

FY2012

**REDSTONE ARSENAL
Compliance-Related Cleanup
Installation Action Plan**

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multiyear installation compliance-related cleanup (CC) program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC) and proposes a comprehensive 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 CC manager, the Installation Management Command (IMCOM), Redstone Arsenal, the US Army Environmental Command (USAEC) regulatory agencies, and executing agencies, 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.

The following persons contributed to the formulation and completion of this Installation Action Plan for REDSTONE ARSENAL:

USAEC
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Acronyms

ABMA	US Army Ballistic Missile Agency
ADEM	Alabama Department of Environmental Management
AOC	Area of Concern
CG	Chlorine Phosgene
CWM	Chemical Warfare Materials
DDT	Dichlorodiphenyl-trichloroethane
DRO	Diesel Range Organics
ER,A	Environmental Restoration, Army
FFA	Federal Facilities Agreement
FRA	Final Remedial Action
FY	Fiscal Year
GCD	Gulf Chemical Depot
H	Mustard Gas
HVA	Huntsville Arsenal
IMCOM	Installation Management Command
IRA	Interim Remedial Action
K	thousand
kg	kilogram
L	Lewisite
mg	milligram
mg/kg	milligrams per kilogram
MICOM	US Army Missile Command
MSFC	George C. Marshall Space Flight Center
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NW	North West
O&M	Operations and Maintenance
OB	Open Burning
OU	Operable Unit
PA/SI	Preliminary Assessment/Site Inspection
PAH	Polyaromatic Hydrocarbons
POL	Petroleum, Oil and Lubricants
R&D	Research and Development
RA	Remedial Action
RARE	Redstone Arsenal Rocket Engine
RBC	Risk-Based Concentrations
RC	Response Complete
RCRA C	Resource Conservation and Recovery Act, Subtitle C (HW Management)
RIP	Remedy-in-Place
ROP	Redstone Ordnance Plant
RSA	Redstone Arsenal
SVOC	Semi-Volatile Organic Compounds
TC	Thionyl Chloride
USACE	US Army Corps of Engineers
WP	White Phosphorous

Acronym Translation Table

CERCLA

Preliminary Assessment(PA)
Site Inspection(SI)
Remedial Investigation/Feasibility Study(RI/FS)
Remedial Design(RD)
Remedial Action (Construction)(RA(C))
Remedial Action (Operation)(RA(O))
Long Term Management(LTM)
Interim Remedial Action(IRA)

RCRA

= RCRA Facility Assessment(RFA)
= Confirmation Sampling(CS)
= RCRA Facility Investigation/Corrective Measures Study(RFI/CMS)
= Design(DES)
= Corrective Measures Implementation (Construction)(CMI(C))
= Corrective Measures Implementation (Operation)(CMI(O))
= Long Term Management(LTM)
= Interim Measure(IM)

Site Alias List

AEDB-CC Site ID to Alias List

AEDB-CC #	Alias
CCRSA-051	RSA-051
CCRSA-052	RSA-052
CCRSA-061	RSA-061
CCRSA-063	RSA-063
CCRSA-064	RSA-064
CCRSA-066	RSA-066
CCRSA-068	RSA-068
CCRSA-110	RSA-110
CCRSA-188	RSA-188
CCRSA-257	RSA-257
CCRSA-264	RSA-264
CCRSA-281	RSA-281
CCSWMU-182	RSA2002-03
CCSWMU-216	NONE
CCSWMU-222	NONE
CCSWMU-241	NONE
CCSWMU-242	NONE
CCSWMU-243	NONE
CCSWMU-245	NONE
CCSWMU-286	RSA-286
CCSWMU-290	RSA-290

Installation Information

Installation Locale

Installation Size (Acreage): 38300

City: Huntsville

County: Madison

State: Alabama

Other Locale Information

Redstone Arsenal (RSA) is a US Army facility surrounded by the city of Huntsville in Madison County, Alabama. RSA occupies approximately 38,300 acres. Huntsville has a population of nearly 175,000; Madison County population is approximately 280,000. Approximately 500 military families reside in government quarters on RSA and approximately 26,000 government employees and contractors work at the facility. 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).

Installation Mission

RSA's mission is to perform basic and advanced weapons system research and development.

Lead Organization

Lead Executing Agencies for Installation

Redstone Arsenal and US Army Corps of Engineers (USACE), Mobile District

Regulator Participation

State Alabama Department of Environmental Management (ADEM), Montgomery, Alabama

Installation Program Summaries

CC

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

Affected Media of Concern: Groundwater, Other (Subsurface Soils), Soil

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 204103/204103

Prior Funding: \$5,781.0 K

Current Requirements: \$.0 K

Future Requirements: \$.0 K

Cleanup Program Summary

Installation Historic Activity

Redstone is home to the US Army Aviation and Missile Command (AMCOM), the Space and Missile Defense Command, numerous Program Executive Offices, and major components of the Defense Intelligence Agency and the Missile Defense Agency and MSFC. The current activities at RSA center on completing basic and advanced weapons system research and development.

World War II (WWII) Operations:

The land area of the present RSA includes three separate military facilities originally established in 1941: the Redstone Ordnance Plant (ROP) (later Redstone Arsenal), 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 from 1942 to 1945. The responsibilities for weapon production were separated as follows:

Huntsville Arsenal:

HVA covered the largest area and was composed of three production plants (Plant 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 materials (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) was produced 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 eight 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 plants, as well as other administrative and support facilities (motor pool, warehouses, etc.)

Redstone Ordnance Plant (ROP):

Munitions (artillery shells, mortars, bombs, etc.) were filled with CWM (i.e., H, L, WP, CG, smoke, gel-type incendiary material, etc.) at one of the three HVA plants and then transported by railroad to ROP for final assembly, which included installation of any fusing, burster tube, or other explosive configurations. The ROP also produced explosive 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 changeover from production of one type of munition item to another. Prior to arrival at the ROP, the munition casing was filled but not explosively configured (weaponized). After final assembly, explosively configured munitions were transported to the Gulf Chemical Depot (GCD) for storage in bunkers, igloos, or other explosives structures. From the depot, munitions were transported off-site by either railroad or ship from the dock area.

Two railroad classification yards were used to load and assemble ordnance trains for movement. In January 1943, the ROP was renamed the Redstone Arsenal.

Gulf Chemical Depot (GCD):

The GCD stored and shipped munitions as well as bulk chemicals and equipment associated with decontamination. Numerous chemical manufacturing plants were operated at the three facilities to manufacture toxic agents. In 1942, the GCD facilities included seven warehouses, 370 igloos, 55 aboveground magazines, and other outdoor areas for storage of ammunition, bombs, and chemicals. The toxic gas yard received 500,000 pounds of mustard as its initial shipment in early-1942. Shipments of phosgene, carbon tetrachloride, and white phosphorus followed later.

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

Post-WWII Military Operations:

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 RSA as caretaker of the HVA properties. Due primarily to the nature of CSM produced at the

Cleanup Program Summary

Installation Historic Activity

facility and post-WWII demilitarization/decontamination activities, 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. RSA was reactivated 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 subsequently combined in 1950 forming the boundaries of the present day installation. On Oct. 28, 1949, The Secretary of the Army approved the transfer of the Ordnance Research and Development 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 Huntsville Arsenal Plants Area. Real property, equipment, and personnel were transferred from the RSA to provide the MSFC with resources in 1960 by 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 Transport System (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, 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 the direction and control of assigned installations and activities, and basic supporting missile 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 95-base realignment and closure decision.

Post WWII Non-Military Operated Activities:

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 research and development 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 Redstone Arsenal Rocket Engine (RARE) Complex was the original pilot, and later production plant, for trinitrotoluene 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., Air Force, Navy, and NASA). This contract was later expanded to include 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 the support of such programs. Thiokol vacated these facilities in December 1996.

After WWII, the chemical manufacturing facilities used to produce bulk chemicals for the war effort were leased by the Army to privately owned firms for the production of commercial chemicals and pesticides. The manufacturing of pesticides, including dichlorodiphenyl-trichloroethane (DDT), began in 1948. The firms involved were the Alabama Chemical Company (manufacturer of DDT), the 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 sublease. It is reported that the average production of pesticides was approximately 12,500 tons per year. The manufacture of DDT and other pesticides resulted in contamination.

In addition to solid wastes, large quantities of contaminated wastewater were discharged to the local 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 former DDT manufacturing, storage, and disposal sites.

Cleanup Program Summary

Installation Historic Activity

Major Tenant Operations:

Currently RSA is the home of AMCOM and supports the following tenant organizations:

- Aviation and Missile Research, Development and Engineering Center
- US Army Engineering and Support Center
- Fox Army Health Center
- Ground-Based Midcourse Defense Joint Project Office
- Federal Bureau of Investigation (FBI) Hazardous Devices Training Facility
- Logistics Support Activity
- Missile Space and Intelligence Center
- NASA Marshall Space Flight Center
- Ordnance Munitions and Electronics Maintenance School Program Executive Office, Air and Missile Defense Program Executive Office, Aviation
- Program Executive Office, Tactical Missiles
- Redstone Technical Test Center
- South Central Civilian Personnel Operations Center
- US Army Space and Missile Defense Command

National Priorities List (NPL) Listing:

Due to the types of activities conducted at RSA and the likelihood for releases of hazardous substances, RSA (US Army/NASA) was named to the final NPL (Federal Register, Vol. 59, No. 103) on May 31, 1994. The effective date was June 30, 1994.

REDSTONE ARSENAL
Compliance-Related Cleanup

CC Summary

Total Number of AEDB-CC Sites: 59

Number of sites with site inspection/confirmation sampling complete:34

Number of sites with remedy selected (RI-FS/CMS/RFI complete): 31

Number of sites with construction completed (RA(C)/CMI(C)): 1

Number of sites with closeout complete:65

CC Site Types with Future and/or Underway Phases

- 1 Disposal Pit/Dry Well
(CCSWMU-216)
- 12 Explosive Ordnance Disposal Area
(CCRSA-051, CCRSA-052, CCRSA-061, CCRSA-063, CCRSA-064, CCRSA-066, CCRSA-068, CCRSA-110, CCRSA-188, CCRSA-257, CCRSA-264, CCRSA-281)
- 1 Oil Water Separator
(CCSWMU-222)
- 2 Spill Site Area
(CCSWMU-245, CCSWMU-286)
- 4 Storage Area
(CCSWMU-182, CCSWMU-241, CCSWMU-242, CCSWMU-243)
- 1 Waste Treatment Plant
(CCSWMU-290)

Most Widespread Contaminants of Concern

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

Media of Concern

Groundwater, Other (Subsurface Soils), Soil

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

Site ID	Site Name	Action	Remedy	FY	Cost
CCSWMU-179	CONTROL LAB/FIRST AID, PAD #2, TSA B7667	IRA	REMOVAL	2006	TBD
CCSWMU-037	USED OIL UST AT BLDG 7857 FRA		IN-SITU SOIL TREATMENT	2011	TBD

CC Contamination Assessment

Contamination Assessment Overview

Beginning in 1970, the US Army Environmental Hygiene Agency conducted a field survey to characterize the domestic and industrial wastes being discharged from RSA and to determine if water pollution problems were being caused by such discharges. The study identified water pollution problems from two sewage treatment plants and discharges from Olin Corporation DDT manufacturing operations. In 1977, the US Army Toxic and Hazardous Material Agency (USATHAMA) completed an installation assessment that identified possible disposal areas on RSA. Pesticide contamination was confirmed and it was subsequently decided that remedial action was necessary. DDT cleanup occurred at RSA between 1983 and 1988.

RSA has operated under a Resource Conservation and Recovery Act (RCRA) Part B permit since 1986 for hazardous waste storage. RSA also operates an open burn/open detonation (OB/OD) facility in accordance with Modification No. 2 of their Alabama Hazardous Waste Management and Minimization Act Hazardous Waste Storage/Solid Waste Management Unit (SWMU) Corrective Action/Subpart X permit issued on Jan. 11, 2006.

In September 1989, the U.S. Environmental Protection Agency (USEPA) conducted an interim RCRA facility assessment (IRFA) at RSA and another at MSFC. This study identified 110 potentially contaminated sites at RSA and another 77 at MSFC, which is operated by NASA. Between 1989 and 1990, the US Army reevaluated the USEPA IRFA and identified additional sites on RSA, including property that is owned by the TVA and the Wheeler Wildlife Refuge. A total of 286 sites were identified in this follow-on study. Several sites were subsequently added to the list for a total of 331 sites.

From the 331 sites identified in the RCRA facility assessment (RFA) process, the 2003 RCRA Part B permit identifies 235 SWMUs requiring action or management under RCRA or the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Of the 235 SWMUs, 89 are managed under CERCLA and 146 are managed under RCRA. This RCRA IAP addresses the 35 (open and approved) RCRA SWMUs that are identified in the Army Environmental Database - Compliance-Related Cleanup (AEDB-CC).

In 1998, RSA developed the draft work plan for confirmatory sampling activities to comply with Part IV of the April 15, 1998 permit that set forth corrective action requirements for 24 sites previously identified as SWMUs and AOCs.

The CERCLA sites were originally organized into 18 operable units (OUs). RSA was divided into OUs based on watershed locations, critical and sensitive ecological habitats, soil types, and land use. The 18 OUs continue to be used for surface media site purposes. Interpretation of investigative work conducted prior to 2002 was complicated by finding contaminants in wells on multiple sites that did not appear related to site operational activities.

This finding heightened 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 to determine the potential for the groundwater to be interconnected. The "Karst Report," as it has become known, has documented the highly interconnected nature of groundwater at the facility and the potential for rapid and long-distance contaminant transport. It also documented significant connections 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.

The findings of the "Karst Report" supported a decision to separate surface media (primarily surface and subsurface soil) from groundwater under the CERCLA program. Thirteen groundwater sites were established based on data from the report. This allowed a more focused interpretation of surface media contaminants as posing either: human or ecological risks from surface soil or sediment exposure pathways, or principle threat source material serving to contaminate groundwater locally or at distance. The assessment of the RCRA sites will use the CERCLA OUs to determine the potential impacts of CERCLA activities on the groundwater associated with the RCRA sites.

The variety of SWMUs associated with the RCRA corrective action plan (CAP) presents a wide range of potential contaminants. Some SWMUs mainly managed petroleum products while others actively managed hazardous wastes.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that interim measures (IM) and/or source removal be completed at 18 suspect CWM sites. Twelve (12) of these suspect sites are currently located on operational ranges, and have been moved into the Compliance Cleanup program.

CC Contamination Assessment

Cleanup Exit Strategy

It is the goal of RSA to develop and implement clear and realistic remediation goals and exit strategies for all sites currently identified in the Part B permit that require RCRA corrective action. All exit strategies developed will comply with applicable regulations and the conditions of the RCRA permit. All exit strategies will also ensure that human health and the environment are protected over the long term while minimizing risk and cost. Where feasible, exit strategies will use a risk-based approach for establishing cleanup levels.

The assumptions for the exit strategy are:

- Achievable remediation objectives will be defined
- Selected remedial actions will have verifiable and measurable goals that are realistic given conceptual site model and remedy
- All the selected remedial actions will be implemented in a reasonable time frame using current technology
- Remedial actions will remove site contamination or reduce the extent or degree of contamination to a level that will allow site closure
- Selected remedial actions will be developed such that unexpected changes are kept to a minimum.
- The remedial actions will achieve site closure.

In some cases it will be impossible to complete restoration of a site due to the inability to achieve risk-based levels, technical limitations, lack of regulator acceptance, or the restoration is inappropriate based on current and future land use considerations. Based on this realization, negotiations with supporting regulatory agencies may be required to modify or develop defensible exit strategies for some remedial actions.

Future work is anticipated for the 12 sites in the Compliance Cleanup program that require interim measures to remove source material from suspect CWM and conventional ordnance disposal areas.

CC Previous Studies

1989	Sites	Title	Author	Date
		Interim RCRA Facility Assessment Report of the Redstone Arsenal, Huntsville Alabama, EPA ID No. AL 721 002 0742	US Environmental Protection Agency (EPA), A.T. Kearney, Inc. (Kearney)	SEP-1989
1991		Identification and Evaluation of Potential Solid Waste Management Units (SWMUs) and Areas of Concern at Redstone Arsenal, Alabama	Geraghty and Miller	FEB-1991
1998		Draft Work Plan for Confirmatory Sampling Activities	Redstone Arsenal (RSA)	SEP-1998
2001	CCSWMU-002, 003, 028, 030, 031, 034, 035, 037, 042 and 127	Draft Site-Specific Field Sampling Plan and Site-Specific Safety and Health Plan Attachments, Phase II Investigations RCRA Sites RSA-002, 003, 028, 030, 031, 034, 035, 037, 042 and 127	IT Corporation	JUL-2001
		Draft Confirmation Sampling Activities Report	IT Corporation	OCT-2001
2002	CCSWMU-002, 006, 030, 035, 121 and 127	Draft Removal Action Work Plan for RSA-002, 006, 030, 035, 121 and 127	IT Corporation	APR-2002
	CCSWMU-004, 033, 036, 044 and 125	Draft RCRA Phase II Release Assessment Report	IT Corporation	NOV-2002
	CCSWMU-004, 033, 036, 044 and 125	Draft Closure Work Plan and Site-Specific Health and Safety Plan for the Site Closure Fieldwork at for RSA-004, 033, 036, 044 and 125, Redstone Arsenal, Madison County, Alabama	IT Corporation	NOV-2002
2003	CCSWMU-85, 86, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181 and 182	Draft Confirmatory Sampling Report Solid Waste Management Units (RSA-85, 86, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181 and 182)	Bhate Environmental	APR-2003
	CCSWMU-002, 003, 006, 030, 035, 121 and 127	Final Removal Action Work Plan for RSA-002, 003, 006, 030, 035, 121 and 127	Shaw E & I	MAY-2003
	CCSWMU-002, 003, 006, 030, 035, 121 and 127	Draft Removal Action Report for RSA-002, RSA-003, 006, 030, 035, 121 and 127, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUL-2003
	CCSWMU-127	Draft RCRA Facility Investigation Work Plan and Site-Specific Field Sampling Plan for RSA-127, Redstone Arsenal, Madison County,	Shaw E & I	AUG-2003

CC Previous Studies

2003

Sites	Title	Author	Date
	Alabama		
CCSWMU-002, 006, 031, 034, 035, 042 and 121	Draft-Final Site-Specific Field Sampling Plan for Site Closure Fieldwork at RSA-002, 006, 031, 034, 035, 042 and 121, Redstone Arsenal, Madison County, Alabama	IT Corporation	OCT-2003

2004

CCSWMU-003	Final RCRA Facility Investigation Work Plan and Site-Specific Field Sampling Plan for RSA-003, Redstone Arsenal, Madison County Alabama	Shaw E & I	JAN-2004
	Draft RCRA Installation Action Plan, Redstone Arsenal, Madison County Alabama	Shaw E & I	MAR-2004
CCSWMU-002, 003, 006, 030, 035, 121 and 127	Final Removal Action Report for RSA-002, 003, 006, 030, 035, 121 and 127, Redstone Arsenal, Madison County Alabama	Shaw E & I	MAR-2004
CCSWMU-004, 033, 036, 044 and 125	Final Site-Specific Field Sampling Plan and Site-Specific Health and Safety Plan Attachments for Site Closure Fieldwork at RSA-004, 033, 036, 044 and 125, Redstone Arsenal, Madison County Alabama	Shaw E & I	MAR-2004
CCSWMU-002, 003, 006, 035, 121 and 127	Final RCRA Removal Action Report for RSA-002, RSA-003, RSA-006, RSA-035, RSA-121 and RSA-127, Redstone Arsenal, Madison County, Alabama	Shaw E & I	MAR-2004
CCSWMU-004, 033, 036, 044 and 125	Final Site-Specific Field Sampling Plan and Site-Specific Health and Safety Plan Attachments Site Closure Fieldwork at RSA-004, RSA-033, RSA-036, RSA-044 and RSA-125, Redstone Arsenal, Madison County,	Shaw E & I	MAR-2004
CCSWMU-034, 035 and 037	Final Site-Specific Phase III Release Assessment Work Plan for RSA-034, 035 and 037, Redstone Arsenal, Madison County Alabama	Shaw E & I	APR-2004
CCSWMU-002, 006, 031, 034, 035, 042 and 121	Final Site-Specific Field Sampling Plan For Site Closure Fieldwork at RSA-002, 006, 031, 034, 035, 042 and 121, Redstone Arsenal, Madison County Alabama	Shaw E & I	APR-2004
CCSWMU-127	Final RCRA Facility Investigation Work Plan and Site-Specific Field Sampling Plan for RSA-127, Redstone Arsenal, Madison County Alabama	Shaw E & I	APR-2004
CCSWMU-002	Final Site Closure Report for RSA-002, Redstone Arsenal, Madison County Alabama	Shaw E & I	MAY-2004
CCSWMU-042	Final Site Closure Report for RSA-	Shaw E & I	MAY-2004

CC Previous Studies

2004

Sites	Title	Author	Date
	042, Redstone Arsenal, Madison County Alabama		
CCSWMU-008	Final RCRA Facility Investigation Work Plan, Site-Specific Field Sampling Plan, and Health and Safety Plan for RSA-008, Redstone Arsenal, Madison County Alabama, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUN-2004
CCSWMU-034	Final Site Closure Report for RSA-034, Redstone Arsenal, Madison County Alabama	Shaw E & I	JUN-2004
CCSWMU-035	Final Site Closure Report for RSA-035, Redstone Arsenal, Madison County Alabama	Shaw E & I	JUN-2004
CCSWMU-044	Final Site Closure Report for RSA-044, Redstone Arsenal, Madison County Alabama	Shaw E & I	JUN-2004
CCSWMU-172	Final Comparison of Site and Background Soil Data for RSA-172, Redstone Arsenal, Madison County Alabama	Shaw E & I	JUL-2004
CCSWMU-036	Final Site Closure Report for RSA-036, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-159	Final Comparison of Site and Background Soil Data for RSA-159, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-163	Final Comparison of Site and Background Soil Data for RSA-163, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-170	Final Comparison of Site and Background Soil Data for RSA-170, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-171	Final Comparison of Site and Background Soil Data for RSA-171, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-172	Final Comparison of Site and Background Soil Data for RSA-172, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-174	Final Comparison of Site and Background Soil Data for RSA-174, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-176	Final Comparison of Site and Background Soil Data for RSA-176, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-177	Final Comparison of Site and Background Soil Data for RSA-177, Redstone Arsenal, Madison County	Shaw E & I	AUG-2004

CC Previous Studies

2004

Sites	Title	Author	Date
	Alabama		
CCSWMU-182	Final Comparison of Site and Background Soil Data for RSA-182, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2004
CCSWMU-003	Draft RCRA Facility Investigation Report for RSA-003, Redstone Arsenal, Madison County Alabama	Shaw E & I	SEP-2004
CCSWMU-004	Final Additional Sampling Work Plan RSA-004, Redstone Arsenal, Madison County Alabama	Shaw E & I	SEP-2004
CCSWMU-127	Final Removal Action Work Plan Addendum for RSA-127, Redstone Arsenal, Madison County Alabama	Shaw E & I	SEP-2004
CCSWMU-030 and 031	Final Site-Specific Safety & Health Plan Demolition & Removal Action & Remedial Field Investigation at RSA-030/031	Shaw E & I	OCT-2004
CCSWMU-177 and 179	Final Site-Specific Safety and Health Plan Attachment Release Assessment for RSA-177 and RSA-179, Redstone Arsenal, Madison County, Alabama	Shaw E & I	OCT-2004
CCSWMU-177 and 179	Final Site-Specific Safety and Health Plan Attachment Release Assessment for RSA-177 and RSA-179	Shaw E & I	OCT-2004
CCSWMU-030 and - 031	Final Site-Specific Safety & Health Plan Demolition & Removal Action & Remedial Field Investigation at RSA-030/031, Redstone Arsenal, Madison County, Alabama	Shaw E & I	OCT-2004
CCSWMU-030 and 031	Final Demolition Work Plan for RSA-030 and 031	Shaw E & I	OCT-2004
CCSWMU-177 and 179	Final Release Assessment Work Plan for RSA-177 and 179, Redstone Arsenal, Madison County Alabama	Shaw E & I	OCT-2004
CCSWMU-030 and 031	Final Demolition Work Plan for RSA-030 and 031, Redstone Arsenal, Madison County Alabama	Shaw E & I	OCT-2004
CCSWMU-127	Final Site-specific Safety & Health Plan Attachment for Removal Action at RCRA SWMU RSA-127, Redstone Arsenal, Madison County, Alabama	Shaw E & I	NOV-2004
CCSWMU-127	Final Site Specific Safety and Health Plan Attachment RFI for RSA-008, 2004 Final Work Plan Addendum for RSA-127, Redstone Arsenal, Madison County, Alabama, Redstone Arsenal, Madison County	Shaw E & I	NOV-2004
CCSWMU-034, 035 and 037	Final Phase III Release Assessment Report RSA-034, 035 and 037	Shaw E & I	NOV-2004
CCSWMU-116	Final RCRA Confirmation Sampling	Shaw E & I	NOV-2004

CC Previous Studies

2004

Sites	Title	Author	Date
	Work Plan RSA-116, Redstone Arsenal, Madison County, Alabama		
CCSWMU-034, 035 and 037	Final Phase III Release Assessment Report RSA-034, 035 and 037, Redstone Arsenal, Madison County Alabama	Shaw E & I	NOV-2004
CCSWMU-116	Final Site-Specific Safety and Health Plan Attachment, Confirmation Sampling, RSA-116, Redstone Arsenal, Madison County Alabama	Shaw E & I	NOV-2004
CCSWMU-030 and 031	Final TPH Investigation Work Plan for RSA-030 and 031, Redstone Arsenal, Madison County Alabama	Shaw E & I	NOV-2004
CCSWMU-030 and 031	Final TPH Investigation Work Plan for RSA-030 and 031, Redstone Arsenal, Madison County Alabama	Shaw E & I	NOV-2004
CCSWMU-116	Final RCRA Confirmation Sampling Work Plan RSA-116, Redstone Arsenal, Madison County, Alabama	Shaw E & I	NOV-2004
CCSWMU-127	Final Work Plan Addendum for RSA-127, Redstone Arsenal, Madison County, Alabama	Shaw E & I	NOV-2004

2005

CCSWMU-037	RSA-037 ARBCA Evaluation	Shaw E & I	FEB-2005
CCSWMU-030	Final RCRA Facility Investigation Work Plan and Site-Specific Field Sampling Plan for RSA-030	Shaw E & I	MAR-2005
CCSWMU-170, 172, 174, and 182	Final RCRA Release Assessment Work Plan for RSA-170, RSA-172, RSA-174, and RSA-182	Shaw E & I	MAR-2005
CCSWMU-216, 222, and 240	SWMU Assessment Reports for RSA-216, RSA-222, and RSA-240	Shaw E & I	APR-2005
CCSWMU-248	SWMU Assessment Reports for RSA-248	Shaw E & I	MAY-2005
CCSWMU-177	Final RCRA Closure Report for RSA-177	SAIC for US Army Environmental Center (USAEC)	JUN-2005
CCSWMU-004	Final Additional Sampling Report for RSA-004	Shaw E & I	JUN-2005
CCSWMU-035	RSA-035 Oil/Water Separator Report	Shaw E & I	AUG-2005
CCSWMU-034	RCRA Closure Report for Groundwater at RSA-034	Shaw E & I	AUG-2005
CCSWMU-037	Final TPH Source Area Investigation Work Plan for RSA-037	Shaw E & I	AUG-2005
CCSWMU-241, 242, 243, 244, 245, 246 & 247	Final SWMU Assessment Reports (SAR) for RSA-241, RSA-242, RSA-243, RSA-244, RSA-245, RSA-246 & RSA-247 (PSA-RSA-146)	Shaw E & I	AUG-2005
	2005 RCRA Cost to Complete (CTC) Assumptions for FY2006	Shaw E & I	SEP-2005
CCSWMU-127	Draft RCRA Facility Investigation Report for RSA-127	Shaw E & I	SEP-2005

CC Previous Studies

2005

Sites	Title	Author	Date
CCSWMU-008	Draft RCRA Facility Investigation Report for RSA-008	Shaw E & I	SEP-2005
CCSWMU-127	Final Work Plan Addendum for RSA-127	Shaw E & I	NOV-2005
CCSWMU-127	Final Site-Specific Safety & Health Plan Attachment for Removal Action at RCRA SWMU RSA-127	Shaw E & I	NOV-2005
CCSWMU-179	Draft RCRA Closure Report for RSA-179	Shaw E & I	NOV-2005

2006

CCSWMU-240	Final Investigation Work Plan for RSA-240, Former Substation No. 7	Shaw E & I	FEB-2006
CCSWMU-216	Final Work Plan for RCRA Investigations at RSA-216	Shaw E & I	FEB-2006
CCSWMU-044	Final RSA-044 Closure Report	Shaw E & I	MAR-2006
CCSWMU-222	Final Investigation Work Plan for RCRA Investigations at RSA-222	Shaw E & I	MAR-2006
CCSWMU-116	Final Confirmation Sampling Report for RSA-116 South-Side Blowdown Lagoon	Shaw E & I	MAY-2006
CCSWMU-170	Final RCRA Closure Report for RSA-170	Shaw E & I	JUN-2006
CCSWMU-172	Final RCRA Closure Report for RSA-172	Shaw E & I	JUN-2006
CCSWMU-174	Draft RCRA Closure Report for RSA-174	Shaw E & I	JUN-2006
CCSWMU-268	Final SWMU Assessment Report for RSA-268	Shaw E & I	JUN-2006
CCSWMU-182	Final RCRA Closure Report for RSA-182	Shaw E & I	JUN-2006
CCSWMU-270	Final SWMU Assessment Report for RSA-268 and RSA-270	Shaw E & I	JUN-2006
CCSWMU-003	Final Work Plan for Supplemental RCRA Facility Investigation at RSA-003	Shaw E & I	JUN-2006
CCSWMU-246	Final RCRA Release Assessment Work Plan, RSA-246, Former Sewer Ejector/ Motor Pool, Building 7630	Shaw E & I	JUL-2006
CCSWMU-030 and 031	Draft RCRA Facility Investigation Report for RSA-030 and RSA-031	Shaw E & I	JUL-2006
CCSWMU-244	Final RCRA Release Assessment Work Plan, RSA-244, Building 7356, Propellant	Shaw E & I	JUL-2006
CCSWMU-003	Final Technical Memorandum for RSA-003	Shaw E & I	JUL-2006
CCSWMU-003	Final Work Plan for Supplemental RCRA Facility Investigation at RSA-003	Shaw E & I	JUL-2006
CCSWMU-277	Final SWMU Assessment Report for RSA-277, Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash Down Area	Shaw E & I	AUG-2006
CCSWMU-222	Final Release Assessment/Closure Report for RSA-222	Shaw E & I	OCT-2006

CC Previous Studies

2006

Sites	Title	Author	Date
CCSWMU-247	Final Release Assessment Work Plan for RSA-247	Shaw E & I	OCT-2006
CCSWMU-216	Final Confirmation Sampling/Closure Report for RSA-216	Shaw E & I	NOV-2006

2007

CCSWMU-248	Final Release Assessment Work Plan for RSA-248	Shaw E & I	JAN-2007
CCSWMU-277	Final Release Assessment Work Plan for RSA-277	Shaw E & I	JAN-2007
CCSWMU-268	Final Release Assessment Work Plan for RSA-268	Shaw E & I	FEB-2007
CCSWMU-292	Final Secondary Investigation Report for Bldg 3311 (CCSWMU-292) dated May 2007	Shaw Env. Inc.	MAY-2007
CCSWMU-244	Final RCRA Release Assessment/Closure Report for RSA-244	Shaw E & I	MAY-2007
CCSWMU-035	Draft Additional Investigation Work Plan for RSA-035	Shaw E & I	JUN-2007
CCSWMU-241	Final Release Assessment Work Plan for RSA-241	Shaw E & I	JUN-2007
CCSWMU-246	Final RCRA Release Assessment/Closure Report for RSA-246	Shaw E & I	JUN-2007
CCSWMU-037	Draft Alabama Risk Based Corrective Action (ARBCA) Evaluation for RSA-037	Shaw E & I	JUL-2007
CCSWMU-283	Final Solid Waste Management Unit Assessment Report for RSA-283	Shaw E & I	JUL-2007
CCSWMU-277	Final Release Assessment Report for RSA-277	Shaw E & I	AUG-2007
CCSWMU-284	Final SWMU Assessment Report for RSA-284, Fire Training Area	Shaw E & I	OCT-2007
CCSWMU-177	Final Letter Report for Groundwater and Soil at RSA-177, Small Motor Finishing TSA, Bldg 7654	Shaw E & I	OCT-2007
CCSWMU-179	Final Letter Report for Groundwater Sampling at RSA-179, Control Lab & First Aid, Pad 2, TSA, Bldg 7667	Shaw E & I	OCT-2007
CCSWMU-243	Final Release Assessment Work Plan for RSA-243	Shaw E & I	OCT-2007
CCSWMU-240	Final RCRA Release Assessment/Removal Action/Closure Report for RSA-240, Former Substation No. 7	Shaw E & I	OCT-2007
CCSWMU-242	Final RCRA Release Assessment Work Plan for RSA-242, HW Storage Igloo, Bldg 7314	Shaw E & I	OCT-2007
CCSWMU-248	Final Release Assessment /Closure Report for RSA-248, Bldg 3633, Battery Maintenance Shop	Shaw E & I	OCT-2007
CCSWMU-247	Final Release Assessment Report for RSA-247, Bldg 7644, Steel Fabrication Shop & Maintenance Shop	Shaw E & I	OCT-2007

CC Previous Studies

2007

Sites	Title	Author	Date
CCSWMU-009	Draft RCRA Facility Investigation Work Plan for RSA-009, Inactive Sewage Treatment Plant #3	Shaw E & I	NOV-2007
CCSWMU-277	Draft Site-Specific Safety & Health Plan Attachment RCRA Facility Investigation for RSA-277, Bldg 5487, Wastewater Maintenance Shop, Acid Wash-Down Area	Shaw E & I	NOV-2007
CCSWMU-277	Final RCRA Facility Investigation Work Plan for RSA-277, Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash-Down Area	Shaw E & I	DEC-2007

2008

CCSWMU-268	Draft Release Assessment Report for RSA-268, Sewage Treatment Plant, Bldg 8018	Shaw E & I	JAN-2008
CCSWMU-009	Final RCRA Facility Investigation Work Plan for RSA-009, Inactive Sewage Treatment Plant #3	Shaw E & I	JAN-2008
CCSWMU-286, CCSWMU-287, CCSWMU-288, CCSWMU-289, CCSWMU-290, CCSWMU-291, CCSWMU-292, and CCSWMU-295	Final SWMU Assessment Reports for CCSWMU-286, CCSWMU-287, CCSWMU-288, CCSWMU-289, CCSWMU-290, CCSWMU-291, CCSWMU-292, and CCSWMU-295, Redstone Arsenal, Madison County, Alabama	Shaw E & I	MAR-2008
CCSWMU-268	Final Release Assessment Report , Redstone Arsenal, Madison County, Alabama	Shaw E & I	APR-2008
CCSWMU-284	Draft Release Assessment Work Plan for CCSWMU-284, Fire Training Area (FTA), Redstone Arsenal, Madison County, Alabama	Shaw E & I	MAY-2008
CCSWMU-283	Draft Release Assessment Work Plan for CCSWMU-283, Former Primary Substation No.2, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUN-2008
CCSWMU-245	Draft Release Assessment Work Plan for CCSWMU-245, Steam Heating Plant, Bldg 7579, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUL-2008
CSWMU-283	Final Release Assessment Work Plan, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUL-2008
CCSWMU-284	Final Release Assessment Work Plan, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JUL-2008
CCSWMU-277	Draft RCRA Facility Investigation Report for CCSWMU-277, Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash-Down Area, Redstone Arsenal, Madison County, Alabama	Shaw E & I	AUG-2008
CCSWMU-298, CCSWMU-299,	Final SWMU Assessment Reports for CCSWMU-298, CCSWMU-299,	Shaw E & I	AUG-2008

CC Previous Studies

2008

Sites	Title	Author	Date
CCSWMU-300, CCSWMU-301, CCSWMU-302, CCSWMU-303, CCSWMU-304, CCSWMU-305, CCSWMU-306, and CCSWMU-307	CCSWMU-300, CCSWMU-301, CCSWMU-302, CCSWMU-303, CCSWMU-304, CCSWMU-305, CCSWMU-306, and CCSWMU-307, Redstone Arsenal, Madison County, Alabama		
CCSWMU-245	Final RCRA Release Assessment Work Plan for CCSWMU-245, Steam Heating Plant, Building 7579, Redstone Arsenal, Madison County Alabama	Shaw E & I	AUG-2008
CCSWMU-035	Draft Additional Investigation Work Plan for CCSWMU-035, In-Ground Oil/Water Separator, Bldg 4812, Redstone Arsenal, Madison County, Alabama	Shaw E & I	SEP-2008
CCSWMU-277	Final RCRA Facility Investigation Report for CCSWMU-277, Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash-Down Area , Redstone Arsenal, Madison County, Alabama	Shaw E & I	OCT-2008
CCSWMU-035	Final Additional Investigation Report for CCSWMU-035, In-Ground Oil/Water Separator, Bldg 4812	Shaw E & I	NOV-2008
CCSWMU-247	Draft RCRA Facility Investigation Work Plan CCSWMU-247, Bldg 7644, Steel Fabrication Shop and Maintenance Facility, Redstone Arsenal, Madison County, Alabama	Shaw E & I	DEC-2008
CCSWMU-291 and CCSWMU-293	Draft (Rev 2) Accident Prevention Plan for Secondary Investigation for Sites CCSWMU-291 and CCSWMU-293, Redstone Arsenal, Madison County, Alabama	Nationview LLC	DEC-2008
CCSWMU-291 and CCSWMU-293	Draft (Rev 2) Work Plan for Secondary Investigation for Sites CCSWMU-291 and CCSWMU-293, Redstone Arsenal, Madison County, Alabama	Nationview LLC	DEC-2008
CCSWMU-243	Draft Release Assessment Report for CCSWMU-243, Propellant Storage, Bldg 7342, Redstone Arsenal, Madison County, Alabama	Shaw E & I	DEC-2008

2009

CCSWMU-289	Draft Release Assessment Work Plan for CCSWMU-289, Drinking WTP#2, Sludge Thickener (Bldg 9102) & Drying Beds Redstone Arsenal, Madison County, Alabama	Shaw E & I	JAN-2009
CCSWMU-291 and CCSWMU-293	Final Accident Prevention Plan for Secondary Investigation for CCSWMU-291 and CCSWMU-293, Redstone Arsenal, Madison County,	Nationview LLC	JAN-2009

CC Previous Studies

2009

Sites	Title	Author	Date
	Alabama		
CCSWMU-291 and CCSWMU-293	Final Work Plan for Secondary Investigation Report for CCSWMU-291 and CCSWMU-293, Redstone Arsenal, Madison County, Alabama	Nationview LLC	JAN-2009
CCSWMU-247	Final RCRA Facility Investigation Work Plan for CCSWMU-247, Steel Fabrication / Maintenance Facility, Bldg 7644, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JAN-2009
CCSWMU-305	Draft Release Assessment Work Plan for CCSWMU-305, Dispatcher's Office with Washrack, Bldg 3664, Redstone Arsenal, Madison County, Alabama	Shaw E & I	JAN-2009
CCSWMU-286	Final RCRA Facility Investigation Work Plan for RSA-247, Steel Fabrication/Maintenance Facility, Bldg 7644	Shaw Environmental Inc.	JAN-2009
CCSWMU-291 and CCSWMU-293	Final Work Plan for Secondary Investigation Report for CCSWMU-291 and CCSWMU-293	Shaw Env. Inc	JAN-2009
CCSWMU-291 and CCSWMU-293	Final Accident Prevention Plan for Secondary Investigation for CCSWMU-291 and CCSWMU-293	Shaw Environmental Inc.	JAN-2009
CCSWMU-243	Final Release Assessment Report for CCSWMU-243, Propellant Storage, Bldg 7342, Redstone Arsenal, Madison County, Alabama	Shaw E & I	FEB-2009
CCSWMU-289	Final Release Assessment Work Plan for CCSWMU-289, Drinking WTP#2 Sludge Thickener, (Bldg 9102) & Drying Beds, Redstone Arsenal, Madison County, Alabama	Shaw E & I	FEB-2009
CCSWMU-305	Final Release Assessment Work Plan for CCSWMU-305, Dispatcher's Office with Washrack, Bldg 3664, Redstone Arsenal, Madison County, Alabama	Shaw E & I	FEB-2009
CCSWMU-243	Final Release Assessment Report, CCSWMU-243, Propellant Storage, Bldg 7342	Shaw Env. Inc	FEB-2009
CCSWMU-289	Final Release Assessment Work Plan, CCSWMU-289, Drinking WTP#2 Sludge Thickener, (Bldg 9102) & Drying Beds	Shaw Env. Inc.	FEB-2009
CCSWMU-305	Final Release Assessment Work Plan, CCSWMU-305, Dispatcher's Office with Washrack, Bldg 3664	Shaw Env. Inc.	FEB-2009
CCSWMU-290	Final Release Assessment Work Plan, CCSWMU-290, Drinking WTP#3, Sludge Thickener & Drying Beds, Bldgs 5431 & 5433	Shaw Env. Inc.	JUN-2009
CCSWMU-116	Groundwater Monitoring Work Plan, CCSWMU-116, South-Site	Shaw Env. Inc.	JUN-2009

CC Previous Studies

2009

Sites	Title	Author	Date
	Blowdown Lagoon at TA-5		
CCSWMU-242	Final Release Assessment/Closure Report for CCSWMU-242, HW Storage Igloo, Bldg 7314	Shaw Env. Inc.	JUL-2009
CCSWMU-308	Final SWMU Assessment Report for CCSWMU-308, Exterior Sump at Bldg 7120	Shaw Env. Inc.	OCT-2009
CCSWMU-309	Final SWMU Assessment Report for CCSWMU-309, Covered Trench & Sump at Bldg 7155	Shaw Env. Inc.	OCT-2009
CCSWMU-310	Final SWMU Assessment Report for CCSWMU-310, Former OWS & Suspected OWS at Bldg 7289	Shaw Env. Inc.	OCT-2009
CCSWMU-310	Final SWMU Assessment Report for CCSWMU-311, Exterior Sumps & Interior Concrete Pits at Bldg 7352	Shaw Env. Inc.	OCT-2009

2010

CCSWMU-293	Draft Secondary Investigation Report for CCSWMU-293 (This is the final report submitted by NationView, even though it is title "draft".)	Shaw Env. Inc.	JAN-2010
CCSWMU-286	Final Release Assessment Work Plan for CCSWMU-286 Boiler/Steam Plant, Bldg 3624 dated 8 Feb 10	Shaw Env. Inc.	FEB-2010
CCSWMU-287	Final Release Assessment Work Plan for CCSWMU-287, Component Storage Warehouse, Bldg 3634	Shaw Env. Inc.	FEB-2010
CCSWMU-291	Final Secondary Investigation Report for CCSWMU-291 dated April 2010	Shaw Env. Inc.	APR-2010
CCSWMU-245	Final Release Assessment Report for CCSWMU-245, Steam Heating Plant, Bldg 7579 dated April 2010 (Replaced 131-D)	Shaw Env. Inc.	APR-2010
CCSWMU-003	Final Supplemental RCRA Facility Investigation Report for CCSWMU-003	Shaw Env. Inc.	JUN-2010
CCSWMU-305	Final Release Assessment Report for CCSWMU-305, Dispatcher's Office with Washrack, Bldg 3664	Shaw Env. Inc.	JUN-2010
CCSWMU-288	Final Release Assessment Work Plan for CCSWMU-288, Drinking WTP #1, Sludge Thickener & Drying Beds, Bldgs 8043 and 8044	Shaw Env. Inc.	JUN-2010
CCSWMU-288	Final Release Assessment Work Plan for CCSWMU-288, Drinking WTP #1, Sludge Thickener & Drying Beds, Bldgs 8043 and 8044	Shaw Env. Inc.	JUN-2010
CCSWMU-035	Final RFI Work Plan for CCSWMU-035, In-Ground OWS, Bldg 4812	Shaw Env. Inc.	JUL-2010
CCSWMU-247	Final RFI Report for CCSWMU-247, Steel Fabrication/Maintenance	Shaw Env. Inc.	OCT-2010

CC Previous Studies

2010

Sites	Title	Author	Date
	Facility, Bldg 7644 dated October 2010		
CCSWMU-284	Final Release Assessment Report for CCSWMU-284, Fire Training Area (FTA)	Shaw Env. Inc.	OCT-2010
CCSWMU-306	Final Release Assessment Work Plan, CCSWMU-306, Steam Heating Plant, Bldg 7291	Shaw Env. Inc.	NOV-2010
CCSWMU-304	Final Release Assessment Work Plan, CCSWMU-304, OWS, Washrack & Sump, Adjacent to Bldg 5498 dated Nov 2010	Shaw Env. Inc.	NOV-2010
CCSWMU-314	Final SWMU Assessment Report on CCSWMU-314, Used Oil AST & Spill Site, Bldg 3670 dated December 2010	Shaw Env. Inc.	DEC-2010
ccswmu-003	Final Work Plan for Data Collection to Support the CMS for CCSWMU-003, In-Ground OWS, Bldg 3617, dated Dec 2010	Shaw Env. Inc.	DEC-2010

2011

CCSWMU-290	Final Release Assessment Report, CCSWMU-290, Drinking WTP #3, Sludge Thickening & Drying Beds, Bldgs 5431 & 5433	Shaw Env. Inc.	FEB-2011
CCSWMU-268	Final RFI Work Plan for CCSWMU-268, Sewage Treatment Plant, Bldg 8018	Shaw Env. Inc.	MAR-2011
CCSWMU-289	Final Release Assessment Report, CCSWMU-289, Drinking WTP #2, Sludge Thickener (Bldg 9201) & Drying Beds	Shaw Env. Inc.	MAR-2011
CCSWMU-241	Final Release Assessment Report, CCSWMU-241 HW Storage Igloo, Bldg 7313 (Replaced 143-D)	Shaw Env. Inc.	MAR-2011
CCSWMU-315	Final SWMU Assessment Report for CCSWMU-315, Abandoned Drum Area near the Golf Course, dated June 9, 2011	Shaw Env. Inc.	JUN-2011
CCSWMU-283	Final Release Assessment Report, CCSWMU-283 - Former Primary Substation No. 2, Bldg 3796	Shaw Env. Inc.	JUL-2011
CCSWMU-009	Final RCRA Facility Investigation Report, CCSWMU-009, Inactive Sewage Treatment Plant #3 dated September 2011	Shaw Env. Inc.	SEP-2011
CCSWMU-216	Final Revision 1 Confirmation Sampling/Closure Report CCSWMU-216, Bldg 5475, Laboratory Injection Test Facility	Shaw Env. Inc.	SEP-2011
CCSWMU-286	Final Release Assessment Report for CCSWMU-286, Boiler/Steam Plant, Bldg 3624	Shaw Env. Inc.	OCT-2011
CCSWMU-287	Final Release Assessment Report for CCSWMU-287, Component	Shaw Env. Inc.	OCT-2011

CC Previous Studies

2011

Sites	Title	Author	Date
	Storage Warehouse, Bldg 3634		
CCSWMU-288	Final Release Assessment Report for CCSWMU-288, Drinking WTP#1, Sludge Thickener & Drying Beds, Bldgs 8043 & 8044	Shaw Env. Inc.	NOV-2011
CCSWMU-305	Final, Revision 1, Release Assessment Report for CCSWMU-305, Dispatcher's Office with Washrack, Bldg 3664 dated Dec 2011	Shaw Env. Inc.	DEC-2011

REDSTONE ARSENAL
Compliance-Related Cleanup
Site Descriptions

Site ID: CCRSA-051
Site Name: Inactive Munitions Demil & Disposal, Are
Alias: RSA-051

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199003.....	201103
RFI/CMS.....	201103.....	202703
IRA.....	201103.....	202503
LTM.....	202703.....	204203

RIP Date: N/A
RC Date: 202703
Closeout Date: 204203

SITE DESCRIPTION

This is an inactive 20 acre disposal site within an active missile test range area for chemical munitions (mustard and Lewisite agents). Bounded by Wheeler Refuge, it operated during the 1940's and 1950's.

Site RSA-51 occupies about 20 acres near the southwestern boundary of OU-17 and is characterized by a small number of irregularly spaced, circular burn pad-type features. The area also includes a series of disposal trenches. The site is south of Wheeler Lake and the associated wetlands of Indian Creek (IC) and west of Centerline Road at the intersection of Test Area 6 and Test Area 1.

The site demilitarized munitions and explosives by OB, burning in trenches, burial in trenches, detonation in earthen pits, and similar methods in this area. Artillery shells including WP rounds were reportedly disposed of at this site. Many regularly spaced trench features about 300 feet long extending east from Anderson Road characterize the trench area. The area is within an active missile test range and is used for pasture land and military exercises. The southern portion of the site is characterized by 12 regularly spaced trench features approximately 150 ft long extending east from the existing gravel road.

Traditional unexploded ordnance (UXO) is also present at the site. Archive search results indicate the potential presence of CWM.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that IM and/or source removal be completed at this suspect CWM site.

Site ID: CCRSA-052

Site Name: Inactive Munitions Demil & Disposal, Are

Alias: RSA-052

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199501.....	199506
RFI/CMS.....	199506.....	202703
IRA.....	201103.....	202303
LTM.....	202703.....	204203

RIP Date: N/A

RC Date: 202703

Closeout Date: 204203

SITE DESCRIPTION

This 63 acre site was used from the 1940s to 1950s as a disposal (OB/OD) site for chemical munitions, including H and L agents.

Site RSA-52 is located in the central part of RSA west of the MSFC West Test Area (the Saturn 5 Test Stand) and Dodd Road. The unit is bounded by Wheeler National Wildlife Refuge to the northwest and south. This unit occupies approximately 63 acres and is fenced. The site is within TA-1 active missile test range. It was used in the 1940s and 1950s as a disposal OB/OD site for chemical munitions, including H components and L agents. Disposal operations were conducted in the trenches and on the land surface. Records show that over one million chemical and WP rounds were disposed of at this site.

Approximately 25 trenches were identified based on a geophysical survey. The trench lengths range from 275 ft to 650 ft. Ordnance and metal fragments are evident at the surface throughout the site. The site was fenced in 2001.

The site soils are contaminated with high levels of metals. Vials from chemical agent identification sets (CAIS) and ordnance have been found at this site.

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Site ID: CCRSA-061

Site Name: Inactive Munitions Demil/Disposal Area P

Alias: RSA-061

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199501.....	199506
RFI/CMS.....	199506.....	202703
IRA.....	201103.....	202503
LTM.....	202703.....	204203
RIP Date: N/A		
RC Date: 202703		
Closeout Date: 204203		

SITE DESCRIPTION

This is an inactive 40 acre disposal site that was used for the demilitarization and disposal site of white phosphorus and chemical munitions in the 1940s and 1950s. Twenty trenches are present within RSA-062.

RSA-061 and 062 are one disposal area, and both will be addressed as RSA-061. This makes the site ~65 acres with 24 trenches.

Site RSA-61 is an inactive disposal site that was used in the 1940s and 1950s. It is located in the central portion of RSA, east of Dodd Road and north of Huntsville Spring Branch (HSB), and was used as a demilitarization and disposal site for WP and chemical munitions. The materials were incinerated in disposal trenches, covered, and the residues remain in place. The trenches were marked with vertical railroad ties and concrete posts and appear devoid of undergrowth. Twenty trenches have been identified through a geophysical survey. Ordnance and metal fragments are evident at the surface throughout the site.

UXO is present and the site is contaminated with high levels of metals. Breakdown products VOCs, SVOCs and CWM are also present.

During the investigation, the size of site RSA-061 was increased to 40 acres. A determination was made that RSA-061 and RSA-062 are one disposal area, and will be addressed under RSA-061. This brought the site size to about 65 acres with 24 trenches. [RSA-062 will be listed as RC in the Army Environmental Database - Restoration (AEDB-R).] Area fencing was completed (in 2001) with trench marking as a time-critical removal action (TCRA).

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Site ID: CCRSA-063

Site Name: Inactive Chemical Munitions Disposal Are

Alias: RSA-063

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199501.....	199506
RFI/CMS.....	199506.....	202803
IRA.....	201103.....	202603
LTM.....	202803.....	204203

RIP Date: N/A
RC Date: 202803
Closeout Date: 204203

SITE DESCRIPTION

This seven acre, inactive chemical disposal site was used to dispose of munitions contaminated with mustard gas and lewisite (1940-50s) and lies within the active firing zone for Test Area 1.

Site RSA-63 is located west of Dodd Road, north of Test Area 1 Centerline Road, and south of HSB. RSA-63 is a seven-acre, inactive chemical disposal site used to dispose of munitions contaminated with H and L in the 1940s and 1950s and lies within the active firing zone for Test Area 1.

Records indicate two cement coffins filled with chemical ton containers, unfired bomb casings and ordnance were disposed of in two trenches, which are approximately 265 and 340 ft long. The trenches were covered with two to four ft of clean backfill. The site was fenced in 2001.

Metals and CWM breakdown products were detected in the soil.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that IM and/or source removal be completed at this suspect CWM site.

Site ID: CCRSA-064

Site Name: Inactive Munitions Demil/Disposal AreaBB

Alias: RSA-064

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199707.....	199904
RFI/CMS.....	199904.....	202703
IRA.....	201103.....	202503
LTM.....	202703.....	204203

RIP Date: N/A
RC Date: 202703
Closeout Date: 204203

SITE DESCRIPTION

This is an inactive H gas disposal area. The site was active in 1955 and 1956 and occupies less than one acre. Approximately 350 mustard gas shells were demilitarized at the site.

Site RSA-64 occupies less than one acre in the southeastern part of the facility, north of Buxton and Sheffield Roads, and west of the Preflight Evaluation Lab, Building 7290. The site is an inactive H disposal area which was active in 1955 and 1956. Approximately 350 H shells were demilitarized at the site. Currently, this unit is covered with vegetation, including small trees, and in 2001 the area was fenced, posted, and restricted.

Preliminary sampling results indicate metals in the soils. This site may be a source of chlorinated solvent (TCE) that has been found in area groundwater.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that IM and/or source removal be completed at this suspect CWM site.

Site ID: CCRSA-066
Site Name: Inactive Ash Disposal Site, Area X-1
Alias: RSA-066

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	198807.....	199006
RFI/CMS.....	199006.....	203003
IRA.....	201103.....	202803
LTM.....	203003.....	204203

RIP Date: N/A
RC Date: 203003
Closeout Date: 204203

SITE DESCRIPTION

This is a closed unlined waste disposal and demolition area of approximately 21 acres located within an operational range. The landfill portion (two acres) of the site was active from the 1950s to the late-1970s, and was used as a disposal area for incineration ash, residue, and unsalvageable metal debris (e.g., rocket motor parts, crushed drums) from the open burning operations at the OB/OD grounds (RSA-14). The site was additionally used for demilitarization of chemically filled ordnance.

Site RSA-66 is a closed unlined waste disposal and demolition area consisting of approximately 21 acres located within an 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 (two 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 munitions and explosives of concern (MEC) is present on the site. There are SVOCs, VOCs and metals in the groundwater. In addition, VOCs, metals, and explosives have been found in the soil.

Site RSA-066-R-01 was opened, but is listed as RC because it is located on an active range.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that IM and/or source removal be completed at this suspect CWM site.

Site ID: CCRSA-068

Site Name: Inactive Chemical Disposal, Area Z

Alias: RSA-068

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	198807.....	199006
RFI/CMS.....	199006.....	203603
IRA.....	201103.....	203603
LTM.....	203603.....	204203

RIP Date: N/A
RC Date: 203603
Closeout Date: 204203

SITE DESCRIPTION

This is a 12 acre demilitarization and disposal area for explosives operational from the 1950s to 1980. It was also used as disposal area for toxic waste and laboratory chemicals. The majority of the chemicals were disposed of in two trenches and buried along the eastern and southern boundaries.

Site RSA-68 is about 12 acres located in OU-15 in the southern portion of the arsenal, less than one mile east of the Tennessee River and within an operational range, with wetlands to the north and Igloo Pond to the east. Site RSA-68 was within the Gulf Chemical Warfare Depot during the 1940s and was used as a demilitarization and disposal area for explosives. From the 1950s to 1980, the site was active as a disposal area for toxic waste and laboratory chemicals. The majority of the chemicals were disposed of in two trenches and buried along the eastern and southern boundaries. The site was fenced in 2001.

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 CAIS were discovered at the site.

The ADEM issued the RCRA Hazardous Waste Facility Permit No. AL7 210 020 742, on Sept. 30, 2010 to the Army. This RCRA permit governs the storage, treatment, and disposal of hazardous waste, as well as corrective measures for multiple SWMUs and AOCs in accordance with RCRA. Part VI of the RCRA permit requires that IM and/or source removal be completed at this suspect CWM site.

Site ID: CCRSA-110

Site Name: Former Drum Storage/Construction Debris,

Alias: RSA-110

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	199505.....	199802
RFI/CMS.....	199802.....	204103
IRA.....	201103.....	203903
LTM.....	204103.....	204203

RIP Date: N/A

RC Date: 204103

Closeout Date: 204203

SITE DESCRIPTION

This 24 acre site was used as rail car storage in the 1940s and 50s. Rail cars full of chemical ordnance were staged in gravel storage areas waiting to be unloaded.

Site RSA-110 is a 24 acre area site located in the southeastern portion of OU-15 within the floodplain of the Tennessee River and within an operational range. The site was used for rail car storage. Rail cars full of chemical ordnance were staged in gravel storage areas waiting to be unloaded. This area was used in the 1940s and 1950s. Remains of the gravel storage areas are still visible today. The site is primarily dense brush and wetlands. The site was fenced in 2001 and much of the site is covered with surface MEC.

In 1989, RSA personnel removed most of the building and fire bricks from the site and dismantled several incinerators/ovens used to destroy munitions. The ground surface of the non-wooded portion of the site has a heavy gravel base (up to one foot thick in places) with scattered areas containing small surface debris. An area of hummocky surface soil covering about seven acres was identified in the northeastern portion of RSA-110.

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.

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Site ID: CCRSA-188

Site Name: Northern Burial Area/Burning Ground #3

Alias: RSA-188

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	200401.....	200406
RFI/CMS.....	200902.....	202803
IRA.....	201103.....	202703
LTM.....	202803.....	204203

RIP Date: N/A

RC Date: 202803

Closeout Date: 204203

SITE DESCRIPTION

This 6.6 acre area appears to have been used by the Army and Thiokol from the early-1940s into the late-1950s for burning small quantities of chemicals and production wastes, munitions after testing, and munitions from ROP operations. It is probable that debris from activities at Burning Ground No. 3 were disposed in this area.

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 75 millimeter (mm) 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.

This is located on an active range.

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Site ID: CCRSA-257
Site Name: Rock Pond
Alias: RSA-257

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	200902.....	200905
RFI/CMS.....	200909.....	202503
IRA.....	201103.....	202303
LTM.....	202503.....	204203

RIP Date: N/A

RC Date: 202503

Closeout Date: 204203

SITE DESCRIPTION

This 94 acre site may have been used as a quarry, borrow area, and/or a waste disposal area from the 1940s to 1950s. The majority of the site is under water and contains a large pond with several islands. Site observations suggest that the central island has been used as a burn pit and disposal area for incendiary munitions.

RSA-257 is the site that began as a scarred area around 1942 west of the present-day Test Area 2 and Patton Road, and south of Test Area 1. By 1950, large portions of the area were inundated when the ground was excavated below the water table. This area may have been used as a quarry, borrow area, and/or a waste disposal area. Anecdotal reports suggest that a centrifuge in Test Area 2 accidentally discharged munitions into Rock Pond on occasion. VSI observations suggest that the central island has been used as a burn pit and disposal area for incendiary munitions.

This area now contains a large pond with several islands, which may be soil mounds from excavations or constructed berms. The largest such feature arcs from the eastern side of the large, central island toward the south. Vegetation is growing in the water, and accessible portions of the outer shoreline are free of debris. The south end of the large island has large amounts of melted metal (slag) and an abundance of incendiary munitions debris mixed with the slag. It appears the area has been used as a burn pit. A pile of steel I-beams and two large structures fabricated from steel I-beams were observed on the island, but no buildings or other structures were observed.

In 2005, metals exceeded background values in sediment and petroleum range organics (PRO) was detected in soil and at relatively high concentrations in surface water and sediment.

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Site ID: CCRSA-264
Site Name: RR Spring
Alias: RSA-264

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	200808.....	200812
RFI/CMS.....	200909.....	202403
IRA.....	201103.....	202203
LTM.....	202403.....	204203

RIP Date: N/A

RC Date: 202403

Closeout Date: 204203

SITE DESCRIPTION

This 18 acre area is the site of the Railroad Spring. It is alleged that items were historically dumped from rail cars into Railroad Spring.

RSA-264 is the site of the Railroad spring located in central RSA, west of Dodd Road between HSB and Test Area 1. It has been alleged that items were dumped from rail cars into Railroad spring; however, the distance from the spring to the former rail line (more than 500 ft) would have made spontaneous dumping difficult. Visual evidence of dumping or disposal in the spring has not been confirmed. The surrounding area is thickly wooded with dense undergrowth. Munitions debris and mounded soils were observed in the area east of the spring channel. The munitions debris may be associated with Test Area 1 operations.

In 2005, limited site assessment (LSA) data do not indicate chemical contamination because concentrations of metals in soil are only slightly greater than their background values; however, this site will be investigated to evaluate the potential for subsurface ordnance hazards associated with the detection of subsurface metallic materials.

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Site ID: CCRSA-281
Site Name: Disposal Trenches at RSA-046 Range
Alias: RSA-281

STATUS

Regulatory Driver: RCRA C

Phases	Start	End
RFA.....	200905.....	200909
RFI/CMS.....	200909.....	202903
IRA.....	201103.....	202703
LTM.....	202903.....	204203

RIP Date: N/A
RC Date: 202903
Closeout Date: 204203

SITE DESCRIPTION

This seven acre site is associated with RSA-046. In the 1940s and 1950s, RSA-046 was used as a 4.2 inch mortar and small rocket motor test area. The on site trenches were used as part of the range clearance activities (1940's and 50's).

Site RSA-281 occupies approximately seven acres in the southeast portion of RSA on Buxton Road, east of Patton Road. New archive search information indicates that RSA-046 was used during the 1940s and 1950s as a 4.2-inch mortar and small rocket motor test area. The on-site trenches were part of the range clearance activities. Limited geophysics have identified some trenches. Scrap metal and remnants of ordnance were found at the site.

Because RSA-046 range is on an operational range, only the disposal areas will be addressed under this site (RSA-281).

Metals and explosives were found in the soil and sediment associated with the surface burn and trench areas.

The MEC/UXO with WP and potential CWM are present at the site.

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Site ID: CCSWMU-182
Site Name: 1.1 GRINDER BLDG P2, TSA, BLDG 7695
Alias: RSA2002-03

STATUS

Regulatory Driver: RCRA C
 Contaminants of Concern: Metals
 Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	198908.....	199109
CS.....	200303.....	200304
RFI/CMS.....	200502.....	201212
RIP Date: N/A		
RC Date: 201212		
Closeout Date: 201312		

SITE DESCRIPTION

CCSWMU-182, located south of Bldg 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 & 2-ft wide ran the length of the Bldg (12.25-feet). The storage area at Bldg 7695 was used from 1978 to 1993 to store cyclotetramethylenetetranitramine (HMX) & cyclotrimethylenetrinitramine (RDX) waste. The cleanup strategy assumes that a no further action (NFA) recommendation contained in the closure report will be accepted by ADEM and no further action will be required for CCSWMU-182 under the RCRA corrective action process.

In 2003, confirmatory sampling (CS) was completed around the storage area to determine if releases had occurred. During the CS, 10 soil samples were collected & analyzed for VOCs, SVOCs, metals, explosives, perchlorate, & cyanide. Sample results indicated chromium was present in soils at concentrations above background levels & USEPA Region 9 preliminary remediation goals (PRGs). 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 & geochemical evaluation of the data was completed to determine whether the chromium concentrations detected in surface & subsurface soils were within the naturally occurring background range. The geochemical evaluations indicated that the detected concentrations of chromium were anomalously high & might represent a component of contamination. Based on this finding, a release assessment (RS) was recommended for CCSWMU-182. The RS activities were funded in 2004 & completed in 2005. The RS included the completion of soil borings to collect surface & subsurface soil samples. Based on the data collected during the CS & the RS, CCSWMU-182 does not appear to have released contaminants that pose a threat to human health or the environment; therefore an NFA recommendation is appropriate for this site.

CLEANUP STRATEGY

The Final RCRA Closure Report was submitted to ADEM June 07, 2006 with a NFA recommendation. No response and/or comments have been received from ADEM. Comments on the CCSWMU-182 Final RCRA Closure Report were received from ADEM on Dec. 11, 2009. ADEM did not concur with the NFA recommendation for CCSWMU-182. ADEM requested additional soil and groundwater sampling for CCSWMU-182. A response to the ADEM comments was submitted in February of 2010. It is unlikely that additional sampling will be required. The cleanup strategy assumes that the release assessment NFA recommendation will be accepted by ADEM and no additional efforts are required for CCSWMU-182.

Site ID: CCSWMU-216

Site Name: LABORATORY INJECTION TEST FACILITY, B5475

Alias: NONE

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Soil

Phases	Start	End
RFA.....	200412.....	200501
RFI/CMS.....	200510.....	201301
IRA.....	200510.....	201301

RIP Date: N/A

RC Date: 201301

Closeout Date: 201310

SITE DESCRIPTION

This site was initially designated as an injection test facility, but is currently a rocket actuation and guidance system laboratory.

The cleanup of this site was previously funded. No additional funding is required at this time. Additional sampling was completed to determine the extent of any releases from the concrete pit. No contamination was found.

This new RCRA SWMU was identified in 2005 based upon a Potential Source Area Investigation (RSA-147) conducted under the CERCLA program. CCSWMU-216 is located south of Fowler Road and McMorrow Laboratories and west of Jungerman Road. CCSWMU-216 consists of two containment basins on the west side of Bldg. 5475 and a concrete pit located north of the building. The concrete pit received discharges from the containment areas and it has no outlet. Bldg. 5475 was initially designated as an injection test facility. Bldg. 5475 is currently a rocket actuation and guidance system laboratory. 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 indicated that releases of metals and petroleum products occurred 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 risk-based concentrations (RBCs). Based on the indications of releases of hazardous constituents from the concrete pit additional investigations began at CCSWMU-216 in 2006. The investigations at CCSWMU-216 were funded in 2005 and completed March 2006. The concrete sump associated with CCSWMU-216 was removed and soil samples were collected from below the sump. The data confirmed that releases did not occur at CCSWMU-216 and that exposure to soil at the site poses no unacceptable health threat if the site is used for either commercial or residential purposes. A Confirmation Sampling/Closure Report for CCSWMU-216 requesting an NFA was submitted to ADEM Dec. 05, 2006. Comments on the Confirmation Sampling/Closure Report for CCSWMU-216 were received from ADEM Nov. 12, 2010. It is not expected that additional efforts other than completed the responses and submitting a revised report will be required for CCSWMU-216.

CLEANUP STRATEGY

Pending the completion of the response to comments and acceptance of the NFA recommendation by ADEM, no additional actions are expected for CCSWMU-216.

Site ID: CCSWMU-222

Site Name: ROADS & GROUNDS MAINTENANCE SHOP, B5494

Alias: NONE

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Soil

Phases	Start	End
RFA.....	200412.....	200501
RFI/CMS.....	200510.....	201301

RIP Date: N/A

RC Date: 201301

Closeout Date: 201409

SITE DESCRIPTION

Sampling was completed in the area around the old oil/water separator (OWS) to confirm the extent of releases of hazardous constituents to the soil due to leaks in the old OWS.

This new RCRA SWMU was identified in 2005 based upon a Potential Source Area (PSA) Investigation (PSA RSA-147) conducted under the CERCLA program. RSA-222 (Roads and Grounds Maintenance Shop) consists of the paint shop, water curtain paint booth, and OWS in Bldg. 5494. The paint shop is located at the east end of Bldg. 5494. The paint booth OWS is located on the southeast side of the building. An additional OWS (Bldg. 5498) is located south of Bldg. 5494. All vehicle washing activities occur at Bldg. 5498 and all discharges from the operations are routed to the Bldg. 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.

CLEANUP STRATEGY

The clean up of this site was previously funded. No additional funding is required at this time. Sampling was completed in October 2006. Release assessment closure report requesting NFA was submitted to ADEM on Oct. 23, 2006. No response has been received from ADEM. Pending acceptance of the NFA recommendation by ADEM, no additional actions are expected for CCSWMU-222.

Site ID: CCSWMU-241
Site Name: HW STORAGE IGLOO, BLDG 7313
Alias: NONE

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Soil

Phases	Start	End
RFA.....	200502.....	200503
RFI/CMS.....	200702.....	201308

RIP Date: N/A

RC Date: 201308

Closeout Date: 201409

SITE DESCRIPTION

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 Redstone Ordnance Plant. CCSWMU-241 was used to store hazardous waste until 1996.

This new RCRA SWMU was identified in 2005 based upon a Potential Source Area Investigation (RSA-146) conducted under the CERCLA program. CCSWMU-241 (Bldg. 7313, Storage Igloo), 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). Bldg. 7313 is situated in a field of several igloos and was most recently used by the Thiokol Corporation. Bldg. 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. 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 fiscal year (FY) 09. The data from the removal action indicated that the removal action was not successful and a RCRA facility investigation (RFI) is required for the site. The RFI for CCSWMU-241 is not currently funded. This site will be transferred to Army Environmental Database-Restoration-Compliance Restoration (AEDB-R-CR) for further investigations.

CLEANUP STRATEGY

Additional investigation is required to determine the extent of releases of metals and other hazardous constituents at CCSWMU-241. An RFI is required for CCSWMU-241.

Site ID: CCSWMU-242
Site Name: HW STORAGE IGLOO, BLDG 7314
Alias: NONE

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	200502.....	200503
RFI/CMS.....	200702.....	201308

RIP Date: N/A

RC Date: 201308

Closeout Date: 201409

SITE DESCRIPTION

Additional investigations are required to determine the extent of hazardous constituents in soil and groundwater at CCSWMU-242. It is expected that a limited risk assessment will be completed and it will determine that no risks are associated with concentrations of contaminants at CCSWMU-242.

This new RCRA SWMU was identified in 2005 based upon a PSA Investigation (RSA-146) conducted under the CERCLA program. CCSWMU-242 (Building 7314, Storage Igloo), 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. CCSWMU-242 was used to store hazardous waste until 1996. In 1997, one surface soil sample collected near the front of the igloo was analyzed for explosives, PAHs, metals, and VOCs. Benzo(a)anthracene and benzo(a)pyrene were detected in the sample at concentrations slightly above the RBC value. Sampling completed in 2004 analyzed for perchlorate, VOCs, SVOCs, and explosives. The 2004 sampling confirmed the presence of benzo(a)pyrene above the RBC. Perchlorate was detected in the subsurface soils. Groundwater contained TCE above the RBC.

CLEANUP STRATEGY

The release assessment for CCSWMU-242 was funded and started in 2007. The release assessment report confirmed the presence of SVOCs in soils. The ARBCA RM-1 evaluation completed as part of the release assessment report determined that the cumulative cancer risk level for the hypothetical future residential receptors was below the ADEM trigger level of 1E-5, and that the detected concentrations of metals and SVOCs in surface soil pose no unacceptable threat to groundwater or surface water quality. The release assessment report requesting a NFA for CCSWMU-242 was submitted to ADEM on July 31, 2009. It is expected that NFA recommendation for CCSWMU-242 will be accepted by ADEM and no additional efforts will be required for CCSWMU-242. ADEM review/concurrence is pending.

Site ID: CCSWMU-243
Site Name: PROPELLANT STORAGE, BLDG 7342
Alias: NONE

STATUS

Regulatory Driver: RCRA C
 Contaminants of Concern: Semi-volatiles (SVOC)
 Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	200502.....	200503
RFI/CMS.....	200702.....	201308
RIP Date: N/A		
RC Date: 201308		
Closeout Date: 201409		

SITE DESCRIPTION

Additional investigations are required to determine the extent of hazardous constituents in soil and groundwater at CCSWMU-243. It is expected that a limited risk assessment will be completed and it will determine that no risks are associated with concentrations of contaminants at CCSWMU-243.

This new RCRA SWMU was identified in 2005 based upon a PSA Investigation (RSA-146) conducted under the CERCLA program. CCSWMU-243 (Building 7342, Storage Igloo) is located on Eagle Road, west of Magazine Road and just east of Pelican Road in the western portion of the former RARE North Plant area in the southeast portion of RSA. 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 Redstone Ordnance Plant. CCSWMU-243 was used to store hazardous waste until 1996. In 1997, one surface soil sample collected near the front of the igloo was analyzed for explosives, PAHs, metals, and VOCs. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-c,d)pyrene were detected above their respective RBCs. Soil and groundwater samples collected in 2004 were analyzed for perchlorate and explosives. The 2004 sampling did not detect perchlorate or explosives above the screening criteria. Additional investigations are required to determine the extent of hazardous constituents released from CCSWMU-243. The additional investigations for CCSWMU-243 were funded and in 2007. The additional investigations completed in 2008 determined that releases from CCSWMU-243 did not contain concentrations of contaminants that would pose a risk to human health. The report requesting an NFA for CCSWMU-243 was submitted to ADEM Feb. 5, 2009. ADEM review/concurrence is pending.

CLEANUP STRATEGY

It is expected that the NFA recommendation for this site will be accepted by ADEM and that no additional efforts will be required.

Site ID: CCSWMU-245

Site Name: STEAM HEATING PLANT, BLDG 7579

Alias: NONE

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	200502.....	200503
RFI/CMS.....	200702.....	201309

RIP Date: N/A

RC Date: 201309

Closeout Date: 201409

SITE DESCRIPTION

Additional investigations are required to determine the extent of hazardous constituents in soil at CCSWMU-245. It is expected that a limited risk assessment will be completed and it will determine that no risks are associated with concentrations of contaminants at CCSWMU-245.

This new RCRA SWMU was identified in 2005 based upon a Potential Source Area Investigation (RSA-146) conducted under the CERCLA program. CCSWMU-245 is located south of Redstone Road and east of Line Road in the northern portion of the former Redstone Arsenal Rocket Engine (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 Redstone Ordnance Plant (ROP) Lines 3 and 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. In 1997, soil samples were collected and analyzed for explosives, polyaromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), and metals. Lead was detected in surface soil above background levels. Benzo(a)pyrene was detected in surface soil above the RBC. TPH was also detected in the samples analyzed. Additional investigations are required to determine the extent of the release of hazardous constituents from CCSWMU-245. The release assessment for CCSWMU-245 was funded in 2007 and implemented in 2008. The preliminary results of the release assessment indicate that SVOCs in soil are a concern for CCSWMU-245. The release assessment report will be submitted to ADEM in 2010 noting that a RFI is required for CCSWMU-245. This site will be transferred to AEDB-R-CR for further investigations.

CLEANUP STRATEGY

Additional investigations are required to determine the extent of the release of hazardous constituents from CCSWMU-245. The additional investigations for CCSWMU-245 were funded in 2007.

Site ID: CCSWMU-286
Site Name: BOILER/STEAM PLANT, BLDG 3624
Alias: RSA-286

STATUS

Regulatory Driver: RCRA C
 Contaminants of Concern: Petroleum, Oil and Lubricants (POL)
 Media of Concern: Soil

Phases	Start	End
RFA.....	200401.....	200801
RFI/CMS.....	200809.....	201312
RIP Date: N/A		
RC Date: 201412		
Closeout Date: 201412		

SITE DESCRIPTION

CCSWMU-286 (Building 3624) was constructed with four water-tube, sectional-header boilers. 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. The building and associated ASTs were demolished. Due to the long history of use of the building as a boiler, there is potential that releases of boiler chemicals and POL from AST pipelines and operational activities occurred during past operations. The 1977 Water Quality Engineering Special Study No. 24-0034-78 documented the fact that the references to "industrial sewer" implied that there was some sort of industrial treatment plant when there was no such plant at RSA. It documented an "industrial sewer" which originated in the area near the Commissary (Bldg 3623) and a steam plant (Bldg 3624) that received boiler blowdown from the steam plant and cooling water from the school area, then flowed approximately 4,800 feet to the southeast (across the corner of the property occupied by CCSWMU-008 STP No. 4), and discharged directly into Huntsville Spring Branch. It is unknown if the flow was in an open ditch or if piping actually exists.

CCSWMU-286 was identified as 145-PS-02F-03 in the PSA Investigation for RSA-145 conducted under the CERCLA program. It is located in the eastern portion of RSA east of Ajax Road and south Gray Road. It has 8,253 sq. ft and was constructed as a boiler house in 1943. It was constructed with four water-tube, sectional-header boilers. 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, there is potential that releases of boiler chemicals and POL from AST pipelines and operational activities occurred during past operations. Stained soil and oil residue was observed during a visual site inspection. The release assessment for CCSWMU-286 was implemented in 2010. The release assessment for CCSWMU-286 indicated that releases occurred at this site and that an RFI is required. The RFI for CCSWMU-286 is not funded. This site will be transferred to AEDB-R-CR for further investigations.

CLEANUP STRATEGY

Additional investigations in the form of a RFI are required at CCSWMU-286.

Site ID: CCSWMU-290

Site Name: WTP#3, SLUDGE THICKENER & DRYING BEDS

Alias: RSA-290

STATUS

Regulatory Driver: RCRA C

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

Media of Concern: Groundwater, Soil

Phases	Start	End
RFA.....	200404.....	200801
RFI/CMS.....	200809.....	201305

RIP Date: N/A

RC Date: 201405

Closeout Date: 201405

SITE DESCRIPTION

CCSWMU-290 constructed in 1959 served as the Water Treatment Plant No. 3 for RSA.

CCSWMU-290 COMPLETE SITE NAME: DRINKING WATER TREATMENT PLANT (WTP) #3, SLUDGE THICKENER & DRYING BEDS, BLDGS 5431 & 5433. It was identified as 147-PS-03G in the Potential Source Area Investigation for RSA-147 conducted under the CERCLA program. It is located in the central portion of RSA between Viper and Mills Roads on the east side of Jungerman Road. The structures originally associated with CCSWMU-290 were demolished but they are located in close proximity to current Building 3428. CCSWMU-290 includes only the sludge thickener and sludge drying beds. 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 known from similar unlined sludge drying beds located on Redstone that releases have occurred resulting in soil contamination. Currently, a lined holding pond is located just north of the former sludge drying bed location. The release assessment investigation at CCSWMU-290 was completed in 2010. The release assessment indicated that no additional investigations are required at CCSWMU-290.

CLEANUP STRATEGY

Additional investigations at CCSWMU-290 in the form of a release assessment were funded in FY08 and the field efforts completed in FY09. It is expected that the release assessment report with the no further action recommendation will be accepted by ADEM and no additional efforts will be required at CCSWMU-290.

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
CCSWMU-002	IN-GROUND OIL/WATER SEPARATOR, BUILDING	200605	NFA Concurrence Letter from ADEM dated 22 May 06
CCSWMU-004	IN-GROUND OWS & WASH RACK BLDG 3636	200610	ADEM concurrence received on 30 October 2006 for NFA
CCSWMU-006	PAINT SHOP & SUMP AT MOTOR POOL 3634	199109	NFA Letter from ADEM dtd 29 Oct 04
CCSWMU-033	PLATING ROOMS FLOOR DRAINS BUILDING 5432	200010	NFA received from ADEM 26 Nov 02
CCSWMU-034	WASTE AVIATION FUEL TEMPORARY STORAGE AR	200506	Groundwater NFA Concurrence Letter from ADEM dated March 10, 2006. Surface Media NFA Concurrence Letter from ADEM dated December 6, 2004.
CCSWMU-036	IN-GROUND OIL/WATER SEPARATOR, BLDG 4832	200110	NFA Concurrence Letter from ADEM dtd 22 Jun 05
CCSWMU-037	USED OIL UST AT BLDG 7857	201107	ADEM concurred with the NFA recommendation for surface media on July 29, 2011.
CCSWMU-042	USED OIL UST AT BLDG 4812	200701	A NFA for soil was received from ADEM on January 11, 2007
CCSWMU-044	USED OIL UST AT BLDG 5435B	200705	ADEM Concurrence: Final RCRA Closure Report for RSA-044, dated March 2007.
CCSWMU-121	PAINT SHOP & PAINT WASHOUT BOOTH BLDG 47	200406	NFA Concurrence Letter from ADEM dtd 14 Jun 2004.
CCSWMU-125	SATELLITE WASTE ACCUMULATION AREA, BLDG	200211	ADEM concurred with an NFA recommendation for CCSWMU-125 presented in the Draft RCRA Confirmation Sampling Activities Report of November 26, 2002. ADEM's concurrence with the NFA recommendation negates the need for additional sampling.
CCSWMU-127	PHOTO LAB PROCESS WW SUMP BLDG 5451	200610	A NFA was received from ADEM on 10 Oct 06 for the surface media. The GW will be addresses under the CERCLA Program.
CCSWMU-158	FLAMMABLE MATERIAL STORAGE BLDG TSA 3233	200410	NFA Concurrence Letter from ADEM dtd 29 Oct 04.
CCSWMU-159	CHEMICAL CONTAINMENT STORAGE, TSA BLDG 3	200411	NFA concurrence received from ADEM November 23, 2004.
CCSWMU-160	MIXER BLDG, TSA BLDG 7339	200412	An NFA was recommended for CCSWMU-160 and was accepted by ADEM on December 30, 2003.
CCSWMU-161	CASE PREP BLDG, TSA BLDG 7346	200412	An NFA was recommended for CCSWMU-161 and was accepted by ADEM on December 30, 2003.
CCSWMU-162	SMALL MOTOR LOADING T, TSA BLDG 7347	200412	An NFA was recommended for CCSWMU-162 and was accepted by ADEM on December 30, 2003.
CCSWMU-163	PROPELLANT MIXER, TSA BLDG 7353	200502	NFA was received from ADEM February 10, 2004.
CCSWMU-164	MIXER BLDG, TSA BLDG 7356	200412	An NFA was recommended for CCSWMU-164 and was accepted by ADEM on December 30, 2003.
CCSWMU-165	CASTING BLDG, TSA BLDG 7360	200402	An NFA was recommended for

Site Closeout (No Further Action) Summary

Site ID	Site Name	NFA Date	Documentation
			CCSWMU-165 and was accepted by ADEM on February 17, 2004.
CCSWMU-166	LINER PREPARATION, TSA BLDG 7369	200402	An NFA was recommended for CCSWMU-166 and was accepted by ADEM on February 17, 2004.
CCSWMU-167	MIXER BLDG, TSA BLDG 7382	200402	NFA Concurrence Letter from ADEM dated 19 FEB 2004.
CCSWMU-168	MOTOR CASTING AND PROCESSING BLDG, TSA B	200402	NFA Concurrence Letter from ADEM dated 17 FEB 2004.
CCSWMU-169	MOTOR ASSEMBLY AND PACKOUT, TSA BLDG 755	200605	NFA Concurrence Letter from ADEM dated May 22, 2006.
CCSWMU-170	DEAERATION CLEANUP, TSA BLDG 7593	201107	ADEM concurred with the NFA recommendation for surface media on July 29, 2011.
CCSWMU-171	PROPELLANT MIXING, TSA BLDG 7594	200502	NFA Concurrence Letter from ADEM dated 10 FEB 05.
CCSWMU-172	MOTOR POOL, TSA, BLDG 7630	201107	ADEM concurred with the NFA recommendation for surface media on July 29, 2011.
CCSWMU-173	CHEMISTRY LAB, PAD #1, TSA, BLDG 7632	200412	NFA Concurrence Letter from ADEM dated 30 DEC 03.
CCSWMU-174	CHEMISTRY LAB, PAD #2, TSA, BLDG 7632	201107	ADEM concurred with the NFA recommendation for surface media on July 29, 2011.
CCSWMU-175	PHYSICAL PROPERTY LAB, PAD #1, TSA, BLDG	200412	NFA Concurrence Letter from ADEM dated 30 DEC 03.
CCSWMU-176	PHYSICAL PROPERTY LAB, PAD #2, TSA, BLDG	200502	NFA Concurrence Letter from ADEM dated 10 FEB 05.
CCSWMU-177	SMALL MOTOR FINISHING, TSA, BLDG 7654	200901	NFA Concurrence Letter for Surface Media from ADEM dated September 25, 2008.
CCSWMU-178	CONTROL LAB AND FIRST AID, PAD #1, TSA,	200502	NFA Concurrence Letter from ADEM dated 17 FEB 04.
CCSWMU-179	CONTROL LAB/FIRST AID, PAD #2, TSA B7667	200901	NFA Concurrence Letter for Surface Media from ADEM dated October 2, 2008.
CCSWMU-180	NITRAMINE DRYING PILOT, TSA, BLDG 7688	200412	NFA Concurrence Letter from ADEM dated 30 DEC 03.
CCSWMU-181	NITRAMINE GRINDING PILOT, TSA, BLDG 7690	200402	NFA Concurrence Letter from ADEM dated 17 FEB 04.
CCSWMU-244	PROPELLANT MIXER BLDG, BLDG 7356	200912	ADEM concurred with the NFA recommendation with unrestricted use of site soils on December 11, 2009.
CCSWMU-292	UST AT BLDG 3311, BOILER COMPRESSOR HOUSE	200807	NFA under the UST Program was received from ADEM on July 2, 2008.

Past Phase Completion Milestones

1990

RFA (CCRSA-066 - Inactive Ash Disposal Site, Area X-1, CCRSA-068 - Inactive Chemical Disposal, Area Z)

1991

RFA (CCSWMU-002 - IN-GROUND OIL/WATER SEPARATOR, BUILDING , CCSWMU-004 - IN-GROUND OWS & WASH RACK BLDG 3636, CCSWMU-006 - PAINT SHOP & SUMP AT MOTOR POOL 3634, CCSWMU-033 - PLATING ROOMS FLOOR DRAINS BUILDING 5432, CCSWMU-034 - WASTE AVIATION FUEL TEMPORARY STORAGE AR, CCSWMU-036 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4832, CCSWMU-037 - USED OIL UST AT BLDG 7857, CCSWMU-042 - USED OIL UST AT BLDG 4812, CCSWMU-044 - USED OIL UST AT BLDG 5435B, CCSWMU-127 - PHOTO LAB PROCESS WW SUMP BLDG 5451, CCSWMU-158 - FLAMMABLE MATERIAL STORAGE BLDG TSA 3233, CCSWMU-159 - CHEMICAL CONTAINMENT STORAGE, TSA BLDG 3, CCSWMU-163 - PROPELLANT MIXER, TSA BLDG 7353, CCSWMU-169 - MOTOR ASSEMBLY AND PACKOUT, TSA BLDG 755, CCSWMU-170 - DEAERATION CLEANUP, TSA BLDG 7593, CCSWMU-171 - PROPELLANT MIXING, TSA BLDG 7594, CCSWMU-172 - MOTOR POOL, TSA, BLDG 7630, CCSWMU-174 - CHEMISTRY LAB, PAD #2, TSA, BLDG 7632, CCSWMU-176 - PHYSICAL PROPERTY LAB, PAD #2, TSA, BLDG, CCSWMU-177 - SMALL MOTOR FINISHING, TSA, BLDG 7654, CCSWMU-179 - CONTROL LAB/FIRST AID, PAD #2, TSA B7667, CCSWMU-182 - 1.1 GRINDER BLDG P2, TSA, BLDG 7695)

1995

RFA (CCRSA-052 - Inactive Munitions Demil & Disposal, Are, CCRSA-061 - Inactive Munitions Demil/Disposal Area P, CCRSA-063 - Inactive Chemical Munitions Disposal Are)

1998

RFA (CCRSA-110 - Former Drum Storage/Construction Debris,)

1999

RFA (CCRSA-064 - Inactive Munitions Demil/Disposal AreaBB)

2001

CS (CCSWMU-033 - PLATING ROOMS FLOOR DRAINS BUILDING 5432, CCSWMU-037 - USED OIL UST AT BLDG 7857)

2002

CS (CCSWMU-036 - IN-GROUND OIL/WATER SEPARATOR, BLDG 4832)

2003

CS (CCSWMU-170 - DEAERATION CLEANUP, TSA BLDG 7593, CCSWMU-172 - MOTOR POOL, TSA, BLDG 7630, CCSWMU-174 - CHEMISTRY LAB, PAD #2, TSA, BLDG 7632, CCSWMU-177 - SMALL MOTOR FINISHING, TSA, BLDG 7654, CCSWMU-179 - CONTROL LAB/FIRST AID, PAD #2, TSA B7667, CCSWMU-182 - 1.1 GRINDER BLDG P2, TSA, BLDG 7695)

RFA (CCSWMU-125 - SATELLITE WASTE ACCUMULATION AREA, BLDG)

2004

RFA (CCRSA-188 - Northern Burial Area/Burning Ground #3, CCSWMU-121 - PAINT SHOP & PAINT WASHOUT BOOTH BLDG 47, CCSWMU-165 - CASTING BLDG, TSA BLDG 7360, CCSWMU-166 - LINER PREPARATION, TSA BLDG 7369, CCSWMU-167 - MIXER BLDG, TSA BLDG 7382, CCSWMU-168 - MOTOR CASTING AND PROCESSING BLDG, TSA B, CCSWMU-181 - NITRAMINE GRINDING PILOT, TSA, BLDG 7690)

CS (CCSWMU-002 - IN-GROUND OIL/WATER SEPARATOR, BUILDING , CCSWMU-127 - PHOTO LAB PROCESS WW SUMP BLDG 5451)

2005

CS (CCSWMU-034 - WASTE AVIATION FUEL TEMPORARY STORAGE AR, CCSWMU-158 - FLAMMABLE MATERIAL STORAGE BLDG TSA 3233, CCSWMU-159 - CHEMICAL CONTAINMENT STORAGE, TSA BLDG 3, CCSWMU-163 - PROPELLANT MIXER, TSA BLDG 7353, CCSWMU-171 - PROPELLANT MIXING, TSA BLDG 7594, CCSWMU-176 - PHYSICAL PROPERTY LAB, PAD #2, TSA, BLDG)

RFA (CCSWMU-160 - MIXER BLDG, TSA BLDG 7339, CCSWMU-161 - CASE PREP BLDG, TSA BLDG 7346, CCSWMU-162 - SMALL MOTOR LOADING T, TSA BLDG 7347, CCSWMU-164 - MIXER BLDG, TSA BLDG 7356, CCSWMU-173 - CHEMISTRY LAB, PAD #1, TSA, BLDG 7632, CCSWMU-175 - PHYSICAL PROPERTY LAB, PAD #1, TSA, BLDG, CCSWMU-178 - CONTROL LAB AND FIRST AID, PAD #1, TSA, , CCSWMU-180 - NITRAMINE DRYING PILOT, TSA, BLDG 7688, CCSWMU-216 - LABORATORY INJECTION TEST FACILITY, B5475, CCSWMU-222 - ROADS & GROUNDS MAINTENANCE SHOP, B5494, CCSWMU-241 - HW STORAGE IGLOO, BLDG 7313, CCSWMU-242 - HW STORAGE IGLOO, BLDG 7314, CCSWMU-243 -

CC Schedule

PROPELLANT STORAGE, BLDG 7342, CCSWMU-244 - PROPELLANT MIXER BLDG, BLDG 7356, CCSWMU-245 - STEAM HEATING PLANT, BLDG 7579)

2006

- RFI/CMS (CCSWMU-002 - IN-GROUND OIL/WATER SEPARATOR, BUILDING)
- IRA (CCSWMU-179 - CONTROL LAB/FIRST AID, PAD #2, TSA B7667)
- CS (CCSWMU-169 - MOTOR ASSEMBLY AND PACKOUT, TSA BLDG 755)

2007

- RFI/CMS (CCSWMU-127 - PHOTO LAB PROCESS WW SUMP BLDG 5451)
- CS (CCSWMU-004 - IN-GROUND OWS & WASH RACK BLDG 3636, CCSWMU-042 - USED OIL UST AT BLDG 4812, CCSWMU-044 - USED OIL UST AT BLDG 5435B)

2008

- RFA (CCSWMU-286 - BOILER/STEAM PLANT, BLDG 3624, CCSWMU-290 - WTP#3, SLUDGE THICKENER & DRYING BEDS, CCSWMU-292 - UST AT BLDG 3311,BOILER COMPRESSOR HOUSE)
- RFI/CMS (CCSWMU-292 - UST AT BLDG 3311,BOILER COMPRESSOR HOUSE)

2009

- RFI/CMS (CCSWMU-177 - SMALL MOTOR FINISHING, TSA, BLDG 7654, CCSWMU-179 - CONTROL LAB/FIRST AID, PAD #2, TSA B7667)
- RFA (CCRSA-257 - Rock Pond, CCRSA-264 - RR Spring, CCRSA-281 - Disposal Trenches at RSA-046 Range)

2010

- RFI/CMS (CCSWMU-244 - PROPELLANT MIXER BLDG, BLDG 7356)

2011

- RFA (CCRSA-051 - Inactive Munitions Demil & Disposal, Are)
- CM(C) (CCSWMU-037 - USED OIL UST AT BLDG 7857)
- RFI/CMS (CCSWMU-037 - USED OIL UST AT BLDG 7857, CCSWMU-170 - DEAERATION CLEANUP, TSA BLDG 7593, CCSWMU-172 - MOTOR POOL, TSA, BLDG 7630, CCSWMU-174 - CHEMISTRY LAB, PAD #2, TSA, BLDG 7632)

Projected Phase Completion Milestones

See attached schedule

REDSTONE ARSENAL CC Schedule

 = phase underway

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-051	Inactive Munitions Demil & Disposal, Are	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-052	Inactive Munitions Demil & Disposal, Are	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-061	Inactive Munitions Demil/Disposal Area P	RFI/CMS						
		IRA						
		LTM						

REDSTONE ARSENAL CC Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-063	Inactive Chemical Munitions Disposal Are	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-064	Inactive Munitions Demil/Disposal AreaBB	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-066	Inactive Ash Disposal Site, Area X-1	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-068	Inactive Chemical Disposal, Area Z	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-110	Former Drum Storage/Construction Debris,	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-188	Northern Burial Area/Burning Ground #3	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-257	Rock Pond	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-264	RR Spring	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCRSA-281	Disposal Trenches at RSA-046 Range	RFI/CMS						
		IRA						
		LTM						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-182	1.1 GRINDER BLDG P2, TSA, BLDG 7695	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-216	LABORATORY INJECTION TEST FACILITY, B5475	RFI/CMS						
		IRA						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-222	ROADS & GROUNDS MAINTENANCE SHOP, B5494	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-241	HW STORAGE IGLOO, BLDG 7313	RFI/CMS						

REDSTONE ARSENAL CC Schedule

SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-242	HW STORAGE IGLOO, BLDG 7314	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-243	PROPELLANT STORAGE, BLDG 7342	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-245	STEAM HEATING PLANT, BLDG 7579	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-286	BOILER/STEAM PLANT, BLDG 3624	RFI/CMS						
SITE ID	SITE NAME	PHASE	FY13	FY14	FY15	FY16	FY17	FY18+
CCSWMU-290	WTP#3, SLUDGE THICKENER & DRYING BEDS	RFI/CMS						

Community Involvement

No community involvement for the CC program.

