

FY 2011 SECRETARY OF DEFENSE ENVIRONMENTAL AWARDS PROGRAM  
FACILITY LEAD AGREEMENT (FLA) TEAM  
FORT A.P. HILL, VA  
ENVIRONMENTAL RESTORATION – INDIVIDUAL/TEAM

## Introduction

### Mission Statement

Fort A.P. Hill is the sixth largest military installation on the east coast and operates as a regional collective training center supporting Active and Reserve Components of the Army as well as the Joint Force, Interagency, and federal and local law enforcement. It is a regional hub for Army Special Forces training. Fort A.P. Hill's annual throughput exceeded 90,000 military personnel and offers 48,000 acres of maneuver training. The 28,000-acre live-fire range complex can accommodate training up to and including combined arms live-fire exercises. The installation's training and maneuver area, with the resulting joint-force training capability, led to the installation being rated one of the top Army installations for military value during the 2005 BRAC proceedings. The Installation's motto is, "Where America's Military Sharpens Its Combat Edge."

### Environmental and Geographical Setting

Fort A.P. Hill (FAPH) is located within the Lower Rappahannock watershed system. FAPH has approximately 292 acres of surface water comprised of over 20 lakes and ponds. A main tributary in the Lower Rappahannock watershed is the Mattaponi River. Seven major streams run through FAPH and drain to the Mattaponi.

The installation is located in the northeastern part of the Commonwealth of Virginia. It is roughly midway between Richmond, Virginia (40 miles to the south) and the Washington, D.C. metropolitan area (50 miles to the north). The I-95 corridor connects these two major cities and lies approximately seven miles west of the installation.



Installation location about 40 miles north of Richmond, Virginia, and 90 miles south of Washington, D.C.

### Political and Economic Setting

The political jurisdictions surrounding the Installation are Caroline County, Essex County, King George County, Spotsylvania County and the towns of Bowling Green and Port Royal, all of which are part of the Greater Fredericksburg Region. The town of Bowling Green is the governmental seat and the professional and service hub of Caroline County. Northeast of the installation is the county's smaller incorporated town, Port Royal, which is located on the Rappahannock River.



Soldiers Training in Reclaimed Areas Surrounding Landfill

## Background

### Facility Lead Team

Terry Banks	Chief Environmental and Natural Resources Division, DPW	Fort A.P. Hill, VA
Sergio Sergi	Chief Compliance Branch, Environmental and Natural Resources Division, DPW	Fort A.P. Hill, VA
James Spencer	Environmental Operations Manager	URS Group, Inc., Richmond, VA
Tina DeVine	Project Engineer	URS Group, Inc., Richmond, VA

## Position Description

Terry Banks	Serves as the chief for the Installation Environmental Program; oversees compliance, cultural resources, restoration, and natural resources programs.
Sergio Sergi	Compliance team manager with oversight over all environmental compliance and pollution prevention program areas and restoration program manager responsible for the management of the Installation Restoration Program (IRP), Military Munitions Response Program (MMRP), Operational Range Assessment Program (ORAP), and Formerly Used Defense Sites (FUDS).
James Spencer	Serves as an Environmental Manager for URS in Richmond, VA, program manager for the URS environmental contract with Fort A.P. Hill, and URS project manager for the Facility Lead restoration project at Fort A.P. Hill.
Tina DeVine	Serves as a Project Manager for URS in Richmond, VA, and the URS technical lead for the Facility Lead restoration project at Fort A.P. Hill.

## Team Awards and Services

- 2011 National Trust/Advisory Council on Historic Preservation Award
- 2010 GSA Achievement Award for Real Property Innovation
- 2009 U.S. Fish and Wildlife Service Partners in Conservation Award for Army Compatible Use Buffer Program
- 2009 IMCOM Stalwart Award, Northeast Region
- ASME member.
- Virginia DoD Eagle Award for Environmental Stewardship
- Certified Energy Manager (CEM)
- Member: Virginia Regional Environmental Management System Partnership (VREMS).
- Virginia Environmental Excellence Program - Exemplary Environmental Enterprise (E3)
- Earth Day – celebrated with approximately 1,000 school students with 30 exhibits

# Accomplishments

## Accelerated Environmental Cleanup



RCRA corrective action at Department of Defense facilities is typically executed under a permit or administrative order, which is a lengthy process to implement corrective action programs. To streamline and expedite the corrective action process, FAPH entered into a Facility Lead Agreement (FLA) with EPA Region III. This agreement allowed FAPH to take the lead on establishing corrective action schedules and activities and use more streamlined methods to investigate the 26 sites, implement appropriate actions, and achieve both short-term and long-term objectives more quickly, including implementation of a final site-wide remedy. This program is only available to facilities with good enforcement records, a proactive approach to cleanup, and a willingness to work with the Agency. The Facility Lead approach reduced the time needed to achieve final remedy status by at least 50% compared with programs completed under a RCRA permit or consent order.



Excluding landfills and operational wastewater facilities, 100% of the restoration sites (four acres) were cleaned up and subsequently made available to the Installation for mission-related activities.



Restored washpoint at Raymonds Fork now used for mission training activities

## Facility Lead Corrective Action Program Sites

### Wastewater Facilities

AOC 1 HQ WTP	AOC 3 Cooke STP
AOC 2 Wilcox WWTP	AOC 4 Cooke STP

### Fire Training Areas

SWMU 21 Fire Training Pit 1  
SWMU 22 Fire Training Pit 2

### Wash Rack/Oil Water Separator Facilities

SWMU 1 Pender	SWMU 6 Buzzards Roost
SWMU 2 Cooke	SWMU 7 Range 1
SWMU 3 Rappahannock	SWMU 8 Rhodes
SWMU 4 Wilcox	SWMU 9 Jackson
SWMU 5 Raymonds Fork	SWMU 10 Davis

### Landfills

SWMU 11 ASP	SWMU 16 Wilcox
SWMU 12 Taylors Corner 1	SWMU 17 Acors Corner
SWMU 13 Taylors Corner 2	SWMU 18 Dropzone 1
SWMU 14 CDD	SWMU 19 Dropzone 2
SWMU 15 Sales Corner	SWMU 20 Pender

Successful completion of the FLA program has supported FAPH's training mission with several benefits:

- Restoration and clean removal of 10 wash point facilities allow utilization of these sites for training. Some have been used for bivouacking, parking, and reverse osmosis purification units for drinking water training. Other potential mission uses are planned at these previously unused sites.
- Previously unknown limits of waste at old landfills were identified thereby allowing for optimal management and use of surrounding areas for training, including siting of a new forward operating training base at Pender.
- Clean close-out and removal of former fire training area improved current use of site for training purposes and future use. This site is located in a primary corridor designated in the master plan for non-industrial use.
- Actions resulted in a hundred additional acres being available for recreational and mission-related activities.

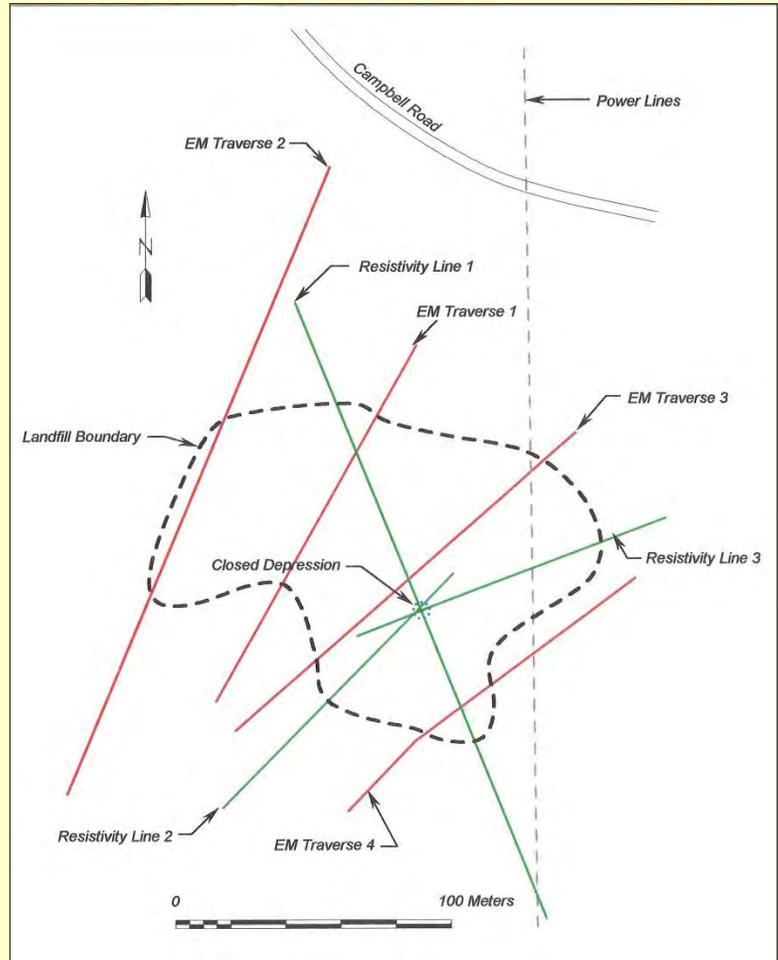


## Innovative Technology Demonstration/Validation and Implementation



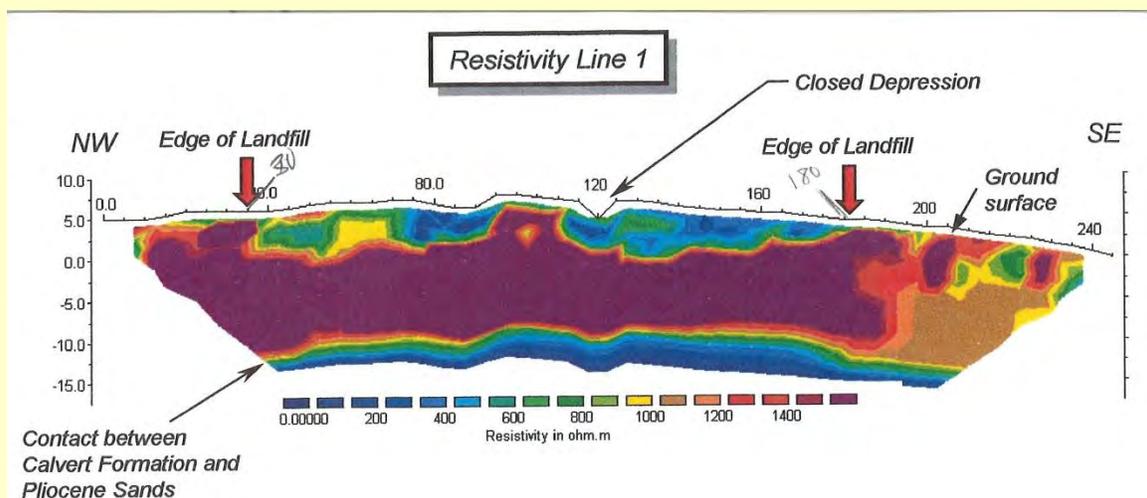
Several of the old landfills investigated had limited information on the extent of waste present and soil cap. An integrated approach was used to 1) characterize the limits of waste and nature of landfill cover and 2) evaluate whether the landfills and waste posed a risk to human health and the environment. Multiple data platforms were used for the integrated analysis:

- Historical aerial photograph analysis.
- Surface geophysical surveys were performed including electromagnetic (EM) induction and 2D electrical resistivity imaging.
- Soil borings were completed to characterize the nature of cap material and depth to waste.
- Surface soil samples were collected from cap areas to evaluate whether any commingling of waste and the soil cap had occurred.
- Samples of groundwater, surface water and sediment were collected from locations around the landfills to evaluate potential releases.



Integrated Data Analysis Used to Characterize Landfill Areas

### Geophysical Characterization of Acors Corner Landfill



## Innovative Technology Demonstration/Validation and Implementation

### Cost savings and Reduction for Environmental Restoration



- ✓ Innovative Facility Lead program and tiered risk screening process resulted in achieving final remedy status for 26 sites with total expenditures of only \$1.4M, an average of \$56,000 per site. Estimated total cost savings are at least \$1.5M compared with costs typically incurred under a RCRA permit or consent order.
- ✓ Facility Lead and risk management approach resulted in minimal long-term monitoring and maintenance requirements for the 26 sites. Estimated cost savings are at least \$2M over 10 years compared with costs typically incurred under a RCRA permit or consent order.

## Partnerships Addressing Environmental Restoration Issues Between DoD and Other Entities



Fort A.P. Hill was the first DoD facility and only Army facility to participate in the Facility Lead program. EPA Region III has offered this program by invitation only to a select few facilities. The team developed an agreed upon work plan and reporting templates with EPA to allow investigation and reporting of all sites during a single phase of work increasing efficiencies and cost savings.

The FLA Team had regular stakeholder interaction and involvement during the course of the project with the EPA, the Virginia Department of Environmental Quality, and various directorates and stakeholder entities at FAPH. Milestone meetings were held at FAPH to facilitate the collective decision-making process with stakeholders.

On September 15, 2010, EPA issued a Statement of Basis, which summarized the information gathered during the environmental investigations at FAPH and proposed monitored natural attenuation with institutional controls as the final remedy. Consistent with the public participation provisions under RCRA, EPA requested comments from the public on the proposed remedy. The 30-day comment period ended on October 15, 2010. EPA did not receive any comments.

## Restoration Advisory Boards (RABs)



FAPH solicited the local community in October 2009 seeking Restoration Advisory Board (RAB) members and did not receive enough interest to establish a RAB. Solicitations to the local community to form a RAB were made again in 2011.

Periodic briefings of FLA activities were provided to the Installation Community Council (ICC). The ICC provides a forum for discussing issues of mutual concern, sharing information and promotes sustained positive relationships between Fort A.P. Hill and surrounding communities. The council consists of local government representatives, regional business, and civic and educational leaders.

Public participation and community engagement have also occurred through the National Environmental Policy Act (NEPA) public participation process for several projects conducted in the vicinity of the FLA restoration areas.

Because of the great relationship between the installation and the community and the establishment of the ICC, public participation and community engagement and involvement works wells without the formation of a formal RAB.

### Opportunities for Small and Small Disadvantaged Businesses in Environmental Restoration



Small and small disadvantaged business (SB/SDB) opportunities for the Facility Lead program included providing support services for environmental restoration investigation and remedy activities. The team established a goal of subcontracting 25% of the restoration related work to SD/SDBs. Qualified SB/SDBs were solicited at the early planning stages of the Facility Lead program to increase the opportunities for SB/SDBs to participate in the environmental restoration program. As a result of these efforts, 39% of the expenditures for the Facility Lead program (\$552,584) were from SB and SDBs participation, as shown in the following table. This is nearly 100% of the work subcontracted to outside businesses by the team.

Subcontractor	Services	SB	SDB	Contracted \$
EMAX Laboratory	Laboratory	X	X	\$391,695
Fishburne Drilling	Drilling	X		\$71,009
Precision Measurements	Surveying	X		\$11,703
Capitol Environmental Services	Excavation, Waste Disposal	X		\$78,177
<b>Total</b>				<b>\$552,584</b>

### Reducing Risk to Human Health and the Environment



A streamlined tiered risk screening process was used to evaluate each of the sites. One benefit of this approach was that sites not requiring further action were quickly identified and eliminated from further consideration. Sites requiring further evaluation were subjected to additional screening steps to identify whether additional risk assessment or further actions were required. For this project, this approach eliminated the need to perform time consuming and costly baseline human health and ecological risk assessments for each site.

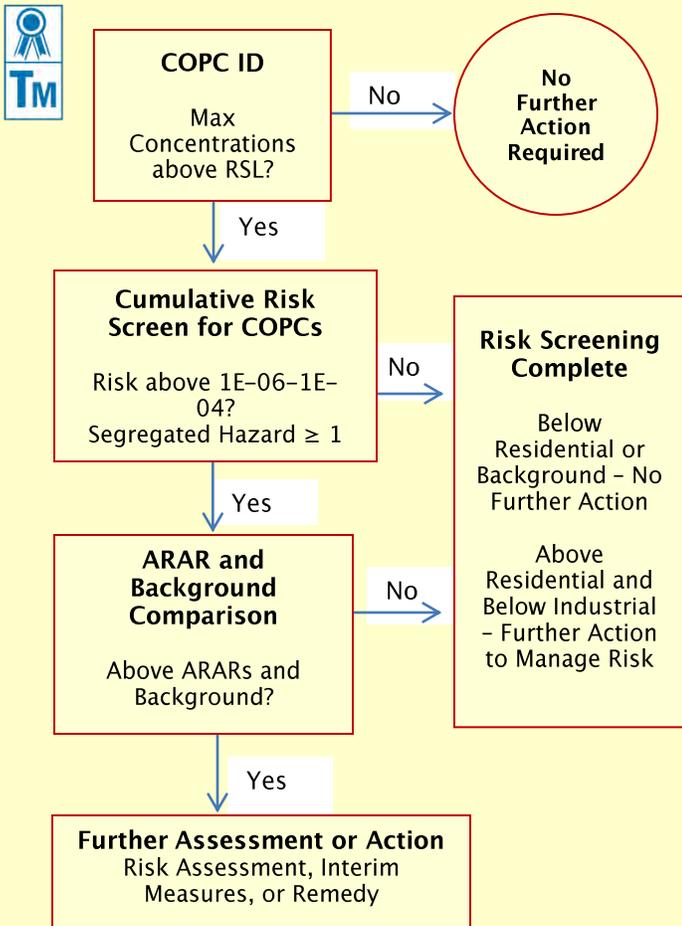
At the request of EPA, one baseline human health risk assessment was completed for groundwater at the Taylors Corner 2 Landfill to estimate risks under a future hypothetical residential scenario. A Screening level Ecological Risk Assessment (SLERA) process was used at five landfill sites to evaluate ecological risks following the Ecological Risk Assessment Guidance for Superfund (ERAGS). SLERA elements included:

- Ecological reconnaissance and site characterization.
- Identification of chemicals of potential ecological concern.
- Preliminary exposure estimate and risk characterization.
- Refined exposure estimate and risk characterization.
- Comparison to background.
- Scientific management decision point.



- ✓ Streamlined risk screening process used exclusively at 25 of 26 sites.
- ✓ High effectiveness, all non-landfill sites can be used for mission-related activities.
- ✓ Resulted in significant time and cost savings as baseline risk assessments typically require a several fold higher level of effort than the risk screening process.

### Streamlined Tiered Human Health Risk Screening Process



### Green Remediation

The Facility Lead program approach focused on achieving environmental goals protective of human health and the environment, while reducing the environmental footprint of restoration activities to the extent practical consistent with EPA’s principles for Greener Cleanups.



Efforts were made to reduce generation of waste material by employing non-intrusive surface geophysical surveys and remote sensing rather than performing intrusive excavation activities. Direct push technology was used to minimize generation of investigative derived waste. Cleanup activities for 26 sites resulted in less than 450 cubic yards of waste material, 35% of this material was processed for reuse.

The final remedy implemented has a minimal environmental footprint. Long-term and maintenance activities are minimal (passive) and do not require the use of energy or water resources and will not generate waste. Minimal additional air emissions and greenhouse gas emissions will occur with remedy implementation because long-term monitoring and maintenance activities will be performed as a part of existing Installation activities. The remedy as implemented will not result in noise, additional lighting or additional land disturbance.

### Conclusion

The Facility Lead approach to environmental restoration resulted in accelerated facility-wide environmental cleanup at Fort A.P. Hill at 26 sites and reduced the time needed to achieve final remedy status by at least 50% compared to programs completed under RCRA permits or consent orders. The streamlined processes and innovative risk screening and management approach resulted in an estimated cost savings of at least \$1.5M to achieve final remedy status with minimal long-term monitoring and maintenance requirements estimated to save at least \$2M over 10 years.



The team transferred lessons learned, strategies, methods, and experiences to others in the Department of Defense. The successful risk-based approach developed for the Facility Lead program to assess landfills and sites with waste in place and manage associated risks was transferred by the team to concurrent restoration work at the Radford Army Ammunition Plant, VA. This resulted in no further action decisions beyond institutional controls for a landfill site and no further action for four other sites with a cost savings of \$1M because remedial actions were originally planned for these sites. Lessons learned and experiences from implementation of the Facility Lead program were shared with the Army Corps of Engineers, U.S. Army Environmental Command and other restoration managers in the region, so they could be applied to other environmental restoration programs.