was submitted to the regulators on Aug. 5, 2014.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed by RSA-146.

Site ID: RSA-204
Site Name: THIOKOL OXIDIZER FACILITY
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201510
DES	201209	201611
CMI(C)	201209	201811
CMI(O)	201811	204811

RIP Date: 201811

RC Date: 204811

SITE DESCRIPTION

RSA-204, Thiokol Oxidizer Facility consisting of approximately 8.5 acres is located in the southeastern portion of RSA in the former Thiokol North Plant area, in Test Area TA-10, within groundwater unit RSA-146. Building 7687 was used for oxidizer storage, prior to being transported to the other buildings in the facility. Building 7688 was used as an oxidizer drying facility, and had an associated TSA. Building 7689 was used as an ammonium perchlorate grinding facility, and had an associated 1.3 propellant waste sump and TSA. Building 7690 was used as a nitramine grinding facility, and had an associated 1.1 propellant waste sump and TSA. Building 7691 was used as an ammonium perchlorate processing facility, and also had an associated 1.3 propellant waste sump, a former septic tank and drain field which received 1.3 propellant wastes, and two TSAs.

Phase I findings indicate perchlorate is present in soil at concentrations that will leach to and contaminate groundwater. Further, the site is the source of the isolated groundwater contaminant plume underlying the site.

The RFI report recommending corrective measures was submitted in November 2013. A CMIP is currently in progress to address soil and groundwater.

CLEANUP/EXIT STRATEGY

A CMS, DD, permit modification, DES, CMI (C) and CMI(O) will be completed. The anticipated remedy for soil is excavation with offsite disposal. The anticipated remedy for groundwater is enhanced bioremediation, MNA and LUCs.

Site ID: RSA-206
Site Name: PROPELLANT MIXING FACILITY #2 & C
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201610

RIP Date: N/A

RC Date: 201610

SITE DESCRIPTION

Site RSA-206 includes Buildings 7339 and 7340 that were part of the propellant plant located along Snake Pit Road. These buildings were constructed in 1960 for use by Thiokol as a mixer building and secondary casting and finishing facility for rocket motors, respectively.

The primary activity at 7339 was mixing of 420-gallon batches of class-1.3 propellant. The greatest potential for release was related to the mixing process (i.e., overflow or spilling) and pouring the propellant mixture from the mixers into the casting cans. Historical documentation for Building 7339 indicates that ammonium perchlorate was washed into the industrial drain with large quantities of water. The industrial drain then flowed to a sump (RSA-137a) that ultimately discharged to the sanitary sewer. A generator (with a possible UST) was located southeast of the building. Fill and vent pipes were present, but the exact location of any UST is unknown. A TSA (RSA-160) is located to the north of Building 7339. This TSA was reported to store class-1.3 propellant wastes. Recent building lists indicate that Building 7339 is as an R&D facility (metal fabrication). During a site visit, a generator was noted outside to the southeast. It is likely that a UST is associated with this generator because fill and vent pipes were observed on the ground surface. Exterior concrete trenches were noted to be draining to a sump (RSA-137a). This sump drains to the sanitary sewer.

Activities at Building 7340 included casting propellants into rocket motors and finishing the motors by cutting off or removing excess propellant. Mixed propellants were received in casting cans. Casings were loaded with Teflon coated cores and then brought on racks to the casting area. Propellant was then poured into each casing using a vacuum method which aided in removing air from the propellant as the propellant was poured. Cast rocket motors were cured and finished. Finishing involved removing the core and cutting off any excess propellant.

Building 7340 contains a concrete sump (RSA-137b) with a metal separator along the northwest side of the building. The sump has a settling basin that collects particulate materials from class-1.3 propellant wastes and allowed liquids to drain to the sanitary sewer. TSAs (RSA-90 and RSA-138b) are visible outside the facility and were reportedly used to store class-1.3 propellant wastes and rocket motor insulation.

In 2004, VOCs and perchlorate were detected in soil and groundwater. The groundwater will be addressed as part of RSA-206.

The Rev 0 RFI report was submitted on May 06, 2013, with a revised RFI report being requested.

Rev 1 RFI is scheduled to be submitted to ADEM on Dec. 31, 2015. Corrective measures have been recommended for groundwater and NFA for surface media.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for groundwater is ERH and MNA.

Site ID: RSA-208
Site Name: SOUTH PLANT TESTING FACILITIES
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201611

RIP Date: N/A

RC Date: 201611

SITE DESCRIPTION

RSA-208, the South Plant Testing Facilities, includes the following buildings/operations:

Building 7550 consists of two former firing stands. This facility was constructed in 1942 for use by the Army to test bazooka rockets. Reportedly, a liquid test stand used hydrazine, inhibited red fuming nitric acid, nitric acid oxidizer, and dinitrogen tetroxide.

Building 7565 was constructed in 1945 for use by the ROP as a paint house for Line 3 munitions; however use of the facility was brief because all war-related operations were halted in 1946. It is assumed that operations in this building included cleaning with solvents. In 1950, Rohm and Haas converted the facility into a control building and static test stand (on the south end). Rocket motors were mounted on stands and fired. A darkroom was also present for processing photographs of testing operations. It is assumed that various chemicals related to photograph development were used at this site. At the time that Building 7565 was being converted into a static test stand and control facility, an acceleration range was constructed just west of the facility. The acceleration range was attached to Building 7565 via an underground tunnel and was used to test shoulder-fired rockets. The static test stand and acceleration range were collectively referred to as the E-Range by Rohm and Haas employees.

Building 7569 was constructed in 1945 for use by the ROP as a remelt building for munitions operations on Line 3. Modifications were made to the facility by Rohm and Haas in 1956 to support rocket weapons testing. From 1956 to 1971, Rohm and Haas performed thousands of static test operations in the bunker area south of Building 7569. Raytheon used the facility for guided missile maintenance from 1977 to 1982. From 1985 to 1993, Thiokol used Building 7569 for storage of Tube-Launched, Optically-Aimed, Wire Guided, and Hellfire missile casings. Reportedly, during the early years, an oil-burning heater supplied heat to the facility and a 250-gallon heat oil tank was stored on-site to fuel the burner. Documentation suggests that the tank was removed in 1956.

Building 7587 was constructed in 1962 by Rohm and Haas for use as a static test stand. Rockets were mounted and fired from this facility while instrumentation mounted on the north side of the building recorded measurements.

On Nov. 27, 2013 the Rev 1 RFI report was submitted to ADEM and recommended NFA for surface media. Groundwater contamination will be addressed under site RSA-146.

CLEANUP/EXIT STRATEGY

Currently awaiting ADEM review comments or concurrence on the rev 1 RFI report which recommends NFA for surface media. Groundwater is being addressed under RSA-146.

Site ID: RSA-209
Site Name: PROPELLANT CRUSHING/GRINDING & FUZE
Alias: OFFSITE

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201603
DES	201601	201705
CMI(C)	201705	201803
CMI(O)	201804	204803

RIP Date: 201804

RC Date: 204803

SITE DESCRIPTION

Constructed in 1955, Building 7568 was used by Rohm and Haas as an ammonium perchlorate and potassium perchlorate crushing and grinding facility until 1971. Grinding operations included receiving/storing raw materials and processing them through a hopper into large mills to grind the oxidizer into powder. Cleaning of the grinding machinery may also have taken place on the premises. Vacuums were typically used during grinding to mitigate dust. The western side of the building had seven bays that were used for grinding, analytical laboratories, ovens for removing solvent from nitroglycerin, instrumentation, and storage. The southeastern corner of the building contained X-ray facilities, a photographic laboratory, an analytical laboratory, and an air conditioning room. The northeast corner of the building contained offices and two storage bays. The Army regained control of the facility in 1971, and its use is undocumented until 1975. From 1975 to 1982, Raytheon used the facility for unknown use in Dragon Missile production. Recent building lists indicate that this facility was used for fuse production in the early-1990s.

The Rev 0 RFI report was submitted in December 2013 for regulatory review recommending NFA for surface media and corrective measures for groundwater based on VOCs. Based on regulatory comments to the Rev 0 RFI report, additional monitoring wells are to be installed to demonstrate refined groundwater delineation. The Rev 1 RFI report will be prepared to document all current information.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for soil is no further action. The anticipated remedy for groundwater is in situ bioremediation, MNA and LUCs.

Site ID: RSA-210
Site Name: NITROGLYCERINE WASH HOUSE
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201508

RIP Date: N/A

RC Date: 201508

SITE DESCRIPTION

Nitroglycerine Wash House is an approximately 1-acre site located in the southeastern portion of RSA in the former Thiokol South Plant area, within groundwater unit RSA-146. Former Building 7559 was constructed sometime between 1950 and 1956 for use by the Army as a nitroglycerine wash house. Nitroglycerine washing is a process of removing acids from nitroglycerine by subjecting the compound to warm water and an alkaline solution. Subsequently, this facility was used as a heat treatment facility. Available historical documentation provides little information regarding heat treatment operations. Thiokol did not use this building; it was demolished by the 1970s.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The November 2013 Rev 1 RFI report is currently in regulatory review and has recommended NFA for the site.

CLEANUP/EXIT STRATEGY

Currently awaiting ADEM review comments or concurrence on the Rev 1 RFI report; however, resolution of a programmatic issue needs to be incorporated into the Rev1 RFI report. The anticipated path forward is no further action after the RFI for this site.

Site ID: RSA-211
Site Name: SOUTH PLANT STORAGE MAGAZINES
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Perchlorate

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

The South Plant service magazines were constructed in 1953 to support Army activities in the area. The site is approximately 10 acres in size. These facilities include Buildings 7533 through 7539. Available historical documentation provides little information regarding materials stored in these magazines or the activities they supported.

The nitroglycerine magazines occupy Buildings 7529 through 7531. These buildings are storage igloos with earthen mounds covering their south, east, and west sides. Available historical documentation provides little information regarding activities at these facilities. It is assumed that they were used to support research and development operations in the South Plant area. During 1993 or 1994, an incident occurred which required overpacking a drum of red fuming nitric acid. Building 7532 was reportedly the (electric) heater house for the nitroglycerine storage magazines.

The propellant magazines were constructed between 1950 and 1956 to support Army research and development activities in the South Plant area. This area includes Buildings 7523 and 7525, which were constructed in 1985 for use by Thiokol to store nitramine and ammonium perchlorate. By 1976, only Buildings 7527, 7528, and 7529 remained. By 2000, the remaining facilities were used for oxidizer storage. Ammonium perchlorate, HMX, and RDX are listed as having been stored in Buildings 7523, 7524, and 7525. It is assumed that the other buildings in this PSA stored similar materials.

The area occupied by Building 7524 was originally part of the propellant storage magazine facility. The current building was constructed in 1985 for use by Thiokol as a storage facility for nitramines and ammonium perchlorate. Materials were stored in this facility until needed for drying at Building 7522 or grinding at Building 7521. Available historical documentation provides little information regarding storage practices (handling, duration, etc.). The following chemicals are listed as having been potentially stored in Building 7524: ammonium perchlorate; HMX; and RDX.

The October 2013 Rev 1 RFI Report is currently in regulatory review and has recommended NFA for the surface media (vadose zone soils). The groundwater associated with this site was initially investigated under RSA-211, but further investigation and cleanup will be addressed under RSA-146 (a groundwater site).

CLEANUP/EXIT STRATEGY

The anticipated path is to complete the RFI, demonstrating that unrestricted use is appropriate for surface media at this site.

Site ID: RSA-212
Site Name: PROPELLANT DRY HOUSES
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201506

RIP Date: N/A

RC Date: 201506

SITE DESCRIPTION

RSA-212, Propellant Cutting and Drying, is an approximately 0.8-acre site located in the southeastern portion of RSA in the former Thiokol South Plant area, within groundwater unit RSA-146. Building 7556, situated at the center of the site, was constructed in 1942 for use by the ROP as a primer storage magazine. Primers were offloaded from railcars and stored until needed for charge assembly in Building 7555 (at RSA-144). From 1950 to 1971, Rohm and Haas occupied the facility and used it for air drying propellant powders produced after mixing with liquid solvents at Building 7555. The propellant was cut to the necessary size for research and development. Subsequent occupation of the facility by Raytheon from 1971 to 1982 was for unknown purposes. The Army again controlled the facility from 1982 to 1985 and used it for general storage. After being acquired by Thiokol in 1985, this building was used for general storage until 1996. The building has since been demolished. A loading dock located at the southeast corner of the site appears to have been used to load and unload railcars to the road to the west.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The July 9, 2013 Rev 0 RFI Report was submitted for regulatory review. On Sept. 3, 2014 Rev 1 RFI was submitted to the regulators to address comments on Rev 0 and still recommended NFA for the site surface media with groundwater to be addressed as part of RSA-146.

CLEANUP/EXIT STRATEGY

An RFI and NFA DD will be completed. Groundwater is expected to be addressed under RSA-146.

Site ID: RSA-217
Site Name: INERT STORAGE WAREHOUSE FACILITIES
Alias: ROP SERVIC

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
RFI/CMS	200912	201607
DES	201603	201707
CMI(C)	201801	201901

RIP Date: N/A

RC Date: 201901

SITE DESCRIPTION

RSA-217 lies within an approximately 30-acre warehouse and administrative building complex and is part of the former ROP administration area situated between West Line and Warehouse roads. RSA-217 has been defined as the structures and area around six of the buildings in the complex where past activities could have potentially resulted in a release. The following describes each building:

Building 7417 was constructed in 1942 and was used to store inert components and shipping supplies by the ammunition division until needed on the assembly lines. Since 1957 the building has been listed in the RSA Building Inventory as a warehouse reclamation shop. There was evidence of a former AST with a grouted discharge line.

Building 7421 was constructed in 1942 and was used by the ammunition division to store inert components and shipping supplies. The 2001 RSA Master Building Inventory listed this building as a general maintenance building.

Building 7425 was constructed in 1942 and utilized for inert component and shipping supply storage. It was later converted to an administrative facility and a small boiler was installed to provide heat. A 1,500-gallon UST was installed on the north end of the structure to supply No. 2 heating oil in 1980. RSA records document its removal in 1996. The building continues to be used as a storage and administrative facility.

Building 7437 was constructed in 1942 and used to store inert components and supplies by the ammunition division. It was converted to a laboratory and engineering building. Building 7437 housed the engineering management group for the laboratory chief. The building was converted to an administration facility in 1968 and continues to be used in that manner. This building at one time had an adjacent UST and there is still evidence of a small pit/sump on the southeast end.

Buildings 7441 and 7442 were constructed in 1942 and utilized for inert munitions component and shipping material storage. The buildings were essentially used to issue and maintain the records for access credentials. In 1957 both buildings are listed as having an office/lab warehouse use. RSA records show the two buildings were joined, while keeping their separate identification numbers in 1959. The 2001 inventory lists only Building 7442 as an administrative general purpose facility. Both buildings were identified as the Photographic Laboratory. In 2003, both structures were being utilized as administrative facilities.

RFI data for this site were obtained from numerous investigations beginning in 1996. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. The RFI fieldwork is completed at RSA-217, and the Rev 0 RFI report was submittal to ADEM on July 16, 2014. Data indicate the following:

A small area of surface and shallow surface soils associated with the small pit/sump adjacent to Building 7437 pose a cumulative risk to human health from PAH and arsenic concentrations present in the soils. These soils will require an RA.

All other surface media within site RSA-217 pose no unacceptable health threat to commercial/industrial or residential receptors from direct exposure to soil. The site can be released for either commercial/industrial or residential use. A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

Site ID: RSA-217
Site Name: INERT STORAGE WAREHOUSE FACILITIES
Alias: ROP SERVIC

CLEANUP/EXIT STRATEGY

An RFI, CMS, permit modification, DES, and CMI (C) will be completed. The anticipated remedy is soil removal with off-site disposal. Groundwater will be addressed under RSA-219.

Site ID: RSA-218
Site Name: DRMO OPEN STORAGE AREA
Alias: ROP SERVIC

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
RFI/CMS	200912	201606

RIP Date: N/A

RC Date: 201606

SITE DESCRIPTION

RSA-218 occupies approximately 30 acres between Deerberry and Warehouse roads in the southeast portion of RSA. The site is mostly wooded with interspersed open areas where past storage activities occurred. There are no buildings or structures within the site. The investigation of RSA-218 focused on potential releases from historical short-term storage of materials and debris/scrap piles within the site. Starting in the 1943 an aerial photograph shows areas where materials are stored and debris/scrap piles located. Subsequent historical photographs indicate similar activities until the 2002 aerial.

Materials and piles were still present and in active use in designated open areas in October 2003. The most likely potential contaminants from the debris storage and staging activities include metals and residual chemicals from the scrap and VOCs, and SVOCs (polycyclic aromatic hydrocarbons) present in the fuels in transportation/staging equipment.

Data for this site were obtained from numerous investigations beginning in 1996. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. The Rev 0 RFI Report was submitted on July 23, 2014 and the data indicate the following:

The detected levels of contamination in surface media do not pose a threat to human health.

Based on the contaminant migration screening-level assessment, no contaminant detected in soil at RSA-218 is considered to be a source of contamination to groundwater from the soil-to-groundwater migration pathway.

Based on the results of comparisons to RSA ESVs and considering appropriate lines of evidence (e.g., site-to-background evaluation, existence of common laboratory contaminants, consideration of alternative screening values, etc.), surface soils do not require a further evaluation of ecological threats.

The vapor intrusion evaluation concluded that VOCs do not pose an unacceptable human health risk to occupants of buildings erected on the site in the future through the vapor intrusion pathway.

CLEANUP/EXIT STRATEGY

An RFI, DD, and permit modification will be completed. No further action is anticipated for surface media. Groundwater cleanup actions will be addressed under RSA-219.

Site ID: RSA-219
Site Name: CHEMICAL STORAGE AREA IN SALVAGE YD
Alias: ROP SERVIC

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200309	200406
RFI/CMS	200912	201607
DES	201603	201707
CMI(C)	201901	204901
CMI(O)	201901	205001

RIP Date: 204901

RC Date: 205001

SITE DESCRIPTION

RSA-219 is situated in the central portion of groundwater site RSA-146 and occupies approximately 5 acres within and near the current DLA Salvage Yard which is located at the southern end of Warehouse Road. The investigation of RSA-219 focused on potential releases from historical short-term storage of materials, including where storage barns had been utilized during the 1980s and a suspected open storage/disposal area where solvents had been stored on asphalt pads. An historical TCE release was known to have occurred. The site is mostly flat crushed stone surfaced yard and approximately 70 percent of the site is still used for non-chemical salvage and storage. A small drainage swale/ditch enters a culvert and reemerges at the site's western edge where it flows westerly and then southwesterly for a total of approximately 900 ft. This swale/ditch is included in the site boundary.

RFI data for this site were obtained from numerous investigations beginning in 1996. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. The RFI fieldwork is completed at RSA-219, and the Rev 0 RFI was submitted to ADEM on July 22, 2014. Data indicate the following:

PAHs were detected above screening levels in eight of 13 soil/sediment samples collected from a drainage swale which bisects the site. Some of these were collected at a depth of 1 to 2 ft below the bottom surface. Approximately 700 ft of the swale/ditch will require corrective measures to eliminate risks to ecological receptors.

All other surface media within site RSA-219 pose no unacceptable health threat to commercial/industrial or residential receptors from direct exposure to soil.

A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for groundwater is MNA and excavation with off-site disposal for soil.

Site ID: RSA-220
Site Name: CONSTRUCTION MATERIAL STORAGE YARD
Alias: ROP SERVIC

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200309	200406
RFI/CMS	200912	201606

RIP Date: N/A

RC Date: 201606

SITE DESCRIPTION

RSA-220 occupies approximately 30 acres between Deerberry and Warehouse roads. The investigation of RSA-220 focused on potential releases from historical short-term storage of materials and debris/scrap piles within the site. Historical photographs show areas where materials are stored and debris/scrap piles beginning in 1943. Subsequent historical photographs indicate similar activities up until the 2002 aerial photograph.

Materials and piles were still present and in active use in designated open areas in October 2003. The most likely potential contaminants from activities within RSA-220 include metals and residual chemicals from the construction debris and VOCs, and PAHs from the heavy equipment used to handle the materials.

A hazardous waste facility permit pursuant to the AHWMMA was issued Sept. 30, 2010. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

Data for this site were obtained from numerous investigations beginning in 1996. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. The Rev 0 RFI report was submitted to ADEM on July 15, 2014. Data indicate the following:

- Detected levels of contamination in surface media and groundwater do not pose a threat to human health.

- Based on the contaminant migration screening-level assessment, no contaminant detected in soil at RSA-220 is considered to be a source of contamination to groundwater from the soil-to-groundwater migration pathway.

- The vapor intrusion evaluation concluded that VOCs do not pose an unacceptable human health risk to occupants of buildings erected on the site in the future through the vapor intrusion pathway.

CLEANUP/EXIT STRATEGY

An RFI, DD, and permit modification will be completed. No further action is anticipated for soil and groundwater.

Site ID: RSA-225
Site Name: FUSE MODIFICATION LINE 7
Alias: PA3

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Explosives, Metals, Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200402	200405
RFI/CMS	200906	201511

RIP Date: N/A

RC Date: 201511

SITE DESCRIPTION

RSA-225 occupies approximately 1.2 acres and is located near the center of RSA within the RSA-147 groundwater site south of the intersection of Jungerman Road and Fowler Road. The four original buildings located within RSA-225 were used for fuze modification operations. Historic aerial photographs verify that the four buildings were constructed or modified for this purpose between 1943 and 1956. Only two buildings of the four original structures remain. PAHs in soil and VOCs in groundwater are the primary COCs.

The Rev 1 RFI was submitted to ADEM April 7, 2014 and recommended NFA for soils and corrective measures for groundwater.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DES, permit modification, CMI(C), and CMI(O) will be completed. No further action is anticipated for soil. Groundwater will be addressed under the groundwater site RSA-147.

Site ID: RSA-226
Site Name: OPEN STORAGE 54-2
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200406	200501
RFI/CMS	200912	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

RSA-226 is located in the central portion of RSA within groundwater unit RSA-147. RSA-226 is defined as the storage area outside Building 5488, which is located north of the intersection of Mills Road and Stewart Road. Building 5488 (formerly 788) was constructed in 1942 as an inert material warehouse under the auspices of the Ammo Division. The type of building construction is designated as corrugated asbestos. Building 5488 is currently used to store office furniture and laboratory equipment.

Documentation of building use from 1961 indicated that Building 5488 was occupied by three separate occupants: field service, industrial operations, and a central office. RSA-226 is still in use and currently stores chemically treated utility poles and large pipe sections on above-grade racks. Documentation indicates that chemicals (unknown or unidentified) were stored in the area as well as other electrical items, including transformers (1.5 to 150-kilovolt-ampere capacities). Because transformer storage was documented at the "open storage 54-2" (and possibly in the warehouse), it is possible that a release of dielectric fluid occurred. The outside storage area is opposite the former rail spur that serviced the southwest side of Building 5488 from 1943 to 1964. Review of the 1943, 1950, and 1964 aerial photographs indicated that there was activity (presumably continuous) at the storage area during this time frame.

The Rev 1 RFI report recommending no further action for soils is underway. Groundwater will be addressed under the groundwater site RSA-147.

CLEANUP/EXIT STRATEGY

An RFI, DD, permit modification and site closure report will be completed. No further action is anticipated for the soil. Groundwater will be addressed under RSA-147.

Site ID: RSA-227
Site Name: INACTIVE WASHRACK
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200405	200501
RFI/CMS	200909	201602
DES	200909	201610
CMI(C)	201704	201805

RIP Date: N/A

RC Date: 201805

SITE DESCRIPTION

Site RSA-227 is an inactive washrack adjacent to Building 5492 just north of Mills Rd. in the maintenance shop complex (Buildings 5494/5495). The visual site inspection (VSI) confirmed the presence of the washrack and sump located on the south side of the building. Documentation as to the date of construction or specifying years of use have not been found; however, interviews with site personnel suggest the washrack has not been used since before 1984. Subsequent to this use, the area was used as a parking area for maintenance equipment. Based on the limited information available, the estimated period of operation is believed to be from 1962 to 1984. There does not appear to be an oil/water separator (OWS) connected to the inactive washrack. The sump discharges to the south to a surface drainage feature. The site is currently used for parking of maintenance equipment.

The Rev 0 RFI was submitted to ADEM on April 16, 2014. Comments were received from ADEM on Dec. 4, 2014. A Rev. 1 RFI report is required and is due to ADEM Oct. 12, 2015, based on an approved submittal date extension. The current groundwater responsibility information matrix assigns responsibility for VOCs in groundwater to groundwater unit RSA-147.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil excavation with offsite disposal. Groundwater will be addressed under RSA-147.

Site ID: RSA-228
Site Name: SEWAGE TREATMENT PLANT 2
Alias: PA3

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
RFI/CMS	200405	201603

RIP Date: N/A

RC Date: 201603

SITE DESCRIPTION

The Sewage Treatment Plant 2, Building 139 (later renumbered 3239) is located west of Patton Road, west of McDonald Creek, and just south of Goss Road. (3200 block area). The plant was believed to be operational by 1942 and was taken out of service in 1948. A 1943 Army Completion Report for Huntsville Arsenal stated that the plant serviced the northern portion of the arsenal including the Administration Area (former hospital, base housing, etc.) and the Temporary Administration Area (maintenance shop, washrack/garage, fire/police station, steam plant, and carpenter shop). Wastes from Plant Area #3 were not directed through this STP but were sent through Building 439 (RSA-9). Domestic sewage effluents received primary and secondary treatment through this plant before being discharged to the stream.

The plant used a separate sludge digestion and recirculating biofiltration units. The plant units included barscreens, primary clarifiers, biofilters, secondary clarifiers, recirculating pumps, chlorinators, chlorine contact chamber, sludge pumps, sludge digestion tanks, and open sludge drying beds.

VSI confirmed the STP has been demolished and that most of the equipment has been removed. Remains of two of the clarifiers are present. An engineering drawing was used to georeference the probable location of the sludge drying beds. The area is fenced and heavily wooded. The discharge location (outfall) was not located, but an east-west drainage ditch flows into McDonald Creek.

The Rev 2 RFI report recommending no further action was submitted to ADEM on June 24, 2014.

CLEANUP/EXIT STRATEGY

An RFI, statement of basis, DD, site closeout and permit modification will be completed. No further action is anticipated.

Site ID: RSA-230
Site Name: ABANDONED RUBBLE PILE
Alias: DA

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Perchlorate, Pesticides

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
CS	200405	200506
RFI/CMS	201101	201606

RIP Date: N/A

RC Date: 201606

SITE DESCRIPTION

RFI data for this site have been obtained from investigations beginning in 2004. Sampling targeted potential contaminant source areas identified during reviews of historical information, visual inspections, and also based on existing sample data. Existing data indicate the following:

- Concentrations of chemicals of concern for this site including metals, PAHs, pesticides, perchlorate and explosives in soil do not exceed screening criteria based on direct contact for residential receptors; however, minor exceedances (soil to groundwater screening values) were found in on-site soil samples.

- Soils at this site were determined to not pose a threat from the leaching pathway to groundwater and the ARBCA evaluation determined that no unacceptable risks are expected from exposure to soils.

- TCE, two nitroaromatic chemicals and dieldrin have been detected in groundwater samples exceeding screening criteria. These chemicals appear to have originated from upgradient off-site locations and will be addressed under groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

An RFI, statement of basis, DD, site closeout and permit modification will be completed. No further action for soils is anticipated. Groundwater will be addressed under RSA-145.

Site ID: RSA-231
Site Name: SMF #1 MIXING & PREP FACILITIES
Alias: PA3

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
CS	200405	200506
RFI/CMS	200906	201701

RIP Date: N/A

RC Date: 201701

SITE DESCRIPTION

RSA-231 is located in the northeastern portion of RSA, east of Vincent Road and between Hercules Road and Aerobee Road. The site occupies approximately 2.89 acres. Buildings 3474, 3478, 3479, and former Building 3475 are located in the western portion of the site. The other two former building locations, 3490 and 3491, are located in the eastern portion of the site. RSA-231 consists of six noncontiguous building areas that were used in the 1940s for the mixing and blending of smoke mixes, black powder, and starter mix for the various smoke munitions manufactured in the former Smoke Munitions Filling #1 site.

RFI data for this site have been obtained from investigations beginning in 2004. Fieldwork was completed in July 2013. Sampling targeted potential contaminant source areas identified during reviews of historical information, visual inspections, and also based on existing sample data. Existing data indicate the following:

Concentrations of PAHs and metals in soil exceed applicable screening criteria.

VOCs and explosives have been detected in initial groundwater samples exceeding screening criteria. Groundwater will be addressed on groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

An RFI, statement of basis, DD, site closeout and permit modification will be completed. No further action for soils is anticipated. Groundwater will be addressed under RSA-145.

Site ID: RSA-233
Site Name: SMF#2 MIXING AND PREPARATION FACILI
Alias: PA3

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Explosives, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
CS	200405	200906
RFI/CMS	200906	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

RSA-233 lies just west of the intersection of Patton Road and Hansen Road in the northeast portion of RSA. The site occupies approximately 0.7 acres. It consists of four noncontiguous building areas that were used in the 1940s for the mixing and blending of smoke mixes, black powder, and starter mix for the various smoke munitions manufactured in the former Smoke Munitions Filling No. 2 site. PAHs in soil and VOCs and explosives in groundwater exceed action levels.

The Rev 0 RFI report was submitted to ADEM on Sept. 27, 2014 and recommended no further action for the soils. The groundwater will be addressed under groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

An RFI, DD, permit modification and site closure report will be completed. No further action is anticipated for soils. Groundwater will be addressed under RSA-145.

Site ID: RSA-237
Site Name: PROPELLANT CUTTING AND DRYING
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201504

RIP Date: N/A

RC Date: 201504

SITE DESCRIPTION

RSA-237, Propellant Cutting and Drying, is an approximately 0.2-acre site located in the southeastern portion of RSA in the former Thiokol South Plant area, within groundwater unit RSA-146. Building 7556, situated at the center of the site, was constructed in 1942 for use by the ROP as a primer storage magazine. Primers were offloaded from railcars and stored until needed for charge assembly in Building 7555 (at RSA-144). From 1950 to 1971, Rohm and Haas occupied the facility and used it for air drying propellant powders produced after mixing with liquid solvents at Building 7555. The propellant was cut to the necessary size for research and development. Subsequent occupation of the facility by Raytheon from 1971 to 1982 was for unknown purposes. The Army again controlled the facility from 1982 to 1985 and used it for general storage. After being acquired by Thiokol in 1985, this building was used for general storage until 1996. The building has since been demolished. A loading dock located at the southeast corner of the site appears to have been used to load and unload railcars to the road to the west.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The Oct. 15, 2013 Rev 1 RFI report is currently in regulatory review and has recommended NFA for the site surface media with groundwater to be addressed as part of RSA-146.

CLEANUP/EXIT STRATEGY

The anticipated path is to complete the RFI, demonstrating that unrestricted use is appropriate for this site.

Site ID: RSA-238
Site Name: HVA PLANT #2 MUSTARD LINES 5 & 6
Alias: HAMUST56

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals, Pesticides

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200405	200506
RFI/CMS	200906	201708
DES	201706	201807
CMI(C)	201901	202002
LTM	202002	205002

RIP Date: N/A

RC Date: 202002

SITE DESCRIPTION

RSA-238 is approximately 33 acres, and includes the WWII HVA Plant 2 facilities Mustard Line 5 and Line 6. These facilities were located in the central area of RSA on the east side of Stewart Road, south of Mills Road. The facilities started operation in September and November 1942, respectively and were shut down in May 1943. Chemicals used in the mustard manufacturing process included, but were not limited to: fuel oil, sulfur monochloride, ethyl alcohol, chlorine, carbon tetrachloride, kerosene, acetylene tetrachloride, and sodium hypochlorite solutions. Stockpiles of material, presumably coke was observed in aerial photographs near the Plant No. 6 facility. Coke was used in the ethylene scrubber operations.

RFI field activities were initiated in August 2013 with the advancement of soil borings for collection of soil samples followed by installation of monitoring wells for groundwater sampling. Additional soil borings were conducted in October 2013 to complete HTW activities. Remaining sample locations are within areas that have a moderate/high CWM probability and will be executed upon approval of the chemical site plan.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-147.

Site ID: RSA-239
Site Name: LINE # 1 BOILER HOUSE
Alias: NP

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200906
RFI/CMS	200906	201501
DES	201403	201610
CMI(C)	201610	201708

RIP Date: N/A

RC Date: 201708

SITE DESCRIPTION

RSA-239, ROP Line 1 Boiler House, is an approximately 0.6-acre site located in the southeastern portion of RSA in the former Thiokol North Plant area, within groundwater unit RSA-146. Building 7668 was constructed by the Army in 1942 as a boiler house, acquired by Thiokol in 1950, and remains a boiler house to this day. The boilers were powered by fuel oil, formerly stored in four USTs located on the west side of the building. A leak from one of the tanks was discovered in 1980. Approximately 10,000 gallons of fuel oil was reportedly released, mostly flowing into the sanitary sewer system. The tanks were removed in 1998.

The Rev 1 RFI report received regulatory concurrence in Oct. 31, 2013, which recommended corrective measures for the soil. Although groundwater is contaminated beneath the site, RSA-239 is not the source of the groundwater contamination.

CLEANUP/EXIT STRATEGY

A CMS, DD, permit modification, DES, CMI(C) will be completed. The anticipated remedy is soil excavation with offsite disposal. Groundwater will be addressed under RSA-146.

Site ID: RSA-250
Site Name: FORMER STORAGE WAREHOUSE BLDG 778
Alias: HAMUST56

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
RFI/CMS	200406	201506
DES	200906	201603
CMI(C)	200906	201707

RIP Date: N/A

RC Date: 201707

SITE DESCRIPTION

RSA-250 is in the western portion of the area formerly known as Plants Area No. 2 and encompasses 1.3 acres at the northern end of Building 5678. Current Building 5678 is a result of the combination of the three former Buildings 778, 779, and 780, in a line north to south, respectively. Documentation indicated Building 778 was being used for component storage (unidentified). In 1948, Building 778 was used for the storage of blank gas mask faceplates. Concentrations of arsenic were detected in soil exceeding action levels.

On Sept. 30, 2010, a hazardous waste facility permit was issued pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

On July 30, 2013, the Rev 0 RFI report was submitted to ADEM. The Rev 1 RFI report is due to ADEM on Oct. 31, 2014.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The Rev 0 RFI report supported the recommendation of corrective measures for soil with NFA for groundwater. The CMS will most likely identify soil removal as the preferred remedial alternative. Following excavation, the ground surface will be re-graded to approximately the pre-disposal topography.

Site ID: RSA-252
Site Name: INCENDIARY BOMB FACILITY PLANT 2
Alias: DDT

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Pesticides, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200501
RFI/CMS	200906	201610
DES	201605	201709
IRA	200710	200802
CMI(C)	201803	202004
CMI(O)	202004	202104
LTM	202104	205104

RIP Date: 202004

RC Date: 202104

SITE DESCRIPTION

RSA-252 occupies an area of approximately 16 acres located south of Mills Road, between Stewart and Refuge roads. The main structure within RSA-252 is Building 5681. Building 5681 was constructed in 1943 initially as a mustard filling plant but not used as such; it was converted to an oil incendiary filling plant. The building had five sections; empty storage, manufacturing, filling, strapping and filled storage. Structures associated with this building included two gasoline pump houses, two gasoline storage tanks, three magazines along with various neighboring warehouses being used for storage of components. As of June 1945, the terminal date for manufacturing and filling operations, four different types of munitions had been produced at this plant. Chemicals used during incendiary operations included, but were not limited to: gasoline, stearic acid, calcium, isobutyl methacrylate, magnesium particles, sodium nitrate, asphalt, and caustics. Associated waste generated from these processes was reported to have been burned at the plant burning pit located approximately 200 yards west of the plant. In 1947 this building was used for the bagging of DDT. Additional insecticides produced in liquid and dust forms during the 1948-1950 time frame in building 5681 include, but are not limited to: toxaphene, parathion, dieldrin, malathion, chlordane, pyrethrins, betahexachlorocyclohexane, Rotenone, aldrin, and lindane.

The 1957 building use list indicated that Building 5681 was utilized as an office/administration facility. Building decontamination was performed (1990s) prior to current usage as administration offices. The Agency for Toxic Substances and Disease Registry completed a health consultation for Building 5681 in 1997 that included samples of air, surface soil, subsurface soil, wipes, and concrete. In July 2007, three surface soil and three subsurface soil samples were collected at proposed fence locations around Building 5681. Metals and SVOCs contamination was observed in soil around Building 5681. Elevated DDT concentrations were also observed in soil. A TCRA was performed in November and December 2007 to support the installation of force protection measures around the building. The TCRA included the excavation and disposal of 135 cy of soil, followed by site backfilling and site restoration.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

VOCs and pesticides have been detected in groundwater samples exceeding screening criteria. Surface and subsurface soil require remediation of pesticides and PAHs to achieve unrestricted reuse and be protective commercial/industrial receptors and groundwater.

Most of the pesticides in groundwater appear to be site-related. As such, the groundwater contamination will be addressed as site-specific and not as part of groundwater unit RSA-148. The VOCs and some of the pesticides in groundwater appear to have migrated from RSA-226 and will be addressed as part of RSA-226.

The Rev 0 report was submitted to ADEM on June 29, 2012. The Rev 1 RFI report was submitted to ADEM on Dec 13, 2013. ADEM is requiring additional soil sampling for pesticides.

Site ID: RSA-252
Site Name: INCENDIARY BOMB FACILITY PLANT 2
Alias: DDT

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, CMI(C), CMI(O) will be completed and LTM initiated. The anticipated remedy for surface media is excavation with off-site disposal, groundwater monitoring and LUCs.

Site ID: RSA-253
Site Name: UTILITY/FLAMMABLE MATERIALS STORAGE
Alias: POL

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Metals, Other (PRO)

Media of Concern: Groundwater

Phases	Start	End
RFA	200402	200506
RFI/CMS	200912	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

RSA-253, Flammable Materials Storage Building 6109, consists of approximately 0.12 acres and is situated in the northeast portion of RSA close to Test Range 7. Building 6109 was a 90-ft by 120-ft structure constructed in 1956. It was used as a utility building in support of Test Range 7 until 1991 and then used to store flammable materials, including solvents until 2001 when the Army stopped utilizing the structure.

A 2004 VSI noted the structure was in a state of disrepair with assorted items (rusted drums, munitions parts in wooden boxes, construction debris, pipe, trash, and empty can labeled Acetone) present. In 2005, five soil boring and hydro-punch wells were installed at locations adjacent to the building and the former loading/storage pads. The data indicated that no impacts had occurred. The building and its concrete slab and pads were removed sometime between the years 2007 and 2010.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines. Since hydro-punch groundwater data can only be considered for screening purposes per ADEM guidance, additional sampling is planned.

The Rev 0 RFI report was submitted to ADEM on April 25, 2013. The Rev 1 RFI report was submitted to ADEM on Aug. 21, 2014 and recommended NFA for surface media and groundwater.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. It is anticipated that NFA for soil and groundwater will be approved by ADEM.

Site ID: RSA-255
Site Name: MANGANESE ORE STORAGE AREA N. of RS
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200405	200906
RFI/CMS	200906	201508
DES	201506	201607
CMI(C)	201703	201803

RIP Date: N/A

RC Date: 201803

SITE DESCRIPTION

RSA-255 is located in the former Gulf Chemical Warfare Depot Area, in the south-central portion of RSA. The site is approximately 29 acres. The only designated use of the site has been for the open stockpiling of manganese ore as a strategic supply during the late-1940s and early-1950s. Concentrations of arsenic and manganese have been detected in surface soil exceeding action levels.

RFI data for this site were obtained from numerous investigations beginning in 2004. Sampling targeted potential contaminant source areas identified during reviews of historical information, visual inspections, and phased field investigations. The RFI fieldwork is completed at RSA-255, and the Rev 0 RFI report was submitted to ADEM in October 2013. The Army responded to ADEM's comments and submitted the Rev 1 RFI Report on May 30, 2014. ADEM approved the RFI on Sept. 22, 2014.

The CMS was completed on June 20, 2014. Data indicates the following:

- Arsenic, cobalt, and manganese in surface soil associated with former manganese ore storage and manganese in subsurface soil require an action before the site can be released for either commercial/industrial or residential use. These soils will require an RA.

- Exposure to groundwater poses no unacceptable risk to any of the receptors evaluated herein. Contaminants in soil at RSA-255 do not impact groundwater.

- A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

CLEANUP/EXIT STRATEGY

A DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy for soil is excavation and off-site disposal. No further action is anticipated for groundwater.

Site ID: RSA-258
Site Name: FORMER PAINT SPRAY BUILDING 7862
Alias: TA2

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
RFI/CMS	200912	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

RSA-258, Building 7862, covers approximately 500 sf and is situated in the heavily industrialized area in the south-central portion of the RSA approximately two miles north of the Tennessee River, within the RSA-154 groundwater unit. The site is the former location of Building 7862, which was used for spray-painting of parts from approximately 1955 to the late-1960s. At that time the building was removed and the site converted to a guard station and visitor waiting area for entry into Test Area 2.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The Rev 0 RFI report was submitted to ADEM on June 6, 2013. The Rev 1 RFI report was submitted to ADEM on Aug. 13, 2014 and recommended NFA for surface media. A contiguous groundwater zone is not present in the overburden; therefore shallow groundwater was not evaluated in the RFI.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is expected for soils.

Site ID: RSA-261
Site Name: LANCE MISSILE CONDITIONING FACILITY
Alias: TA2

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
RFI/CMS	200906	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

Site RSA-261, Building 7847, Lance Missile Conditioning Facility, is located in the south-central portion of the RSA approximately 2 miles north of the Tennessee River, within the RSA-154 groundwater unit. The building 7847 complex was constructed in 1967 to condition petroleum-based fuel for the Lance missile testing facility. The complex consisted of nine small instrument/ conditioning sheds from which 24-inch tubes led to larger conditioning chambers. Each shed/chamber was connected via a buried 2-inch stainless steel drain pipe to a vault containing a 55-gallon liquid capture drum. The majority of the structure was covered by earthen berm. The instrument sheds and chambers are now utilized for storage of non-chemical materials.

A hazardous waste facility permit was issued on Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines. The limited site assessment (LSA) effort does not meet the ADEM guidance requirements for an RFI and failed to evaluate a potential COC, UDMH, known to be contained in the fuel for the Lance missile.

The Rev 0 RFI report was submitted to ADEM on Nov. 8, 2013. The Rev 1 RFI report was submitted to ADEM on Sept. 4, 2014 and recommended NFA of the surface media. Further evaluation of the groundwater will be part of the RSA-154 RFI.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. No further action is anticipated for surface media. Groundwater will be addressed under RSA-154.

Site ID: RSA-262
Site Name: CWS WAREHOUSE AREA BLDGS 8021-8027
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200402	200405
CS	200405	200506
RFI/CMS	200909	201701
DES	201608	201709
CMI(C)	201803	201907
CMI(O)	201907	202207
LTM	202207	205207

RIP Date: 201907

RC Date: 202207

SITE DESCRIPTION

RSA-262 is an approximately 50-acre site located in the south-central part of RSA within the former GCWD area. The GCWD warehouses were constructed in 1943 and have been used for storage of inert materials, such as spare parts and shipping crates, and for rehabilitation of unserviceable munitions and equipment. By 1960 the warehouses became general purpose warehouses. Currently, five (8021, 8022, 8023, 8024, and 8026) of the seven warehouses remain and are used primarily for general storage and administrative purposes. Buildings 8025 and 8027 were being demolished during VSI activities conducted in 2004. Approximately 15.2 acres of the site is covered by buildings or a former building slab; the open storage area (OSA) comprises 7.3 acres, a small area of the site being asphalt paved roadway c, with the remainder of the site vegetated with maintained grass.

RFI data for this site were obtained from numerous investigations beginning in 2004. Sampling targeted potential contaminant source areas identified during reviews of historical information, visual inspections, and phased RFI sampling. The RFI report revision 0 was submitted to ADEM on Oct. 5, 2012. ADEM comments to the Rev 0 RFI report require additional field investigation. Data as provided in the Rev 0 RFI report indicate the following:

- PAH impacted soil associated with the former oil and grease pit near Building 8024 poses a cumulative risk to human health. Free-phase liquids may exist within the aquifer beneath the site. TCE is present at relatively high concentrations within well RS1699. The extent of groundwater contamination has been delineated in the overburden at the site.

- A screening-level vapor intrusion evaluation showed that VOC concentrations in soil and groundwater do not pose an unacceptable health threat to occupants of future buildings.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. The anticipated remedy for soil is excavation with off-site disposal. The anticipated remedy for groundwater is ERH and MNA.

Site ID: RSA-263
Site Name: CWS MOTORPOOL(B 8017)/CHANGE HOUSE
Alias: POL

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
RFI/CMS	200906	201607

RIP Date: N/A

RC Date: 201607

SITE DESCRIPTION

RSA-263 is located in the south-central area of RSA, north of Buxton Road. The site covers approximately three acres within the RSA-154 groundwater site. The four former buildings, B-8015 (Gasoline Pump Station), B-8016 (Motor Grease and Wash Stalls), B-8020 (Change House), and B-8017 (motor repair shop), have been demolished. All of the buildings were originally constructed in 1943. Building 8017 was used as a motor repair shop to support CWM operations until 1957, when it was converted to storage, repair shop, and dry boat storage. Building 8020 was originally used as a change house for CWM Services personnel. It was converted to a laboratory/equipment testing mission and was demolished sometime between 1997 and 2000. Buildings 8015 and 8016 existed on the same foundation and were comprised of a gasoline pump station and a motor greasing and wash stall. A gasoline UST was located at the east side of the building and was removed in the 1980s. There is no record of post-removal samples.

A VSI was conducted in 2004 and an LSA was conducted in 2005. The LSA consisted of the completion of nine borings and temporary wells at locations biased to areas of highest potential impact. The LSA results indicated that potential release/impact had occurred from the former UST and limited VOC/PRO contaminants in groundwater screening data.

The nature and extent of the surface media and groundwater have been delineated. The Rev 0 RFI report is due to ADEM on Feb. 12, 2015.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-152.

Site ID: RSA-265
Site Name: GASOLINE DRUM STORAGE AREA
Alias: GCWD

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200405	201008
RFI/CMS	201008	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

RSA-265 is located in the southern portion of RSA, south of Dodd Road and west of Shields Road. The site boundary encompasses approximately 76 acres, of which approximately 42 acres are currently associated with Test Area (TA) 4 activities/support. Current range operations on a portion of RSA-265 began in 1962. Additionally, a small arms firing range is currently active within the site boundary. The site was initially constructed in 1942-1943 for use by the Army in the Gulf Chemical Warfare Depot for bulk storage of gasoline drums. The storage area appears to consist of 23 earthen-bermed areas capable of holding up to 12,000 drums. By 1950, activity associated with gasoline drum storage had apparently ceased; however, two areas identified as open storage for bauxite/aluminum ore are noted at the split of the former railroad spur north of the gasoline drum storage area. VOCs (benzene) detected in groundwater exceed action levels.

The Rev 0 RFI report was submitted to ADEM April 1, 2014. ADEM comments were received on Aug. 22, 2014 and they requested additional sampling.

CLEANUP/EXIT STRATEGY

An RFI, DD, permit modification will be completed. No further action is anticipated for the soils. Groundwater will be addressed under RSA-152.

Site ID: RSA-269
Site Name: FORMER UST, BUILDING 7852
Alias: TA2

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
CS	200912	201003
RFI/CMS	201003	201605
DES	201208	201612
CMI(C)	201706	201808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

RSA-269 is a small area of approximately 0.1 acre, consisting of Building 7852 and a 1,000-gallon UST located east of the building and within Test Area 2. Groundwater is part of RSA-154. Building 7852 was built in 1959 as a pump house in support of operations on Test Area 2, which is an area for hazardous assembly, dynamic testing, and environmental conditions testing. RSA building lists indicate that Building 7852 was designated as a pump house through 1988 and is currently labeled as a "Fuse Test Facility." It lies approximately 30 ft from the southeast corner of the missile centrifuge test stand at Building 7843. A 1958 engineering drawing shows mechanical and electrical specifications for two 1,500-gallons per minute (gpm) electrical motor pumps and one 3,500-gpm diesel engine pump used to supply water to Test Stand C. This engineering drawing also shows a 1,000-gallon UST east of the building. Although the tank is labeled as "gasoline tank" on the plan view and as "fuel tank" on the profile view, it is assumed that diesel fuel was contained in the UST to power the diesel engine pump. This UST is not included on the list of removed USTs provided by the Redstone Compliance Group. It is unlikely that the UST has been abandoned in place. The 1958 engineering drawing shows that the top of the UST was installed approximately 2 ft below the ground surface. A magnetometer search of the area on the east side of Building 7852 in October 2014 did not find any subsurface anomaly indicative of the presence of a UST. As such, it appears that this UST was removed.

The RFI field activities were completed in April 2014 and the Rev 0 RFI report was submitted in November 2014. The RFI recommended soil excavation and deferring groundwater to RSA-154.

CLEANUP/EXIT STRATEGY

An RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy for soil is excavation and off-site disposal. Groundwater will be addressed under RSA-154.

Site ID: RSA-271
Site Name: FORMER BOILER HOUSE, BUILDING 7729
Alias: POL

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Other (PRO), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Other (Subsurface Soil)

Phases	Start	End
RFA	200402	200506
CS	200912	201003
RFI/CMS	201003	201505
DES	201506	201611
CMI(C)	201705	201805

RIP Date: N/A

RC Date: 201805

SITE DESCRIPTION

RSA-271, Former Boiler House (Building 7729), is a 0.25-acre site located between the intersections of Raven Road and Curlew Drive, along Eagle Road in the North Plant area of lower southeast RSA. This site is a surface media site located within the former ROP Line 1 operations area and later, the Thiokol Corporation (Thiokol)/ RARE) North Plant area. RSA-271 consists of a vacant area (approximately 0.25 acres) and is the location of a former UST used to support the operation of the boiler unit in former Building 7729. A 1941 drawing shows the location of a former UST near the east corner of the former building and a blowoff and hotwell overflow pit near the middle of the southwestern side of the building. The blowoff and hotwell overflow pit were connected to Boiler Building 7728 and served as a compressor blowdown line and an oil/water separator.

The Army constructed Building 7729 (formerly B-529) in 1942. During ROP operations, Building 7729 was used as a steam heating plant (boiler house). Following the acquisition by Thiokol (circa 1950), the building continued to be used as a boiler house until 1982. Subsequently, it was used as a maintenance storage area. The building has been demolished and the site is currently vacant. A list of removed USTs maintained by the Redstone Compliance Group indicates that a 2,800-gallon, steel UST (installation date unknown) was removed in September 1998. During the steam house/boiler operations, the UST was used to store No. 2 Fuel Oil.

Investigative and RAs began at the site in 1996 when the site was included in a Phase I assessment of the RARE North Plant area performed by Thiokol. In 1998, the installation collected the first samples as part of an assessment targeting the UST and hotwell/blowoff areas. Records show the UST was removed in the same year, although no post-removal sample data is available. A VSI was conducted in 2004 and in an LSA in 2005, to identify contaminant releases within the PSAs identified in 2004 by the previous VSIs. LSA sampling conducted in December 2005 specifically targeted the former UST and blowoff and hotwell overflow pit locations identified in the historical engineering drawing. Petroleum range organics (PRO) was found in all six locations with the highest concentrations within the former UST pit. No SVOC/PAH compounds were present in soils above screening levels. Groundwater samples contained PRO and PAH compounds at levels above screening levels, the highest from the UST pit. Samples were not analyzed for VOCs or metals. In 2010, limited sampling was conducted at the former UST pit to collect samples for potential waste characterization. In addition during ongoing construction actions at the site in fall 2011, the former blowout/hotwell was compromised resulting in a release. The post-response surface soil samples were collected in accordance with ADEM's petroleum spill response requirements.

The RFI Rev 1 RFI report was submitted to ADEM July 31, 2014 and recommended NFA for surface media. Comments were received from ADEM on Aug. 27, 2014 and are being addressed.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES, CMI(C) will be completed. The anticipated remedy for soil is excavation with off-site disposal. Groundwater will be addressed under RSA-146.

Site ID: RSA-272
Site Name: FORMER UST FOR BOILER UNIT BLD 7650
Alias: POL

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Other (Subsurface Soil)

Phases	Start	End
RFA	200402	200405
CS	200912	201003
RFI/CMS	201003	201511

RIP Date: N/A

RC Date: 201511

SITE DESCRIPTION

RSA-272 occupies a small area (approximately 0.01 acre) west of Building 7650. The site is the former location of a UST of unknown capacity. Building 7650 was constructed in 1953 as an administration building for Thiokol. A portion of the facility was noted to have housed a natural gas boiler and generator. A 1975 historical document shows that money was budgeted for a tank removal at Building 7650; however, documentation of its completion was not found. The VSI conducted in 2005 identified a rectangular asphalt patch and flush-cut piping in the concrete pavement west of the boiler room, which appears to be the location of the former UST. Engineering drawings were located that support the hypothesized location of the former UST. A site visit conducted on July 22, 2010 by the Army, the ADEM confirmed the location of the former UST. Information was also found to indicate that an emergency diesel-powered generator was located for a period of time on the noted asphalt pad.

An LSA, conducted in 2005, consisted of the completion of two borings and temporary wells in the vicinity of the former UST location. Only subsurface samples, based on screening data, were collected. VOCs were not determined and SVOCs were not present above screening levels. PRO was detected at 15 to 18 ft below ground surface (bgs) at concentrations up to 260 mg/kg. The hydro-punch groundwater samples contained SVOC/PAH compounds at levels significantly above regional screening levels and PRO at high concentrations. VOCs were not determined in the groundwater samples.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines. The LSA effort does not meet the ADEM guidance requirements for an RFI and no compliant groundwater data was collected.

The Rev 0 RFI was submitted to ADEM on Jan. 10, 2014. ADEM provided comments in July 2014. The Rev 1 RFI was submitted to ADEM on Sept. 5, 2014 and recommended NFA for the surface media. Groundwater will be addressed under RSA-146.

CLEANUP/EXIT STRATEGY

An RFI/CMS. DD, and permit modification will be completed. NFA is anticipated for surface media. The groundwater will be addressed under RSA-146. ADEM comments or approval on the Rev 1 RFI is awaited.

Site ID: RSA-274
Site Name: PHYSICS LABORATORY &HIGH EXPLOSIVES
Alias: SP

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

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

Media of Concern: Other (Subsurface Soil)

Phases	Start	End
RFA	200402	200405
CS	200405	200906
RFI/CMS	200906	201508

RIP Date: N/A

RC Date: 201508

SITE DESCRIPTION

RSA-274, Physics Laboratory and High Explosives Storage Magazine, is an approximately 0.5-acre site located in the southeastern portion of RSA in the former Thiokol South Plant area, within groundwater unit RSA-146. The site includes Buildings 7540 and an associated sump (existing) and 7541 (demolished). Building 7540 was constructed for Rohm and Haas in 1963 to serve as a mixer building to support the operational demands of Building 7597 (at RSA-C); however, prior to use, the program was cancelled and the facility was never used for propellant mixing. From 1970 to 1975, the Army used the facility as a physics laboratory. From 1975 to 1985, it was used for storage. In 1985, the building was transferred to Thiokol, who used it periodically for high-explosive storage until 1992. The building has not been used since 1992.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The Rev 1 RFI report submitted in July 2014 for regulatory review recommended NFA for surface media with groundwater being addressed as part of RSA-146.

CLEANUP/EXIT STRATEGY

ADEM review comments or concurrence on the Rev 1 RFI report is awaited. No further action for soil is anticipated.

Site ID: RSA-275
Site Name: FORMER FILM PROCESSING LABORATORY
Alias: ROP SERVIC

STATUS

Regulatory Driver: RCRA

RRSE: MEDIUM

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200405
RFI/CMS	200912	201512
DES	201612	201712
CMI(C)	201806	201907

RIP Date: N/A

RC Date: 201907

SITE DESCRIPTION

RSA-275 (Film Processing Laboratory, Former Building S-7173) occupies 0.27 acre and is located west of West Line Road and north of Redstone Road. Building S-7173 was built in the early-1950s and supported operations at the adjacent administrative Building S-7172. Building records indicate that both buildings were present in 1976 but were demolished by 1986. The exact dates are not available. Since the removal of the building, the site is a grassy open area with an unpaved parking area to the east. An AST stand is also located within the site boundaries.

The most likely potential contaminants from support operations at former Building S-7173 include VOCs, SVOCs, including PAHs, and metals (primarily silver). The information is based on the historical usage of Building S-7173 as a photographic laboratory. Runoff from the building and exterior concrete pads may have provided a pathway for contaminants to impact soil and groundwater. Site history does not suggest the use of PCBs, pesticides, explosives, or perchlorate at RSA-275. In addition, the presence of the AST stand suggests the potential use of fuel oil at the site.

Data for this site were obtained from investigations starting in 2005. Sampling targeted potential contaminant source areas identified during reviews of historical information and visual inspections. The Rev 0 RFI report was submitted on Jan. 21, 2014.

Analytical results from the investigation indicate the following:

- No chemicals present in soil pose a threat to groundwater from the soil-to-groundwater migration pathway.

- Chemicals present in soil pose unacceptable risks to hypothetical future residential receptors and commercial receptors evaluated for this site due primarily to arsenic and PAHs. Concentrations of arsenic are not considered to be naturally-occurring. The PAH contamination was limited to detections from one sample location. These soils will require a corrective action.

- Groundwater does not pose a risk and therefore NFA is anticipated.

CLEANUP/EXIT STRATEGY

An RFI, CMS, DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy for surface soil is excavation and off-site disposal. No further action is anticipated for groundwater.

Site ID: RSA-276
Site Name: FORMER BOILER HOUSE, BLDG 7362
Alias: POL

STATUS

Regulatory Driver: RCRA

RRSE: LOW

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200402	200506
CS	200912	201003
RFI/CMS	201003	201511

RIP Date: N/A

RC Date: 201511

SITE DESCRIPTION

RSA-276 occupies a vacant area (approximately 0.4 acre) which is the site of former Building 7362. Building 7362 was built in 1959 as a boiler house to support rocket casting and finishing operations conducted in adjacent Building 7360. In the mid-1980s, the building became a storage facility for inert materials until it was demolished. Two 1958 engineering drawings were found that document the layout of the former building and the location of the former 5,000-gallon UST. During the steam house/boiler house operations, the UST was used to store fuel oil No. 2.

An LSA, conducted in 2005, consisted of the completion of two borings and temporary wells in the vicinity of the former UST location. Only subsurface samples, based on screening data, were collected. VOCs were not determined and SVOCs were not present above screening levels. Low levels of PRO (<10 mg/kg) were detected at 14-20 ft bgs. One hydro-punch groundwater sample contained PRO at 110 micrograms per liter (ug/L). VOCs were not determined in the groundwater samples and SVOCs were not present at levels above screening values.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines. The LSA effort does not meet the ADEM guidance requirements for an RFI and no compliant groundwater data was collected.

The Rev 0 RFI report was submitted to ADEM Jan. 9, 2014 and the installation received ADEM comments July 2014. The Rev 1 RFI report is due to ADEM on March 23, 2015.

CLEANUP/EXIT STRATEGY

An RFI, DD and permit modification will be completed. NFA for the surface media is anticipated. The groundwater will be addressed by the RSA-146 groundwater site.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
MSFC-002	INACTIVE ABANDONED DRUM DISPOSAL SITE	200709	A Non-Time Critical Removal Action was performed in 2007. A ROD for NFA was submitted to the regulatory agencies and signed in July 2008.
MSFC-003	INACTIVE OLD BONE YARD DISPOSAL SITE	200109	Cleanup covered under MSFC-003-R-01
MSFC-053	FORMER PROPELLANT STORAGE AREA	201502	ADEM letter dated Oct 1, 2014 concurring on RFI report that recommended no further action.
MSFC-055	DISMANTLED STAUFFER CHEM.MFG. PLANT SITE	199909	Responsibility assumed by NASA under MOA
MSFC-060	INACTIVE DELUGE WATER DRAINAGE SYS.	199909	Closure DD signed by USEPA Region IV and ADEM agreeing to NFA 1999 Sept 15
MSFC-065	FORMER PESTICIDE STORAGE SURFACE DRAIN	199909	Responsibility assumed by NASA under MOA
MSFC-074	INACTIVE DISPOSAL SITE	200604	The site was closed with an administrative letter from USEPA and ADEM in April 2006.
MSFC-077	INACTIVE OPEN BURNING/DISPOSAL PITS	200809	An expanded SI report recommended no action for the site. The regulatory agencies concurred in August 2008.
MSFC-082	INACTIVE CHEM.MUNTS.DEMIL/DISP. TRENCHES	200409	Combined with MSFC-003
MSFC-D	FORMER FUEL OIL STORAGE CONTAINMENT BERM	200409	Responsibility assumed by NASA under MOA
RSA-001	FOX ARMY COMMUNITY HOSPITAL INCINERATOR	199102	NFA under RCRA permit
RSA-002	IN-GROUND OIL/WATER SEPARATOR, BLDG.3338	199102	NFA under RCRA permit
RSA-003	IN-GROUND OIL/WATER SEPARATOR, BLDG.3617	199102	Now compliance response site CCSWMU-003
RSA-004	IN-GROUND OIL/WATER SEPARATOR & WASHRACK	199102	NFA approved by ADEM in Oct 2006
RSA-006	PAINT SHOP & SUMPS BLDG 3634 MOTOR POOL	199102	NFA received from ADEM on Oct 04
RSA-007	HAZARDOUS WASTE STORAGE AREA, BLDG. 3775	199102	NFA under RCRA permit
RSA-008	INACTIVE SEWAGE TREATMENT PLANT 4	200212	Now compliance response site CCSWMU-008
RSA-009	INACTIVE SEWAGE TREATMENT PLANT NO. 3	200212	Now compliance response site CCSWMU-009
RSA-011	INACTIVE SEWAGE TREATMENT PLANT NO. 1	200709	No Action ROD signed in September 2007.
RSA-012	ACTIVE OPEN BURN PANS	199102	Site is an active site regulated under subpart 'X' of the RCRA permit.
RSA-015	HAZARDOUS WASTE STORAGE IGLOO, NO. 1	199102	Site is an active storage unit and not eligible for ER,A program
RSA-016	HAZARDOUS WASTE STORAGE IGLOO, NO. 2	199102	Site is an active storage unit and not eligible for ER,A program
RSA-017	HAZARDOUS WASTE STORAGE IGLOO, NO. 3	199102	Site is an active storage unit and not eligible for ER,A program
RSA-018	HAZARDOUS WASTE STORAGE IGLOO, NO. 4	199102	Site is an active storage unit and not eligible for ER,A program
RSA-019	HAZARDOUS WASTE STORAGE IGLOO, NO. 5	199102	Site is an active storage unit and not eligible for ER,A program
RSA-020	HAZARDOUS WASTE STORAGE IGLOO, NO. 6	199102	Site is an active storage unit and not eligible for ER,A program
RSA-021	HAZARDOUS WASTE STORAGE IGLOO, NO. 7	199102	Site is an active storage unit and not eligible for ER,A program

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
RSA-022	HAZARDOUS WASTE STORAGE IGLOO, NO. 8	199102	Site is an active storage unit and not eligible for ER,A program
RSA-023	HAZARDOUS WASTE STORAGE IGLOO, NO. 9	199102	Site is an active storage unit and not eligible for ER,A program
RSA-024	HAZ. WASTE VACANT STORAGE IGLOO, NO. 10	199102	On RCRA Permit as NFA
RSA-025	HAZ. WASTE VACANT STORAGE IGLOO, NO. 11	199102	On RCRA Permit as NFA
RSA-026	HAZ. WASTE VACANT STORAGE IGLOO, NO. 12	199102	On RCRA Permit as NFA
RSA-027	HAZ. WASTE VACANT STORAGE IGLOO, NO. 13	199102	On RCRA Permit as NFA
RSA-028	IN-GROUND OIL/WATER SEPARATOR, 5693 AREA	199102	Now compliance response site CCSWMU-028
RSA-029	REDSTONE ARSENAL SANITARY SEWER SYSTEM	199102	This site is being tracked under our RCRA program. It is on the NFA list of sites in the Hazardous Waste Permit. No further action is planned for this site. It is an operating sewer system, so it is not eligible for IRP funding.
RSA-030	CENTRAL OIL/WATER SEPARATOR	199102	On RCRA Permit as NFA
RSA-031	CENTRAL OIL/WATER SEPARATOR STORAGE TANK	199102	On RCRA Permit as NFA
RSA-033	PLATING ROOM FLOOR DRAINS, BLDG. 5432	199102	RSA-033 was transferred to the RCRA program and is listed as NFA in the RCRA permit. ADEM concurred with NFA on 26 Nov 2002.
RSA-034	WASTE AVIATION FUEL TEMP. STORAGE AREA	199102	RSA-034 was transferred to the RCRA program and is listed as NFA in the RCRA permit. ADEM concurred with NFA on 6 Dec 2004.
RSA-035	IN-GROUND OIL/WATER SEPARATOR, BLDG.4812	199102	On RCRA Permit as NFA
RSA-036	IN-GROUND OIL/WATER SEPARATOR, BLDG.4832	199102	RSA-036 was transferred to the RCRA program and is listed as NFA in the RCRA permit. ADEM concurred with NFA on 22 Jun 2005.
RSA-037	REMOVED USED OIL UST SITE, TANK #7846	199102	Site will be remediated under the CC Program
RSA-038	REMOVED USED OIL UST SITE, TANK #3240D	199606	DD signed by ADEM Jun 30 1996 for clean closure after underground used oil tank and piping were removed and the former tank vault was backfilled with clean soil.
RSA-039	REMOVED #2 FUEL OIL UST SITE, TANK #3338	199308	NFA under RCRA permit
RSA-040	REMOVED USED OIL UST SITE, TANK #3617	199603	DD signed by ADEM Mar 31 1996 for clean closure after underground used oil storage tank and piping were removed and the former tank vault was backfilled with clean soil.
RSA-041	REMOVED USED OIL UST SITE, TANK #3636	199207	NFA under RCRA permit
RSA-042	REMOVED O.W. SEP.STORAGE TANK #4812 SITE	199102	Site will be remediated under the CC Program
RSA-043	REMOVED USED OIL UST SITE, TANK #3665	199307	NFA under RCRA permit
RSA-044	REMOVED USED OIL UST SITE, TANK #5435B	199102	Site will be remediated under the CC

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			Program
RSA-046	INACTIVE CHEMICAL MUNITION & DEMIL SITE	200409	RSA-046 is a former range operation on an operational range and is not eligible for either IRP or CC funding. A list in the Hazardous Waste Permit is being prepared to address sites located on ranges at such time as the range goes out of operation. The disposal trenches for this operation are being addressed under site RSA-281.
RSA-047	FORMER CHEMICAL TRAINING OPERATIONS	200709	RSA-047 had a No Action ROD signed in September 2007.
RSA-051	INACTIVE MUNITIONS DEMIL & DISPOSAL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-052	INACTIVE MUNITIONS DEMIL & DISPOSAL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-055	INACTIVE SANITARY & INDUSTRIAL LANDFILL	200202	Combined with RSA-054.
RSA-061	INACTIVE MUNITIONS DEMIL & DISPOSAL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-062	INACTIVE MUNITIONS DEMIL & DISPOSAL AREA	200202	RSA-62 and RSA-061 are one disposal area. RSA-062 is now RC and all work for the combined RSA-061/062 site is covered under RSA-061.
RSA-063	INACTIVE CHEMICAL MUNITION STORAGE AREA	201203	Site was on an active range and moved to the -CC database.
RSA-064	INACTIVE MUNITION DEMIL & DISPOSAL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-066	INACTIVE ASH DISPOSAL SITE & DEMIL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-068	INACTIVE TOXIC CHEMICAL DISPOSAL AREA	201203	Site was on an active range and moved to the -CC database.
RSA-070	FORMER CHEMICAL DRUM STORAGE AREA	200202	RSA-070 has been combined with RSA-069 as these adjacent sites were used for the same purposes.
RSA-071	HIGH EXPLOSIVE DROP TEST SITE AREA	199102	RSA-071 is in the RCRA program and is not eligible for either IRP or CC funding. A list in the Hazardous Waste Permit is being prepared to address sites located on ranges at such time as the range goes out of operation.
RSA-072	MORTAR SHELL TEST SITE AREA	199102	RSA-072 is in the RCRA program and is not eligible for either IRP or CC funding. A list in the Hazardous Waste Permit is being prepared to address sites located on ranges at such time as the range goes out of operation.
RSA-073	HIGH EXPLOSIVE IMPACT TEST SITE (WEST)	199102	RSA-073 is in the RCRA program and is not eligible for either IRP or CC funding. A list in the Hazardous Waste Permit is being prepared to address sites located on ranges at such time as the range goes out of operation.
RSA-074	HIGH EXPLOSIVE IMPACT TEST SITE (EAST)	199102	RSA-074 is in the RCRA program and is not eligible for either IRP or CC funding.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			A list in the Hazardous Waste Permit is being prepared to address sites located on ranges at such time as the range goes out of operation.
RSA-075	INACTIVE SOLID WASTE INCINERATOR	199102	NFA under RCRA permit
RSA-076	REMOVED RDX/HMX FILTRATION UNIT 1, NORTH	199102	NFA under RCRA permit
RSA-077	REMOVED RDX/HMX FILTRATION UNIT 2, SOUTH	199102	NFA under RCRA permit
RSA-078	FORMER RDX/HMX FILTER UNIT 1 SUMP, NORTH	199102	NFA under RCRA permit
RSA-079	FORMER RDX/HMX FILTER UNIT 2 SUMP, SOUTH	199102	NFA under RCRA permit
RSA-080	FORMER RDX/HMX SUSPEN.TRANSFER PAD/SUMP	199102	NFA under RCRA permit
RSA-081	REMOVED RDX/HMX CHARCOAL COLUMN DOLLY	199102	NFA under RCRA permit
RSA-082	FORMER SPARGE UNIT SITE, BLDG. 7595	200212	Combined with RSA-C
RSA-084	INACTIVE PROPELLANT WASTES STORAGE PAD	199708	Closure DD signed by USEPA and ADEM 1997 Oct 10
RSA-085	INACTIVE PROPELLANT WASTES STORAGE PAD	199102	RSA-085 was investigated under the RCRA program and received a NFA on the surface media. The site is to transfer to the CERCLA program for addressing the groundwater. This site is co-located with and will be combined with RSA-198.
RSA-086	INACTIVE PROPELLANT WASTES STORAGE PAD	199102	RSA-086 received an NFA from ADEM in Nov 2003 under the RCRA program.
RSA-089	INACTIVE PROPELLANT WASTES STORAGE PAD	200509	The groundwater contamination will be addressed as part of the remedial activities for RSA-97. The cost for perchlorate remediation at this site is included in the estimate for RSA-97.
RSA-090	INACTIVE PROPELLANT WASTES STORAGE PAD	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-091	INACTIVE PROPELLANT WASTES STORAGE PAD	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-092	INACTIVE PROPELLANT WASTES STORAGE PAD	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-093	FORMER RECLAIMED EMPTY DRUM STORAGE AREA	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-094	CHLORINATED-SOLVENT DISTILLATION UNIT 1	200909	PP and ROD were completed in 2009. A No Action remedy was approved, provided the building stays in place.
RSA-096	CHLORINATED-SOLVENT DISTILLATION UNIT 3	201503	
RSA-097	CHLORINATED-SOLVENT DISTILLATION UNIT 4	201301	
RSA-098	CHLORINATED-SOLVENT DISTILLATION UNIT 5	200509	Site determined to be not ER,A eligible. Being addressed under RSA-196.
RSA-099	ABANDONED PLATING SHOP TANKS & SUMPS	200409	RSA-099 received a No Action ROD signed by USEPA in Sept 2004. ADEM has allowed this site to be moved to the NFA table in the permit.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
RSA-100	REMOVED ABOVE GROUND USED OIL TANK	199102	RSA-100 was transferred to the RCRA program and is listed in the NFA table in the permit.
RSA-101	ENCAPSULATED PESTICIDE CONTAM. SED. AREA	198803	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-102	DISMANTLED PESTICIDE MFG. PLANT SITE	198803	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-103	CAPPED PESTICIDE SETTLING LAGOON	198803	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-104	ABANDONED ISP WASTE DISCHARGE LINE	200509	Combined into RSA-117
RSA-105	INACTIVE CLOSED DDT DRAINAGE DITCHES	198803	OLIN DDT
RSA-106	EARTHEN RETENTION DAMS FOR DDT MIGRATION	198803	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-107	CLOSED DDT CONTAM.SOILS/DEBRIS LANDFILL	198303	Permit NFA
RSA-108	TEST RANGE 4 MISSILE IMPACT SITE	199708	Closure DD signed by USEPA and ADEM 1997 Oct 10
RSA-110	FORMER CHEMICAL DRUM STORAGE AREA	201203	Site was on an active range and moved to the -CC database.
RSA-111	CONSTRUCTION DEBRIS	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-116	FORMER OPERATIONS AT SO. SIDE LAGOON	200212	Based upon the ongoing facility use, the site is not considered DERP eligible. A request has been forwarded to EPA/ADEM to remove this site from the CERCLA program. Approval from ADEM was granted on 4 Feb 03. The site is now being tracked as compliance response site CCSWMU-116
RSA-118	INACTIVE IND. DITCH & DISCHARGE LAGOON	200409	Response complete. This site has been included in RSA-117.
RSA-119	ISP INTERNATIONAL MANUFACTURING PLANT	199102	Tenant has own RCRA Permit
RSA-120	MATTHEWS CAVE AND RAVINE	199102	Permit NFA
RSA-121	PAINT SHOP/PAINT WASHOUT BOOTH, BLD.4762	199102	Permit NFA
RSA-123	INACTIVE CEMENT PLANT SUMP	199102	Based on the RFA report, soil and groundwater samples were not recommended to be collected.
RSA-124	DISMANTLED CALGON WTP PROCESS EQUIPMENT	199102	Permit NFA
RSA-125	WASTE ACCUMULATION AREA, BLDG. 5477	199102	Permit NFA
RSA-127	PHOTO LAB WASTEWATER SUMP, BLDG. 5451	199102	Permit NFA
RSA-128	INACTIVE MUSTARD GAS DEMIL AREA	200202	Combined with RSA-112
RSA-129	FORMER BURN PAD & CAPPED WASHOUT PIT	200509	ORAP
RSA-130	INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345	199710	Removal action taken - NFA
RSA-131	ACTIVE OPEN DETONATION AREA	199102	RCRA Subpart X Permit

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
RSA-132	DISMANTLED & REMOVED POPPING FURNACE	200202	Combined into RSA-013
RSA-133	INACTIVE ROCKET WASHOUT RACK & SUMP	200202	Combined into RSA-013
RSA-134	INACTIVE DISPOSAL TRENCH & BURN PIT	201210	Permit Modification #2
RSA-138M	INACTIVE TEMPORARY STORAGE AREA	201408	
RSA-141	4.2 INCH MORTAR DISPOSAL SITE, BLDG 4656	200803	Transferred to MMRP (RSA-141-R-01)
RSA-144	CHLORINATED-SOLVENT DISTILLATION UNIT 6	201209	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-187	NORTHERN THIOKOL MIXING FACILITY	201310	
RSA-189	MOTOR/OXIDIZER PREP FACILITIES	201203	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-190	DISPOSAL/DRAINAGE AREA WEST OF ROP	201110	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-191	ROP LINE 1 SERVICE FACILITIES	201212	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-192	TETRYL AND IGNITER PROCESSING (ROP	201308	
RSA-193	THIOKOL IGNITER PREPARATION FACILIT	201403	
RSA-195	THIOKOL PROPELLANT MIX FACILITY #1	201301	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-196	TEST STAND AND CLEANING BUILDING	200909	The final ROD recommending No Action was signed in September 2008.
RSA-197	ROCKET MOTOR TEST STAND	201009	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-202	GRADED AREA NW OF ROP STORAGE	201209	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-205	PHOTO LAB & MOTOR SERVICE FACILITY	201211	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-207	ROHM & HAAS GORGAS LABORATORY	201301	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table for sites requiring action for groundwater only.
RSA-213	ROP LINE 4 AREA OPS FACILITY	201310	
RSA-214	ROP LINE 6 AREA OPS FACILITY	201111	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			the NFA table.
RSA-215	RSA-146 HISTORIC SERVICE FACILITIES	201402	
RSA-223	CENTRAL RAILROAD CLASSIFICATION YD	200709	RSA-223 received concurrence letters from USEPA and ADEM on the Preliminary Risk Evaluation document and recommendation for NFA for this site.
RSA-224	CONTAINER STORAGE AREA	200809	Received concurrence letters from EPA and ADEM on the recommendation for NFA presented in the Expanded SI report.
RSA-229	FORMER PX SERVICE STATION	200810	Received concurrence for No Action based upon ARBCA submittals.
RSA-232	SMF #1 SERVICE STATION	200709	RSA-232 received concurrence for No Action based upon ARBCA submittals.
RSA-234	WASTE DISPOSAL PIT	200807	Transferred to MMRP (RSA-234-R-01)
RSA-235	BULK FUEL STORAGE FACILITY	200709	RSA-235 received concurrence for No Action based upon ARBCA submittals.
RSA-236	GRENADE PACKING AND ASSEMBLY	200809	Received concurrence letters from EPA and ADEM on the recommendation for NFA presented in the Expanded SI report.
RSA-249	INACTIVE OLD BONEYARD DISPOSAL SITE	200901	Transferred to MMRP (RSA-249-R-01)
RSA-273	PROPELLANT CONDITIONING AND MOTOR C	201311	
RSA-281	DISPOSAL TRENCHES AT RSA-046 RANGE	201203	Site was on an active range and moved to the -CC database.
RSA-A	INACTIVE PROPELLANT STORAGE WELLS	201311	
RSA-B	ABANDONED ARMY PROPELLANT MFG.BLDG 7598	199708	Closure DD signed by USEPA and ADEM 1997 Oct 10
RSA-C	ABANDONED ARMY PROPELLANT MIXER BLDG.	201203	ADEM letter concurred with NFA recommendation. ADEM is currently modifying the permit to move the site to the NFA table.
RSA-D	FORMER CYANIDE-BASE PAINTING OPERATION	200809	Received concurrence letters from EPA and ADEM on the recommendation for NFA presented in the Expanded SI report.
RSA-E	FUEL OIL SPILL FROM TANK #5693	200212	Based upon the ongoing facility use, the site is not considered DERP eligible. A request has been forwarded to EPA/ADEM to remove this site from the CERCLA program. Approval from ADEM was granted on 4 Feb 03. The site is now being tracked as compliance response site CCSWMU-E.
RSA-F	FORMER OPERATIONS AT OPEN STORAGE YARD	200212	Based upon the ongoing facility use, the site is not considered DERP eligible. A request has been forwarded to EPA/ADEM to remove this site from the CERCLA program. Approval from ADEM was granted on 4 Feb 03. USEPA has unofficially concurred and formal confirmation is forthcoming. The site is now being tracked as compliance response site CCSWMU-F.

IRP Schedule

Date of IRP Inception: 197710

Past Phase Completion Milestones

1978	
RFA	(RSA-101 - ENCAPSULATED PESTICIDE CONTAM. SED. AREA, RSA-102 - DISMANTLED PESTICIDE MFG. PLANT SITE, RSA-103 - CAPPED PESTICIDE SETTLING LAGOON, RSA-105 - INACTIVE CLOSED DDT DRAINAGE DITCHES, RSA-106 - EARTHEN RETENTION DAMS FOR DDT MIGRATION)
1979	
CS	(RSA-102 - DISMANTLED PESTICIDE MFG. PLANT SITE, RSA-103 - CAPPED PESTICIDE SETTLING LAGOON, RSA-105 - INACTIVE CLOSED DDT DRAINAGE DITCHES, RSA-106 - EARTHEN RETENTION DAMS FOR DDT MIGRATION)
1981	
RFA	(RSA-107 - CLOSED DDT CONTAM.SOILS/DEBRIS LANDFILL)
1982	
CMI(C)	(RSA-107 - CLOSED DDT CONTAM.SOILS/DEBRIS LANDFILL)
1987	
CMI(C)	(RSA-101 - ENCAPSULATED PESTICIDE CONTAM. SED. AREA, RSA-102 - DISMANTLED PESTICIDE MFG. PLANT SITE, RSA-103 - CAPPED PESTICIDE SETTLING LAGOON, RSA-105 - INACTIVE CLOSED DDT DRAINAGE DITCHES, RSA-106 - EARTHEN RETENTION DAMS FOR DDT MIGRATION)
1989	
RFA	(RSA-005 - INACTIVE WASTE ACCUMULATION AREA, RSA-083 - INACTIVE SPRAY PAINT BOOTH SUMP, RSA-109 - FORMER CHEMICAL MUNITIONS STAGING AREA, RSA-117 - FORMER LIQUID CAUSTIC MFG. PLANT SITE, RSA-122 - DISMANTLED LEWISITE MFG. PLANTS SITE, RSA-134 - INACTIVE DISPOSAL TRENCH & BURN PIT, RSA-139 - CAPPED ARSENIC WASTE POND-NORTH)
PA	(RSA-129 - FORMER BURN PAD & CAPPED WASHOUT PIT)
1990	
ISC	(RSA-037 - REMOVED USED OIL UST SITE, TANK #7846, RSA-038 - REMOVED USED OIL UST SITE, TANK #3240D, RSA-039 - REMOVED #2 FUEL OIL UST SITE, TANK #3338, RSA-040 - REMOVED USED OIL UST SITE, TANK #3617, RSA-041 - REMOVED USED OIL UST SITE, TANK #3636, RSA-043 - REMOVED USED OIL UST SITE, TANK #3665)
SI	(RSA-129 - FORMER BURN PAD & CAPPED WASHOUT PIT, RSA-132 - DISMANTLED & REMOVED POPPING FURNACE, RSA-133 - INACTIVE ROCKET WASHOUT RACK & SUMP)
RFA	(MSFC-027 - INACTIVE WASTE ACCUMULATION AREA, MSFC-034 - FORMER CHEMICAL PRODUCTION AREA, MSFC-053 - FORMER PROPELLANT STORAGE AREA, MSFC-055 - DISMANTLED STAUFFER CHEM.MFG. PLANT SITE, RSA-001 - FOX ARMY COMMUNITY HOSPITAL INCINERATOR, RSA-002 - IN-GROUND OIL/WATER SEPARATOR, BLDG.3338, RSA-003 - IN-GROUND OIL/WATER SEPARATOR, BLDG.3617, RSA-004 - IN-GROUND OIL/WATER SEPARATOR & WASHRACK, RSA-006 - PAINT SHOP & SUMPS BLDG 3634 MOTOR POOL, RSA-007 - HAZARDOUS WASTE STORAGE AREA, BLDG. 3775, RSA-010 - CLOSED UNLINED SANITARY LANDFILL, RSA-012 - ACTIVE OPEN BURN PANS, RSA-013 - UNLINED INACTIVE OPEN BURN PADS, RSA-014 - UNLINED INACTIVE BURN TRENCHES, RSA-015 - HAZARDOUS WASTE STORAGE IGLOO, NO. 1, RSA-016 - HAZARDOUS WASTE STORAGE IGLOO, NO. 2, RSA-017 - HAZARDOUS WASTE STORAGE IGLOO, NO. 3, RSA-018 - HAZARDOUS WASTE STORAGE IGLOO, NO. 4, RSA-019 - HAZARDOUS WASTE STORAGE IGLOO, NO. 5, RSA-020 - HAZARDOUS WASTE STORAGE IGLOO, NO. 6, RSA-021 - HAZARDOUS WASTE STORAGE IGLOO, NO. 7, RSA-022 - HAZARDOUS WASTE STORAGE IGLOO, NO. 8, RSA-023 - HAZARDOUS WASTE STORAGE IGLOO, NO. 9, RSA-024 - HAZ. WASTE VACANT STORAGE IGLOO, NO. 10, RSA-025 - HAZ. WASTE VACANT STORAGE IGLOO, NO. 11, RSA-026 - HAZ. WASTE VACANT STORAGE IGLOO, NO. 12, RSA-027 - HAZ. WASTE VACANT STORAGE IGLOO, NO. 13, RSA-028 - IN-GROUND OIL/WATER SEPARATOR, 5693 AREA, RSA-029 - REDSTONE ARSENAL SANITARY SEWER SYSTEM, RSA-030 - CENTRAL OIL/WATER SEPARATOR, RSA-031 - CENTRAL OIL/WATER SEPARATOR STORAGE TANK, RSA-032 - INACTIVE SCRAP METAL STORAGE AREA, RSA-033 - PLATING ROOM FLOOR DRAINS, BLDG. 5432, RSA-034 - WASTE AVIATION FUEL TEMP. STORAGE AREA, RSA-035 - IN-GROUND OIL/WATER SEPARATOR, BLDG.4812, RSA-036 - IN-GROUND OIL/WATER SEPARATOR, BLDG.4832, RSA-042 - REMOVED O.W. SEP.STORAGE TANK #4812 SITE, RSA-044 - REMOVED USED OIL UST SITE, TANK #5435B, RSA-045 - SMOKE MUNITIONS PLANT 3, RSA-048 - INACTIVE CLOSED SANITARY LANDFILL, RSA-049 - CAPPED ARSENIC WASTE

	LAGOONS-WEST, RSA-050 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-051 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-052 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-053 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-054 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-056 - CAPPED ARSENIC WASTE PONDS-SOUTH, RSA-057 - INACTIVE ARSENIC WASTE LAGOON-EAST, RSA-058 - INACTIVE CLOSED RUBBLE FILL & WASTE PILE, RSA-059 - INACTIVE CLOSED CONSTRUCTION RUBBLE FILL, RSA-060 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-061 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-062 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-063 - INACTIVE CHEMICAL MUNITION STORAGE AREA, RSA-064 - INACTIVE MUNITION DEMIL & DISPOSAL AREA, RSA-065 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-066 - INACTIVE ASH DISPOSAL SITE & DEMIL AREA, RSA-067 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-068 - INACTIVE TOXIC CHEMICAL DISPOSAL AREA, RSA-069 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-070 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-071 - HIGH EXPLOSIVE DROP TEST SITE AREA, RSA-072 - MORTAR SHELL TEST SITE AREA, RSA-073 - HIGH EXPLOSIVE IMPACT TEST SITE (WEST), RSA-074 - HIGH EXPLOSIVE IMPACT TEST SITE (EAST), RSA-075 - INACTIVE SOLID WASTE INCINERATOR, RSA-076 - REMOVED RDX/HMX FILTRATION UNIT 1, NORTH, RSA-077 - REMOVED RDX/HMX FILTRATION UNIT 2, SOUTH, RSA-078 - FORMER RDX/HMX FILTER UNIT 1 SUMP, NORTH, RSA-079 - FORMER RDX/HMX FILTER UNIT 2 SUMP, SOUTH, RSA-080 - FORMER RDX/HMX SUSPEN.TRANSFER PAD/SUMP, RSA-081 - REMOVED RDX/HMX CHARCOAL COLUMN DOLLY, RSA-085 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-086 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-087 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-088 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-090 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-091 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-092 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-093 - FORMER RECLAIMED EMPTY DRUM STORAGE AREA, RSA-095 - CHLORINATED-SOLVENT DISTILLATION UNIT 2, RSA-096 - CHLORINATED-SOLVENT DISTILLATION UNIT 3, RSA-097 - CHLORINATED-SOLVENT DISTILLATION UNIT 4, RSA-100 - REMOVED ABOVE GROUND USED OIL TANK, RSA-110 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-111 - CONSTRUCTION DEBRIS, RSA-115 - INACTIVE EAST SIDE BLOWDOWN LAGOON, RSA-119 - ISP INTERNATIONAL MANUFACTURING PLANT, RSA-120 - MATTHEWS CAVE AND RAVINE, RSA-121 - PAINT SHOP/PAINT WASHOUT BOOTH, BLD.4762, RSA-123 - INACTIVE CEMENT PLANT SUMP, RSA-124 - DISMANTLED CALGON WTP PROCESS EQUIPMENT, RSA-125 - WASTE ACCUMULATION AREA, BLDG. 5477, RSA-126 - INACTIVE OPEN BURN TRENCH, RSA-127 - PHOTO LAB WASTEWATER SUMP, BLDG. 5451, RSA-135H - INACTIVE SUMP FOR 1.1 PROPELLANT WASTES, RSA-138M - INACTIVE TEMPORARY STORAGE AREA, RSA-183 - FORMER LEWISITE PRODUCTION FACILITY, RSA-A - INACTIVE PROPELLANT STORAGE WELLS, RSA-C - ABANDONED ARMY PROPELLANT MIXER BLDG.)
CS	(RSA-050 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-052 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-061 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-062 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-063 - INACTIVE CHEMICAL MUNITION STORAGE AREA, RSA-117 - FORMER LIQUID CAUSTIC MFG. PLANT SITE, RSA-134 - INACTIVE DISPOSAL TRENCH & BURN PIT)
PA	(MSFC-002 - INACTIVE ABANDONED DRUM DISPOSAL SITE, MSFC-003 - INACTIVE OLD BONE YARD DISPOSAL SITE , MSFC-060 - INACTIVE DELUGE WATER DRAINAGE SYS., MSFC-065 - FORMER PESTICIDE STORAGE SURFACE DRAIN, MSFC-074 - INACTIVE DISPOSAL SITE, MSFC-077 - INACTIVE OPEN BURNING/DISPOSAL PITS, MSFC-082 - INACTIVE CHEM.MUNTS.DEMIL/DISP. TRENCHES, MSFC-D - FORMER FUEL OIL STORAGE CONTAINMENT BERM, RSA-008 - INACTIVE SEWAGE TREATMENT PLANT 4, RSA-009 - INACTIVE SEWAGE TREATMENT PLANT NO. 3, RSA-011 - INACTIVE SEWAGE TREATMENT PLANT NO. 1, RSA-046 - INACTIVE CHEMICAL MUNITION & DEMIL SITE, RSA-047 - FORMER CHEMICAL TRAINING OPERATIONS, RSA-055 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-082 - FORMER SPARGE UNIT SITE, BLDG. 7595, RSA-084 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-089 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-094 - CHLORINATED-SOLVENT DISTILLATION UNIT 1, RSA-098 - CHLORINATED-SOLVENT DISTILLATION UNIT 5, RSA-099 - ABANDONED PLATING SHOP TANKS & SUMPS, RSA-104 - ABANDONED ISP WASTE DISCHARGE LINE, RSA-108 - TEST RANGE 4 MISSILE IMPACT SITE, RSA-116 - FORMER OPERATIONS

	AT SO. SIDE LAGOON, RSA-118 - INACTIVE IND. DITCH & DISCHARGE LAGOON, RSA-128 - INACTIVE MUSTARD GAS DEMIL AREA, RSA-130 - INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345, RSA-131 - ACTIVE OPEN DETONATION AREA, RSA-132 - DISMANTLED & REMOVED POPPING FURNACE, RSA-133 - INACTIVE ROCKET WASHOUT RACK & SUMP, RSA-B - ABANDONED ARMY PROPELLANT MFG.BLDG 7598, RSA-D - FORMER CYANIDE-BASE PAINTING OPERATION, RSA-E - FUEL OIL SPILL FROM TANK #5693, RSA-F - FORMER OPERATIONS AT OPEN STORAGE YARD)
1991	
SI	(RSA-116 - FORMER OPERATIONS AT SO. SIDE LAGOON)
RFA	(RSA-145 - GROUNDWATER UNIT GW-01, RSA-146 - GROUNDWATER UNIT GW-02, RSA-147 - GROUNDWATER UNIT GW-03, RSA-148 - GROUNDWATER UNIT GW-04, RSA-149 - GROUNDWATER UNIT GW-05, RSA-151 - GROUNDWATER UNIT GW-07, RSA-152 - GROUNDWATER UNIT GW-08, RSA-156 - GROUNDWATER UNIT GW-12)
CS	(RSA-013 - UNLINED INACTIVE OPEN BURN PADS, RSA-014 - UNLINED INACTIVE BURN TRENCHES, RSA-066 - INACTIVE ASH DISPOSAL SITE & DEMIL AREA, RSA-115 - INACTIVE EAST SIDE BLOWDOWN LAGOON)
1992	
PA	(RSA-141 - 4.2 INCH MORTAR DISPOSAL SITE, BLDG 4656)
RFA	(RSA-140 - INACTIVE DISPOSAL AREA , RSA-142 - CHLORINATED-SOLVENT SPILL AREA)
IMP(C)	(RSA-041 - REMOVED USED OIL UST SITE, TANK #3636)
1993	
IMP(C)	(RSA-039 - REMOVED #2 FUEL OIL UST SITE, TANK #3338, RSA-043 - REMOVED USED OIL UST SITE, TANK #3665)
CS	(RSA-010 - CLOSED UNLINED SANITARY LANDFILL, RSA-053 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-054 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-056 - CAPPED ARSENIC WASTE PONDS-SOUTH, RSA-059 - INACTIVE CLOSED CONSTRUCTION RUBBLE FILL, RSA-060 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-068 - INACTIVE TOXIC CHEMICAL DISPOSAL AREA, RSA-122 - DISMANTLED LEWISITE MFG. PLANTS SITE, RSA-139 - CAPPED ARSENIC WASTE POND-NORTH, RSA-140 - INACTIVE DISPOSAL AREA)
SI	(RSA-055 - INACTIVE SANITARY & INDUSTRIAL LANDFILL)
1994	
RFA	(RSA-143 - UNDERGROUND STORAGE TANK SPILL SITE)
CS	(RSA-058 - INACTIVE CLOSED RUBBLE FILL & WASTE PILE)
1995	
SI	(RSA-130 - INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345)
CS	(RSA-048 - INACTIVE CLOSED SANITARY LANDFILL, RSA-057 - INACTIVE ARSENIC WASTE LAGOON-EAST, RSA-067 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-142 - CHLORINATED-SOLVENT SPILL AREA)
1996	
RFA	(RSA-144 - CHLORINATED-SOLVENT DISTILLATION UNIT 6)
IMP(C)	(RSA-038 - REMOVED USED OIL UST SITE, TANK #3240D, RSA-040 - REMOVED USED OIL UST SITE, TANK #3617)
CS	(RSA-005 - INACTIVE WASTE ACCUMULATION AREA, RSA-049 - CAPPED ARSENIC WASTE LAGOONS-WEST, RSA-051 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-095 - CHLORINATED-SOLVENT DISTILLATION UNIT 2, RSA-096 - CHLORINATED-SOLVENT DISTILLATION UNIT 3, RSA-097 - CHLORINATED-SOLVENT DISTILLATION UNIT 4, RSA-126 - INACTIVE OPEN BURN TRENCH, RSA-143 - UNDERGROUND STORAGE TANK SPILL SITE, RSA-183 - FORMER LEWISITE PRODUCTION FACILITY)
SI	(RSA-047 - FORMER CHEMICAL TRAINING OPERATIONS, RSA-094 - CHLORINATED-SOLVENT DISTILLATION UNIT 1, RSA-098 - CHLORINATED-SOLVENT DISTILLATION UNIT 5, RSA-118 - INACTIVE IND. DITCH & DISCHARGE LAGOON, RSA-128 - INACTIVE MUSTARD GAS DEMIL AREA, RSA-D - FORMER CYANIDE-BASE PAINTING OPERATION)

1997	
RI/FS	(RSA-130 - INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345)
SI	(RSA-046 - INACTIVE CHEMICAL MUNITION & DEMIL SITE, RSA-084 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-104 - ABANDONED ISP WASTE DISCHARGE LINE, RSA-108 - TEST RANGE 4 MISSILE IMPACT SITE, RSA-141 - 4.2 INCH MORTAR DISPOSAL SITE, BLDG 4656, RSA-B - ABANDONED ARMY PROPELLANT MFG.BLDG 7598)
CS	(RSA-032 - INACTIVE SCRAP METAL STORAGE AREA, RSA-065 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-144 - CHLORINATED-SOLVENT DISTILLATION UNIT 6, RSA-145 - GROUNDWATER UNIT GW-01, RSA-146 - GROUNDWATER UNIT GW-02, RSA-147 - GROUNDWATER UNIT GW-03, RSA-148 - GROUNDWATER UNIT GW-04, RSA-149 - GROUNDWATER UNIT GW-05, RSA-151 - GROUNDWATER UNIT GW-07, RSA-152 - GROUNDWATER UNIT GW-08, RSA-156 - GROUNDWATER UNIT GW-12)
1998	
RA(C)	(RSA-130 - INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345)
RD	(RSA-130 - INACTIVE PHOTOLAB SEPTIC TANK-BLDG.7345)
SI	(RSA-008 - INACTIVE SEWAGE TREATMENT PLANT 4, RSA-009 - INACTIVE SEWAGE TREATMENT PLANT NO. 3)
CS	(MSFC-027 - INACTIVE WASTE ACCUMULATION AREA, RSA-064 - INACTIVE MUNITION DEMIL & DISPOSAL AREA, RSA-069 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-070 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-110 - FORMER CHEMICAL DRUM STORAGE AREA)
1999	
CS	(MSFC-034 - FORMER CHEMICAL PRODUCTION AREA, MSFC-053 - FORMER PROPELLANT STORAGE AREA, MSFC-055 - DISMANTLED STAUFFER CHEM.MFG. PLANT SITE, RSA-045 - SMOKE MUNITIONS PLANT 3, RSA-087 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-088 - INACTIVE PROPELLANT WASTES STORAGE PAD)
SI	(MSFC-002 - INACTIVE ABANDONED DRUM DISPOSAL SITE, MSFC-060 - INACTIVE DELUGE WATER DRAINAGE SYS., MSFC-065 - FORMER PESTICIDE STORAGE SURFACE DRAIN, MSFC-074 - INACTIVE DISPOSAL SITE, RSA-089 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-099 - ABANDONED PLATING SHOP TANKS & SUMPS, RSA-E - FUEL OIL SPILL FROM TANK #5693, RSA-F - FORMER OPERATIONS AT OPEN STORAGE YARD)
2000	
SI	(MSFC-077 - INACTIVE OPEN BURNING/DISPOSAL PITS, RSA-011 - INACTIVE SEWAGE TREATMENT PLANT NO. 1, RSA-082 - FORMER SPARGE UNIT SITE, BLDG. 7595)
2001	
CS	(RSA-138M - INACTIVE TEMPORARY STORAGE AREA)
IRA	(RSA-056 - CAPPED ARSENIC WASTE PONDS-SOUTH)
SI	(MSFC-003 - INACTIVE OLD BONE YARD DISPOSAL SITE , MSFC-082 - INACTIVE CHEM.MUNTS.DEMIL/DISP. TRENCHES, MSFC-D - FORMER FUEL OIL STORAGE CONTAINMENT BERM)
2002	
RI/FS	(RSA-055 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-128 - INACTIVE MUSTARD GAS DEMIL AREA, RSA-132 - DISMANTLED & REMOVED POPPING FURNACE, RSA-133 - INACTIVE ROCKET WASHOUT RACK & SUMP)
RFI/CMS	(RSA-062 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-070 - FORMER CHEMICAL DRUM STORAGE AREA)
2003	
RI/FS	(RSA-008 - INACTIVE SEWAGE TREATMENT PLANT 4, RSA-009 - INACTIVE SEWAGE TREATMENT PLANT NO. 3, RSA-116 - FORMER OPERATIONS AT SO. SIDE LAGOON, RSA-E - FUEL OIL SPILL FROM TANK #5693, RSA-F - FORMER OPERATIONS AT OPEN STORAGE YARD)
2004	
PA	(RSA-223 - CENTRAL RAILROAD CLASSIFICATION YD, RSA-224 - CONTAINER STORAGE AREA, RSA-234 - WASTE DISPOSAL PIT, RSA-236 - GRENADE PACKING AND ASSEMBLY)
RFA	(RSA-150 - GROUNDWATER UNIT 06, RSA-153 - GROUNDWATER UNIT 09, RSA-154 - GROUNDWATER

	UNIT 10, RSA-155 - GROUNDWATER UNIT 11, RSA-157 - GROUNDWATER UNIT 13, RSA-187 - NORTHERN THIOKOL MIXING FACILITY, RSA-189 - MOTOR/OXIDIZER PREP FACILITIES, RSA-190 - DISPOSAL/DRAINAGE AREA WEST OF ROP , RSA-191 - ROP LINE 1 SERVICE FACILITIES, RSA-192 - TETRYL AND IGNITER PROCESSING (ROP , RSA-193 - THIOKOL IGNITER PREPARATION FACILIT, RSA-194 - PHYSICAL TEST LABORATORY & STORAGE, RSA-195 - THIOKOL PROPELLANT MIX FACILITY #1, RSA-196 - TEST STAND AND CLEANING BUILDING, RSA-197 - ROCKET MOTOR TEST STAND, RSA-198 - THIOKOL EQUIPMENT/TOOL CLEANING FAC, RSA-199 - THIOKOL PROPELLANT MIX FACILITY #2, RSA-200 - ROP LINE 5 AREA OPERATIONS FACILITY, RSA-201 - THIOKOL RESEARCH LABORATORY, RSA-202 - GRADED AREA NW OF ROP STORAGE, RSA-203 - IGLOO AREA LOADING DOCK, RSA-204 - THIOKOL OXIDIZER FACILITY, RSA-205 - PHOTO LAB & MOTOR SERVICE FACILITY, RSA-206 - PROPELLANT MIXING FACILITY #2 & C, RSA-207 - ROHM & HAAS GORGAS LABORATORY, RSA-208 - SOUTH PLANT TESTING FACILITIES, RSA-209 - PROPELLANT CRUSHING/GRINDING & FUZE, RSA-210 - NITROGLYCERINE WASH HOUSE, RSA-211 - SOUTH PLANT STORAGE MAGAZINES, RSA-212 - PROPELLANT DRY HOUSES, RSA-213 - ROP LINE 4 AREA OPS FACILITY, RSA-214 - ROP LINE 6 AREA OPS FACILITY, RSA-215 - RSA-146 HISTORIC SERVICE FACILITIES, RSA-217 - INERT STORAGE WAREHOUSE FACILITIES, RSA-218 - DRMO OPEN STORAGE AREA, RSA-219 - CHEMICAL STORAGE AREA IN SALVAGE YD, RSA-220 - CONSTRUCTION MATERIAL STORAGE YARD, RSA-225 - FUSE MODIFICATION LINE 7, RSA-226 - OPEN STORAGE 54-2, RSA-227 - INACTIVE WASHRACK, RSA-228 - SEWAGE TREATMENT PLANT 2, RSA-230 - ABANDONED RUBBLE PILE, RSA-231 - SMF #1 MIXING & PREP FACILITIES, RSA-233 - SMF#2 MIXING AND PREPARATION FACILI, RSA-237 - PROPELLANT CUTTING AND DRYING, RSA-238 - HVA PLANT #2 MUSTARD LINES 5 & 6, RSA-239 - LINE # 1 BOILER HOUSE, RSA-249 - INACTIVE OLD BONEYARD DISPOSAL SITE, RSA-250 - FORMER STORAGE WAREHOUSE BLDG 778, RSA-252 - INCENDIARY BOMB FACILITY PLANT 2 , RSA-255 - MANGANESE ORE STORAGE AREA N. of RS, RSA-258 - FORMER PAINT SPRAY BUILDING 7862, RSA-261 - LANCE MISSILE CONDITIONING FACILITY, RSA-262 - CWS WAREHOUSE AREA BLDGS 8021-8027, RSA-263 - CWS MOTORPOOL(B 8017)/CHANGE HOUSE, RSA-265 - GASOLINE DRUM STORAGE AREA, RSA-269 - FORMER UST, BUILDING 7852, RSA-272 - FORMER UST FOR BOILER UNIT BLD 7650, RSA-273 - PROPELLANT CONDITIONING AND MOTOR C, RSA-274 - PHYSICS LABORATORY &HIGH EXPLOSIVES, RSA-275 - FORMER FILM PROCESSING LABORATORY , RSA-281 - DISPOSAL TRENCHES AT RSA-046 RANGE)
RI/FS	(MSFC-082 - INACTIVE CHEM.MUNTS.DEMIL/DISP. TRENCHES, MSFC-D - FORMER FUEL OIL STORAGE CONTAINMENT BERM, RSA-046 - INACTIVE CHEMICAL MUNITION & DEMIL SITE, RSA-099 - ABANDONED PLATING SHOP TANKS & SUMPS, RSA-118 - INACTIVE IND. DITCH & DISCHARGE LAGOON)
ISC	(RSA-232 - SMF #1 SERVICE STATION, RSA-235 - BULK FUEL STORAGE FACILITY)
2005	
RI/FS	(RSA-089 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-098 - CHLORINATED-SOLVENT DISTILLATION UNIT 5, RSA-104 - ABANDONED ISP WASTE DISCHARGE LINE, RSA-129 - FORMER BURN PAD & CAPPED WASHOUT PIT)
CS	(RSA-194 - PHYSICAL TEST LABORATORY & STORAGE, RSA-195 - THIOKOL PROPELLANT MIX FACILITY #1, RSA-196 - TEST STAND AND CLEANING BUILDING, RSA-198 - THIOKOL EQUIPMENT/TOOL CLEANING FAC, RSA-200 - ROP LINE 5 AREA OPERATIONS FACILITY, RSA-226 - OPEN STORAGE 54-2, RSA-227 - INACTIVE WASHRACK, RSA-230 - ABANDONED RUBBLE PILE, RSA-231 - SMF #1 MIXING & PREP FACILITIES, RSA-238 - HVA PLANT #2 MUSTARD LINES 5 & 6, RSA-252 - INCENDIARY BOMB FACILITY PLANT 2 , RSA-262 - CWS WAREHOUSE AREA BLDGS 8021-8027, RSA-281 - DISPOSAL TRENCHES AT RSA-046 RANGE)
ISC	(RSA-229 - FORMER PX SERVICE STATION)
RFA	(PBCatRedstone - FY05 PBC, RSA-253 - UTILITY/FLAMMABLE MATERIALS STORAGE, RSA-271 - FORMER BOILER HOUSE, BUILDING 7729, RSA-276 - FORMER BOILER HOUSE, BLDG 7362)
2006	
RI/FS	(MSFC-074 - INACTIVE DISPOSAL SITE)

2007	
RI/FS	(MSFC-002 - INACTIVE ABANDONED DRUM DISPOSAL SITE, RSA-011 - INACTIVE SEWAGE TREATMENT PLANT NO. 1, RSA-047 - FORMER CHEMICAL TRAINING OPERATIONS)
RFI/CMS	(RSA-049 - CAPPED ARSENIC WASTE LAGOONS-WEST, RSA-057 - INACTIVE ARSENIC WASTE LAGOON-EAST)
SI	(RSA-223 - CENTRAL RAILROAD CLASSIFICATION YD)
CAP	(RSA-229 - FORMER PX SERVICE STATION)
CS	(RSA-150 - GROUNDWATER UNIT 06, RSA-153 - GROUNDWATER UNIT 09, RSA-154 - GROUNDWATER UNIT 10, RSA-155 - GROUNDWATER UNIT 11)
INV	(RSA-229 - FORMER PX SERVICE STATION, RSA-232 - SMF #1 SERVICE STATION, RSA-235 - BULK FUEL STORAGE FACILITY)
IRA	(MSFC-002 - INACTIVE ABANDONED DRUM DISPOSAL SITE, RSA-146 - GROUNDWATER UNIT GW-02)
2008	
CMI(C)	(RSA-049 - CAPPED ARSENIC WASTE LAGOONS-WEST, RSA-057 - INACTIVE ARSENIC WASTE LAGOON-EAST)
IRA	(RSA-252 - INCENDIARY BOMB FACILITY PLANT 2)
RI/FS	(MSFC-077 - INACTIVE OPEN BURNING/DISPOSAL PITS, RSA-141 - 4.2 INCH MORTAR DISPOSAL SITE, BLDG 4656, RSA-D - FORMER CYANIDE-BASE PAINTING OPERATION)
SI	(RSA-224 - CONTAINER STORAGE AREA, RSA-234 - WASTE DISPOSAL PIT, RSA-236 - GRENADE PACKING AND ASSEMBLY)
IMP(C)	(RSA-229 - FORMER PX SERVICE STATION)
CS	(RSA-157 - GROUNDWATER UNIT 13)
2009	
IMP(O)	(RSA-229 - FORMER PX SERVICE STATION)
CS	(RSA-187 - NORTHERN THIOKOL MIXING FACILITY, RSA-189 - MOTOR/OXIDIZER PREP FACILITIES, RSA-190 - DISPOSAL/DRAINAGE AREA WEST OF ROP , RSA-191 - ROP LINE 1 SERVICE FACILITIES, RSA-192 - TETRYL AND IGNITER PROCESSING (ROP , RSA-193 - THIOKOL IGNITER PREPARATION FACILIT, RSA-199 - THIOKOL PROPELLANT MIX FACILITY #2, RSA-201 - THIOKOL RESEARCH LABORATORY, RSA-202 - GRADED AREA NW OF ROP STORAGE, RSA-203 - IGLOO AREA LOADING DOCK, RSA-204 - THIOKOL OXIDIZER FACILITY, RSA-205 - PHOTO LAB & MOTOR SERVICE FACILITY, RSA-206 - PROPELLANT MIXING FACILITY #2 & C, RSA-207 - ROHM & HAAS GORGAS LABORATORY, RSA-208 - SOUTH PLANT TESTING FACILITIES, RSA-209 - PROPELLANT CRUSHING/GRINDING & FUZE, RSA-210 - NITROGLYCERINE WASH HOUSE, RSA-211 - SOUTH PLANT STORAGE MAGAZINES, RSA-212 - PROPELLANT DRY HOUSES, RSA-213 - ROP LINE 4 AREA OPS FACILITY, RSA-215 - RSA-146 HISTORIC SERVICE FACILITIES, RSA-233 - SMF#2 MIXING AND PREPARATION FACILI, RSA-237 - PROPELLANT CUTTING AND DRYING, RSA-239 - LINE # 1 BOILER HOUSE, RSA-249 - INACTIVE OLD BONEYARD DISPOSAL SITE, RSA-255 - MANGANESE ORE STORAGE AREA N. of RS, RSA-273 - PROPELLANT CONDITIONING AND MOTOR C, RSA-274 - PHYSICS LABORATORY &HIGH EXPLOSIVES, RSA-A - INACTIVE PROPELLANT STORAGE WELLS, RSA-C - ABANDONED ARMY PROPELLANT MIXER BLDG.)
RFI/CMS	(RSA-056 - CAPPED ARSENIC WASTE PONDS-SOUTH, RSA-122 - DISMANTLED LEWISITE MFG. PLANTS SITE, RSA-139 - CAPPED ARSENIC WASTE POND-NORTH, RSA-183 - FORMER LEWISITE PRODUCTION FACILITY, RSA-196 - TEST STAND AND CLEANING BUILDING, RSA-200 - ROP LINE 5 AREA OPERATIONS FACILITY)
RI/FS	(RSA-094 - CHLORINATED-SOLVENT DISTILLATION UNIT 1)
2010	
CS	(RSA-197 - ROCKET MOTOR TEST STAND, RSA-265 - GASOLINE DRUM STORAGE AREA, RSA-269 - FORMER UST, BUILDING 7852, RSA-271 - FORMER BOILER HOUSE, BUILDING 7729, RSA-272 - FORMER UST FOR BOILER UNIT BLD 7650, RSA-276 - FORMER BOILER HOUSE, BLDG 7362)
2011	
RFI/CMS	(RSA-053 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-096 - CHLORINATED-SOLVENT

	DISTILLATION UNIT 3)
CS	(RSA-083 - INACTIVE SPRAY PAINT BOOTH SUMP)
RFA	(MSFC-033A - Surface Soils East of Bldg 4816)
2012	
RFI/CMS	(RSA-048 - INACTIVE CLOSED SANITARY LANDFILL, RSA-051 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-052 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-054 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-058 - INACTIVE CLOSED RUBBLE FILL & WASTE PILE, RSA-059 - INACTIVE CLOSED CONSTRUCTION RUBBLE FILL, RSA-061 - INACTIVE MUNITIONS DEMIL & DISPOSAL AREA, RSA-063 - INACTIVE CHEMICAL MUNITION STORAGE AREA, RSA-064 - INACTIVE MUNITION DEMIL & DISPOSAL AREA, RSA-066 - INACTIVE ASH DISPOSAL SITE & DEMIL AREA, RSA-068 - INACTIVE TOXIC CHEMICAL DISPOSAL AREA, RSA-087 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-088 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-095 - CHLORINATED-SOLVENT DISTILLATION UNIT 2, RSA-110 - FORMER CHEMICAL DRUM STORAGE AREA, RSA-142 - CHLORINATED-SOLVENT SPILL AREA, RSA-144 - CHLORINATED-SOLVENT DISTILLATION UNIT 6, RSA-189 - MOTOR/OXIDIZER PREP FACILITIES, RSA-190 - DISPOSAL/DRAINAGE AREA WEST OF ROP , RSA-202 - GRADED AREA NW OF ROP STORAGE, RSA-281 - DISPOSAL TRENCHES AT RSA-046 RANGE, RSA-C - ABANDONED ARMY PROPELLANT MIXER BLDG.)
CS	(RSA-214 - ROP LINE 6 AREA OPS FACILITY)
IRA	(RSA-097 - CHLORINATED-SOLVENT DISTILLATION UNIT 4)
2013	
IRA	(RSA-138M - INACTIVE TEMPORARY STORAGE AREA, RSA-150 - GROUNDWATER UNIT 06)
RFI/CMS	(RSA-097 - CHLORINATED-SOLVENT DISTILLATION UNIT 4, RSA-134 - INACTIVE DISPOSAL TRENCH & BURN PIT, RSA-191 - ROP LINE 1 SERVICE FACILITIES, RSA-192 - TETRYL AND IGNITER PROCESSING (ROP , RSA-195 - THIOKOL PROPELLANT MIX FACILITY #1, RSA-205 - PHOTO LAB & MOTOR SERVICE FACILITY, RSA-207 - ROHM & HAAS GORGAS LABORATORY)
CMI(O)	(RSA-057 - INACTIVE ARSENIC WASTE LAGOON-EAST)
DES	(RSA-053 - INACTIVE SANITARY & INDUSTRIAL LANDFILL, RSA-054 - INACTIVE SANITARY & INDUSTRIAL LANDFILL)
2014	
DES	(RSA-087 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-088 - INACTIVE PROPELLANT WASTES STORAGE PAD, RSA-095 - CHLORINATED-SOLVENT DISTILLATION UNIT 2, RSA-096 - CHLORINATED-SOLVENT DISTILLATION UNIT 3, RSA-142 - CHLORINATED-SOLVENT SPILL AREA, RSA-200 - ROP LINE 5 AREA OPERATIONS FACILITY)
IRA	(RSA-145 - GROUNDWATER UNIT GW-01, RSA-147 - GROUNDWATER UNIT GW-03, RSA-148 - GROUNDWATER UNIT GW-04, RSA-149 - GROUNDWATER UNIT GW-05, RSA-151 - GROUNDWATER UNIT GW-07, RSA-152 - GROUNDWATER UNIT GW-08, RSA-153 - GROUNDWATER UNIT 09, RSA-154 - GROUNDWATER UNIT 10, RSA-155 - GROUNDWATER UNIT 11, RSA-156 - GROUNDWATER UNIT GW-12, RSA-157 - GROUNDWATER UNIT 13)
RFI/CMS	(RSA-138M - INACTIVE TEMPORARY STORAGE AREA, RSA-187 - NORTHERN THIOKOL MIXING FACILITY, RSA-193 - THIOKOL IGNITER PREPARATION FACILIT, RSA-213 - ROP LINE 4 AREA OPS FACILITY, RSA-215 - RSA-146 HISTORIC SERVICE FACILITIES, RSA-273 - PROPELLANT CONDITIONING AND MOTOR C, RSA-A - INACTIVE PROPELLANT STORAGE WELLS)

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
RSA-135H	INACTIVE SUMP FOR 1.1 PROPELLANT WASTES	Permit Modification for RSA-135H	20160331

RSA-149	GROUNDWATER UNIT GW-05	RECORD OF DECISION FOR RSA-149	20160831
RSA-156	GROUNDWATER UNIT GW-12	DECISION DOCUMENT FOR RSA-156	20160430
RSA-192	TETRYL AND IGNITER PROCESSING (ROP	DECISION DOCUMENT FOR RSA-192	20150430
RSA-204	THIOKOL OXIDIZER FACILITY	DECISION DOCUMENT FOR RSA-204	20150731
RSA-157	GROUNDWATER UNIT 13	Permit Modification FOR RSA-157	20160430
RSA-273	PROPELLANT CONDITIONING AND MOTOR C	No Further Action for RSA-273	20150930
RSA-208	SOUTH PLANT TESTING FACILITIES	DECISION DOCUMENT FOR RSA-208	20151031
RSA-255	MANGANESE ORE STORAGE AREA N. of RS	DECISION DOCUMENT FOR RSA-255	20150831
RSA-239	LINE # 1 BOILER HOUSE	DECISION DOCUMENT FOR RSA-239	20150930
RSA-032	INACTIVE SCRAP METAL STORAGE AREA	Permit Modification FOR RSA-032	20151231
RSA-117	FORMER LIQUID CAUSTIC MFG. PLANT SITE	Permit Modification FOR RSA-117	20170630
RSA-274	PHYSICS LABORATORY &HIGH EXPLOSIVES	DECISION DOCUMENT FOR RSA-274	20150930
RSA-275	FORMER FILM PROCESSING LABORATORY	DECISION DOCUMENT FOR RSA-275	20160228
RSA-198	THIOKOL EQUIPMENT/TOOL CLEANING FAC	Permit Modification for RSA-198	20150930
RSA-147	GROUNDWATER UNIT GW-03	Permit Modification FOR RSA-147	20160831
RSA-211	SOUTH PLANT STORAGE MAGAZINES	DECISION DOCUMENT FOR RSA-211	20150531
RSA-212	PROPELLANT DRY HOUSES	DECISION DOCUMENT FOR RSA-212	20150630
RSA-226	OPEN STORAGE 54-2	Permit Modification FOR RSA-226	20160630
RSA-228	SEWAGE TREATMENT PLANT 2	Permit Modification FOR RSA-228	20160630
RSA-238	HVA PLANT #2 MUSTARD LINES 5 & 6	Permit Modification for RSA-238	20150830
RSA-230	ABANDONED RUBBLE PILE	Permit Modification for RSA-230	20151231
RSA-231	SMF #1 MIXING & PREP FACILITIES	Permit Modification for RSA-231	20161230
RSA-276	FORMER BOILER HOUSE, BLDG 7362	DECISION DOCUMENT FOR RSA-276	20151130
RSA-058	INACTIVE CLOSED RUBBLE FILL & WASTE PILE	Permit Modification FOR RSA-058	20150630
RSA-087	INACTIVE PROPELLANT WASTES STORAGE PAD	RECORD OF DECISION FOR RSA-087	20150930
RSA-151	GROUNDWATER UNIT GW-07	DECISION DOCUMENT FOR RSA-151	20160130
RSA-193	THIOKOL IGNITER PREPARATION FACILIT	DECISION DOCUMENT FOR RSA-193	20150930
RSA-199	THIOKOL PROPELLANT MIX FACILITY #2	DECISION DOCUMENT FOR RSA-199	20150430
RSA-209	PROPELLANT CRUSHING/GRINDING & FUZE	DECISION DOCUMENT FOR RSA-209	20160331

RSA-217	INERT STORAGE WAREHOUSE FACILITIES	DECISION DOCUMENT FOR RSA-217	20160731
RSA-253	UTILITY/FLAMMABLE MATERIALS STORAGE	DECISION DOCUMENT FOR RSA-253	20150531
RSA-014	UNLINED INACTIVE BURN TRENCHES	RECORD OF DECISION FOR RSA-014	20170401
RSA-053	INACTIVE SANITARY & INDUSTRIAL LANDFILL	Permit Modification FOR RSA-053	20150930
RSA-060	INACTIVE SANITARY & INDUSTRIAL LANDFILL	Permit Modification FOR RSA-060	20170228
RSA-013	UNLINED INACTIVE OPEN BURN PADS	RECORD OF DECISION FOR RSA-013	20170519
MSFC-053	FORMER PROPELLANT STORAGE AREA	DECISION DOCUMENT FOR MSFC-053	20151231
RSA-200	ROP LINE 5 AREA OPERATIONS FACILITY	RECORD OF DECISION FOR RSA-200	20150930
RSA-272	FORMER UST FOR BOILER UNIT BLD 7650	DECISION DOCUMENT FOR RSA-272	20150930
RSA-210	NITROGLYCERINE WASH HOUSE	DECISION DOCUMENT FOR RSA-210	20150831
RSA-155	GROUNDWATER UNIT 11	DECISION DOCUMENT FOR RSA-155	20160228
RSA-271	FORMER BOILER HOUSE, BUILDING 7729	DECISION DOCUMENT FOR RSA-271	20150531
RSA-262	CWS WAREHOUSE AREA BLDGS 8021-8027	Permit Modification for RSA-262	20170730
MSFC-034	FORMER CHEMICAL PRODUCTION AREA	DECISION DOCUMENT FOR MSFC-034	20160430
RSA-269	FORMER UST, BUILDING 7852	DECISION DOCUMENT FOR RSA-269	20150430
RSA-203	IGLOO AREA LOADING DOCK	DECISION DOCUMENT FOR RSA-203	20150830
RSA-233	SMF#2 MIXING AND PREPARATION FACILI	Permit Modification FOR RSA-233	20151031
RSA-154	GROUNDWATER UNIT 10	DECISION DOCUMENT FOR RSA-154	20160331
RSA-088	INACTIVE PROPELLANT WASTES STORAGE PAD	RECORD OF DECISION FOR RSA-088	20150930
RSA-117	FORMER LIQUID CAUSTIC MFG. PLANT SITE	RECORD OF DECISION FOR RSA-109	20150630
RSA-109	FORMER CHEMICAL MUNITIONS STAGING AREA	RECORD OF DECISION FOR RSA-109	20150630
RSA-213	ROP LINE 4 AREA OPS FACILITY	DECISION DOCUMENT FOR RSA-213	20150430
RSA-A	INACTIVE PROPELLANT STORAGE WELLS	DECISION DOCUMENT FOR RSA-A	20150930
RSA-237	PROPELLANT CUTTING AND DRYING	DECISION DOCUMENT FOR RSA-237	20150430
RSA-261	LANCE MISSILE CONDITIONING FACILITY	Permit Modification FOR RSA-261	20150531
RSA-263	CWS MOTORPOOL(B 8017)/CHANGE HOUSE	DECISION DOCUMENT FOR RSA-263	20161030
RSA-005	INACTIVE WASTE ACCUMULATION AREA	RECORD OF DECISION FOR RSA-005	20150930
RSA-148	GROUNDWATER UNIT GW-04	Permit Modification FOR RSA-148	20160831
RSA-250	FORMER STORAGE	DECISION DOCUMENT FOR RSA-250	20151130

	WAREHOUSE BLDG 778		
RSA-146	GROUNDWATER UNIT GW-02	RECORD OF DECISION FOR RSA-146	20151030
RSA-227	INACTIVE WASHRACK	Permit Modification FOR RSA-227	20160630
RSA-069	FORMER CHEMICAL DRUM STORAGE AREA	Permit Modification for RSA-069	20151231
RSA-252	INCENDIARY BOMB FACILITY PLANT 2	Permit Modification for RSA-252	20160228
RSA-065	FORMER CHEMICAL DRUM STORAGE AREA	RECORD OF DECISION FOR RSA-065	20170930
RSA-140	INACTIVE DISPOSAL AREA	Permit Modification for RSA-140	20150515
RSA-152	GROUNDWATER UNIT GW-08	DECISION DOCUMENT FOR RSA-152	20160130
RSA-187	NORTHERN THIOKOL MIXING FACILITY	DECISION DOCUMENT FOR RSA-187	20150430
RSA-218	DRMO OPEN STORAGE AREA	DECISION DOCUMENT FOR RSA-218	20161230
RSA-201	THIOKOL RESEARCH LABORATORY	DECISION DOCUMENT FOR RSA-201	20160228
RSA-219	CHEMICAL STORAGE AREA IN SALVAGE YD	DECISION DOCUMENT FOR RSA-219	20160731
RSA-150	GROUNDWATER UNIT 06	RECORD OF DECISION FOR RSA-150	20161230
RSA-258	FORMER PAINT SPRAY BUILDING 7862	Permit Modification FOR RSA-258	20150930
RSA-083	INACTIVE SPRAY PAINT BOOTH SUMP	DECISION DOCUMENT FOR RSA-083	20160228
RSA-220	CONSTRUCTION MATERIAL STORAGE YARD	DECISION DOCUMENT FOR RSA-220	20160630
RSA-045	SMOKE MUNITIONS PLANT 3	Permit Modification FOR RSA-045	20161030
RSA-138M	INACTIVE TEMPORARY STORAGE AREA	Permit Modification for RSA-138M	20150930
RSA-206	PROPELLANT MIXING FACILITY #2 & C	DECISION DOCUMENT FOR RSA-206	20151031
RSA-265	GASOLINE DRUM STORAGE AREA	DECISION DOCUMENT FOR RSA-265	20150530
RSA-067	FORMER CHEMICAL DRUM STORAGE AREA	Permit Modification FOR RSA-067	20151231
RSA-145	GROUNDWATER UNIT GW-01	DECISION DOCUMENT FOR RSA-145	20160103
RSA-194	PHYSICAL TEST LABORATORY & STORAGE	Permit Modification for RSA-194	20150828
MSFC-027	INACTIVE WASTE ACCUMULATION AREA	RECORD OF DECISION FOR MSFC-027	20160330
RSA-126	INACTIVE OPEN BURN TRENCH	Permit Modification for RSA-126	20151231
RSA-153	GROUNDWATER UNIT 09	RECORD OF DECISION FOR RSA-153	20160930
RSA-215	RSA-146 HISTORIC SERVICE FACILITIES	DECISION DOCUMENT FOR RSA-215	20150430
RSA-134	INACTIVE DISPOSAL TRENCH & BURN PIT	Permit Modification for RSA-134	20150930

IRP Schedule

Final RA(C) Completion Date: 204901

Schedule for Next Five-Year Review: 2017

Estimated Completion Date of IRP at Installation (including LTM phase): 205906

REDSTONE ARSENAL IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
MSFC-027	INACTIVE WASTE ACCUMULATION AREA	RFI/CMS	■					
		DES	■					
		CMI(C)		■	■			
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
MSFC-033A	Surface Soils East of Bldg 4816	RFI/CMS	■					
		CMI(C)	■	■	■			
		LTM			■	■	■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
MSFC-034	FORMER CHEMICAL PRODUCTION AREA	RFI/CMS	■	■	■			
		DES		■	■			
		CMI(C)				■	■	
		CMI(O)					■	■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
PBCatRedstone	FY05 PBC	RFI/CMS	■	■	■			
		LTM				■	■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-005	INACTIVE WASTE ACCUMULATION AREA	DES	■					
		CMI(C)	■	■				
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-010	CLOSED UNLINED SANITARY LANDFILL	RFI/CMS	■	■				
		DES		■	■			
		CMI(C)			■	■	■	
		CMI(O)					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-013	UNLINED INACTIVE OPEN BURN PADS	RFI/CMS	■	■				
		DES		■	■			
		CMI(C)			■	■		
		LTM				■	■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-014	UNLINED INACTIVE BURN TRENCHES	RFI/CMS	■	■				
		DES		■	■			
		CMI(C)			■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-032	INACTIVE SCRAP METAL STORAGE AREA	RFI/CMS	■					
		DES	■	■	■			
		CMI(C)			■	■		
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-045	SMOKE MUNITIONS PLANT 3	RFI/CMS	■					
		DES		■	■			
		CMI(C)			■	■	■	

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-048	INACTIVE CLOSED SANITARY LANDFILL	DES	■	■				
		CMI(C)			■	■		
		LTM				■	■	■
RSA-049	CAPPED ARSENIC WASTE LAGOONS-WEST	LTM	■	■	■	■	■	■
RSA-050	INACTIVE MUNITIONS DEMIL & DISPOSAL AREA	RFI/CMS	■	■				
		DES		■	■			
		CMI(C)			■	■	■	
RSA-053	INACTIVE SANITARY & INDUSTRIAL LANDFILL	CMI(C)	■					
		LTM	■	■	■	■	■	■
RSA-054	INACTIVE SANITARY & INDUSTRIAL LANDFILL	CMI(C)	■	■				
		CMI(O)	■	■	■	■	■	■
RSA-056	CAPPED ARSENIC WASTE PONDS-SOUTH	CMI(C)		■	■			
		LTM			■	■	■	■
RSA-057	INACTIVE ARSENIC WASTE LAGOON-EAST	LTM	■	■	■	■	■	■
RSA-058	INACTIVE CLOSED RUBBLE FILL & WASTE PILE	CMI(C)	■					
		LTM	■	■	■	■	■	■
RSA-059	INACTIVE CLOSED CONSTRUCTION RUBBLE FILL	DES	■	■				
		CMI(C)			■	■		
		LTM				■	■	■
RSA-060	INACTIVE SANITARY & INDUSTRIAL LANDFILL	DES	■					
		CMI(C)	■	■				
		LTM		■	■	■	■	■
RSA-065	FORMER CHEMICAL DRUM STORAGE AREA	RFI/CMS	■	■				
		CMI(C)		■	■			
		LTM			■	■	■	■
RSA-067	FORMER CHEMICAL DRUM STORAGE AREA	RFI/CMS	■	■				
		CMI(C)		■	■			
		LTM			■	■	■	■
RSA-069	FORMER CHEMICAL DRUM STORAGE AREA	RFI/CMS	■	■				
		CMI(C)		■	■			
		LTM			■	■	■	■

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-083	INACTIVE SPRAY PAINT BOOTH SUMP	RFI/CMS	■					
		DES	■	■				
		CMI(C)		■	■			
		CMI(O)			■	■		
		LTM				■	■	■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-087	INACTIVE PROPELLANT WASTES STORAGE PAD	CMI(C)	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-088	INACTIVE PROPELLANT WASTES STORAGE PAD	CMI(C)	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-095	CHLORINATED-SOLVENT DISTILLATION UNIT 2	CMI(C)	■	■	■			
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-109	FORMER CHEMICAL MUNITIONS STAGING AREA	RFI/CMS	■	■	■			
		DES		■	■			
		CMI(C)				■	■	
		LTM					■	■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-115	INACTIVE EAST SIDE BLOWDOWN LAGOON	RFI/CMS	■	■				
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-117	FORMER LIQUID CAUSTIC MFG. PLANT SITE	RFI/CMS	■	■				
		DES		■	■	■		
		CMI(C)				■	■	■
		CMI(O)						■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-122	DISMANTLED LEWISITE MFG. PLANTS SITE	DES	■	■				
		CMI(C)	■	■	■			
		LTM			■	■	■	■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-126	INACTIVE OPEN BURN TRENCH	RFI/CMS	■	■				
		IRA	■	■				
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-135H	INACTIVE SUMP FOR 1.1 PROPELLANT WASTES	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-139	CAPPED ARSENIC WASTE POND-NORTH	DES	■	■				
		CMI(C)	■	■	■			
		LTM			■	■	■	■

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-140	INACTIVE DISPOSAL AREA	RFI/CMS	■					
		DES	■					
		CMI(C)	■	■				
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-142	CHLORINATED-SOLVENT SPILL AREA	CMI(C)	■	■	■			
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-143	UNDERGROUND STORAGE TANK SPILL SITE	RFI/CMS	■	■				
		DES	■	■	■			
		CMI(C)	■	■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-145	GROUNDWATER UNIT GW-01	RFI/CMS	■					
		DES	■	■	■			
		CMI(C)			■	■	■	■
		CMI(O)						■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-146	GROUNDWATER UNIT GW-02	RFI/CMS	■	■	■	■	■	■
		DES						■
		CMI(C)						■
		CMI(O)						■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-147	GROUNDWATER UNIT GW-03	RFI/CMS	■	■	■			
		DES		■	■			
		CMI(C)				■	■	
		CMI(O)					■	■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-148	GROUNDWATER UNIT GW-04	RFI/CMS	■	■	■			
		DES		■	■			
		CMI(C)				■	■	
		CMI(O)					■	■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-149	GROUNDWATER UNIT GW-05	RFI/CMS	■	■	■			
		DES		■	■			
		CMI(C)				■	■	
		CMI(O)					■	■
		LTM						■

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-150	GROUNDWATER UNIT 06	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-151	GROUNDWATER UNIT GW-07	RFI/CMS						
		DES						
		CMI(C)						
		CMI(O)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-152	GROUNDWATER UNIT GW-08	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-153	GROUNDWATER UNIT 09	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-154	GROUNDWATER UNIT 10	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-155	GROUNDWATER UNIT 11	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-156	GROUNDWATER UNIT GW-12	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-157	GROUNDWATER UNIT 13	RFI/CMS						
		DES						
		CMI(C)						
		LTM						

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-183	FORMER LEWISITE PRODUCTION FACILITY	DES	■	■				
		CMI(C)	■	■	■	■		
		LTM				■	■	■
RSA-194	PHYSICAL TEST LABORATORY & STORAGE	DES	■					
		CMI(C)	■	■	■			
RSA-198	THIOKOL EQUIPMENT/TOOL CLEANING FAC	DES	■					
		CMI(C)	■	■				
RSA-199	THIOKOL PROPELLANT MIX FACILITY #2	DES	■					
		CMI(C)		■	■			
RSA-200	ROP LINE 5 AREA OPERATIONS FACILITY	CMI(C)	■	■				
RSA-201	THIOKOL RESEARCH LABORATORY	DES	■	■				
		CMI(C)			■	■		
RSA-204	THIOKOL OXIDIZER FACILITY	RFI/CMS	■					
		DES	■	■				
		CMI(C)	■	■	■	■		
		CMI(O)				■	■	■
RSA-206	PROPELLANT MIXING FACILITY #2 & C	RFI/CMS	■	■				
RSA-208	SOUTH PLANT TESTING FACILITIES	RFI/CMS	■	■				
RSA-209	PROPELLANT CRUSHING/GRINDING & FUZE	RFI/CMS	■					
		DES	■	■				
		CMI(C)		■	■			
		CMI(O)			■	■	■	■
RSA-217	INERT STORAGE WAREHOUSE FACILITIES	RFI/CMS	■					
		DES	■	■				
		CMI(C)			■	■		
RSA-218	DRMO OPEN STORAGE AREA	RFI/CMS	■					
RSA-219	CHEMICAL STORAGE AREA IN SALVAGE YD	RFI/CMS	■					
		DES	■	■				
		CMI(C)				■	■	■
		CMI(O)				■	■	■

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-220	CONSTRUCTION MATERIAL STORAGE YARD	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-225	FUSE MODIFICATION LINE 7	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-226	OPEN STORAGE 54-2	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-227	INACTIVE WASHRACK	RFI/CMS	■					
		DES	■	■				
		CMI(C)		■	■			
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-228	SEWAGE TREATMENT PLANT 2	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-230	ABANDONED RUBBLE PILE	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-231	SMF #1 MIXING & PREP FACILITIES	RFI/CMS	■	■				
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-233	SMF#2 MIXING AND PREPARATION FACILI	RFI/CMS	■					
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-238	HVA PLANT #2 MUSTARD LINES 5 & 6	RFI/CMS	■	■				
		DES		■	■			
		CMI(C)				■	■	
		LTM					■	■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-239	LINE # 1 BOILER HOUSE	DES	■	■				
		CMI(C)		■				
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-250	FORMER STORAGE WAREHOUSE BLDG 778	DES	■					
		CMI(C)	■	■				
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-252	INCENDIARY BOMB FACILITY PLANT 2	RFI/CMS	■	■				
		DES	■	■				
		CMI(C)			■	■	■	
		CMI(O)					■	■
		LTM						■
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-255	MANGANESE ORE STORAGE AREA N. of RS	DES	■					
		CMI(C)		■	■			
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-262	CWS WAREHOUSE AREA BLDGS 8021-8027	RFI/CMS	■	■				
		DES	■	■				
		CMI(C)			■	■		
		CMI(O)				■	■	■
		LTM						■

REDSTONE ARSENAL IRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-263	CWS MOTORPOOL(B 8017)/CHANGE HOUSE	RFI/CMS						
RSA-265	GASOLINE DRUM STORAGE AREA	RFI/CMS						
RSA-269	FORMER UST, BUILDING 7852	RFI/CMS						
		DES						
		CMI(C)						
RSA-271	FORMER BOILER HOUSE, BUILDING 7729	DES						
		CMI(C)						
RSA-272	FORMER UST FOR BOILER UNIT BLD 7650	RFI/CMS						
RSA-275	FORMER FILM PROCESSING LABORATORY	RFI/CMS						
		DES						
		CMI(C)						
RSA-276	FORMER BOILER HOUSE, BLDG 7362	RFI/CMS						

REDSTONE ARSENAL

Army Defense Environmental Restoration Program
Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 39/20

Installation Site Types with Future and/or Underway Phases

1 Burn Area
(RSA-234-R-01)

7 Chemical Disposal
(MSFC-003-R-01, RSA-066-R-01, RSA-068-R-01, RSA-110-R-01, RSA-112, RSA-113, RSA-114)

1 Disposal Pit/Dry Well
(MSFC-035)

3 Explosive Ordnance Disposal Area
(RSA-141-R-01, RSA-188, RSA-221-R-01)

1 Small Arms Range
(RSA-280-R-01)

1 Storage Area
(RSA-249-R-01)

1 Training and Maneuver Area
(RSA-294-R-01)

4 Unexploded Munitions/Ordnance
(RSA-072-R-01, RSA-278-R-01, RSA-312-R-01, RSA-313-R-01)

Most Widespread Contaminants of Concern

Munitions and explosives of concern (MEC)

Media of Concern

Soil

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

Site ID	Site Name	Action	Remedy	FY
RSA-072-R-01	Former Mortar Test Site (NOT in Ran	IRA	UXO CLEARANCE	2009

Duration of MMRP

Date of MMRP Inception 198807

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 204108/204108

Date of MMRP completion including Long Term Management (LTM): 207109

MMRP Contamination Assessment

Contamination Assessment Overview

The National Defense Authorization Act (NDAA) for FY02 (Public Law 107-107) amended the Defense Environmental Restoration Program (DERP) by establishing a new program element for the cleanup of property known or suspected to contain UXO, discarded military munitions (DMM) and/or munitions constituents (MC). It requires the Army to develop and maintain an inventory of sites [referred to as munitions response sites (MRS)] that are known or suspected to contain UXO, DMM, and/or MC for sites that are not located on operational ranges, operating manufacturing or storage facilities, or permitted demilitarization facilities. This program element is called the MMRP and is funded separately from the DERP; however, because the Army had previously conducted responses on-sites known or suspected to contain UXO, DMM, and/or MC, munitions response action can occur under the IRP category or the MMRP category. Under the MMRP category, the Army may conduct munitions response activities when the release is at a site that is not a formerly used defense site (FUDS), an operational range, an active munitions demilitarization facility, or an active waste military munitions (WMM) treatment or disposal unit and the site's MMRP costs were not identified or included in the DERP IRP database prior to Sept. 30, 2002.

The Army was required to initiate an inventory of defense sites or MRS with UXO, DMM, and/or MC by May 31, 2003, and to update the inventory annually until complete. The data collected during this inventory on defense sites provides the MRS that will be addressed as MMRP category sites. The range inventory consisted of three phases; Phase I, advance range survey (ARS), Phase II, the active/inactive (A/I) range inventory, and Phase III, the closed, transferred or transferring (CTT) range inventory.
Phase I ARS was completed December 2000
Phase II A/I range inventory was completed July 2001
Phase III CTT range inventory was completed September 2002

There are some off-site issues associated with MMRP sites at Redstone. Site RSA-278-R-01 is a 110-acre portion of RSA that was transferred to the state of Alabama for the construction of Highway 565. The Army disclosed to the state the possible presence of UXO on this parcel and performed a visual sweep for UXO and ordnance-related residue prior to construction. No complete subsurface survey has been conducted. The extent of UXO or related materials (if any) found during construction is not known.

There is high regulatory interest in the MEC on RSA. There has been a great deal of confusion in regard to the division of responsibility between the IRP and MMRP for sites on the arsenal. Many of the issues causing the confusion are being worked out at the Army level and we have begun discussions with the regulators to sort through and alleviate the confusion.

As yet, there is little to no public interest in the MMRP sites. Most are located within the boundaries of RSA and the MSFC. Landowners within the site located off of the installation's property have been notified of the MMRP by letters sent in May 2009.

Work on the RFIs has begun on several of the MMRP sites under the PMC awarded in 2009. Several new MMRP sites have been identified due to range boundary adjustments to support mission activities.

Cleanup Exit Strategy

MMRP sites are currently being addressed in priority order based upon the Munitions Response Site Prioritization Protocol (MRSPP).

MMRP Previous Studies

2008

Title	Author	Date
Final Historical Range Report for RSA.	Shaw	JUN-2008
Final Site Investigation Report United States Army Garrison Redstone Arsenal	Malcolm Pirnie, Inc.	SEP-2008

REDSTONE ARSENAL

Military Munitions Response Program

Site Descriptions

Site ID: MSFC-003-R-01
Site Name: Inactive Old Bone Yard Disposal Sit
Alias: MSFC-003

STATUS

Regulatory Driver: RCRA

MRSPP Score: 03

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Munitions and explosives of concern (MEC)

Media of Concern: Soil

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	200911	203009
IRA	201103	202505
LTM	203102	206002

RIP Date: N/A

RC Date: 203009

SITE DESCRIPTION

Site MSFC-003-R-01 is located southwest of the historic Redstone Rocket Test Stand, on both sides of Dodd Road and east of Lem Road. MSFC-003-R-01 is an inactive disposal site of approximately 63 acres. Site MSFC-003-R-01 was used to dispose of and/or treat chemical munitions, toxic materials, chemical wastes, and phosphorous-filled munitions. Portions were formerly known as the "old bone yard". Site investigations in the three areas have been ongoing since 1988 with geophysical surveys and area specific sampling events completed in each.

A 1.5-acre area labeled on earlier maps as the "permanent toxic storage area" and several burn pits lies within MSFC-003-R-01. MSFC-003-R-01 has been expanded to the south and southwest to include MSFC-082-R-01 IRP site MSFC-082] where chemical artillery shells were demilitarized and disposed of in trenches. Several rounds have been discovered in fill material from this area. Reportedly, the site was partially remediated in 1960 by clearing and burning vegetation, as well as screening and disking the top 6 inches of soil with bleach. All metal found during this action was incinerated in burn pits at the unit. NASA has active, buried utility lines going through this site. In 2000, 52 empty, chemically configured 4.2-inch mortar rounds were uncovered during the repair of a water main. Information gathered during historical reviews concluded that construction and miscellaneous debris from the original boundary of this site was relocated to the east across Dodd Road during construction of water reservoirs for the Saturn test stand. This activity expanded the original boundary to create two noncontiguous sites (separated by Dodd Road) which together represent the current MSFC-003-R-01 boundary.

The shape file that was provided with the CTT range inventory document shows that this site is the original area associated with the IRP site MSFC-3. Since this area is MMRP eligible, the IRP site has been made RC and the area will be addressed under the MMRP. The CWM probability assessment for the installation shows that there is an occasional probability of encountering CWM at this site.

ASA MSFC currently uses the site as an advanced engine and propulsion testing facility. The testing facility contains office buildings, parking areas, roads, non-potable water tanks, and pump houses. Current users of the site include authorized installation personnel, visitors, contractors, and trespassers. A gate and signs restrict vehicle traffic to the installation to authorized personnel and visitors. There are several buried and active utility lines associated with MSFC operations which traverse the site.

The ADEM issued the RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect CWM site.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM, Phase I will be broken into two parts, IM, Phase IA and IM, Phase IB. IM, Phase IA will involve geophysical surveys. The IM, Phase IB will involve reacquisition of anomalies identified in the IM Phase IA and investigative sampling and trenching to

determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely, based on the assumption that chemical agents and CWM will be detected, that the IM, Phase I will be followed by an IM, Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed by NASA.

Site ID: MSFC-035
Site Name: INACTIVE SUMP/TILED DRAIN FIELD-EAST TA
Alias: None

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Phases	Start	End
RFA	198910	199009
CS	199510	201111
RFI/CMS	201103	202905
IRA	201103	202408
LTM	203102	206002

RIP Date: N/A

RC Date: 202905

SITE DESCRIPTION

Site MSFC-035 is a concrete-lined sump and tile drain field that was believed to have been operational for a few years during WWII. The unit is located at the north end of the MSFC east test stand area, immediately south of Perimeter Road and 350 ft east of the paved scrap storage pad north of the MSFC Test Complex 300. The sump is a brick/concrete above ground structure with a steel manhole cover on top. The drain field is a grassy open field of about 1 acre. Scrap separation activities and two burn pits for waste Pyrogel (Mg paste and gasoline/asphalt based incendiary) were believed to have occurred at the site. Storage of goop drums and open-pit burning of goop also possibly occurred at the site.

The 1989 follow-on study to the PA/SI (Harmon Engineering & Associates, Inc. 1989) determined that the unit was part of a latrine and shower area that received raw domestic sewage and gray water from the German prisoner-of-war camp during prisoner captivity during WW II. Domestic waste from this unit most likely leached into the surface drainage system via groundwater infiltration. In 1989, Geraghty & Miller, Inc. summarized the work Harmon performed and formulated the PA/SI for the site.

A 1948 document identifies the inspection of the facility in connection with storing of goop drums and installation of facilities, roads, and pits for burning goop.

The 2004 VSI revealed that the current area for MSFC-035 is paved, with several large pieces of equipment parked in the area. A Site investigation report was submitted to USEPA Region and ADEM on July 8, 2010, which recommended no further action. USEPA approved the site investigation report. ADEM had the renewed permit underway and included the site as requiring an IM for source removal of chemical waste followed by an RFI.

The Phase IA non-intrusive work plan for a geophysical survey is being prepared and will be executed in FY15.

CLEANUP/EXIT STRATEGY

An IM, RFI and DD will be completed. The expected path forward consists of conducting an IM, Phase I site characterization to determine the nature and extent of site contamination. The IM, Phase I will be broken into two parts, IM, Phase Ia and IM, Phase Ib. The IM, Phase Ia will involve geophysical surveys. The IM, Phase Ib will involve reacquisition of anomalies identified in IM, Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A data sufficiency package will be developed to be shared with ADEM to determine whether a Phase II IM is required; however, it is anticipated that chemical wastes will not be detected and an RFI and DD recommending no further action will be finalized.

Site ID: RSA-066-R-01
Site Name: RSA-66
Alias: None

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198807	199006
RFI/CMS	199006	203706
IRA	201103	203207
LTM	203801	206701

RIP Date: N/A

RC Date: 203706

SITE DESCRIPTION

Site RSA-66 is a closed unlined waste disposal and demolition area consisting of approximately 21 acres located within a former operational range on the southern portion of RSA, south of Buxton Road, and within one-half mile of the Tennessee River. The landfill portion of the site (2 acres) was used from the 1950s to the late-1970s as a disposal area for incinerating ash, residue, and unsalvageable metal debris (e.g., rocket motor parts, crushed drums) from the OB operations at the OB/OD grounds (RSA-14). It was also used for demilitarization of chemically-filled ordnance. The site was fenced in 2001.

A large amount of MEC is present on the site. Earth moving activities conducted in association with ground clearing and grass planting for deer inadvertently uncovered ordnance that were only shallowly buried below the surface. Small ponds and wetlands cover most of the site and drainage is poor. The site is heavily wooded, with the exception of the former ash disposal area, which is now an open field covered with grasses. There are SVOCs, VOCs and metals in the groundwater. In addition, VOCs, metals, and explosives have been found in the soil. RSA-066 is located on the southern portion of the arsenal within 1/2 mile of the Tennessee River. Small ponds and wetlands cover most of the site and drainage is poor. The site is heavily wooded, with the exception of the former ash disposal area, which is now an open field covered with grasses. In 2013, the site was removed from the range inventory.

In 2000, 11 5-gallon drums of barium hydroxide were removed from the site as part of an interim action. Barium hydroxide was used as a cooling fluid for cutting titanium. The cutting rig is still on-site.

A draft Phase I work plan has been completed.

The ADEM issued the RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect RCWM site.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase I will be broken into two parts, IM Phase IA and IM Phase IB. IM Phase IA will involve geophysical surveys. IM Phase IB will involve reacquisition of anomalies identified in IM Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed by RSA-152.

Site ID: RSA-068-R-01
Site Name: RSA-68
Alias: None

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Volatiles (VOC)

Media of Concern: Soil, Surface Water

Phases	Start	End
RFA	198807	199006
RFI/CMS	199006	204012
IRA	201103	203607
LTM	204208	207108

RIP Date: N/A

RC Date: 204012

SITE DESCRIPTION

During a test pit excavation, metal waste and buried ordnance were encountered. A variety of chemicals were dumped in open trenches and treated in open pits. UXO is present at the site. Metals, VOCs, pesticides and explosives were found in the soil. Metals, VOCs, explosives and CWM were found in the groundwater. Metals, VOCs and CWM were found in the surface water and sediment. A clean phosgene container and chemical agent identification set (CAIS) were discovered at the site.

RSA-068 lies within the floodplain of the Tennessee River with wetlands on the north and south and Igloo Pond on the east/northeast. The site is fenced. Drainage at the site is controlled by southward-flowing drainage ditches located west and east of the site and wetland areas to the north. The site is covered with grasses, briars, and pine trees. The vegetation is sparse, discolored, and stressed.

A draft RI report was submitted to USEPA and ADEM on March 4, 2010; however the document was superseded by the ADEM issued RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect CWM site.

In 2013, the site was removed from the range inventory and moved from the OMA to the DERP program. A draft Phase I work plan has been completed.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM phase I site characterization to determine the nature and extent of site contamination. The IM phase I will be broken into two parts, IM phase IA and IM phase IB. IM phase IA will involve geophysical surveys. IM phase IB will involve reacquisition of anomalies identified in IM phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM phase I will be followed by an IM phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed by RSA-152.

Site ID: RSA-072-R-01
Site Name: Former Mortar Test Site (NOT in Ran
Alias: RSA-282

STATUS

Regulatory Driver: RCRA

MRSPP Score: 03

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	200909	201702
IRA	200709	200810
CMI(C)	201612	201908
LTM	201908	204908

RIP Date: N/A

RC Date: 201908

SITE DESCRIPTION

Site RSA-072-R-01 (RSA-282) is a 117-acre portion of RSA-072 that is located outside of the RSA operational range boundaries. The location of RSA-072-R-01 corresponds to the impact area of RSA-072. Construction activities supporting the Software Engineering Directorate (SED) of the Aviation and Missile Research, Development, and Engineering Center in the RSA-072-R-01 area have indicated that a continuing UXO hazard still exists at this site. Construction of the initial phases of the SED complex approximately 15 years ago unearthed some 4.2 mortar ordnance and explosives scrap but no munitions items presenting a UXO hazard. An EM-61 survey of the area was done in 2005 and a number of geophysical anomalies were noted. Construction on the more recent SED expansions resulted in a number of 4.2-inch mortar projectiles, both fuzed and non-fuzed. To date, these projectiles have been found to be filled with sand, chlorosulfonic acid (FS), or WP. Nothing found in the historical record or on-site indicates that CWM (mustard or lewisite)-filled projectiles were fired at the former proofing range. When the fuzed projectiles were found in April 2007, work was suspended on the construction activities and the site was nominated for cleanup under the MMRP. A TCRA was performed to remove the 4.2-inch mortar projectiles. The TCRA report stated that 3,610 anomalies were investigated and 1,135 pounds of cultural debris, four munitions debris (MD) items, and 17 MEC items were recovered. The cultural debris was assessed and recycled. The MD items were transferred to the OB/OD operations at RSA for final disposition. The MEC items were 4.2-inch mortars that were recovered, packaged, and transported by the 22nd Chemical Battalion (Technical Escort) personnel to the RSA storage area. Further testing by 22nd Chemical Battalion (Technical Escort) personnel determined that all MEC items recovered were FS smoke filled mortars. The TCRA clearance operations covered a total of 37.88 acres of the 117 acre MRS. The work was performed in phases to meet site construction requirements. The Phase I area, site of the storm water retention pond construction was 5.5 acres in size. Clearance for the Phase II Area A covered 15.88 acres for magnetometer and dig surface sweep in the western half of Area A and a digital geophysical mapping (DGM) survey in the eastern half of Area A. Clearance was also performed for the following areas: approximately 1 acre for the Area E, 3 ft wide by 1,500 ft long sewer line construction; for 0.5 acre for Area B, the additional parking lot; and 15 acres for the Area F, Rotary Wing Facility area.

Additional site information is from the Draft Historical Records Review (May 2007), the Final SI Report September 2008 and the Inventory of BCM Sites on Active Army Installations conducted in 2004. Site data including site size and type are from this report unless superseded by Site-specific Instructions from the Data Gathering Sessions.

A hazardous waste facility permit was issued Sept.30, 2010 pursuant to AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-150.

Site ID: RSA-072-R-01
Site Name: Former Mortar Test Site (NOT in Ran
Alias: RSA-282

Site ID: RSA-110-R-01
Site Name: RSA-110
Alias: None

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Munitions and explosives of concern (MEC), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	199505	199802
RFI/CMS	199802	204108
IRA	201103	203605
LTM	204110	207109

RIP Date: N/A

RC Date: 204108

SITE DESCRIPTION

Site RSA-110-R-01 is a 24-acre area site located in the southeastern portion of RSA within the floodplain of the Tennessee River. The site was used for railcar storage. Railcars full of chemical ordnance were staged in gravel storage areas waiting to be unloaded. Specifically, RSA-110 is believed to have been used in the 1940s for chemical agent drum storage. A 1943 aerial photograph shows what appear to be 25 rows of 55-gallon drums on their sides on a series of east-west tracks in this area. Later in the 1950s the area is believed to have been used for unloading and staging of chemical ordnance. Incinerators/ovens existed on the site to destroy the munitions. Remains of the gravel storage areas are still visible today. The site is primarily dense brush and wetlands.

In 1989, RSA personnel removed most of the building and fire bricks from the site and dismantled several incinerators/ovens used to destroy munitions. In the late-1990s, a packed in gas containing CAIS kits (941-neat mustard) was found and destroyed in 2009. In 1999, a surface UXO sweep revealed an area just to the north that may contain buried drums. The site was fenced in 2001 and much of the site is covered with surface MEC. In 2013, this site was removed from the range inventory.

The ground surface of the non-wooded portion of the site has a heavy gravel base (up to 1 foot thick in places) with scattered areas containing small surface debris. An area of hummocky surface soil covering about 7 acres was identified in the northeastern portion of RSA-110. Approximately 3.7 acres in the northwestern corner of the site are wooded.

Two piles of discarded Dragon rocket motors were found on the site. There were SVOCs and metals found in the soil. High levels of thiodiglycol (TDG) and chlorinated solvents (including 1,1,2,2-tetrachloroethane) have been detected in the groundwater.

The ADEM issued the RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect RCWM site.

The final structures were demolished in 2013. In 2014, wildlife game cameras recorded multi species of wildlife ingesting surface soils in an area containing unidentified items. UXO technicians determined that the items were not MPPEH. A site-specific probability assessment is being developed to address the need for surface sampling to determine ecological risk.

CLEANUP/EXIT STRATEGY

Complete IM, RFI/CMS, DD, permit modification, DES, CMI(C) and LTM. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase I will be broken into two parts, IM Phase IA and IM Phase IB. IM Phase IA will involve geophysical surveys. IM Phase IB will involve reacquisition of anomalies identified in IM Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at

the site that remains following the IM. Groundwater will be addressed by RSA-151.

Site ID: RSA-112
Site Name: FORMER DEMILITARIZATION & DISPOSAL SITE
Alias: DEMIL

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals, Munitions and explosives of concern (MEC), Volatiles (VOC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	198810	199009
CS	199510	199609
RFI/CMS	200906	203405
IRA	201103	202902
LTM	203501	206401

RIP Date: N/A

RC Date: 203405

SITE DESCRIPTION

Site RSA-112 is approximately 86 acres and is located in the east-central part of the arsenal adjacent to RSA-58, east of Patton Road, south of Martin Road, and northeast of Creek Road. It is located in the 100-year floodplain of the Huntsville Spring Branch, is primarily wooded, and surrounded by wetlands. Three perennial surface water streams transect RSA 112, all of which originate within the residential and industrialized areas of Huntsville, upstream of RSA. This site is bounded on the west by Corkern Range. In addition, MEC is present at the site.

RSA-112 contains four discrete areas that are believed to have been used for demolition or demilitarization activities. These include 1) a demolition area and suspected trenches located within 10 acres in the northern portion of the site; 2) RSA-128, which is a suspected former mustard gas demilitarization area located in the south-central portion of the site and contains two surface burn areas; 3) three suspected disposal/detonation pits located in the western portion of the site; and 4) three disposal trenches in the western portion of the site. Site RSA-128 is listed as RC in AEDB-R and all needed actions are funded under RSA-112. Based on review of available data for RSA-112, the sources of munitions of concern, chemical agent, and hazardous or toxic waste are primarily associated with surface demilitarization burning and with the disposal trenches.

The original RSA-112 of 58 acres was fenced as part of a time critical removal action and the remaining part of the site has restricted access. The fence was installed in 2001.

The ADEM issued RCRA hazardous waste facility permit No. AL7 210 020 742, to the Army on Sept. 30, 2010. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect CWM site followed by an RFI. The performance objective of the IM listed in Table VI.5 of the permit is removal of demil/disposal areas and UXO.

The Phase IA non-intrusive work plan for a geophysical survey is being prepared and will be executed in 2015.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase I will be broken into two parts, IM Phase IA and IM Phase IB. IM Phase IA will involve geophysical surveys. IM Phase IB will involve reacquisition of anomalies identified in IM Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed under RSA-145.

Site ID: RSA-113
Site Name: INACTIVE DISPOSAL TRENCHES & BURN PITS
Alias: DEMIL

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Metals, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198910	199009
CS	199310	199509
RFI/CMS	200509	203405
IRA	201103	202905
LTM	203501	206401

RIP Date: N/A

RC Date: 203405

SITE DESCRIPTION

Site RSA-113 consists of two inactive disposal trenches, each about 20 ft wide and 300 ft long, and a fuse disposal area, located in the east central portion of the arsenal, north of Creek Road, south of Martin Road, and east of Patton Road. Metal debris (e.g., decomposed drums, a rail cart, and structural steel) is visible in sections of the uncovered areas of the trenches. The 12-acre area is overgrown with vegetation including brush, briars, and small trees. The site was fenced in 2001.

Ordnance is scattered on the surface throughout the site, and MEC is present on the surface. Metals, explosives and CWM breakdown products were detected in soils.

A draft RI work plan was submitted in August 2008.

The FY05 PBA option was funded to include completion of RIP, five years of LTM and a five-year review. The path forward changed based on the 2010 RCRA permit.

The ADEM issued RCRA hazardous waste facility permit No. AL7 210 020 742, to the Army on Sept. 30, 2010. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect RCWM site.

The Phase IA non-intrusive work plan for a geophysical survey is being prepared and will be executed in 2015.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase I will be broken into two parts, IM Phase IA and IM Phase IB. IM Phase IA will involve geophysical surveys. IM Phase IB will involve reacquisition of anomalies identified in IM Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed under RSA-145.

Site ID: RSA-114
Site Name: INACTIVE MADKIN MOUNTAIN ROCK QUARRY
Alias: DEMIL

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Chemical weapon munitions (CWM)/Chemical agent, Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Sediment, Surface Water

Phases	Start	End
RFA	198810	198909
CS	198910	199609
RFI/CMS	200906	203005
IRA	201103	202503
LTM	203105	206105

RIP Date: N/A

RC Date: 203005

SITE DESCRIPTION

Site RSA-114 is an abandoned limestone rock quarry that is located on the south side of Madkin Mountain, near the geographical center of the arsenal, north of the intersection of Neal Road and Mills Road. The rectangular shaped, water-filled quarry is approximately four acres.

Approximately three acres of the surrounding area has been added as part of this site. The water level depth varies widely with seasonal fluctuations. After the quarry was closed during the mid-1940s, tons of surplus materials (e.g., soldier gas mask canisters, H chemical production plant filters) were disposed in the quarry. Large quantities of debris are currently visible above the water surface with the largest concentration being encompassed in two large piles on the southern side of the quarry. These two piles consist of gas mask canisters and large industrial charcoal canisters. The gas mask canisters and charcoal columns are believed to have been un-used. Underwater investigations have indicated the presence of intact, agent configured drums and 4.2 inch mortar rounds. This site was fenced in 2001.

The ADEM issued the RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect CWM site.

The Phase I B intrusive investigation work plan is being prepared.

CLEANUP/EXIT STRATEGY

An IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase is typically broken into two parts (Phase IA and Phase IB), however phase IA is not appropriate for this site. IM Phase IB will involve investigative sampling and debris characterization to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that chemical agent and CWM will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed under RSA-148.

Site ID: RSA-141-R-01
Site Name: 4.2 Inch Mortar Disposal Site, Bldg
Alias: RSA-141

STATUS

Regulatory Driver: RCRA

MRSPP Score: 03

Contaminants of Concern: Munitions and explosives of concern (MEC), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	200906	201708
DES	201707	201807
CMI(C)	201901	202002
LTM	202002	205002

RIP Date: N/A

RC Date: 202002

SITE DESCRIPTION

RSA-141-R-01 is the 4.2-inch Mortar Disposal Site, Building. 4656. It has been reported that this site was used for disposal (burial) of possibly mustard-filled munitions. According to RSA personnel, munitions buried at the site were from a rail car derailment in either 1942 or 1943, and the munitions were not fitted with bursters and fuzes. From at least 1943 to 1950, RSA-141-R-01 was the location of the Post Engineers Operations. The site previously contained an open-area coal stockpile, rail road tracks, a locomotive repair shop, and various buildings.

In 1992, a total of 16 4.2-inch mortar rounds were found in the topsoil west of Building 4656. It was reported that 12 of these rounds were empty and tested negative for low-level mustard agents.

In 1994, a magnetometer survey and an intrusive operation were conducted. Of the 41 excavations, only two uncovered munitions items. At one location, 3.5-inch rocket components and an incendiary bomb casing were found. At the other location, a base plug for a 4.5 or 5-inch rocket, a 105-mm cartridge case, and four 4.2-inch mortar rounds, all without fuzes were found. Two of the mortar rounds were determined not to contain liquid given the absence of burster wells. The other two were possibly liquid filled. Their contents and/or testing results are unknown.

RSA-141-R-01 is located on the MSFC installation which is managed by NASA. The site has an area of approximately 14.5 acres.

The RFI work plan was finalized and approved by the Army in 2012. Completed RFI field activities include a DGM survey, an intrusive investigation of resulting subsurface anomalies, and sampling of site media for MC and HTW. The RFI report is due to ADEM on Nov. 5, 2015.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is soil excavation with off-site disposal and LUCs. Groundwater will be addressed by NASA.

Site ID: RSA-188
Site Name: NORTHERN BURIAL AREA / BURNING GROU
Alias: NP

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC), Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200309	200406
CS	200406	200501
RFI/CMS	200902	202905
IRA	201103	202405
LTM	203005	205905

RIP Date: N/A

RC Date: 202905

SITE DESCRIPTION

The Northern Burial Area (NBA) appears to have been used by the Army and Thiokol from the early-1940s into the late-1950s. NBA was identified as a scarred area on aerial photographs from 1943 to 1959 and is located north of Sandpiper Road and the RARE north plant fence line. The area is not visible in 1964 photographs.

At this time, the types of wastes disposed at this site are unknown. Early photographs show a road leading from Burning Ground No. 3 to this area. It is probable that debris from activities at Burning Ground No. 3 were disposed in the NBA. Other types of materials disposed in the NBA and evident on the ground surface include concrete debris, clay tiles, and building debris. A surface depression near monitoring wells RS692 and RS697 exposes the topsoil where charred debris and rubbish were noted during a 1999 visit. Geophysical surveys performed to date have identified 11 subsurface anomalies suspected to result from buried metal (potentially UXO).

During the 2003 VSI, bare soil was noted around the perimeter of a north-sloping depressed area with no clearly defined drainage channels. Two areas of debris were observed. One included the base plate from a 75mm high-explosive projectile, as well as steel plates, brick, concrete, and two-inch-diameter pipes. The other contained only general debris, such as bricks and pipes.

Burning Ground No. 3 appears to have also been used by the Army and Thiokol from the early-1940s into the 1960s. This area exists as a bermed area in the shape of a "W" on aerial photographs from 1943 to 1964 but is barely visible in 1976 photographs. The area is suspected to have been used for burning small quantities of chemicals and production wastes, munitions after testing, and munitions from ROP operations. Reportedly, this burning ground was not used by Thiokol for disposal or burning after 1961.

Geophysical surveys to date have identified five subsurface anomalies suspected to be caused by buried metal (potentially UXO). Due to the discovery of a 30mm shell during the spring of 2001, Burning Ground No. 3 is considered a UXO concern. The current site boundaries encompass approximately 6.5 acres; however, analysis of previous geophysical investigation indicates the presence of anomalies potentially representing burn pits/trenches directly adjacent to the marked limits of the northern unit. This additional area encompasses approximately 2.96 acres and will be included in the geophysical surveys. This brings the total survey area to approximately 9.5 acres.

The ADEM issued the RCRA hazardous waste facility permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. Part VI of the RCRA permit requires that IM for source removal be completed at this suspect CWM site. In 2013, this site was removed from the range inventory.

The Phase I A non-intrusive work plan for a geophysical survey was approved by ADEM on Dec. 2, 2014.

CLEANUP/EXIT STRATEGY

IM, RFI/CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The expected path forward consists

of conducting an IM Phase I site characterization to determine the nature and extent of site contamination. The IM Phase I will be broken into two parts, IM Phase IA and IM Phase IB. IM Phase IA will involve geophysical surveys. IM Phase IB will involve reacquisition of anomalies identified in IM Phase IA and investigative sampling and trenching to determine the nature and extent of contamination. A recommended action plan will be developed to determine the path forward. It is likely that, based on the assumption that munitions and explosives of concern will be detected, that the IM Phase I will be followed by an IM Phase II which will include source removal and development of the final compliance report. Upon completion of the IM, the RFI and DD will be finalized. It is anticipated that a CMS, permit modification, DES, CMI(C) and LTM for LUCs (at a minimum) will be required to address residual contamination at the site that remains following the IM. Groundwater will be addressed under RSA-146.

Site ID: RSA-221-R-01
Site Name: FuseStorage&Munitions Disposal Area
Alias: RSA-221

STATUS

Regulatory Driver: RCRA

MRSPP Score: 05

Contaminants of Concern: Munitions and explosives of concern (MEC)

Media of Concern: Soil, Surface Water

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	200910	201710
CMI(C)	201706	202002
LTM	202002	205002

RIP Date: N/A

RC Date: 202002

SITE DESCRIPTION

An SI in 2003 noted that two areas were found to contain MD, and a site visit in April 2006 noted that several of the buildings were in a state of disrepair. It was discussed during the TPP meetings that the buildings were not currently in use. Previous analytical data indicated the presence of nitrocellulose (NC) and elevated metals in the groundwater and pentaerythritol tetranitrate, nitroglycerin, NC, nitroguanidine, and metals in the on-site ditch soil; however, NC is an insoluble, woody polymer and the analytical method used to detect it does not differentiate between NC and other nitrate compounds. As such, the NC detection is concluded to be a false positive and no further evaluation is required. Potential MEC include 155mm projectiles and other debris, and potential MC explosives and metals.

The RFI work plan was submitted to ADEM in October 2013. A detector aided visual survey was completed in February 2014 which located and removed a total of approximately 5,000 lbs. of MD located on the surface of the drainage ditch. The MD was removed to prevent interference with the DGM survey. The MD consisted of 155mm empty munition bodies, lifting lugs, and base plates. Additional subsurface materials are present at the site and were left for the intrusive investigation following the DGM investigation.

ADEM exercised their right to approve MEC work plans in April 2014. The Rev 1 work plan for the DGM was submitted to ADEM on June 12, 2014 and is currently under comment resolution.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-146.

Site ID: RSA-234-R-01
Site Name: WASTE DISPOSAL PIT
Alias: RSA-234

STATUS

Regulatory Driver: RCRA

MRSPP Score: 05

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
RFI/CMS	200906	201710
CMI(C)	201706	202002
LTM	202002	205002

RIP Date: N/A

RC Date: 202002

SITE DESCRIPTION

RSA-234-R-01 is an approximately 1-acre site located in the northeast part of RSA. The site is the location of former Building 642. Building 642 was constructed in 1942, initially as an incendiary bomb filling plant and grenade filling plant warehouse. It was converted in March 1942 to an M-54 incendiary bomb loading plant. In April 1942, the entire building and approximately 4 tons of thermate were destroyed in a fire and the remaining structure was razed. RSA historical records and site aerial photographs indicate that the remaining slab was then used as a waste disposal area to burn and dispose of various waste smoke mixes and rejected 105 mm canisters. These operations continued until sometime before 1975. Currently, the former building concrete slab is deteriorated in many areas and the area surrounding the slab is heavily wooded.

An LSA was completed in 2004. This LSA consisted of placement of five borings and temporary wells. Locations selected included holes and cracks within the slab where it appeared past burning activities had occurred and from within the former rail road loading dock footprints. Soil data yielded a few metals with concentrations above screening levels in surface and subsurface soils, and sporadic VOCs and explosives all at levels below screening limits. In groundwater chlorinated VOCs were present at levels above screening limits; however, due to low yields in the temporary wells very limited groundwater analyses were completed. The LSA effort does not meet the ADEM guidance requirements for a RFI and additional sampling to conduct an ADEM compliant RFI is necessary. In addition, since the site was previously used to burn MEC, a DGM survey and potential anomaly removal will be required before the projected RIP/RC can be achieved.

The RFI work plan was submitted to ADEM in February of 2013. Fieldwork was completed in May 2013. A DGM report was developed and submitted to ADEM in November 2014 and is under comment resolution.

This site is also used to track the funding for agency support for the engineering, MEC, CWM and logistics tasks required for several non-IM MMRP sites.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is soil excavation with off-site disposal and LUCs. Groundwater will be addressed under RSA-145.

Site ID: RSA-249-R-01
Site Name: INACTIVE OLD BONEYARD DISPOSAL SITE
Alias: RSA-249

STATUS

Regulatory Driver: RCRA

MRSPP Score: 06

Contaminants of Concern: Explosives, Metals, Munitions and explosives of concern (MEC)

Media of Concern: Soil

Phases	Start	End
RFA	200311	200405
CS	200602	201111
RFI/CMS	201010	201702
CMI(C)	201612	201912
LTM	201912	204912

RIP Date: N/A

RC Date: 201912

SITE DESCRIPTION

The site has been transferred to MMRP as RSA-249-R-01. Additional site information is from the Draft Historical Records Review (May 2007) and the Inventory of BCM Sites on Active Army Installations conducted in 2004. Site data including site size and type are from this report unless superseded by site-specific instructions from the data gathering sessions. This site has been categorized as a multi-use range of moderate complexity.

The RFI work plan was submitted to ADEM on June 5, 2014. The Army is currently addressing ADEM's comments.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-148.

Site ID: RSA-278-R-01
Site Name: Highway 565 Area
Alias: RSA-278

STATUS

Regulatory Driver: RCRA

MRSPP Score: 04

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	200912	201802
CMI(C)	201703	202003
LTM	202003	205003

RIP Date: N/A

RC Date: 202003

SITE DESCRIPTION

This site replaces site RSA-001-R-01. This change was made in January 2007 based on guidance received from the December 2006 IAP meeting to correspond to RSA environmental site naming conventions.

The RSA-278-R-01 site is the portion of RSA that was transferred from the northwest corner of the installation in the mid-1980s to the state of Alabama for the construction of Highway 565. The site is at the north end of three former ranges: "North Bombing Range," "4.2-Inch Mortar Range", and "High Explosives Drop Test Site, Area A." This MRS is approximately 110 acres and includes a portion of Interstate-565 (I-565) (i.e., "Highway 565 Area"), several developed parcels, and approximately 44 acres of undeveloped land. No portion of this MRS is currently owned or controlled by the DoD. In addition to the Alabama Department of Transportation (ALDOT), there are eight other property owners.

In response to a Nov. 16, 1984 memo to the Army from ALDOT during construction, the Army determined "that the possibility exists that unexpended ordnance (live ammunition) may exist on all right-of-way on the project which was formerly RSA property." Prior to construction of the highway, the Army visually swept the area for UXO and ordnance related residue. The Army also agreed to provide safety training to highway workers and explosive ordnance disposal support during the intrusive construction phase of the project. A complete subsurface survey was not conducted on the area prior to, during, or after the construction. Five items were found during the construction of Interstate 565; however, the extent of MEC or related materials remaining (if any) on the site is unknown.

In 2008, this MRS was added to the list of MMRP sites requiring investigation and potential additional actions based upon historical information. A historical review has been performed and is summarized in the Final SI Report, US Army Garrison, RSA, Huntsville, Alabama (Malcolm Pirnie, Inc., 2008). No other work or investigations have been conducted at this MRS since the property was transferred. Additional site information is from the Draft Historical Records Review (May 2007) and the Inventory of BCM Sites on Active Army Installations conducted in 2004.

A Rev 1 RFI work plan was developed and is under comment resolution. Three right of entry agreements are required to execute the work plan and two have been completed. An explosive site plan is under development. To reduce the impact to the local community, advanced classification techniques for DGM are needed during intrusive investigation of subsurface anomalies.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-150.

Site ID: RSA-280-R-01
Site Name: Skunk Hollow Small Arms Range
Alias: RSA-280

STATUS

Regulatory Driver: RCRA

MRSPP Score: 07

Contaminants of Concern: Metals, Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
RFA	200201	200305
CS	200602	200809
RFI/CMS	201205	201611
DES	201607	201711
CMI(C)	201805	201910

RIP Date: N/A

RC Date: 201910

SITE DESCRIPTION

Site RSA-280-R-01 is the Skunk Hollow Small Arms Range, a 0.8-acre site north of Madkin Mountain and operational range. The range was used for small arms firing, including M16 rifles and 40mm practice grenades.

Built in 1991, this 0.8-acre 25-meter M16 rifle and pistol range was used until approximately 2001-2002 when it was closed due to the potential for small arms to ricochet. It is believed that the range had two years of limited use. The range site plans include details of drains below and within the face of the impact berm. The design drawings depict that the drains were to be constructed of perforated pipe and exit the range on the east side into a drainage ditch.

MC related to small arms ammunition is suspected in the backstop. Based on the activities that occurred at the former small arms range, debris associated with small arms ammunition includes spent projectiles, fragments, and shell casings. Fragments from M781 40mm projectiles were also found in the backstop. This projectile contains only an orange dye powder which is dispersed on impact without an explosive charge.

In 2012, Building 3520 was demolished. The RFI work plan was developed and executed between 2013 and 2014. The data sufficiency package and Phase II sampling plan are under comment resolution.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is removal of the small arms range backstop with off-site disposal. Groundwater will be addressed under RSA-145.

Site ID: RSA-294-R-01
Site Name: Field Training Exercise Area E
Alias: RSA-294

STATUS

Regulatory Driver: RCRA

MRSPP Score: Evaluation pending

Contaminants of Concern: Metals, Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	201103	201108
RFI/CMS	201205	201610
CMI(C)	201604	201811
LTM	201811	204811

RIP Date: N/A

RC Date: 201811

SITE DESCRIPTION

Site RSA-294-R-01 comprises the portion of Field Training Exercise (FTX) Area E which lies south of Martin Road. This site is designated as Area E on a 1970 reservation map of MMCS training areas and a 1973 historical map. FTX activities began during the 1960s. Training aids used during the FTX activities may have included smoke grenades, blank ammunition, and flares.

Most of the site is swampy and densely vegetated. Little evidence of historical training activities has been identified, but soil piles and a couple of discarded drums were observed. Soil and groundwater samples collected at one of the drums were analyzed for TLC VOCs, TCL SVOCs, PRO, and TAL metals (soil only). No analytes exceed screening criteria in soil, and TCE was detected in groundwater at a concentration (64 µg/L) consistent with the plume associated with RSA-113. No TCE was detected in soil.

The RFI work plan was developed and executed in 2013-2014. During the analog survey MD were discovered in the areas bordering RSA-112 and RSA-113. These discoveries fit the conceptual site models for RSA-112 and RSA-113 and not RSA-294-R-01. A boundary change will be recommended during the RSA-294-R-01 RFI that will transfer those parcels to the appropriate sites. A data sufficiency package is being prepared.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-145.

Site ID: RSA-312-R-01
Site Name: Former Range Area Gate 7 Expansion
Alias: RSA-312

STATUS

Regulatory Driver: RCRA

MRSPP Score: 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Soil

Phases	Start	End
RFA	201012	201103
RFI/CMS	201205	201802
CMI(C)	201708	202003
LTM	202003	205003

RIP Date: N/A

RC Date: 202003

SITE DESCRIPTION

RSA-312-R-01, Former Range Area for Gate 7 Expansion, was identified as the result of the removal of parcels of land from the RSA Range Inventory for the expansion of Gate 7 and the construction of a new access control facility. RSA-312- R-01 covers approximately 60 acres of land, consisting of pasture and wooded areas and is located in the northwest portion of RSA. It is west of Anderson Road extending almost to the western arsenal boundary and is adjacent to the recently identified SWMU RSA-313-R-01 which is located along Zierdt Road. Portions of the site extend north and south of Martin Road. Available historical information indicates that this location was largely undeveloped or was farm land prior to 1941. In mid-1941 with the development of RSA as a result of WW II, the Army began developing the area. Numerous range areas were developed in support of testing activities for ordnance manufactured at RSA during WW II. According to available historical information, the majority of the areas within the site were not used as impact or explosive testing areas

RSA-312-R-01 also encompasses most of an existing SWMU, RSA-073. RSA-073 is identified as the HE Impact Test Site, Area C. This site was used for explosive training/munitions testing during the 1940s and 1950s. The 5-acre site consists of wooded and open field areas. The unit was identified by the USEPA as an area of concern in 1989 and further characterized as an SWMU in RSA's RCRA permit. RSA-073 was surface cleared of UXO in the 1940s and 1950s. Construction areas adjacent to RSA-073 were also surface cleared in 1989.

A Site/Activity-Specific Probability Assessment Support Work Plan for the Martin Road Expansion/Gate 7 Access Control Point Construction and Zierdt Road Expansion Activities was submitted in August 2010. A SWMU assessment report was submitted for RSA-312-R-01 in September 2010. The available historical information indicated that the vast majority of the areas within the site were not used for waste management activities and that most of the site likely served as a buffer area between the arsenal's western boundary and the test areas known to be present within the northern portions of RSA. The general lack of construction activities and permanent structures make it unlikely that waste management or disposal occurred within RSA-312-R-01.

The RFI work plan was developed and is under comment resolution.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-153.

Site ID: RSA-313-R-01
Site Name: W side Former High explosive Area A
Alias: RSA-313

STATUS

Regulatory Driver: RCRA

MRSPP Score: 04

Contaminants of Concern: Munitions and explosives of concern (MEC), Munitions constituents (MC)

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
RFA	201012	201103
RFI/CMS	201205	201802
CMI(C)	201708	202003
LTM	202003	205003

RIP Date: N/A

RC Date: 202003

SITE DESCRIPTION

RSA-313-R-01, Western Side of Former High Explosive Drop Area A, is located in the northwestern portion of RSA, west of Anderson Road along the western boundary of the arsenal and occupies approximately 96.5 acres of land. There are no known structures associated with the site. The site extends from Interstate 565 along the western arsenal boundary to a point south of Martin Road and consists mostly of wooded and limited pasture areas. Areas outside of the RSA boundary to the west include numerous agricultural, residential and commercial areas.

A Site/Activity-Specific Probability Assessment Support Work Plan for the Martin Road Expansion/Gate 7 Access Control Point Construction and Zierdt Road Expansion Activities was submitted in August 2010. A SWMU assessment report was submitted for RSA-313-R-01 in September 2010. The available historical information indicates that the areas within the site were not used for waste management activities and that the site likely served as a buffer area between the arsenal's western boundary and the test areas known to be present within the northern portions of RSA; however, concerns over the possible presence of MEC still exist for the site.

The RFI work plan was developed and is under comment resolution.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-153.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
MSFC-077-R-01	MSFC-77	200809	DD received
MSFC-082-R-01	MSFC-82	200406	Combined with MSFC-003-R-02 due to possibility of CWM
PBA@MR Redston	PBA@MR Redstone	201503	
RSA-001-R-01	HIGHWAY 565 AREA	200701	Site re-named RSA-278-R-01.
RSA-002-R-01	MSFC-3E	200305	Combined with MSFC-003-R-01
RSA-003-R-01	RIFLE RANGE	200503	This is an operational range (R0506), therefore not eligible for MMRP
RSA-004-R-01	SMOKE GRENADE AREA	200701	site re-named RSA-279-R-01
RSA-013-R-01	RSA-13	200406	Site covered under RSA-013 of IRP database.
RSA-014-R-01	RSA-14	200406	Site covered under RSA-014 of IRP database.
RSA-046-R-01	RSA-46	200406	This is an operational range (R0505 and R0506), therefore not eligible for MMRP
RSA-065-R-01	RSA-65	200406	Site covered under RSA-065 of IRP database.
RSA-067-R-01	RSA-67	200406	This is an operational range (R0701), therefore not eligible for MMRP
RSA-069-R-01	RSA-69	200406	This is an operational range (R0701), therefore not eligible for MMRP
RSA-070-R-01	RSA-70	200406	This is an operational range (R0701), therefore no eligible for MMRP
RSA-071-R-01	RSA-71	200503	This is an operational range (Range R1101/1102/1103/1104/1105/1107), therefore no eligible for MMRP
RSA-073-R-01	RSA-73	200503	This is an operational range (R1104 /1105/1106/1107), therefore not eligible for MMRP
RSA-074-R-01	RSA-74	200503	This is an operational range (R1000 and R1107), therefore not eligible for MMRP
RSA-132-R-01	RSA-132	200406	This is an operational range (R0702), therefore not eligible for MMRP
RSA-279-R-01	Smoke Grenade Area	200809	The MMRP SI (June 2009) recommended NFA.
RSA-285-R-01	Former WP Grenade Test Area	201107	

MMRP Schedule

Date of MMRP Inception 198807

Past Phase Completion Milestones

1989	
RFA	(RSA-114 - INACTIVE MADKIN MOUNTAIN ROCK QUARRY)
1990	
RFA	(MSFC-035 - INACTIVE SUMP/TILED DRAIN FIELD-EAST TA, RSA-066-R-01 - RSA-66, RSA-068-R-01 - RSA-68, RSA-112 - FORMER DEMILITARIZATION & DISPOSAL SITE, RSA-113 - INACTIVE DISPOSAL TRENCHES & BURN PITS)
1995	
CS	(RSA-113 - INACTIVE DISPOSAL TRENCHES & BURN PITS)
1996	
CS	(RSA-112 - FORMER DEMILITARIZATION & DISPOSAL SITE, RSA-114 - INACTIVE MADKIN MOUNTAIN ROCK QUARRY)
1998	
RFA	(RSA-110-R-01 - RSA-110)
2003	
RFA	(MSFC-003-R-01 - Inactive Old Bone Yard Disposal Sit, PBA@MR Redston - PBA@MR Redstone, RSA-072-R-01 - Former Mortar Test Site (NOT in Ran, RSA-141-R-01 - 4.2 Inch Mortar Disposal Site, Bldg, RSA-221-R-01 - FuseStorage&Munitions Disposal Area, RSA-278-R-01 - Highway 565 Area, RSA-279-R-01 - Smoke Grenade Area, RSA-280-R-01 - Skunk Hollow Small Arms Range)
PA	(MSFC-077-R-01 - MSFC-77, MSFC-082-R-01 - MSFC-82, RSA-001-R-01 - HIGHWAY 565 AREA, RSA-002-R-01 - MSFC-3E, RSA-003-R-01 - RIFLE RANGE, RSA-004-R-01 - SMOKE GRENADE AREA, RSA-013-R-01 - RSA-13, RSA-014-R-01 - RSA-14, RSA-046-R-01 - RSA-46, RSA-065-R-01 - RSA-65, RSA-067-R-01 - RSA-67, RSA-069-R-01 - RSA-69, RSA-070-R-01 - RSA-70, RSA-071-R-01 - RSA-71, RSA-073-R-01 - RSA-73, RSA-074-R-01 - RSA-74, RSA-132-R-01 - RSA-132)
2004	
RFA	(RSA-188 - NORTHERN BURIAL AREA / BURNING GROU, RSA-234-R-01 - WASTE DISPOSAL PIT, RSA-249-R-01 - INACTIVE OLD BONEYARD DISPOSAL SITE)
2005	
CS	(RSA-188 - NORTHERN BURIAL AREA / BURNING GROU)
2008	
SI	(MSFC-077-R-01 - MSFC-77)
CS	(MSFC-003-R-01 - Inactive Old Bone Yard Disposal Sit, RSA-072-R-01 - Former Mortar Test Site (NOT in Ran, RSA-141-R-01 - 4.2 Inch Mortar Disposal Site, Bldg, RSA-221-R-01 - FuseStorage&Munitions Disposal Area, RSA-278-R-01 - Highway 565 Area, RSA-279-R-01 - Smoke Grenade Area, RSA-280-R-01 - Skunk Hollow Small Arms Range)
2009	
IRA	(RSA-072-R-01 - Former Mortar Test Site (NOT in Ran)
2010	
RFA	(RSA-285-R-01 - Former WP Grenade Test Area)
2011	
RFA	(RSA-294-R-01 - Field Training Exercise Area E, RSA-312-R-01 - Former Range Area Gate 7 Expansion, RSA-313-R-01 - W side Former High explosive Area A)
RFI/CMS	(RSA-285-R-01 - Former WP Grenade Test Area)
2012	
CS	(MSFC-035 - INACTIVE SUMP/TILED DRAIN FIELD-EAST TA, RSA-249-R-01 - INACTIVE OLD BONEYARD DISPOSAL SITE)

Projected Phase Completion Milestones

See attached schedule

MMRP Schedule

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

To Be Determined

Final RA(C) Completion Date: 202003

Schedule for Next Five-Year Review: 2017

Estimated Completion Date of MMRP at Installation (including LTM phase): 207109

REDSTONE ARSENAL MMRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
MSFC-003-R-01	Inactive Old Bone Yard Disposal Sit	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
MSFC-035	INACTIVE SUMP/TILED DRAIN FIELD-EAST TA	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-066-R-01	RSA-66	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-068-R-01	RSA-68	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-072-R-01	Former Mortar Test Site (NOT in Ran	RFI/CMS						
		CMI(C)						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-110-R-01	RSA-110	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-112	FORMER DEMILITARIZATION & DISPOSAL SITE	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-113	INACTIVE DISPOSAL TRENCHES & BURN PITS	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-114	INACTIVE MADKIN MOUNTAIN ROCK QUARRY	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-141-R-01	4.2 Inch Mortar Disposal Site, Bldg	RFI/CMS						
		DES						
		CMI(C)						
		LTM						

REDSTONE ARSENAL MMRP Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
RSA-188	NORTHERN BURIAL AREA / BURNING GROU	RFI/CMS	■	■	■	■	■	■
		IRA	■	■	■	■	■	■
		LTM						■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-221-R-01	FuseStorage&Munitions Disposal Area	RFI/CMS	■	■	■			
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-234-R-01	WASTE DISPOSAL PIT	RFI/CMS	■	■	■			
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-249-R-01	INACTIVE OLD BONEYARD DISPOSAL SITE	RFI/CMS	■	■				
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-278-R-01	Highway 565 Area	RFI/CMS	■	■	■			
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-280-R-01	Skunk Hollow Small Arms Range	RFI/CMS	■	■				
		DES	■	■	■			
		CMI(C)			■	■	■	
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-294-R-01	Field Training Exercise Area E	RFI/CMS	■	■				
		CMI(C)	■	■	■	■		
		LTM				■	■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-312-R-01	Former Range Area Gate 7 Expansion	RFI/CMS	■	■	■			
		CMI(C)		■	■	■	■	
		LTM					■	■
SITE ID	**SITE NAME**	**PHASE**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21+**
RSA-313-R-01	W side Former High explosive Area A	RFI/CMS	■	■	■			
		CMI(C)		■	■	■	■	
		LTM					■	■

REDSTONE ARSENAL

Army Defense Environmental Restoration Program
Compliance Restoration

CR Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Closeout Sites Count: 48/4

Installation Site Types with Future and/or Underway Phases

2 Above Ground Storage Tank
(CCRSA-314, CCSWMU-E)

1 Dip Tank
(CCSWMU-277)

3 Disposal Pit/Dry Well
(CCRSA-308, CCRSA-309, CCSWMU-216)

1 Industrial Discharge
(CCSWMU-182)

2 Maintenance Yard
(CCSWMU-246, CCSWMU-247)

9 Oil Water Separator
(CCRSA-310, CCRSA-319, CCSWMU-003, CCSWMU-028, CCSWMU-030, CCSWMU-035, CCSWMU-222, CCSWMU-304, CCSWMU-306)

3 Sewage Treatment Plant
(CCSWMU-008, CCSWMU-009, CCSWMU-268)

2 Soil Contamination After Tank Removal
(CCSWMU-291, CCSWMU-293)

8 Spill Site Area
(CCRSA-316, CCSWMU-240, CCSWMU-245, CCSWMU-248, CCSWMU-283, CCSWMU-284, CCSWMU-286, CCSWMU-287)

4 Storage Area
(CCSWMU-241, CCSWMU-242, CCSWMU-243, CCSWMU-F)

3 Surface Disposal Area
(CCRSA-311, CCRSA-315, CCRSA-317)

1 Surface Impoundment/Lagoon
(CCSWMU-116)

1 Unexploded Munitions/Ordnance
(CCRSA-266)

1 Washrack
(CCSWMU-305)

3 Waste Treatment Plant
(CCSWMU-288, CCSWMU-289, CCSWMU-290)

Most Widespread Contaminants of Concern

Metals, Perchlorate, Petroleum, Oil and Lubricants (POL), Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern

Groundwater, Soil

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

Site ID	Site Name	Action	Remedy	FY
CCSWMU-277	B5487 WW MAINT SHOP ACID BATH WASHDOWN	IRA	WASTE REMOVAL - SOILS	2009
CCSWMU-035	IN-GROUND OIL/WATER SEPARATOR, BLDG 4812	FRA	NATURAL ATTENUATION	2015

Duration of CR

Date of CR Inception: 198908

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 202207/204810

Date of CR completion including Long Term Management (LTM): 205207

CR Contamination Assessment

Contamination Assessment Overview

Environmental restoration activities include the IRP and Military Munitions Response Program (MMRP). On Dec. 29, 2008, the Office of the Deputy Under Secretary of Defense for Installations and Environment, [ODUSD (I&E)], issued an interim policy for Defense Environmental Restoration Program (DERP) eligibility that rescinded the 1986 eligibility date for the IRP and the 2002 eligibility date for the MMRP. This made many sites previously addressed in the Army's Compliance-related Cleanup (CC) Program eligible for the DERP. Sites that are now eligible for the Munitions Response (MR) program have been migrated from Army Environmental Database - Compliance-related Cleanup (AEDB-CC) and given the naming convention of other MR sites. The newly eligible non-MR type sites are considered to be Installation Restoration (IR) sites; however, the newly eligible sites are being coded as CR in AEDB-R to distinguish them from the original IR sites and IR Metrics.

Release assessments for RSA-241, RSA-242, RSA-243, RSA-283, RSA-284, RSA-288, RSA-290, RSA-291, RSA-304, and RSA-305 were not accepted by ADEM. These sites will move forward in FY12 as RFIs. Technical review comments were received from ADEM on aging RFI reports for sites RSA-003, RSA-008, RSA-009, RSA-030, and RSA-031. No further action decisions for surface media were received for sites RSA-037, RSA-170, RSA-172, and RSA-174. ADEM concurred with a LUC decision for site RSA-008.

Cleanup Exit Strategy

RFIs are planned to be completed at six sites, and will begin at 13 other sites. Sites RSA-116, RSA-222, RSA-240, RSA-246, and RSA-248 may also move forward into an RFI depending upon ADEM's final review comment responses. Corrective measure studies are underway and are planned to be completed for sites RSA-003 and RSA-009. RFIs at 11 compliance restoration (CR) sites are planned. CR sites RSA-009, RSA-003, RSA-035 and RSA-268 will move forward into CMI phase.

CR Previous Studies

Title	Author	Date
There are no Previous Studies		

REDSTONE ARSENAL

Compliance Restoration

Site Descriptions

Site ID: CCRSA-266
Site Name: Open Storage area N. of Bldg 8607
Alias: RSA-266

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Explosives, Perchlorate, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200901	201009
RFI/CMS	201104	201612

RIP Date: N/A

RC Date: 201612

SITE DESCRIPTION

The site is located along the Tennessee River in the southern portion of RSA within the RSA-157 groundwater unit and is approximately 111 acres. Buildings 8800 through 8855 were constructed in 1942 as storage magazines to support activities at the GCWD. The primary mission of the GCWD was the segregation, renovation, and preparation for long term storage of chemical munitions manufactured at Huntsville Arsenal ARFO. Building lists indicate that the primary function of these facilities was storage of general depot materials; however, the 1954 building information modeling indicates that several of these buildings were assigned to the Ordnance Guided Missile School or contractors such as Rohm and Haas and Thiokol Corporation. Magazines in this area were used for the storage of finished munitions (not raw explosive materials or chemical agents).

A PSA investigation was conducted with the subsequent PSA report submitted in 2006. Select PAHs and metals were detected in soil at concentrations exceeding evaluation criteria. As part of the PSA report comment resolution meeting held on April 15, 2008, ADEM, the USEPA, and the Army reviewed analytical data collected as part of the 2004 PSA effort and determined that CCRSA-266 does not warrant further investigation for HTRW constituents. In a letter dated Jan. 14, 2009, the Army requested a no action decision for HTRW constituents and to defer until range closure the investigation of MEC and MC. Qualified concurrence for no action for HTRW constituents and to defer investigation for MEC and MC until range closure was received from USEPA on Feb. 20, 2009. ADEM concurred that no action was appropriate for HTRW in a letter dated Nov. 10, 2009. A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to HWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI.

Phase I RFI soil sampling was conducted in FY14 and indicated additional sampling was required. The Phase II RFI sampling plan is being developed.

CLEANUP/EXIT STRATEGY

The RFI, DD, and permit modification will be completed. The anticipated remedy is no further action for soils. Groundwater will be addressed under RSA-157.

Site ID: CCRSA-308
Site Name: Exterior Sump at Bldg 7120
Alias: RSA-308

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Explosives, Metals, Perchlorate, Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200908	200910
RFI/CMS	201209	201610

RIP Date: N/A

RC Date: 201610

SITE DESCRIPTION

Building 7120 was built in 1945 to serve as the Ordnance Missile Laboratories propulsion laboratory and auditorium. It contains offices, an auditorium, a maintenance shop, laboratories, and a 28-bay propellant mixing/testing area. The majority of activities conducted were related to physical tests of rockets and missiles to better understand the flight mechanics and design physics. These activities included propellant mixing, casting, curing, testing, painting, and/or degreasing. Current activities conducted in the test bays include mixing and testing of small batches of propellants. During a site visit completed May 11, 2009, an east side exterior sump was observed. The sump has the potential to receive waste from the test bays and to manage hazardous constituents. It is unknown if any releases of hazardous constituents occurred from the exterior sump. The sump will be investigated further as a SWMU. Historical sample results associated with Building 7120 indicate that there may have been more than one sump in the past and have managed solid and hazardous waste based on lead and solvent concentrations that exceed RCRA limits.

The RFI is currently underway.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closeout report will be completed. No further action is anticipated for soils. Groundwater will be addressed under RSA-146.

Site ID: CCRSA-309
Site Name: Covered trench & sump at Bldg 7155
Alias: RSA-309

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Perchlorate, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200908	200910
RFI/CMS	201209	201604

RIP Date: N/A

RC Date: 201604

SITE DESCRIPTION

Building 7155 was built in 1988 and is used as a laboratory. Building activities consist of testing both inert and energetic materials for Ordnance Missile Laboratories studies. There are nine test bays along the north side of the lower level that currently test explosives. All bays have interior floor trench drains along the outside (north wall) that connect to an exterior metal-covered trench that extends approximately 30 yards to a large metal-covered concrete sump. Any discharges from the nine test bays on the lower north side of Building 7155 are captured by the sump.

The RFI fieldwork has been completed and the Rev 0 RFI report is underway and recommends no further action for soils and groundwater.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closure report will be completed. No further action is anticipated for soil and groundwater.

Site ID: CCRSA-310
Site Name: Former & Suspected OWS at Bldg7289
Alias: RSA-310

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	200908	200910
RFI/CMS	201207	201511

RIP Date: N/A

RC Date: 201511

SITE DESCRIPTION

CCRSA-310 is comprised of a former (removed) OWS location and an existing suspected OWS located near Building 7289. Building 7289 was constructed in 1961 as a boiler house to support operations in the adjacent rocket-motor conditioning facility, Building 7288. One 7,200-gallon, No. 2 steel fuel oil UST was installed in 1961 and removed on May 10, 1996 when the boiler house was converted to natural gas. The boiler house has been inactive for more than 10 years. An OWS was abandoned by removal between June 20, 2001 and June 30, 2002. It is unclear if soil sampling for the removed OWS was performed. During a May 11, 2009, site visit, a second in-place suspected OWS was discovered south of Building 7289. It is possible that the two OWSs received boiler chemicals and/or POL during past operations. It is unknown if any releases occurred. Due to the potential for the OWSs to receive hazardous constituents and the unknown potential for releases from the OWSs, the removed OWS location and the suspected OWS at Building 7289 will be investigated further as a SWMU.

The Rev 0 RFI report recommending no further action for soils was submitted to ADEM on Sept. 11, 2014. The VOCs in groundwater will be addressed under groundwater site RSA-154.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification, and site closure report will be completed. The anticipated soil remedy is no further action. Groundwater will be addressed under RSA-154.

Site ID: CCRSA-311
Site Name: Sump & Concrete Pits at Bldg 7352
Alias: RSA-311

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Explosives, Metals, Perchlorate, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200908	200910
RFI/CMS	201104	201612

RIP Date: N/A

RC Date: 201612

SITE DESCRIPTION

CCRSA-311 is situated in the central portion of groundwater site RSA-146 within Test Area 10. CCRSA-311 includes two concrete pits located inside Building 7352, three exterior captive sumps, and interior trench drains. Building 7352 was originally constructed for use as a bowl and wastewater cleanup facility for equipment and tools used in propellant mixing and casting operations at nearby facilities. More recently the building was used to conduct FSs for a missile recycling program. Currently the building is closed and access is restricted following a May 2010 propellant explosion. There is the potential for the presence of hazardous constituents in the sumps and pits. In addition, the propellant explosion in May 2010 may have resulted in a release of perchlorate to soils in the vicinity of the building.

RFI planning documents have been prepared and approved. RFI field investigations were completed in January 2014. Data sufficiency report was submitted to the Army for review and Rev 0 RFI report was submitted to ADEM in FY15.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil excavation and off-site disposal. Groundwater will be addressed under RSA-146.

Site ID: CCRSA-314
Site Name: Used Oil AST & Spill site Bldg 3670
Alias: RSA-314

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	201009	201011
RFI/CMS	201104	201607

RIP Date: N/A

RC Date: 201607

SITE DESCRIPTION

CCRSA-314 consists of the used oil AST and spill site located near Building 3670. Building 3670 is the heavy equipment (e.g., bulldozer and forklift) maintenance facility. The AST was installed in 1992. It has a capacity of 2,000 gallons. Reportedly, fewer than 25 gallons of used oil were spilled at this location as a result of a failure of the overfill alarm. During the tank removal, the presence of contamination at a depth of 4 ft indicated that the spill was likely larger than reported and that additional investigations are required. Due to high levels of petroleum contamination in the soil, this area was identified as a new SWMU.

In 2013, during the Phase II investigation, free product up to 1 foot thick was discovered in four monitoring wells. Delineation of PAHs in surface media is currently underway.

CLEANUP/EXIT STRATEGY

The RFI/CMS, DD, and permit modification will be completed. A DES, CMI(C), and CMI(O) may also be required. It is anticipated that corrective measures including limited excavation and off-site disposal may be recommended for soil in the RFI. Corrective actions for groundwater may include free-product removal; however, this determination will be made upon completion of the RFI.

Site ID: CCRSA-315
Site Name: Abandoned Drum Area
Alias: RSA-315

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201102	201103
RFI/CMS	201205	201611

RIP Date: N/A

RC Date: 201611

SITE DESCRIPTION

RSA-315 is an abandoned drum area along the northeast edge of the RSA Golf Course, north of Goss Road. During a site visit in February 2011, approximately 15 5-gallon steel containers, four 55-gallon steel drums, tire casings, concrete and metal debris were observed distributed across three locations. The rusted condition of the steel containers indicated that they were exposed to the elements for a long period of time. The exact origin of the containers is unknown; however, the possibilities for the origin include construction efforts that were completed in the area and the operation or maintenance of the golf course. As such, these containers may have contained petroleum products, fertilizers, pesticides, or herbicides. Due to the rusted condition of the drums, none of the drums contained any contents at the time they were discovered. A metal storage building (Building 106) used for golf course equipment is located on a slight ridge immediately east of the southern portion of the site. Two small concrete pads exist in the southeastern portion of the site that are associated with former golf course maintenance/storage buildings. It is of note that a historic/archeological area of concern exists within the site boundary as well as a suspected historic cemetery lot. Field activities within these are limited to prevent possible disturbances to these features.

Soil sampling was completed for the areas and the drums removed. The sample results indicated that metals were present above screening levels in one of the three areas. Arsenic was detected in surface soil exceeding action levels. Based on the soil sampling, RSA-315 was identified as a new SWMU in notification provided to ADEM on March 29, 2011. The field investigation for the RFI was initiated in November 2012. Benzo (a) pyrene was detected at a concentration over the PSV in surface soils. Additional sampling to address data gaps was conducted and the Rev 0 RFI report is underway.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-150.

Site ID: CCRSA-316
Site Name: 7500 Area Hardstand Parking
Alias: None

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201208	201301
RFI/CMS	201303	201704

RIP Date: N/A

RC Date: 201704

SITE DESCRIPTION

CCRSA-316, with an area of approximately 2.64 acres, was historically used as a parking area for military vehicles and is located west of RSA-209 in the former South Plant area of RSA. The site largely consists of an open, unfenced grassy area with weathered asphalt and gravel roads. Three apparent used oil surface spill areas were identified during a site visit in 2012. Because the used oil spill areas were located in close proximity to RSA-209, RSA notified ADEM. The spills are thought to have historically originated from various military vehicles that are parked in the area and are not thought to be the result of a current release from new, unused product during fueling and/or leakage directly from the vehicles.

Surface soil sampling targeting the three release areas was conducted in 2012 for a limited analytical suite [total petroleum hydrocarbons (TPH) and RCRA metals]. Results indicated elevated concentrations of TPH and select metals. Additional surface soil sampling was conducted in September 2012 with analysis for explosives and perchlorate (to assess possible impact from RSA-209).

An RFI SFSP was submitted to ADEM on Sept. 9, 2014 proposing the advancement of 20 soil borings and installation of five monitoring wells for the collection of soil and groundwater samples to meet the objectives of an RFI.

CLEANUP/EXIT STRATEGY

The RFI will be completed. The remedy will be determined upon completion of the RFI. Groundwater will be addressed under RSA-146.

Site ID: CCRSA-317
Site Name: Construction Site E of Bldg 5674
Alias: RSA-317

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	201303	201306
RFI/CMS	201403	201808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

CCRSA-317 occupies approximately 1.5 acres in the central portion of RSA west of Patton Road and south of Martin Road. The site is bounded by Technology Road to the north, Refuge Road and Building 5681 to the east, by Building 5676 to the south, and by Building 5674 to the west. The site is a cleared area that has no buildings or other structures. Currently at the site there is a debris pile that was generated as a result of the site clearing operations and several loads of gravel that were intended for use in the construction activities. The area comprising CCRSA-317 was being cleared and graded as part of ongoing construction activities at RSA. During soil grading operations associated with construction activities, a heavy equipment operator observed an area of soil that appeared to be burning and emitting a white smoke after the soil had been removed from the area during leveling operations. The area was re-covered with soil and the burning and white smoke ceased. The cause of the smoke is unknown. A visual inspection did not indicate the presence UXO or pieces of scrap metal that would suggest that munitions were present. After securing the site and stopping all construction activities, an additional site visit was completed on April 11, 2013. During visual inspection of the site, a thin layer of black material was observed in the area where the burning and smoking was observed and in many other areas across the site. The origin of this black material is unknown.

SAR was prepared for the site and submitted to ADEM in May 2013. Recommendations for additional investigation at CCRSA-317 as presented in the SAR are based on site observations, limited analytical data, and the documented use of surrounding areas for production of incendiary devices.

Data for this site as obtained from a sample of the identified material as presented in the 2013 SAR indicate the following:

- The sample did not contain cyanide or reactive cyanide.
- The total phosphorus content does not suggest the potential for white phosphorus
- Explosives and perchlorate were not detected in the sample
- Concentrations of one PAH and one VOC were detected exceeding PSVs
- Detected concentrations of barium, cadmium, and lead exceed screening criteria (PSVs, background screening values, dilution attenuation factor 4, site-specific screening levels); and Barium (25,200 mg/kg) and magnesium (87,300 mg/kg) concentrations strongly suggest the sampled material is related to the former production of incendiary devices.

The RFI work plan is underway.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed and LTM initiated. The anticipated remedy is LUCs. Groundwater will be addressed under RSA-148.

Site ID: CCRSA-319
Site Name: Former OWS, Bldg 4812 and Pad
Alias: None

STATUS

Regulatory Driver: RCRA

Phases	Start	End
RFA	201407	201409
RFI/CMS	201503	201808

RIP Date: N/A

RC Date: 201808

SITE DESCRIPTION

RSA-319 is located in the northern-central portion of RSA, off of Hale Road at the Redstone Army Airfield. RSA-319 is located just beyond the RSA-035 boundary to the west, adjacent to the former OWS, and encompasses the concrete pad associated with Building 4812. A portion of the concrete pad north of the trench drain has been removed. RSA-319 includes Building 4812, which is scheduled to be demolished; the grassy area located to the northeast of Building 4812; a grassy area between Building 4812 and the RSA-035 boundary to the west; and the concrete pad for the fuel vehicle parking area south of Building 4812. The grassy area northeast of Building 4812 was being excavated to install a new eyewash stand next to the Building 4812 pad as part of ongoing construction activities at RSA.

During soil excavation operations associated with installation of the eyewash stand on July 1, 2014, the contractor observed areas of discolored soil at a depth of 3 to 4 ft and an oily sheen on the potable water that leaked into the excavation during connection to the water main. The water present in the excavation had a petroleum odor that was noted by the individuals involved. Construction of the eyewash stand was suspended and the site marked as off limits. The excavation was left open during sampling and completion of the investigation that was performed on July 10, 2014. The excavation has since been backfilled with clean soil and signs were installed indicating this as a new site.

CLEANUP/EXIT STRATEGY

RFI is underway.

Site ID: CCSWMU-003
Site Name: IN-GROUND OIL/WATER SEPARATOR BLDG 3617
Alias: RSA-003

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Explosives, Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Groundwater

Phases	Start	End
RFA	198908	199109
CS	200001	200110
RFI/CMS	200404	201602
DES	201205	201701
CMI(C)	201707	202207
LTM	202207	205207

RIP Date: N/A

RC Date: 202207

SITE DESCRIPTION

This SWMU was an in-ground OWS located outside Building 3617 that received waste lubricant oils, grease, and detergents from vehicle maintenance activities until 1997. It was replaced by a new in-ground OWS.

The separator was a concrete structure 8 ft wide by 8 ft long by 8 ft deep, designed to hold approximately 4 ft of liquid (approximately 2,000-gallons). The data collected during the confirmation sampling indicated the need for additional investigations at CCSWMU-003 due to the release of TPH and lead. The release assessment completed in 2001 identified TPH above 100-ppm and metals (arsenic, lead, chromium, and mercury) above RSA background levels in surface and subsurface soils. Removal actions for TPH contaminated soil were implemented in June and July 2002. The removal actions identified additional TPH impacted soils resulting from an out of service oil drain pit on the south side of Building 3617. The removal action activities at CCSWMU-003 were expanded to include the waste oil drain pit and petroleum impacted soils around the pit. Additional release areas were identified during the removal actions. Groundwater contained TPH, TCE, DCE, dichloroethane, and vinyl chloride above maximum contaminant levels (MCL). The identification of additional potential release areas and the concentrations of contaminants in the groundwater indicated that an RFI was necessary to assess releases at CCSWMU-003.

The RFI began in May 2004. The draft RFI report that recommended NFA was submitted based on the lack of risk to human health and the environment on Sept. 20, 2004. Comments on the RFI report were received from ADEM Nov. 17, 2005. ADEM requested additional evaluation of groundwater at CCSWMU-003. The evaluation of groundwater at CCSWMU-003 as part of a supplemental RFI began in July 2006 and was completed in 2010. The supplemental RFI and an ARBCA human health risk evaluation identified six VOC COCs in groundwater (TCE and its break down products). Multiple sampling rounds indicate there is a steady decline in TCE concentrations at the site.

The Rev 1 RFI report was submitted to ADEM on April 17, 2014 and Rev 2 was submitted on Dec. 19, 2014, recommending no further action for surface media and corrective measures for groundwater.

CLEANUP/EXIT STRATEGY

The RFI/CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. NFA is anticipated for soil surface media and MNA for groundwater.

Site ID: CCSWMU-008
Site Name: SEWAGE TREATMENT PLANT #4
Alias: RSA-008

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
RFI/CMS	200409	201703
DES	201707	201807
CMI(C)	201901	202002

RIP Date: N/A

RC Date: 202002

SITE DESCRIPTION

Sewage Treatment Plant No. 4 (CCSWMU-008) is located in the northeastern section of RSA north of Martin Road, east of Patton Road, south of Hansen Road, and west of McDonald Creek. The in-ground concrete facility was constructed in 1959 and removed from active service in 1992; however, it is still used on an as needed basis. The plant was used for treatment of sewage and wastewater generated in the northern portion of RSA. CCSWMU-008 also received floor wash water from some of the research labs and motor pools, as well as water separated by the oil/water separators located in the area.

RSA requested the movement of CCSWMU-008 from the CERCLA program to the RCRA program under an NFA recommendation on Oct. 7, 2002. Limited investigations of CCSWMU-008 were completed under the CERCLA program. More thorough investigations are required under RCRA to evaluate the site. ADEM requested an RFI for the site on Feb. 4, 2003. The RFI began in June 2004. A courtesy copy of the RFI work plan was submitted to ADEM on June 14, 2004. The original RFI was completed in October 2004. A final RFI requesting LUCs was submitted to ADEM in May 2012. ADEM required additional sampling which is underway.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. It is anticipated that excavation of contaminated soil from the sludge drying beds with off-site disposal will be required. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-009
Site Name: INACTIVE SEWAGE TREATMENT PLANT #3
Alias: RSA-009

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
RFI/CMS	200702	201604
DES	201205	201704
CMI(C)	201703	201810

RIP Date: N/A

RC Date: 201810

SITE DESCRIPTION

Inactive Sewage Treatment Plant No. 3 located in the northeastern portion of RSA north of Martin Road. The treatment plant was originally constructed in 1942. The plant was operated under a National Pollution Discharge Elimination System permit allowing a monthly flow of 2.0 million gallons per day. The treatment plant historically treated sewage generated in the central portion of RSA as well as discharges from the Marshall Space Flight Center. The plant is currently operational and is utilized on an as-needed basis. RSA requested the movement of CCSWMU-009 from the CERCLA program to the RCRA program under a NFA recommendation on Oct. 07, 2002. ADEM concurred with the movement of CCSWMU-009 to RCRA but did not concur with the NFA recommendation. ADEM requested an RFI for the site on Feb. 4, 2003. The efforts to complete the RFI were funded and began in 2007. Delays in completing the investigation due to archeological concerns were identified in January 2008.

The preliminary data indicated that PCBs were a concern for surface soils at the site. Delineation of the extent of PCBs in surface soils was attempted and data indicated that PCBs were present in soils at concentrations up to 860 ppm. Data from the RFI indicates that PCBs in soils are a concern at CCSWMU-009. Based on the RFI data, a CMS, and a CMI will be required. The CMS was initially funded in FY09; however, because ADEM requested additional sampling at RSA-009 in their Dec. 12, 2011 comments, RSA agreed to the sampling and the efforts proposed for the CMS will be used to revise the RFI. Therefore, a CMS/CMI will be required. CMI will consist of removing contaminated soil from the sludge drying beds. No corrective actions are expected for groundwater. The cleanup strategy assumes that the documentation of all site investigation activities will be included in the closure report for CCSWMU-009.

RFI fieldwork is ongoing to address data gaps identified by ADEM.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, Permit Modification, DES and CMI(C) will be completed. The anticipated remedy is soil excavation and off-site disposal. Groundwater contamination will be addressed by NASA.

Site ID: CCSWMU-028
Site Name: IN-GROUND OWS 5693 AREA
Alias: RSA-028

STATUS

Regulatory Driver: RCRA

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

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
CS	200001	200110
RFI/CMS	201103	201512
DES	201603	201707
CMI(C)	201801	201906

RIP Date: N/A

RC Date: 201906

SITE DESCRIPTION

CCSWMU-028 consists of four active in-ground oil-water separators located within the confines of the RSA POL storage yard. The four OWS are referred to as RSA-028 (1), RSA-028 (2), RSA-028 (3), and RSA-028 (4). Soil sampling indicated that releases occurred from RSA-028 (1). It is unknown if releases occurred from RSA-028 (4). The evidence suggests that the TPH detected in soil and groundwater could have potentially come from sources other than the OWS. Numerous sources including ASTs and pipelines used to store and transfer petroleum fuels are located in the immediate area surrounding CCSWMU-028. Further investigation at CCSWMU-028 encompassed the POL storage yard and surrounding areas. The cleanup strategy for RSA-028 (1) assumes that the clean-up will incorporate the entire area associated with the RSA POL Fuel Storage Yard into studies and corrective actions. It is assumed that corrective action will be required for groundwater and soils of RSA-028 (1) and the RSA POL Fuel Storage Yard.

A Rev 0 RFI report was submitted to ADEM in 2015.

CLEANUP/EXIT STRATEGY

The RFI/CMS, DD, permit modification, DES, and CMI (C) will be completed. The anticipated remedy is soil excavation with off-site disposal. Groundwater will be addressed under RSA-148.

Site ID: CCSWMU-030
Site Name: CENTRAL OIL WATER SEPARATOR
Alias: RSA-030

STATUS

Regulatory Driver: RCRA

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	198908	199109
CS	200001	200110
RFI/CMS	200409	201705

RIP Date: N/A

RC Date: 201705

SITE DESCRIPTION

CCSWMU-030 is an inactive facility located near Building 5427. The unit consists of a metal building, a 2,000-gallon concrete holding sump, and a 1,000-gallon OWS. The unit served as a central repository for waste oil generated throughout RSA until it was removed from service in 2004. CCSWMU-030 began operation in 1982. Recovered oil was discharged to the central OWS storage tank (RSA-031) located east of the unit. Treated water was discharged to the sanitary sewer system.

Site CCSWMU-031 has been incorporated into CCSWMU-030 and is an inactive facility located near Building 5427. The unit consists of three ASTs with secondary containment. Two of the ASTs are located within a bermed containment area with a synthetic liner. These tanks reportedly have a capacity of 5,000 and 2,000 gallons. The third tank is a 5,000-gallon, double-wall tank located on the east side of CCSWMU-031. The tanks stored the oil recovered from the operations completed in Building 5427. The facility was removed from service in 2004 and investigations to assess the extent of contamination began.

The facility, including the tanks have been decommissioned and removed. The Rev 0 RFI report for CCSWMU-030 and CCSWMU-031 was submitted to ADEM on Nov. 21, 2013. The Rev 1 RFI report is due to ADEM on Nov. 6, 2015.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD and permit modification will be completed. A DES, CMI(C) and CMI(O) may be required. The anticipated remedy for soil may be excavation with off-site disposal. The anticipated remedy for groundwater may be ORC followed by ISEB; however, this determination will be made upon completion of the RFI.

Site ID: CCSWMU-035
Site Name: IN-GROUND OIL/WATER SEPARATOR, BLDG 4812
Alias: RSA-035

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
CS	200001	200110
RFI/CMS	200807	201311
DES	201205	201311
CMI(C)	201205	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

Site CCSWMU-035 is an inactive in-ground OWS located at the RSA airfield. The OWS received runoff from a fuel truck parking area. The OWS was taken out of service in 1997 when a new separator was installed. The original unit was installed in the 1940s, upgraded in the 1970s, and upgraded in 1985. The OWS consisted of two stages (initial and second). Each stage consisted of a 2-ft by 3-ft by 4-ft deep concrete pit. An UST associated with RSA-042 stored the recovered waste oil. The OWS was connected to the RSA-042 UST by an underground pipeline. The waste oil recovered from the unit was routinely transferred to RSA-030. The water discharged from the unit was routed to an adjacent drainage ditch east of the OWS.

In 2000, confirmation sampling was completed and the OWS was removed. Samples were also collected from the pipelines. The data indicated that releases occurred from the OWS prompting the completion of a release assessment. The release assessment completed in 2001 determined that releases from the OWS were related to petroleum products and had impacted surface soil at the point where the OWS overflowed. A removal action completed in 2002 removed surface soils impacted by petroleum releases. Additional areas of TPH impacted soil were identified near the airfield UST. Investigations under the UST program may be necessary to determine future actions at the UST site. The UST was not addressed by any of the previous investigations.

A hazardous waste facility permit was issued on Sept. 30, 2010 pursuant to AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

The RFI report was approved by ADEM on Oct. 9, 2012. The design was completed and ADEM approved via Modification 3 to RSA's permit on Nov. 16, 2013. The CMI(C) is currently underway with the excavation of PAH contaminated soil.

CLEANUP/EXIT STRATEGY

A CMI(C) consisting of soil removal will be completed. No further action for soil and groundwater will be required.

Site ID: CCSWMU-116
Site Name: SOUTH SIDE BLOWDOWN LAGOON, TEST AREA 5
Alias: RSA-116

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
RFI/CMS	201210	201610

RIP Date: N/A

RC Date: 201610

SITE DESCRIPTION

CCSWMU-116 (RSA-116) is approximately 4.5 acres in size and is located in the southern portion of RSA, south of Buxton and Pershing roads, on the south side of Test Area 5. The site is active. CCSWMU-116 was originally constructed as a holding basin for spent cooling water discharged during rocket motor test firing at Test Stand 8879. The cooling water was mixed with rocket motor exhaust. The spent cooling water was held in the lagoon and evaporated and/or percolated through the soil. There is a release structure at the base of the lagoon for drainage to the creek. In 1993, the lagoon was upgraded, lined with a synthetic membrane, and an 8-foot chain-link fence was installed. The site is still used to capture water used during the static testing of rocket motors.

The final RCRA confirmation sampling report South-Side Blowdown Lagoon, Test Area 5, CCSWMU-116 was submitted to ADEM May 8, 2006. The sampling completed at CCSWMU-116 indicated that SVOCs were present in subsurface soils at concentrations that exceeded risk-based screening concentrations (RBSC). After the site becomes inactive, further investigation to determine the extent of SVOC contamination is warranted. Additional soil borings installed along the western edge of the dam are needed to confirm and determine the extent of PAH contamination in subsurface soils. Comments on the final RCRA confirmation sampling report for CCSWMU-116 were received Dec. 13, 2007. The comments from ADEM requested that RSA complete additional monitoring of groundwater at CCSWMU-116. RSA agreed to the additional monitoring efforts in their response to comments submitted on May 19, 2008. The monitoring effort was funded in FY08 and was implemented from 2009 to 2010. The report was issued in January 2012 suggesting annual monitoring until the site is closed.

The RFI report is under review by ADEM and recommends no further action for soils. The groundwater will be addressed by groundwater site RSA-156.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification, and site closeout will be completed. The anticipated remedy for soil is no further action. Groundwater will be addressed under RSA-156.

Site ID: CCSWMU-182
Site Name: 1.1 Grinder Bldg P2, TSA Bldg 769
Alias: RSA-182

STATUS

Regulatory Driver: RCRA

Phases	Start	End
RFA	198908	199109
CS	200303	200304
RFI/CMS	200502	201505

RIP Date: N/A

RC Date: 201505

SITE DESCRIPTION

CCSWMU-182, located south of Building 7695, is a steel building underlain by a 4-inch thick concrete pad that is approximately 7.25 ft by 12.25 ft. It was constructed in 1988. A sump approximately 1 ft deep and 2 ft wide ran the length of the building (12.25 ft). The storage area at Building 7695 was used from 1978 to 1993 to store HMX and RDX waste. Confirmatory sampling (CS) was completed in 2003 around the storage area to determine if releases occurred. During the CS, 10 soil samples were collected and analyzed for VOCs, SVOCs, metals, explosives, perchlorate, and cyanide. Sample results indicated chromium was present in soils at concentrations above background levels and USEPA Region 9 preliminary remediation goals (PRG). The CS report submitted in September 2003 recommended additional investigation at CCSWMU-182 to determine if the concentrations of chromium detected were site related. A statistical and geochemical evaluation of the data was completed to determine whether the chromium detected in surface and subsurface soils were within the naturally occurring background range. The geochemical evaluations indicated that the Detected concentrations of chromium were anomalously high and may represent a component of contamination. Based on this finding, a release assessment was recommended for CCSWMU-182. The RS activities were funded in 2004 and completed in 2005. The RS included the completion of soil borings to collect surface and subsurface soil samples. Based on the data collected during the CSA and the RS, CCSWMU-182 does not appear to have released contaminants that pose a threat to human health or the environment, therefore a NFA recommendation is appropriate for this site. The final RCRA closure report was submitted to ADEM June 7, 2006 with an NFA recommendation. ADEM provided comments in December 2009 disagreeing with the NFA decision.

A revised closure report was submitted to ADEM on March 10, 2014. A NFA approval letter was received from ADEM dated Aug. 29, 2014.

CLEANUP/EXIT STRATEGY

The final RCRA closure report supporting a recommendation for NFA was submitted to ADEM in March 2014. We are currently awaiting ADEM review comments or concurrence on the RCRA CA. If ADEM does not concur with the RCRA CA, actions required to complete an RFI and CMS will occur under.

Site ID: CCSWMU-216
Site Name: Laboratory Injection Test Facility,
Alias: RSA-216

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200412	200501
RFI/CMS	200510	201704

RIP Date: N/A

RC Date: 201704

SITE DESCRIPTION

This new RCRA SWMU was identified in 2005 based upon a PSA investigation (PSA RSA-147) conducted under the CERCLA program. It is located south of Fowler Road and McMorrow Laboratories and west of Jungerman Road. It was initially designated as an injection test facility, but is currently a rocket actuation and guidance system laboratory. RSA-216 consists of two containment basins on the west side of Building 5475 and a concrete pit located north of the building. The concrete pit received discharges from the containment areas and it has no outlet. Building 5475 was initially designated as an injection test facility. Previous sampling completed in 2004 indicated that it is unlikely that releases occurred from the containment basins. Any release to the containment basins were routed directly to the concrete pit by a four-inch cast iron pipe. The 2004 sampling determined that releases of metals and petroleum products did occur from the concrete pit. Arsenic, cadmium, and mercury were detected at concentrations that exceeded the respective background levels and risk based concentrations based on residential USEPA Region 9 PRGs.

Concentrations of benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene in sample SD01 also exceeded their respective residential RBCs. Based on the indications of releases of hazardous constituents from the concrete pit additional investigations in the form of additional sampling are required at CCSWMU-216 in 2006. In March 2006 additional sampling was completed to determine the extent of any releases from the concrete pit. The concrete pit was removed to allow sampling below the pit and soil borings were installed downgradient of the concrete pit to determine the extent of the release. No contamination was found and a NFA was requested for this site. The release assessment report was submitted to ADEM in November 2006. A Confirmation Sampling/Closure Report requesting a NFA was submitted to ADEM Dec. 5, 2006. ADEM provided comments on the Confirmation Sampling/Closure Report in November 2010 and November 2011. A Rev 1 Confirmation Sampling/Closure Report was produced in May 2012. ADEM requested that an RFI be prepared and it is currently underway.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closure report will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-147.

Site ID: CCSWMU-222
Site Name: Roads and Grounds Maintenance Shop
Alias: RSA-222

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Petroleum, Oil and Lubricants (POL)

Media of Concern: Groundwater

Phases	Start	End
RFA	200509	200610
RFI/CMS	201203	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

This site was identified in 2005 based upon a PSA Investigation (RSA-147) conducted under the CERCLA program. CCSWMU-222 (Roads and Grounds Maintenance Shop) consists of the paint shop, water curtain paint booth, and OWS in Building 5494. The paint shop is located at the east end of Building 5494. The paint booth OWS is located on the southeast side of the building. An additional OWS (Building 5498) is located south of Building 5494. All vehicle washing activities occur at Building 5498 and all discharges from the operations are routed to the Building 5498 OWS. The water curtain system for paint booth is still operational. The sump for the water curtain paint booth and floor drain for the painting areas is connected to the OWS. The OWS discharges to the sanitary sewer. The old OWS that was referred to as the paint trap was replaced in 2001. The old OWS was in poor repair prior to its replacement and it is likely that the discharges from the water curtain paint booth contained hazardous constituents that were released to the old OWS. No sampling was completed during the replacement of the old OWS. The investigations were funded in 2005 and completed in 2006. A release assessment/closure report recommending NFA was submitted to ADEM Oct. 23, 2006.

In a letter dated Feb. 24, 2012, ADEM stated that additional investigation of the OWS was required. The Rev 0 RFI report with a recommendation for NFA was submitted to ADEM in July 2014.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. No further action is anticipated for surface media and groundwater.

Site ID: CCSWMU-240
Site Name: FORMER SUBSTATION NO.7, BLDG 5290
Alias: RSA-240

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polychlorinated Biphenyls (PCB)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200412	200501
RFI/CMS	200603	201512

RIP Date: N/A

RC Date: 201512

SITE DESCRIPTION

CCSWMU-240 was identified in 2005 based upon a PSA investigation (PSA RSA-147) conducted under the CERCLA program. This Former Substation No. 7, Building 5290, which operated from 1960-1996 is located just northeast of the Sparkman Center, north of Sparkman Circle, and west of Patton Road. It was replaced by Substation No. 8 located approximately 25 to 50 ft east of CCSWMU-240. The site where Former Substation No. 7 was located is now an open field. Little evidence of the former substation remains at the site. A concrete conduit that spans a drainage ditch south of the former substation's location is the only remaining indication of the substation's presence. Previous sampling completed in 2004 indicated that PCB Aroclor-1260 was present in groundwater at concentrations that exceed the RBC and the drinking water MCL.

A hazardous waste facility permit issued Sept. 30, 2010 pursuant to AHWMMA, requires that an RFI be completed for this site in accordance with Table VI.2.

The Rev 0 RFI report was submitted to ADEM on May 23, 2014. In response to ADEM comments, Rev 0 RFI report with slip pages was submitted to ADEM on Aug. 29, 2014. NFA was recommended for surface media and groundwater.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. It is anticipated that no further action will be required for surface media and groundwater.

Site ID: CCSWMU-241
Site Name: HW STORAGE IGLOO, BLDG 7313
Alias: RSA-241

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	200702	201611
DES	201607	201712
CMI(C)	201806	201907

RIP Date: N/A

RC Date: 201907

SITE DESCRIPTION

CCSWMU-241 is located on Plover Road, west of Magazine Road and north of Redstone Road in the former RARE Facility area in the southeast portion of RSA (currently within the Test Area 10 boundary). Building 7313 is situated in a field of several igloos and was most recently used by the Thiokol Corporation. Building 7313 is an igloo that was constructed in 1942 and used primarily for storage of high explosives and chemical high explosives in support of operations at the ROP. CCSWMU-241 was used to store hazardous waste until 1996. Sampling completed in 2004 indicated that chromium and mercury are present in surface and subsurface soils at levels that exceed background values. A release assessment is required to determine the extent of the hazardous constituents released from CCSWMU-241. The release assessment for CCSWMU-241 was funded and started in 2007. The initial results from the release assessment indicated the presence of SVOCs in soils above screening levels. A limited removal action to address SVOCs in soils was completed in FY09. The data from the removal action indicated that the removal action was not successful and an RFI is required for the site.

A release assessment was submitted in March 2011. A soil removal for PAH contamination was conducted as part of the release assessment, however the action did not remove all PAH contamination exceeding target concentrations. RFI data for this site have been obtained from numerous investigations and corrective measures. Post-excavation confirmation sampling indicated that SVOC/PAH constituents remain at concentrations exceeding PSVs in subsurface soils. Concentrations of limited metals in subsurface soil also exceed screening criteria.

Additional RFI fieldwork has been completed with an RFI data sufficiency document summarizing this information receiving Army concurrence in August 2014.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil removal actions to remove SVOCs/PAHs within the former area of removal northwest of Building 7313. Groundwater will be addressed under RSA-146.

Site ID: CCSWMU-242
Site Name: HW STORAGE IGLOO, BLDG 7314
Alias: RSA-242

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	201108	201602
DES	201602	201707
CMI(C)	201801	201902

RIP Date: N/A

RC Date: 201902

SITE DESCRIPTION

CCSWMU-242 is located on Plover Road, west of Magazine Road and north of Redstone Road in the former RARE Facility area in the southeast portion of RSA (currently within the Test Area 10 boundary). Building 7314 is situated in a field of several igloos and was most recently used by the Thiokol Corporation. Building 7314 is an igloo that was constructed in 1942 and used primarily for storage of high explosives and chemical high explosives in support of operations at the ROP. After 1950, the igloo was used by Thiokol Corporation to store chemicals and munitions until the company's departure from RSA in 1996. Sampling completed in 2004 indicated that SVOCs were present in surface and subsurface soils at levels that exceed RBSCs. A release assessment was completed to determine the extent of the hazardous constituents released from CCSWMU-242. The release assessment for CCSWMU-242 was funded and started in 2007. The initial results from the release assessment indicated the presence of SVOCs in soils above screening levels but not at levels that posed a risk. The July 2009 Release Assessment Report for CCSWMU-242 requested NFA for RSA-242; however, ADEM did not concur with the NFA recommendation in their comments provided Aug. 22, 2011.

Rev 0 RFI was submitted on Aug. 29, 2014 and recommended an action for arsenic in soils for residential receptor. Exposure to CCSWMU-242 soils poses no unacceptable health risk to the industrial receptors. Groundwater actions are deferred to site RSA-146.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy is soil removal. Groundwater will be addressed under RSA-146.

Site ID: CCSWMU-243
Site Name: PROPELLANT STORAGE, BLDG 7342
Alias: RSA-243

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	201108	201610

RIP Date: N/A

RC Date: 201610

SITE DESCRIPTION

CCSWMU-243 is located on Plover Road, west of Magazine Road and north of Redstone Road in the former RARE Facility area in the southeast portion of RSA (currently within the Test Area 10 boundary) in the former RARE North Plant area. Building 7342 is situated in a field of several igloos and was most recently used by the Thiokol Corporation. Building 7342 is an igloo that was constructed in 1942 and used primarily for storage of high explosives and chemical high explosives in support of operations at the ROP. After 1950, the igloo was used by Thiokol Corporation to store chemicals and munitions until the company's departure from RSA in 1996. Sampling completed in 1997 indicated that SVOCs were present in surface and subsurface soils at levels that exceed RBSCs. A release assessment was completed to determine the extent of the hazardous constituents released from CCSWMU-243. The release assessment for CCSWMU-243 was funded and started in 2007. The initial results from the release assessment indicated the presence of SVOCs in soils above screening levels but not at levels that posed a risk. The February 2009 Release Assessment Report for CCSWMU-243 requested NFA for CCSWMU-243; however, ADEM did not concur with the NFA recommendation in their comments provided Aug. 30, 2011. RSA agreed to complete additional sampling and/or an RFI.

Additional RFI soil sampling was conducted in accordance with the November 2013 RFI SFSP. A Data sufficiency summary has been prepared summarizing the current data and is ready for presentation in August 2014. Based on the advance review CCSWMU-243 RFI report, recommendation for full NFA for the site is being made.

CLEANUP/EXIT STRATEGY

The RFI,CMS, DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy is soil removal with off-site disposal. Groundwater will be addressed under RSA-146. Based on the advance review CCSWMU-243 RFI report, recommendation for full NFA for the site is being made.

Site ID: CCSWMU-245
Site Name: STEAM HEATING PLANT, BLDG 7579
Alias: RSA-245

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	200702	201508

RIP Date: N/A

RC Date: 201508

SITE DESCRIPTION

CCSWMU-245 (Building 7579, Steam Heating Plant) is located south of Redstone Road and east of Line Road in the northern portion of the former RARE South Plant area in the southeast portion of RSA. CCSWMU-245 was constructed in 1942 as the primary steam heating plant (boiler house) for the ROP Line 3 and Line 4. It was transferred from RSA to Rohm and Haas Company in 1950, reverted back to RSA in 1971, and was transferred to the Thiokol Corporation in 1985. Thiokol used the facility as a boiler house from 1985 until 1996.

The Rev 0 RFI report submitted to ADEM on July 1, 2014 recommends no further action for surface media.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-146.

Site ID: CCSWMU-246
Site Name: SEWER EJECTOR & MOTOR POOL, BLDG 7630
Alias: RSA-246

STATUS

Regulatory Driver: RCRA

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

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	200609	201702

RIP Date: N/A

RC Date: 201702

SITE DESCRIPTION

This new RCRA SWMU was identified in 2005 based upon a PSA investigation (PSA RSA-146) conducted under the CERCLA program. CCSWMU-246 (Building 7630, Sewer Ejector/Motor Pool) is located on Pheasant Road at Oriole Circle, in the central portion of the former RARE North Plant area in the southeast portion of RSA. CCSWMU-246 was originally constructed in 1959 and was used as a sewer ejector station. The original building was demolished. The existing Building 7630 was constructed in 1983 and used by the Thiokol Corporation as a motor pool and painting facility until 1996. A 1,000-gallon fuel oil UST and a pump were located in an equipment yard north of the building. Oil stains were visible on the ground near the pump. An exterior two-chambered baffled OWS, which had an outlet to the sewer line was located next to the equipment wash bay. Gray water leaving the OWS suggested paint-wash discharge may have entered the OWS.

A former gasoline UST (approximately 2,000 gallons) was reportedly removed from the west end of the building in 1983 or 1984. In 1997 soil and groundwater samples were collected near the building and analyzed for explosives, PAHs, metals, PCBs, and SVOCs. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, and PCB-1254 were detected above RBCs. Groundwater contained metals, VOCs and explosives above screening criteria. A release assessment investigation at CCSWMU-246 began in 2006 and was completed in 2007. On June 26, 2007, a release assessment/closure report for CCSWMU-246 requesting NFA was submitted to ADEM. The February 2009 Release Assessment Report for CCSWMU-246 requested NFA for CCSWMU-246; however, ADEM did not concur with the NFA recommendation in their comments provided Sept. 29, 2011 and requested an RFI for CCSWMU-246.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy is soil removal with off-site disposal. Groundwater will be addressed under RSA-146.

Site ID: CCSWMU-247
Site Name: STEEL FABRICATION/MAINTENANCE FAC. B7644
Alias: RSA-247

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	200605	201612
DES	201701	201805
CMI(C)	201811	202003

RIP Date: N/A

RC Date: 202003

SITE DESCRIPTION

CCSWMU-247 (Building 7644, Steel Fabrication Shop and Maintenance Facility) is located in the northeast corner of Pheasant Road and Blue Bird Road, in the central portion of the former RSA Rocket Engine North Plant area in the southeast portion of RSA. Building 7644 was built in 1958 and was reportedly used as a metal plating shop until 1959. Little is known about the plating operations, but a 1975 document describes Building 7644 as a metal plating facility where tooling is coated with cadmium, nickel chrome, and other electrochemical processes (U.S. Army Missile Command, 1975). According to the RSA building use history, Building 7644 was converted to a steel fabrication and maintenance shop in 1959 and was operated by the Thiokol Corporation until 1996. Activities in the building during this period included metal work such as pipe fitting, threading, and drilling of metal parts. A release assessment was completed at CCSWMU-247 in 2007. The extent of cadmium and nickel contamination in surface soil and nickel contamination in subsurface soil at CCSWMU-247 was not defined by the release assessment.

The Rev 0 RFI was submitted to the regulators on March 5, 2012.

Environmental data have been collected from investigations at this site since 1997. Sample locations have been conducted to target PSAs and for contaminant delineation. Phase III RFI delineation fieldwork was conducted in January 2014. Data indicate metals (cadmium, chromium and nickel) and cyanide concentrations in surface and shallow subsurface soil exceed residential screening values.

ADEM concurred with RFI report on Feb. 17, 2015 and CMIP is underway.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) will be completed. The anticipated remedy for soil is soil excavation with off-site disposal. No further action is anticipated for groundwater.

Site ID: CCSWMU-248
Site Name: BATTERY MAINTENANCE SHOP, BLDG 3633
Alias: RSA-248

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200502	200503
RFI/CMS	200609	201608

RIP Date: N/A

RC Date: 201608

SITE DESCRIPTION

Site CCSWMU-248 (Building 3333) was identified in 2005 based upon a PSA investigation (RSA-145) conducted under the CERCLA program. It is located west of Patriot Drive, north of Neal Road, and south of Roland Road and is currently operational. It occupies 12,360 sf and was constructed in 1943 as a warehouse for the SMF plant. The northern half of Building 3633 is used as a forklift maintenance area and the southern half is used for battery maintenance. The battery maintenance portion of Building 3633 consists of a storage area for incoming batteries, a battery filling and charging area, and a wash down area. The battery maintenance activities in Building 3633 began with the development of the Nike missile system that occurred in the mid-1950s. During this era lead acid and nickel-cadmium batteries were serviced. The battery maintenance activities included the complete rebuilding of batteries, draining of battery electrolyte, and replacing lead plates. These historical activities as well as current activities have resulted in the release of hazardous waste or hazardous constituents through floor drains, piping to the sanitary sewer, and to the surface by spills and routine operations.

The Rev 0 RFI report is due to ADEM on March 25, 2015 and no further action for soils is anticipated.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. No further action is anticipated for soils. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-268
Site Name: SEWAGE TREATMENT PLANT, BLDG 8018
Alias: RSA-268

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200501	200607
RFI/CMS	200609	201510

RIP Date: N/A

RC Date: 201510

SITE DESCRIPTION

CCSWMU-268, located in the southwestern portion of RSA north of Buxton Road along the northern end of Shields Road, is a former sewage treatment plant (Building 8018) that was constructed in 1943 to provide limited wastewater treatment services for the Gulf Chemical Warfare Depot. Building 8018 was removed from service in 1992 when the Imhoff tank, dosing chamber, and other structures were filled with gravel. Limited investigations at CCSWMU-268 were completed under the CERCLA program in 2005. Metals were detected in surface or subsurface soils at concentrations that exceeded background and/or RBCs. Arsenic, chromium, and mercury were detected in surface or subsurface soils at concentrations that exceeded background levels. One groundwater grab sample contained SVOCs (benzo(a)anthracene, benzo(b)fluoranthene, and benzo(k)fluoranthene) at concentrations exceeding their respective RBCs. Additional investigations to confirm and determine the extent of the releases at CCSWMU-268 were funded and completed in 2007. The release assessment indicated the presence of metals in groundwater samples collected from piezometers. A single well was installed to collect data to confirm the presence of metals in groundwater.

The release assessment report requesting an NFA for CCSWMU-268 was submitted in April 2008. Comments on the release assessment report were received from ADEM on June 9, 2009. Existing sampling at the site was not fully compliant with ADEM's AEIRG and ADEM did not provide concurrence with the NFA recommendation. ADEM requested further investigation of soil and groundwater at CCSWMU-268.

The Rev 0 RFI report was submitted for regulatory review in March 2013. Regulatory comments received in August 2013 requested additional sampling and a Rev 1 RFI report. A Phase II RFI SFSP was prepared in December 2013 to address regulatory comments. The Rev 1 RFI was scheduled for regulatory submittal in December 2014. The results of the RFI are expected to indicate that no further action is needed for soil and a groundwater action will be addressed under RSA-154.

CLEANUP/EXIT STRATEGY

Funding was obtained through the PBA contract to complete the actions through RFI/CMS and CMI(C). The Rev 0 RFI was submitted to ADEM in April 2013 indicating that metals were sufficiently delineated; however, PAHs required further delineation in surface soil. The RFI recommended that a CMIP be developed to both define the extent of PAHs and also to allow implementation of corrective measures. ADEM provided comments indicating that a Rev 1 RFI is required. Additional sampling was recommended in surface soil in the area of the sludge drying beds for determination of PAH impacts. The results of the Rev 1 RFI report are expected to indicate that a corrective measure study and a removal action will be required for the removal of contaminants from the filter beds and sludge beds.

Site ID: CCSWMU-277
Site Name: B5487 WW MAINT SHOP ACID BATH WASHDOWN
Alias: RSA-277

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200508	200606
RFI/CMS	200609	201510
IRA	200905	200908

RIP Date: N/A

RC Date: 201510

SITE DESCRIPTION

CCSWMU-277 (Building 5487, Wastewater Maintenance Shop Acid Bath Wash-Down Area) is located north of Mills Road in the central portion of RSA. The building is approximately 12,350 sf and was constructed in 1942. The eastern half of Building 5487 is used as a pipe, plumbing, and wastewater maintenance shop and is involved in machining (pipe threading) activities. These activities require the use of a cutting lubricant which is collected in catch basins and by absorbent material placed below the machinery. The western half of the building is used as a heating, ventilation, and air conditioning shop. A release assessment was completed at CCSWMU-277 in 2007, which indicated that a release of hazardous constituents to soil, and a potential release of hazardous constituents to groundwater, occurred at CCSWMU-277. The detection of metals above screening criteria in surface soil and the detections of VOCs above screening criteria in groundwater prompted a recommendation for further investigation of the site. The RFI concluded that in order to address the unacceptable risk to the construction worker from chromium contamination and allow the site to be released for unrestricted use, an interim removal action for surface soil would be needed. ADEM concurred with the RFI that an interim removal action for chromium-contaminated surface soil be completed. A removal action letter work plan was completed in June 2009 to remove and dispose of contaminated surface soil at CCSWMU-277 with the removal action being completed in August 2009. ADEM comments on the May 2012 revised RFI report indicated that extent of contamination had not been fully determined; therefore additional sampling to complete the RFI is necessary.

RFI data for this site have been obtained from numerous investigations. Sampling targeted potential contaminant source areas identified during reviews of historical information and as a result of previous sampling. The RFI fieldwork is completed at CCSWMU-277, and the Rev 2 RFI report was submitted to ADEM on Oct. 22, 2014 and recommends no further action for the soils. The groundwater will be addressed under groundwater site RSA-147.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification, and site closure report will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-147.

Site ID: CCSWMU-283
Site Name: FORMER PRIMARY SUBSTATION NO.2, BLDG3796
Alias: RSA-283

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polychlorinated Biphenyls (PCB)

Media of Concern: Soil

Phases	Start	End
RFA	200705	200706
RFI/CMS	201108	201702
DES	201701	201802
CMI(C)	201808	201910

RIP Date: N/A

RC Date: 201910

SITE DESCRIPTION

RSA-283 is a former primary substation that reportedly was established in the 1940's. The substation is currently inactive. Substation No. 2 was taken out of service between 1994 and 1996. Available engineering drawings indicate that the primary substation existed as early as 1943 and originally consisted of three 161 kV transformers used to reduce the 161 kV voltage to 44 kV to allow distribution to substations within RSA. Currently, there are 23 transformers of varying sizes, voltages, and vintages located at RSA-283. In May 2007 sampling of all 23 transformers indicated that two of the transformers located at RSA-283 (transformers 19 and 20) contain PCBs at concentrations above 50 ppm. The nine surface soil samples collected from suspected release areas indicated that PCBs were released from the transformers to soil. The concentrations of PCBs detected in the soil were low, with concentrations ranging from 0.24 mg/kg (equivalent to ppm) to 6.8 mg/kg; however, all of the detections of PCBs exceed risk-based screening concentrations based on the USEPA Region 9 PRG for residential soil (0.11 mg/kg). This data indicates the need for additional investigation to determine the nature and extent of the releases. It should be noted that RSA-283 has an archaeological site (1MA1263) on southwest side just touching the boundary.

The State Historical Preservation Office (SHPO) has determined that the archaeological site is not eligible for inclusion on the national register. Notification of RSA-283 as a new SWMU was provided to ADEM on June 11, 2007. The additional investigations in the form of a release assessment began 2008. The release assessment determined the extent of PCB contaminated soils. The concentrations of PCBs detected in surface soil confirmed that releases of PCB-containing transformer oil occurred at CCSWMU-283. The data from the release assessment indicates that PCBs are present in soils above the residential risk-based screening concentrations, but are below the industrial levels. While it is unlikely that the area will be returned to residential use, a removal action was implemented to remove concentrations of PCBs above residential levels. The release assessment report containing the removal action requesting NFA for CCSWMU-283 was submitted to ADEM July 28, 2011. The comments provided by ADEM on Sept. 21, 2011 indicated that an RFI is required for the site.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, and CMI(C) report will be completed. The anticipated remedy is soil excavation and off-site disposal. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-284
Site Name: FIRE TRAINING AREA (FTA)
Alias: RSA-284

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200705	200706
CS	201012	201012
RFI/CMS	201205	201511

RIP Date: N/A

RC Date: 201511

SITE DESCRIPTION

CCSWMU-284 is Fire Training Area (FTA) that covers an area of approximately 900 ft by 400 ft (8.3 acres). The FTA contains a burn pit, a diesel fuel AST, a drafting pit (used for extended testing of water pumping apparatus), a propane AST, and a structural training tower with a burn room. Discharges from the burn pit are routed to an OWS. The OWS discharges directly to an unlined surface drainage ditch. According to available information, the initial construction of the burn pit consisted of a concrete curb lined with firebrick and a sand bottom with a high density polyethylene liner. The initial construction of the burn pit did not include a method to remove the fuel and water from the pit. During heavy rains the burn pit would fill up with rain water resulting in overflows that contained residual petroleum products that remained in the pit and sand layer. Additionally, it was also noted during the exercises that diesel fuel would splash over the curb resulting in a release of petroleum to the surrounding soil. Since that time, the site was upgraded to fix problems that resulted in past releases of water contaminated with diesel fuel from the burn pit. The burn pit was first rebuilt in the 1990s to change its construction to concrete; however, deficiencies in the type of concrete selected were noted in the form of cracks in the concrete that occurred due to the high heat that occurs during the training exercises. The burn pit was rebuilt in the late-1990s with refractory concrete and a 14-ft wide catch apron with drains. The catch apron was routed to an OWS that discharges to a drainage feature east of the site.

During a site visit completed in May 2007, it was determined that at least two documented releases of diesel fuel occurred at the FTA in 2002 and 2007. While the releases were properly responded to and cleaned up, the frequency indicates a need for further evaluation of past usage and evaluation of past releases on soil and groundwater. Notification of CCSWMU-284 as a new SWMU was provided to ADEM on June 26, 2007. The release assessment to determine the nature and extent of releases at CCSWMU-284 was funded in 2007 and was completed in 2008. The release assessment indicated that surface and subsurface soils at CCSWMU-284 did not pose an unacceptable risk to human health in a residential use scenario, nor do they pose an unacceptable threat to groundwater quality from leaching. Because groundwater samples could not be collected from three of the six wells installed during the release assessment, a significant data gap exists in the western half of CCSWMU-284. TCE exceeded the MCL in groundwater, indicating a possible release to groundwater; however, it is not clear that the TCE originated from CCSWMU-284. The release assessment report requesting NFA was submitted to ADEM Oct. 26, 2010. Comments received on Sept. 30, 2011, indicated that ADEM did not concur with the request for NFA.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines. As required by the Army, a CMS will also be developed under the current PBA.

The Rev 0 RFI report was scheduled to be submitted to ADEM on Oct. 31, 2014 and recommended NFA for surface media and groundwater.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. It is anticipated that the RFI report will support the recommendation of NFA for soil and groundwater.

Site ID: CCSWMU-286
Site Name: BOILER/STEAM PLANT, BLDG 3624
Alias: RSA-286

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200401	200801
RFI/CMS	200809	201609

RIP Date: N/A

RC Date: 201609

SITE DESCRIPTION

CCSWMU-286 is located in the eastern portion of RSA east of Ajax Road and south Gray Road. RSA-286 is 8,253 sf and was constructed as a boiler house in 1943. Building 3624 was constructed as a coal fired boiler. The boiler was replaced in 1960 with four new water-tube boilers. The boiler was then fueled with natural gas and fuel oil as standby. Due to the long history of use of the building as a boiler, releases of boiler chemicals and POL from AST pipelines and operational activities occurred during past operations. Additional investigations in the form of a release assessment are required to determine the extent of releases from CCSWMU-286. CCSWMU-286 was identified as 145-PS-02F-03 in the PSA investigation for RSA-145 conducted under the CERCLA program. Based on the potential for releases, CCSWMU-286 was identified as a new SWMU in notification provided to ADEM on Jan. 17, 2008.

The release assessment for CCSWMU-286 indicated that releases occurred at CCSWMU-286 and that an RFI was required. The Rev 0 RFI report was due to ADEM on Feb.9, 2015.

CLEANUP/EXIT STRATEGY

Complete RFI, CMS, DD and permit modification. A DES and CMI(C) may be needed. The anticipated remedy may be soil removal with off-site disposal. no further action is anticipated for groundwater; however, this determination will be made upon completion of the RFI.

Site ID: CCSWMU-287
Site Name: COMPONENT STORAGE WAREHOUSE, BLDG 3634
Alias: RSA-287

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200701	200801
RFI/CMS	201209	201611
DES	201607	201711
CMI(C)	201805	201905

RIP Date: N/A

RC Date: 201905

SITE DESCRIPTION

CCSWMU-287 is located in the eastern portion of RSA west of Patriot Drive, north of Neal Road, and south of Roland Road. Building 3634 built in 1943 is a 12,780-sf storage warehouse for components in the Smoke Munitions Filling Area 2. In 1954, the building was used by the transportation organization as a shop for vehicle maintenance. Historical documents noted potential releases during vehicle oil changes and lubrications. CCSWMU-287 was identified as 145-PS-03A-04 in 2007 in the PSA investigation for RSA-145 conducted under the CERCLA program. Additional investigations in the form of a release assessment were implemented in 2010 to confirm the releases at CCSWMU-287. The release assessment investigations indicated that a limited removal action, RFI, and risk assessment are required to determine the extent of releases at CCSWMU-287 and ensure that there are no risks associated with any remaining concentrations of contaminants at CCSWMU-287.

The Rev 0 RFI report is underway and will recommend an action. The groundwater contamination will be addressed under groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES and CMI(C) will be completed. The anticipated remedy for soil is excavation and off-site disposal. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-288
Site Name: WTP#1, SLUDGE THICKENER & DRYING BEDS
Alias: RSA-288

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200404	200801
RFI/CMS	201207	201605

RIP Date: N/A

RC Date: 201605

SITE DESCRIPTION

CCSWMU-288 is located in the southern portion of RSA off of Shields Road on the northern banks of the Tennessee River. CCSWMU-288 was built in 1942 as the primary water treatment facility for RSA. It treated water from the Tennessee River for use at the arsenal. The treatment of water drawn from the Tennessee River generated solid waste that was managed in the sludge thickener and sludge drying beds. It is unknown if the solid waste contained any hazardous constituents or if any releases from the sludge beds or other features occurred. CCSWMU-288 was identified as 145-PS-02F-03 in the PSA investigation for RSA-145 conducted under the CERCLA program.

The release assessment completed in 2010 indicated that no further action was required for CCSWMU-288; however, ADEM required additional sampling for completion of an RFI.

The Rev 0 RFI report will recommend NFA for surface media for the site. The groundwater contamination will be addressed under RSA-155.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closure report will be completed. No further action is anticipated for the soil. Groundwater will be addressed under RSA-155.

Site ID: CCSWMU-289
Site Name: WTP#2, SLUDGE THICKENER & DRYING BEDS
Alias: RSA-289

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200404	200801
RFI/CMS	200904	201601

RIP Date: N/A

RC Date: 201601

SITE DESCRIPTION

CCSWMU-289 is located in the southeastern portion of RSA off of the southeastern corner of the Railford Road loop, on the northern banks of the Tennessee River. CCSWMU-289 was built in 1943 and served as Water Treatment Plant (WTP) No. 2 for the secondary treatment of water used in industrial processes. The treatment of water drawn from the Tennessee River generated solid waste that was managed in the sludge thickener and sludge drying beds. It is unknown if the solid waste contained any hazardous constituents or if any releases from the sludge beds or other features occurred. CCSWMU-289 was identified as 157-PS-01B in the PSA investigation for RSA-157 conducted under the CERCLA program. Additional investigations are required at CCSWMU-289 in the form of a release assessment. It should be noted that CCSWMU-289 has an archaeological site (1MA0720) on the southeast portion of the site. The SHPO has determined that the archaeological site is eligible for inclusion on the national register.

The Rev 0 RFI report was submitted to ADEM on Oct. 15, 2014 and recommended no further action for soils and groundwater.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closeout will be completed. No further action is anticipated for soil and groundwater.

Site ID: CCSWMU-290
Site Name: WTP#3, SLUDGE THICKENER & DRYING BE
Alias: RSA-290

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200404	200801
RFI/CMS	200809	201605

RIP Date: N/A

RC Date: 201605

SITE DESCRIPTION

CCSWMU-290 is located in the south-central portion of RSA south of Martin Road, east of Patton Road and north of Mills Road behind Building 5428. Buildings 5431 (Former Sludge Thickener) and 5433 (Former Sludge Drying Beds) were demolished in the 1990s. WTP No. 3 was built in 1959 as a potable water treatment facility for RSA. WTP No. 3 was never used to treat wastes of any kind. WTP No. 3 treated the industrial water produced by WTPs No. 1 and No. 2. In 1970, WTP No. 3 was estimated to have the capacity to produce 6.0 million gallons of potable water per day. There were seven drying beds at CCSWMU-290 before they were demolished in the 1990s. Each bed was 61 ft, four inches long and 24 ft wide (including the retaining wall for both dimensions). The drying-bed retaining walls were made of eight-inch-thick concrete and extended to a maximum depth of 8 ft. Based on available engineering drawings, the sludge thickener and drying beds covered approximately 0.25 acre.

Every six weeks, the settling/mixing basins were drained and the sediment removed. Sediment/sludge was pumped from the settling/mixing basins to the thickener. From the thickener, the sediment/sludge was pumped into the drying beds. The sediment removed from the filter beds is the only waste assumed to be associated with the WTP process. The areas associated with the treatment of the sediment/sludge (sludge thickener and drying beds) outline the areas of concern with this SWMU. During the early years of operation, the drying beds were backwashed to surface drainage; however, notes on the 1991 piping diagrams state that sludge from the drying beds was discarded at the RSA landfill. It is unknown if the solid waste contained any hazardous constituents or if any releases from the sludge beds or other features occurred.

Additional investigations in the form of a release assessment were completed at CCSWMU-290 in 2010. The release assessment indicated that NFA is required for CCSWMU-290; however, ADEM has directed that an RFI and a risk assessment be completed before NFA status can be approved. The Rev 0 RFI report is currently underway and no further action is anticipated for soil and groundwater.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closeout will be completed. No further action is anticipated for the soil and groundwater.

Site ID: CCSWMU-291
Site Name: UST AT FORMER BLDG T-3162 (STEAM PLANT)
Alias: RSA-291

STATUS

Regulatory Driver: RCRA

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200704	200801
RFI/CMS	201205	201703

RIP Date: N/A

RC Date: 201703

SITE DESCRIPTION

CCSWMU-291 is located in the northeastern portion of RSA south of Bob Wallace Avenue and west of Patton Road. Building T-3162 was built in 1942 as a boiler house. It continued as a steam plant through 1976 and was demolished by 1983. Records documenting the removal of USTs at T-3162 are not available. Soil and groundwater samples collected in 2005 indicated the presence of petroleum products in soil and groundwater. A secondary investigation completed in 2010 indicated benzo(a)pyrene present in soil above the PSV.

In February 2013 a geophysical investigation concluded that the UST was not present at the site. In addition, a soil investigation was conducted and indicated low levels of metals (above PSVs but below background levels), VOCs, and SVOCs in surface soils. No subsurface samples exceeded PSVs. PAHs were identified in groundwater but the need for an action is yet to be determined. The Rev 0 RFI report is due to ADEM in 2015.

CLEANUP/EXIT STRATEGY

The RFI/CMS, DD and permit modification will be completed. A DES, and CMI(C) may be required but a determination will be made upon completion of the RFI.

Site ID: CCSWMU-293
Site Name: FORMER USTs AT BLDG 3639
Alias: RSA-293

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200401	200801
RFI/CMS	200908	201507

RIP Date: N/A

RC Date: 201507

SITE DESCRIPTION

Site CCSWMU-293 is located in the eastern portion of RSA east of Patriot Drive, West of Patton Road and North of Overlook Road. Building 369 was used as a screening and proportioning building for various mix components (105 mm M-1 white and M-2 colored smoke canisters) in the 1940s. In the 1950s, Building 3639 was converted to a gasoline/diesel fueling station. Five USTs were removed from CCSWMU-293 in 1996. During limited sampling completed in 2005, benzene and carbon tetrachloride were detected in soil and/or groundwater at concentrations above the MCL indicating potential releases from the USTs.

A release assessment (essentially a secondary investigation under the UST program) completed in 2010 confirmed releases to soil and groundwater. Benzene is a concern for groundwater.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to the AHWMMA. Table VI.2 of the permit stipulates that this site achieve an approved RFI in accordance with AEIRG and ARBCA guidelines.

Additional delineation of PAHs in surface soils was required. The Rev 0 RFI report was scheduled to be submitted to ADEM on Dec. 14, 2014.

CLEANUP/EXIT STRATEGY

The RFI, DD and permit modification will be completed. The anticipated remedy is no further action for soil. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-304

Site Name: OWS,WASHRACK&SUMP ADJACENT TO BLDG 5498

Alias: RSA-304

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC), Volatiles (VOC)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200803	200805
RFI/CMS	200907	201710

RIP Date: N/A

RC Date: 201710

SITE DESCRIPTION

CCSWMU-304 (Building 5498) is located in the eastern portion of RSA, east of Miles Road and north of Stewart Road. The original washrack and OWS at Building 5498 were constructed around 1979. Available information indicates that the washrack was historically and currently being used for washing vehicles and equipment associated with maintenance activities completed at RSA. The SWMU consists of the concrete washing area, settling basins, and OWS. The original OWS was replaced with a 3,000-gallon, double walled, fiberglass, enhanced coalescing OWS in 2002. Due to the potential for release of POL from the washrack, CCSWMU-304 was identified as a new SWMU in notification provided to ADEM on May 5, 2008.

The Rev 0 RFI report was submitted to ADEM March 18, 2014 for regulatory review recommending no action at this time for surface media and groundwater. Regulatory comments were received in July 2014 requiring a Phase II investigation and a Rev 1 RFI report.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, CMI(C) and CMI(O) will be completed. The anticipated remedy for surface media is excavation with off-site disposal of soils. No further action is anticipated for groundwater.

Site ID: CCSWMU-305
Site Name: DISPATCHER OFC WITH WASHRACK,BLDG 3664
Alias: RSA-305

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Metals, Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Soil

Phases	Start	End
RFA	200803	200805
RFI/CMS	201006	201604

RIP Date: N/A

RC Date: 201604

SITE DESCRIPTION

RSA-305 (Building 3664) is located in the northeastern portion of RSA west of Patriot Drive near Vista Road. Building 3664 was constructed in 1952 as a Dispatch Office in support of the motor pool area. The washrack was constructed prior to 1977 and the OWS was added after 1977. Available information indicates that the washrack was historically used for washing the exterior of vehicles maintained in the motor pool. The original concrete OWS at Building 3664 was replaced in 2002 with a 3,000-gallon, double walled, fiberglass, enhanced coalescing OWS. The SWMU consists of the concrete washing area and OWS. Due to the potential for release of POL from the washrack, RSA-305 was identified as a new SWMU in notification provided to ADEM on May 05, 2008.

Rev 0 RFI report is underway and recommends no further action for soils. The groundwater will be addressed under groundwater site RSA-145.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification, and site closeout report will be completed. No further action is anticipated for soil. Groundwater will be addressed under RSA-145.

Site ID: CCSWMU-306
Site Name: STEAM HEATING PLANT, BLDG 7291
Alias: RSA-306

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Polycyclic Aromatic Hydrocarbons (PAH)

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA	200803	200805
RFI/CMS	200907	201612
DES	201606	201707
CMI(C)	201801	201811
CMI(O)	201811	204810

RIP Date: 201811

RC Date: 204810

SITE DESCRIPTION

CCSWMU-306 (Building 7291), is located south of Redstone Road and east of Line Road in the northern portion of the former Redstone Arsenal Rocket Engine South Plant area in the southeast portion of RSA. The site includes Building 7291, a concrete sump, OWS, and a water conditioning vault. Building 7291 is a 1,200 sf building constructed in 1960 as a steam heating plant/boiler house. Building 7291 was constructed with two 15,000-gallon, steel No.2 fuel oil USTs on the east side of the building. The USTs were removed in February 1996 and replaced with one 10,000-gallon AST. In 2004 a site inspection noted a stained soil and stressed vegetation near the OWS/sump. It is possible that POL was released from the oil water separator/sump. Based on the long history of use of the building as a boiler and the visual indications of potential releases of POL, CCSWMU-306 was identified as a new SWMU in notification provided to ADEM on May 5, 2008. RSA requested to complete the investigation under ARBCA as a POL only site; however, ADEM denied the request and required the site to be addressed under the permit with an RFI.

The Rev 0 RFI report is underway and an action is anticipated for the soil with LUCs for groundwater.

CLEANUP/EXIT STRATEGY

The RFI, CMS, DD, permit modification, DES, CMI(C) and CMI(O) will be completed. No further action is anticipated for soil and MNA for groundwater.

Site ID: CCSWMU-E
Site Name: #2 FUEL OIL SPILL TANK #5693, FUEL FARM
Alias: RSA-E

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Petroleum, Oil and Lubricants (POL), Semi-volatiles (SVOC)

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
CS	200401	200409
RFI/CMS	201009	201504

RIP Date: N/A

RC Date: 201504

SITE DESCRIPTION

CCSWMU-E resulted from the release of approximately 58,584 gallons of No. 2 fuel oil from AST 5693 in 1985. Immediately recovery efforts were implemented in the form of a recovery trench. Within 8 days 36,000 gallons were recovered. Recovery efforts continued for a period of six months; however, at the end of the effort an estimated 30,000 gallons of oil had seeped into the ground. In 1998, monitoring wells and soil borings were installed to determine the extent of the release. Soil samples collected were only analyzed for TPH, diesel-range organics, oil, and grease. The results of the investigation indicated that area of contamination was likely localized south of AST 5693; however, in view of the limited analytical suite performed and the limited number of samples collected, additional investigation was completed and determined the nearby fuel farm contributed to the contaminants detected at CCSWMU-E.

A hazardous waste facility permit was issued Sept. 30, 2010 pursuant to AHWMMA requiring an RFI for this site.

The Rev 0 RFI report was submitted on April 29, 2014 and recommend NFA for the surface media at this site. Groundwater under this site is part of a multi-site plume from the RSA-028. Groundwater under CCSWMU-E will be addressed under site RSA-028.

CLEANUP/EXIT STRATEGY

The RFI recommends NFA for the surface media based on no unacceptable risk. Groundwater will be addressed under the surface media site RSA-028. Currently awaiting ADEM comments or concurrence on the Rev 0 RFI.

Site ID: CCSWMU-F
Site Name: FENCED OPEN STORAGE/LAYDOWN YARD
Alias: RSA-F

STATUS

Regulatory Driver: RCRA

Contaminants of Concern: Polychlorinated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAH), Volatiles (VOC)

Media of Concern: Soil

Phases	Start	End
RFA	198908	199109
RFI/CMS	201209	201701

RIP Date: N/A

RC Date: 201701

SITE DESCRIPTION

Site CCSWMU-F is an active, gravel covered, OSA located northwest of the intersection of Mills and Jungerman roads in the central portion of the RSA. CCSWMU-F covers approximately 1.5 acres. The gravel site was used to store a variety of materials including transformers, empty drums, POL products, and scrap metal; however, only a portion of the area (half an acre) was used in relation to RCRA activities. The area located in the southern portion of CCSWMU-F was used as an overflow area for 90-day storage of hazardous waste and to store empty drums. There are no known releases from the hazardous waste storage area or the drum storage area. Soil staining was reported in the northern portion due to past operations at CCSWMU-F and a possible release of PCBs was also reported.

The Rev 0 RFI report is underway and NFA is anticipated for soils. Groundwater will be addressed under the groundwater sites RSA-147.

CLEANUP/EXIT STRATEGY

The RFI, DD, permit modification and site closeout report will be completed. No further action is anticipated for soils. Groundwater will be addressed under RSA-147.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CCRSA-257	Rock Pond	201203	Site was on an active range and moved to the -CC database.
CCRSA-264	RR spring	201203	Site was on an active range and moved to the -CC database.
CCSWMU-031	CENTRAL OIL WATER SEPARATOR STORAGE TANK	201409	
CCSWMU-143	POL-CONTAM. SOIL, B.3234 SOUTH of B.3240	201409	

CR Schedule

Date of CR Inception: 198908

Past Phase Completion Milestones

1991	
RFA	(CCSWMU-003 - IN-GROUND OIL/WATER SEPARATOR BLDG 3617 , CCSWMU-008 - SEWAGE TREATMENT PLANT #4, CCSWMU-009 - INACTIVE SEWAGE TREATMENT PLANT #3, CCSWMU-028 - IN-GROUND OWS 5693 AREA, CCSWMU-030 - CENTRAL OIL WATER SEPARATOR, CCSWMU-031 - CENTRAL OIL WATER SEPARATOR STORAGE TANK, CCSWMU-035 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4812, CCSWMU-116 - SOUTH SIDE BLOWDOWN LAGOON, TEST AREA 5, CCSWMU-143 - POL-CONTAM. SOIL, B.3234 SOUTH of B.3240, CCSWMU-182 - 1.1 Grinder Bldg P2, TSA Bldg 769, CCSWMU-E - #2 FUEL OIL SPILL TANK #5693, FUEL FARM, CCSWMU-F - FENCED OPEN STORAGE/LAYDOWN YARD)
2002	
CS	(CCSWMU-003 - IN-GROUND OIL/WATER SEPARATOR BLDG 3617 , CCSWMU-028 - IN-GROUND OWS 5693 AREA, CCSWMU-030 - CENTRAL OIL WATER SEPARATOR, CCSWMU-031 - CENTRAL OIL WATER SEPARATOR STORAGE TANK, CCSWMU-035 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4812)
2003	
CS	(CCSWMU-182 - 1.1 Grinder Bldg P2, TSA Bldg 769)
2004	
CS	(CCSWMU-E - #2 FUEL OIL SPILL TANK #5693, FUEL FARM)
2005	
RFA	(CCSWMU-216 - Laboratory Injection Test Facility,, CCSWMU-240 - FORMER SUBSTATION NO.7, BLDG 5290, CCSWMU-241 - HW STORAGE IGLOO, BLDG 7313, CCSWMU-242 - HW STORAGE IGLOO, BLDG 7314, CCSWMU-243 - PROPELLANT STORAGE, BLDG 7342, CCSWMU-245 - STEAM HEATING PLANT, BLDG 7579, CCSWMU-246 - SEWER EJECTOR & MOTOR POOL, BLDG 7630, CCSWMU-247 - STEEL FABRICATION/MAINTENANCE FAC. B7644, CCSWMU-248 - BATTERY MAINTENANCE SHOP, BLDG 3633)
2006	
RFA	(CCSWMU-268 - SEWAGE TREATMENT PLANT, BLDG 8018, CCSWMU-277 - B5487 WW MAINT SHOP ACID BATH WASHDOWN)
2007	
RFA	(CCSWMU-222 - Roads and Grounds Maintenance Shop, CCSWMU-283 - FORMER PRIMARY SUBSTATION NO.2, BLDG3796, CCSWMU-284 - FIRE TRAINING AREA (FTA))
2008	
RFA	(CCSWMU-286 - BOILER/STEAM PLANT, BLDG 3624, CCSWMU-287 - COMPONENT STORAGE WAREHOUSE, BLDG 3634, CCSWMU-288 - WTP#1, SLUDGE THICKENER & DRYING BEDS , CCSWMU-289 - WTP#2, SLUDGE THICKENER & DRYING BEDS, CCSWMU-290 - WTP#3, SLUDGE THICKENER & DRYING BE, CCSWMU-291 - UST AT FORMER BLDG T-3162 (STEAM PLANT), CCSWMU-293 - FORMER USTs AT BLDG 3639, CCSWMU-304 - OWS,WASHRACK&SUMP ADJACENT TO BLDG 5498, CCSWMU-305 - DISPATCHER OFC WITH WASHRACK,BLDG 3664, CCSWMU-306 - STEAM HEATING PLANT, BLDG 7291)
2009	
IRA	(CCSWMU-277 - B5487 WW MAINT SHOP ACID BATH WASHDOWN)
2010	
RFA	(CCRSA-257 - Rock Pond, CCRSA-264 - RR spring, CCRSA-266 - Open Storage area N. of Bldg 8607, CCRSA-308 - Exterior Sump at Bldg 7120, CCRSA-309 - Covered trench & sump at Bldg 7155, CCRSA-310 - Former & Suspected OWS at Bldg7289 , CCRSA-311 - Sump & Concrete Pits at Bldg 7352)
2011	
RFA	(CCRSA-314 - Used Oil AST & Spill site Bldg 3670, CCRSA-315 - Abandoned Drum Area)
CS	(CCSWMU-284 - FIRE TRAINING AREA (FTA))
2012	
RFI/CMS	(CCRSA-257 - Rock Pond, CCRSA-264 - RR spring)
2013	
RFA	(CCRSA-316 - 7500 Area Hardstand Parking, CCRSA-317 - Construction Site E of Bldg 5674)

CR Schedule

2014

DES	(CCSWMU-035 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4812)
RFI/CMS	(CCSWMU-031 - CENTRAL OIL WATER SEPARATOR STORAGE TANK, CCSWMU-035 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4812, CCSWMU-143 - POL-CONTAM. SOIL, B.3234 SOUTH of B.3240)
RFA	(CCRSA-319 - Former OWS, Bldg 4812 and Pad)

Projected Phase Completion Milestones

See attached schedule

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

To Be Determined

Final RA(C) Completion Date: 202207

Schedule for Next Five-Year Review: 2017

Estimated Completion Date of CR at Installation (including LTM phase): 205207

REDSTONE ARSENAL CR Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCRSA-266	Open Storage area N. of Bldg 8607	RFI/CMS						
CCRSA-308	Exterior Sump at Bldg 7120	RFI/CMS						
CCRSA-309	Covered trench & sump at Bldg 7155	RFI/CMS						
CCRSA-310	Former & Suspected OWS at Bldg7289	RFI/CMS						
CCRSA-311	Sump & Concrete Pits at Bldg 7352	RFI/CMS						
CCRSA-314	Used Oil AST & Spill site Bldg 3670	RFI/CMS						
CCRSA-315	Abandoned Drum Area	RFI/CMS						
CCRSA-316	7500 Area Hardstand Parking	RFI/CMS						
CCRSA-317	Construction Site E of Bldg 5674	RFI/CMS						
CCRSA-319	Former OWS, Bldg 4812 and Pad	RFI/CMS						
CCSWMU-003	IN-GROUND OIL/WATER SEPARATOR BLDG 3617	RFI/CMS						
		DES						
		CMI(C)						
		LTM						
CCSWMU-008	SEWAGE TREATMENT PLANT #4	RFI/CMS						
		DES						
		CMI(C)						
CCSWMU-009	INACTIVE SEWAGE TREATMENT PLANT #3	RFI/CMS						
		DES						
		CMI(C)						
CCSWMU-028	IN-GROUND OWS 5693 AREA	RFI/CMS						
		DES						
		CMI(C)						
CCSWMU-030	CENTRAL OIL WATER SEPARATOR	RFI/CMS						
CCSWMU-116	SOUTH SIDE BLOWDOWN LAGOON, TEST AREA 5	RFI/CMS						
CCSWMU-216	Laboratory Injection Test Facility,	RFI/CMS						

REDSTONE ARSENAL CR Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-222	Roads and Grounds Maintenance Shop	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-240	FORMER SUBSTATION NO.7, BLDG 5290	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-241	HW STORAGE IGLOO, BLDG 7313	RFI/CMS						
		DES						
		CMI(C)						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-242	HW STORAGE IGLOO, BLDG 7314	RFI/CMS						
		DES						
		CMI(C)						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-243	PROPELLANT STORAGE, BLDG 7342	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-246	SEWER EJECTOR & MOTOR POOL, BLDG 7630	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-247	STEEL FABRICATION/MAINTENANCE FAC. B7644	RFI/CMS						
		DES						
		CMI(C)						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-248	BATTERY MAINTENANCE SHOP, BLDG 3633	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-268	SEWAGE TREATMENT PLANT, BLDG 8018	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-277	B5487 WW MAINT SHOP ACID BATH WASHDOWN	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-283	FORMER PRIMARY SUBSTATION NO.2, BLDG3796	RFI/CMS						
		DES						
		CMI(C)						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-284	FIRE TRAINING AREA (FTA)	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-286	BOILER/STEAM PLANT, BLDG 3624	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-287	COMPONENT STORAGE WAREHOUSE, BLDG 3634	RFI/CMS						
		DES						
		CMI(C)						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-288	WTP#1, SLUDGE THICKENER & DRYING BEDS	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-289	WTP#2, SLUDGE THICKENER & DRYING BEDS	RFI/CMS						

REDSTONE ARSENAL CR Schedule

SITE ID	SITE NAME	PHASE	FY16	FY17	FY18	FY19	FY20	FY21+
CCSWMU-290	WTP#3, SLUDGE THICKENER & DRYING BE	RFI/CMS						
CCSWMU-291	UST AT FORMER BLDG T-3162 (STEAM PLANT)	RFI/CMS						
CCSWMU-304	OWS,WASHRACK&SUMP ADJACENT TO BLDG 5498	RFI/CMS						
CCSWMU-305	DISPATCHER OFC WITH WASHRACK,BLDG 3664	RFI/CMS						
CCSWMU-306	STEAM HEATING PLANT, BLDG 7291	RFI/CMS						
		DES						
		CMI(C)						
		CMI(O)						
CCSWMU-F	FENCED OPEN STORAGE/LAYDOWN YARD	RFI/CMS						

Community Involvement

Technical Review Committee (TRC): 199406

Community Involvement Plan (Date Published): 201206

Restoration Advisory Board (RAB): No

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

Community Interest Solicited on: 201309

Efforts Taken to Determine Interest

In 1994, RSA established a TRC to provide a forum for interested parties to discuss and provide input into restoration activities. This was in accordance with requirements outlined by 10 U.S.C. 27(c), Executive Order 12580, Superfund Implementation and Army Regulation 200-1.

The RSA has conducted TRC meetings along with public availability sessions, environmental open houses, and public meetings to generate interest in the environmental program. A community involvement plan was also developed. The community involvement plan documents the chronology of historical events that the RSA has conducted to solicit community involvement regarding environmental restoration efforts.

During these community involvement efforts, RSA solicited potential interest in forming a RAB. Some of the tools used to solicit interest included RAB booths at public meetings, fact sheets, RAB sign-up sheets, comment cards and RAB applications.

Public meetings were held in October 2003, October 2005, and November 2007. At these meetings, public interest in a RAB was solicited using a RAB booth, fact sheets, a RAB sign-up sheet, comment cards, RAB applications, and an oral presentation on RABs. In November 2009, advertisements were published in the "Huntsville Times," "Speakin' Out News", and the "Redstone Rocket" newspapers soliciting public interest in forming a RAB.

Results

Six citizens with interest in forming a RAB responded to the advertisements; however, this was less than the minimum of 50 individuals indicating interest in forming a RAB. A minimal number of responses have resulted from each of the public meetings held in previous years.

Follow-up Procedures

Although there is not enough sustainable community interest to establish a RAB at present, interest will continue to be solicited on a biennial basis. The next effort to solicit interest in a RAB is planned for September 2015.

Additional Community Involvement Information

Document repositories for RSA's IRP are established at both the Triana and Huntsville public libraries for public review and reference. The repository for the Huntsville library is located in the main library in the Genealogical and Historical Resources Section (Heritage Room, third floor). The attendant at each library is available to direct interested parties to the exact location of the computer.

The entire IRP document repository has been loaded electronically onto a dedicated, interactive computer at each library. Documents can be accessed and read at each station or copied to flash storage drives, but cannot be edited. Currently at the Huntsville library, because of electronic storage capacity, the first 399 documents are available on CDs that can be accessed through the dedicated CD reader. All other documents are loaded directly onto the dedicated computer for public retrieval, review, and reference. Both computers contain an electronic listing of the entire repository to assist with locating those documents of interest. The attendant at the library can direct interested parties to the exact location of the computer. The RSA is in the process of adding additional storage capacity to the Huntsville Library computer so that all documents are accessible without loading individual CDs. In addition, Redstone staff are also investigating and programming a static, but enhanced, interactive log-on for the public to utilize in retrieving documents. It is the installation's intent to enhance the interactive log-on with mapping so that the public can investigate a specific AOC without knowing the site name or document of interest.

Administrative Record is located at

US Army Garrison - Redstone
Environmental Management Division

Community Involvement

7741 Sandpiper Road
Redstone Arsenal, Alabama 35898
(256) 842-0314

Information Repository is located at

Huntsville/Madison County Public Library
Heritage Room, 915 Monroe Street
Huntsville, Alabama 35898
(256) 532-5969

Triana Public Library
640 6th Street
Triana, Alabama 3575
(256) 772-3677

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

TAPP Title: N/A

Potential TAPP: N/A