



# U.S. Army Environmental Command

Aberdeen Proving Ground, MD 21010-5401

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### Redstone preserves local history

Aberdeen Proving Ground, Md. At Redstone Arsenal, Ala., students of all kinds – young and old – can touch and see ancient Indian artifacts, or help recover the remains of a 19<sup>th</sup> century homestead. That's because, in addition to being the home of the Army's aviation, missile, and space commands and NASA's Marshall Space Flight Center, Redstone Arsenal is also the home of nearly one thousand archaeological sites, 418 of which are potentially eligible for listing on the National Register of Historic Places (NRHP).

These archaeological sites were identified during a comprehensive survey effort that is part of Redstone Arsenal's award-winning cultural resources management program. Knowing where the precious artifacts were buried or located on the 38,000 acre arsenal was the first step in preserving them for posterity.

"Back in the day we would have surveyed a little bit of the area at a time prior to specific construction projects or other activities that would impact those areas," said Mr. Daniel J. Dunn, Redstone Department of Environmental Management's Cultural and Natural Resources Branch Chief. "But since the mid-1990's, we changed our strategy to surveying the entire installation. In so doing we have a more comprehensive picture of what we've got."

If having the big picture is the first step, the next step is figuring out how to preserve the sites that can still contain important new information – especially since Redstone Arsenal isn't a national park, it's a military installation. Dunn and his staff worked out an innovative programmatic agreement with the Alabama State Historic Preservation Office that allowed them to capture the cultural details of historic sites and preserve representative samples of the sites, without having to preserve each and every artifact in place. The result is a win-win situation for the community and the Army – the history of the Redstone Arsenal area is documented in detail for the community, and obstacles to mission support activities being conducted at the Redstone Technical Test Center and other tenant agencies are removed for the Army.

"Redstone Arsenal's work to develop a Programmatic Agreement and implement creative mitigation strategies through consultation is to be highly commended," said Kelly Yasaitis Fanizzo, a specialist with the Advisory Council on Historic Preservation.

The Redstone Arsenal cultural resources staff has also worked on a Memorandum of Agreement that covers almost half of the arsenal's historic buildings. The agreement streamlines the process that determines how Redstone Arsenal can renovate or demolish certain classes of old buildings that qualify as historic places simply due to their age. At Redstone this class of buildings includes 383 World-War II-era ammunition storage igloos.

The human element in the cultural resources management program extends from state and federal agencies to the local community. The Redstone Cultural and Natural Resources Branch has organized a volunteer

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archaeological excavation for Alabama Archaeological Society members and civilian DoD employees and their families. The installation also established an Indian Education/Archaeological Resources Outdoor Classroom, the center piece of which is a full-size replica of a Late Mississippian Period wattle and daub house, constructed by Redstone staff and volunteers. The Outdoor Classroom and Redstone's yearly Earth Day celebrations give local schoolchildren and the surrounding community the opportunity to attend lectures and demonstrations that outline the history and importance of cultural resources.

For their efforts Redstone Arsenal received the Army's highest honor in environmental stewardship – the Secretary of the Army Environmental Award.

- 30 -

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"Sustaining the Environment for a Secure Future"

*FY 2007 Secretary of Defense Environmental Awards*

# **Redstone Arsenal, Alabama**

*Cultural Resources Management,  
Installation*



*Sustaining the Environment for a Secure Future*

# Redstone Arsenal, Alabama

## Cultural Resources Management, Installation



### SUMMARY

Located in the heart of the Tennessee Valley and home to the U.S. Army Aviation and Missile Command, Redstone Arsenal is the premier location for the Army's rocket and missile programs. The arsenal is responsible for the first penetration of outer space by a U.S. missile, the development of the first ballistic missile and the establishment of NASA's Marshall Space Flight Center. Nearly 158,000 active, retired and dependent Soldiers and over 27,000 civilians at the installation are committed to Redstone Arsenal's mission to perform basic and advanced weapons system research and development while managing and providing weapon systems for troops and allies.

The cultural resources staff at Redstone Arsenal manage nearly one thousand archaeological sites and more than a thousand historic structures located on the arsenal's property. These sites range from Early Paleoindian lithic artifact scatters to ruins of early 20th century sharecropper houses. Inventoried structures on Redstone include two from before the arsenal was established in 1941, 714 dated to the World War II era, and 834 that were built during the Cold War era.

Implementing efficient and cost-effective procedures for the management and preservation of valuable cultural resources, Redstone Arsenal's cultural resources staff has fostered mission enhancement with the development of an innovative programmatic agreement, and heightened community enthusiasm for archeological conservation through educational classrooms and tours.

A few of the highlights of Redstone Arsenal's FY 2007 cultural resources management program include:

- A complete inventory of all archeological resources on 100 percent of Redstone Arsenal land, and initial evaluation of NRHP-eligible sites.
- Global Positioning System data collection and mapping of all archeological sites for site impact assessments and mission planning purposes.
- Development of a Memorandum of Agreement to reduce the cost and time of complying with state institutions regarding the treatment of historic buildings and structures while still meeting regulatory requirements.
- Coordination with local American Indian tribes to repatriate human remains and burial goods found on Redstone Arsenal's property.
- Full compliance with 36 CFR 79, the curation of Federally-Owned and Administered Archaeological Collections.
- Collaborations with state institutions in the development of a Programmatic Agreement to mitigate archeological sites in mission-critical areas without sacrificing valuable historic information.
- Establishment of an Archaeological Resources Outdoor Classroom and field trips for Huntsville City schoolchildren; and community outreach programs such as: archeological tours, Earth Day celebrations and volunteer archeological excavations.

**“The Cultural Resource program at Redstone Arsenal illustrates the impact that dedicated and professional staff can have in the preservation and management of significant resources, while maintaining the installation's focus on their mission.”**

*– Caroline Hall, Preservation Compliance Coordinator,  
National Park Service*

*On the cover: Soldiers train on disarming explosives at the U.S. Army Ordnance, Munitions and Electronics Maintenance School, Redstone Arsenal, Al.*

## INTRODUCTION

Located in the heart of the Tennessee Valley and home to the U.S. Army Aviation and Missile Command, Redstone Arsenal is the premier location for the Army's rocket and missile programs. When Congress approved the funds to construct a second U.S. chemical manufacturing and storage facility in 1941, the Army chose Huntsville, Alabama, as the site for Huntsville Arsenal, renamed Redstone Arsenal in 1943.

The installation's initial purpose was to produce chemical ammunition for use in World War II. After the war was over, the chemical ammunition production was declared in excess to the Army's needs and the arsenal was put up for sale. However, the sale never took place after Army officials decided that the land was needed for the development of a new rocket and missile mission. In June of 1949, Redstone Arsenal was officially reactivated as the site of the Center for Ordnance Rocket Research and Development, and has been focused on weapons system research and development ever since.

Today, Redstone Arsenal is responsible for the first penetration of outer space by a U.S. missile, the development of the first ballistic missile and the establishment of NASA's Marshall Space Flight Center. Nearly 158,000 active, retired and dependent Soldiers, and over 27,000 civilians at the installation, are committed to Redstone Arsenal's mission to perform basic and advanced weapons system research and development while managing and providing weapon systems for troops and allies.

## BACKGROUND

Redstone Arsenal's environmental management is led by the Division of Environmental Management (DEM), under the Directorate of Public Works. The cultural resources staff is the branch of the DEM that implements the Integrated Cultural Resources Management Plan (ICRMP) covering all 38,000 acres that make up Redstone Arsenal. Redstone Arsenal's ICRMP is current and due to be revised in 2011.

The Redstone Cultural Resource Management Program staff is comprised of three individuals: Danny Dunn, the DEM Cultural and Natural Resources

Branch Chief; Carolene Wu, the Cultural Resource Manager; and Ben Hoksbergen, the DEM Staff Archaeologist who is contracted through Alexander Archaeological Consultants.

## PROGRAM SUMMARY

Redstone Arsenal's cultural resources staff manages nearly one thousand archaeological sites and more than a thousand historic structures located on the arsenal's property. These sites range from Early Paleoindian lithic artifact scatters to ruins of early 20th century sharecropper houses. Inventoried structures on Redstone include two from before the arsenal was established in 1941, 714 dated to the World War II era and 834 that were built during the Cold War era.

When Redstone Arsenal updated the ICRMP in 2006, the cultural resources staff focused on four objectives: archaeological site inventory, evaluation of site eligibility for National Register status, completion of the historic structure inventory and site mitigation in mission-critical areas. In FY 2007, the cultural resources staff successfully completed the first three objectives and made dramatic strides toward the completion of the fourth, without going over budget.

Implementing efficient and cost-effective procedures for the management and preservation of valuable cultural resources, Redstone Arsenal's cultural resources staff has fostered mission enhancement with the development of an innovative programmatic agreement, and heightened community enthusiasm for archaeological conservation through educational classrooms and tours.

A few of the highlights of Redstone Arsenal's FY 2007 cultural resources management program include:

- A complete inventory of all archaeological resources on 100 percent of Redstone Arsenal land, and initial evaluation of NRHP-eligible sites.
- Global Positioning System data collection and mapping of all archaeological sites for site impact assessments and mission planning purposes.
- Development of a Memorandum of Agreement to reduce the cost and time of complying with the National Historic Preservation Act regarding the treatment of historic buildings and structures while still meeting regulatory requirements.

- Coordination with local American Indian tribes to repatriate human remains and burial goods found on Redstone Arsenal's property.
- Full compliance with 36 CFR 79, the curation of Federally-Owned and Administered Archaeological Collections.
- Collaborations with state institutions in the development of a Programmatic Agreement to mitigate archaeological sites in mission-critical areas without sacrificing valuable historic information.
- Establishment of an Archaeological Resources Outdoor Classroom and field trips for Huntsville City schoolchildren; and community outreach programs such as: archaeological tours, Earth Day celebrations and volunteer archaeological excavations.

## ACCOMPLISHMENTS

### Archaeological Inventory

#### *Surveying Archaeological Resources*

Fiscal year 2007 marked the completion of Redstone Arsenal's Phase I inventory of archaeological sites. Because of the unpredictable distribution of significant intact Paleoindian and Archaic sites throughout the upland areas of Redstone Arsenal, it was decided that sampling through a predictive modeling approach would not be adequate to preserve significant archaeological resources. Therefore, the Phase I inventory consisted of a complete archaeological survey of 100 percent of the installation's land. This process resulted in the official identification of 904 archaeological sites within Redstone Arsenal boundaries. Of these, 418 were considered to be potentially eligible for listing on the NRHP and their preservation is taken into account when planning installation activities. The archaeological inventory included re-appraising previously surveyed areas where outdated methods were used and where Geographical Information System (GIS) analysis documented conspicuous gaps in the site densities. Phase I was considered completed by the end of 2007 but the inventory is still open to the potential inadvertent discovery of new sites in the future.

All 904 sites recorded on Redstone Arsenal territory were assigned state trinomial site numbers and have undergone initial evaluation as to their eligibility

**Fiscal Year 2007 Secretary Of Defense Environmental Awards U.S. Army Nomination**

status for nomination to the NRHP. The complete inventory and original reports on individual sites were submitted to the Alabama State Historic Preservation Office (ALSHPO) by April of 2007. Of the 904 sites identified through the Phase I survey, the ALSHPO concurred that 418 are considered potentially eligible for NRHP nomination.

After Redstone Arsenal's Phase I survey was complete, the cultural resources staff advised NASA cultural resource management personnel on their survey methodology. The staff helped the cultural resources staff at Marshal Space Flight Center carry out their own archaeological inventory. (The NASA facility has a land use agreement with Redstone Arsenal and has a separate cultural resources management program). Because of the cultural resources staff's help, Marshal Space Flight Center now has completed a survey of all archaeological resources located on their lands.

### Technical Merit

#### *Resourceful Data Collection*

The cultural resources staff's innovative incorporation of modern day technology has enhanced the installation's mission readiness while preserving the valuable cultural resources located on the arsenal's property. In an ongoing effort culminating in July of 2007, all recorded archaeological site boundaries were mapped using a Global Positioning System (GPS). The data collected from these GPS images were assimilated and stored as shape files in a limited access GIS layer in the DEM GIS database.

This mapping procedure helped Redstone Arsenal's Directorate of Public Works Master Planning Division with the challenging process of planning missions around the large number of archaeological resources located within the installation's boundaries. The shape files generated with the GPS data are now used daily to plan installation missions and activities around archaeological sites.

### Historic Buildings and Structures

#### *Memorandum of Agreement*

Since the implementation of the National Historic Preservation Act of 1966 (NHPA), the cultural resources staff coordinated with the ALSHPO to perform a case-by-case assessment on every

undertaking that involved a building over 50 years old. Though coordination with the ALSHPO is required under Section 106 of the NHPA, and is necessary to guarantee the safe treatment of cultural resources, the case-by-case assessment process was costly and time-consuming; sometimes taking up to a year to complete.

To expedite the Section 106 process, the cultural resources staff consulted with the Advisory Council on Historic Preservation (ACHP) and the ALSHPO to develop a second Memorandum of Agreement (MOA) for the treatment and management of NRHP-eligible buildings and structures located on Redstone Arsenal property. The first MOA was signed in 2003 and covered the management of 413 NRHP-eligible historic buildings and structures to include:

- Three WW II Historic Districts (405 structures)
- One Cold War Historic District (three structures)
- Five Cold War individually eligible buildings



*Part of the World War II carbonyl iron plant in the Carbonyl Iron Unit Historic District at Redstone Arsenal. This is one of only three known active carbonyl iron plants in the world. The district has undergone very little modification since it first began production in 1943.*

The second MOA was signed in October of 2007 and covered 23 NRHP-eligible buildings and structures. A major part of Redstone Arsenal's ICRMP is the completion of the second MOA and the implementation of the two MOAs. After the signing of the second MOA, the cultural resources staff immediately started the ongoing process of carrying out the conditions of the agreement, which include:

- Management of 23 NRHP-eligible historic buildings and structures:

- One WW II Historic District (8 structures)
- Two Cold War Historic Districts (12 structures)
- Three Cold War buildings individually eligible for listing on the NRHP.
- Preparation of Historic American Buildings Survey/ Historic American Engineering Record (HABS/ HAER) documentation on all eligible buildings.
- Scanning of existing architectural drawings and black and white photography of all the buildings.
- Scanning of drawings depicting the original equipment in the WWII historic district.

The implementation of the FY 2007 MOA is well underway. As a result, actions on all but one of the 437 NRHP-eligible buildings and structures on Redstone Arsenal will require no further coordination with the ALSHPO. The cultural resources staff greatly reduced review time from up to a year to days, thus reducing the overall cost of Section 106 compliance and leaving funds left over to positively impact Redstone Arsenal's mission.

## American Indian Cooperation

In accordance with the Native American Grave Protection and Repatriation Act (NAGPRA), Redstone Arsenal's cultural resources staff consulted with representatives from 17 American Indian tribes to reach agreements on the repatriation of the human remains and associated artifacts once buried on the installation's property. In FY 2007, as with every one or two years, a consultation meeting was held with the tribes to discuss repatriation and grave protection. Redstone Arsenal's ICRMP calls for the development of an MOA with the American Indian tribes to reduce the number of consultation meetings and move forward with the reburial of American Indian remains on the arsenal's property. In order to protect these reburied remains, all repatriated graves on base will be unmarked but designated as cultural resources to avoid disturbance of the sites.

## Curation

The cultural resources staff continually curates artifacts from all projects in full accordance with federal standards. The curation efforts comply with 36 CFR 79, the Curation of Federally-Owned and Administered Archaeological Collections. Redstone Arsenal's collections are curated at the University of Alabama Erskine Ramsay Archaeological Repository in

the Moundville Archaeological Park in Moundville, Alabama. Part of this curation effort includes an inventory of all prehistoric diagnostic artifacts that appear in archaeological documents funded by Redstone



*Cotaco Creek type points from the Redstone Arsenal collection. This picture is as part of a photographic database of prehistoric diagnostic artifacts that were collected during cultural resource management projects on Redstone Arsenal.*

Arsenal. All of the diagnostic artifacts inventoried are photographed and entered in an Access database that can be queried by site or artifact type.

**“Redstone Arsenal has set a new standard for the effective management of important heritage assets while fully supporting the Army’s vital defense mission.”**

*– A. Lee Foster, Deputy Federal Preservation Officer, Office of the U.S. Army Assistant Chief of Staff for Installation*

## Mission Enhancement

### Programmatic Agreement

In consultation with Redstone Technical Test Center (RTTC), one of the largest tenants on the installation, a number of NRHP-eligible archaeological sites were found to be particular impediments to mission activities. The test center had to work around archaeological sites, which inconvenienced their mission. Most of these sites were of a single type, namely late 19th to early 20th century house sites. Mitigation of these sites through data recovery would be cost prohibitive. The few recent Phase III data recovery projects conducted in Alabama each cost in excess of one million dollars. This cost would be in addition to that of any Phase II investigations that were conducted prior to data recovery.

To avoid such an expensive solution, an innovative programmatic agreement (PA) is being developed, in conjunction with the ALSHPO, for the mitigation of late 19th and early 20th century historic tenant and sharecropper house sites. These sites make up as much as 43% (n=181) of the NRHP-eligible archaeological sites on Redstone Arsenal. As part of this PA, historic site type models are being established by incorporating archaeological survey data, archival research and oral history collected from the former residents of the land now occupied by the installation. The goal of this research is to reconstruct the late 19th through early 20th century cultural landscape of Redstone and to identify the tenant/sharecropper houses so that a representative sample of the sites with the greatest potential to provide further information can be selected for preservation.



*A double hearth and chimney base on an early 20th century house site excavated as part of the site sampling for Redstone Arsenal’s Programmatic Agreement for historic house sites.*

Data from limited Phase II testing of historic archaeological sites in mission critical areas is also being applied to the formation of the site type model. For the sites not selected for preservation, reports detailing the archival research and oral history serve as a substitute for mitigation through costly and time consuming archaeological data recovery excavations. In doing so, Redstone Arsenal is using the most cost-effective means of mitigating a class of archaeological sites, thus avoiding the long response time for Phase II testing and data recovery and freeing up installation land for mission-related development and land use while still preserving historical information. The



cost of performing Phase II evaluations on all 181 NRHP-eligible historic house sites is estimated at approximately \$9 million. Further mitigation through data recovery of those sites confirmed to be NRHP eligible would far exceed this figure. The total cost budgeted for the collection of oral history and archival research in support of the PA is \$598,272.90.

This agreement is the first of its kind, not just for military installations, but for the whole Southeast portion of the United States. The final completion of the PA is expected in 2010.

**“Redstone Arsenal has demonstrated the capacity to think beyond the standard documentation practices to develop a cost-efficient and innovative mitigation plan for some of its historic properties, a plan that encourages community participation and supports the Army mission.”**

*- Sarah Killinger, Liaison to the Army, Advisory Council on Historic Preservation*

## COMMUNITY RELATIONS

### Community Tours and Volunteer Excavation

In June of 2007, the cultural resources staff organized a tour of the late 19th and early 20th century landscape of the installation for the former residents, and their descendents, of the land that became Redstone Arsenal. The excursion, which included two guided bus tours, was an opportunity for the former residents and their descendents to reunite with their cultural backgrounds and learn more about the history of the area they once occupied. The goal of the tours was to show appreciation to the portion of the community who contributed oral history to the PA site type model. The cultural resources staff acquired many new potential informants for additional oral history through this effort.

In July of 2007, the cultural resources staff, in coordination with the Alabama Archaeological Society (AAS), hosted a volunteer archaeological excavation. A total of 28 people participated, including both professional and amateur members of the AAS and civilian DoD employees and their families. Staff from the *Huntsville Times* were also on hand and published an article on the excavation. Data from the



*Alexander Archaeological Consultants, Inc. personnel excavate a test unit on a historic house site as part of the site sampling for Redstone Arsenal's Programmatic Agreement for historic house sites.*

excavation was analyzed and presented by the DEM Staff Archaeologist at the annual winter meeting of the AAS.

## CULTURAL RESOURCES AWARENESS AND EDUCATION

### Outdoor Classroom

Beginning in 2006, the cultural resources staff collaborated with the Huntsville City School's EARTHSCOPE Program to establish an Indian Education/Archaeological Resources Outdoor Classroom. The center piece of the outdoor classroom is a full-size replica of a Late Mississippian Period wattle and daub house, which was constructed throughout FY 2007 by the DEM Staff Archaeologist, with the help of a Public Education Grant from the AAS and volunteer help from Huntsville City Schools teachers, local members of the AAS, and children with American Indian ancestry of U.S. Army enlisted personnel who were stationed at Redstone Arsenal. The cultural resources staff and EARTHSCOPE organized over a dozen field trips to the outdoor classroom for Huntsville City School fourth graders from late October to November of 2006. More than 1,200 students from almost all of the Huntsville City Public Schools participated in the four-hour long field trips.

In FY 2007, the cultural resources staff collaborated with the Huntsville City School's EARTHSCOPE Program to make the field trips a yearly event. The cultural resources staff is planning to host several

Outdoor Indian Education Classroom	
Action	Results
Demonstration archaeological dig	Students gained better understanding of how an archaeological dig is carried out and how archaeologists use artifacts to learn about the past.
Construction of 10 permanent cultural resources interpretive signs	Signs illustrate American Indian culture throughout prehistory. They also demonstrate how American Indians utilized natural resources for survival.
Demonstration of pre-historic lifeways, such as flint-knapping, atlatl (spear-thrower) use and American Indian games	Students were able to see how native peoples survived by adapting to their environment. Games allowed students to have fun while learning how native peoples entertained themselves.
Construction (with volunteer help) of a full-scale replicated Late Mississippian period wattle and daub house	Students had the opportunity to tour the replicated house to see first-hand how native peoples lived.
Cultural resources quizzes	Students were quizzed at the end of the field trips to help them retain the information they absorbed.



*Redstone DEM Staff Archaeologist Ben Hoksbergen demonstrates prehistoric fire-making technology to local home school students at the Garrison Redstone annual Earth Day celebration in April of 2007.*

field trips again during National American Indian Heritage month in November of this year.

### Annual Earth Day Celebration

Redstone Arsenal’s DEM hosts a yearly Earth Day Celebration at the Path to Nature Outdoor Education Area. Approximately 300 fifth-grade students from local public schools attend the festivities each year. Like the outdoor classroom, the cultural resources staff educates participants on American Indian culture through the demonstration of prehistoric skills and games. Lectures are given on such topics as how archaeologists learn about past cultures from material remains, the importance of natural resources to prehistoric American Indians and the importance of preserving cultural resources. The reconstructed Mississippian house that the cultural resources staff constructed is also open for tours during the celebration. Many students who attend the Indian education field trips as fourth graders return to Redstone Arsenal for the Earth Day Celebration.

Redstone Arsenal’s public outreach and education programs have gained widespread support from local government and organizations. The University of Alabama and Alabama A&M University have both used the Path to Nature Outdoor Education Area for research and classes, and the field trips for the

Huntsville City School fourth graders were covered by the *Huntsville Times*. Since its inception in 1995, the annual Earth Day celebration is attended each year by the Huntsville City Mayor, Loretta Spencer; the Madison City Mayor and Mary Jane Caylor, an Alabama State Board of Education member.

**“(Redstone Arsenal’s) partnership building with the community through volunteer efforts and its leadership role in numerous educational activities acts as a true outreach success story with wide implications both on and off the installation.”**

*– Kelly Yasaitis Fanizzo, Historic Preservation Specialist, Advisory Council on Historic Preservation*

### CONCLUSION

Not only does Redstone Arsenal’s comprehensive ICRMP conform fully to DoD policy addressing the management of cultural resources on a military installation, the Cultural Resources Management Program promotes the protection of heritage assets while supporting the military mission through creative practices of site mitigation and cost reduction. The installation’s public outreach and education efforts have raised awareness of cultural resources management and protection among personnel on base and in the surrounding community. Redstone Arsenal’s cultural resources management program sets an example for military installations around the world.