

**FY2007**

as of April 2006

**FORT RILEY**

Kansas

**Installation Restoration Program/  
Military Munitions Response  
Program  
Installation Action Plan**



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## Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations, and necessary remedial actions.


In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Fort Riley, executing agencies, regulatory agencies, and the public, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change. Project schedules are re-negotiated annually based on available resources or as needed due to project requirements. Under current project funding and regulatory schedules, Fort Riley will have all remedies for high priority sites in place by FY07 (ahead of Defense Program Guidance goals).


The following persons contributed to the formulation and completion of this Installation Action Plan during a planning workshop held on 4-5 April 2006:


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Walt Aucott	U.S. Geological Survey
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John Shimp	Fort Riley
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**Fort Riley  
Installation Action Plan Approval Signature**

	<i>02 Aug 06</i>
<b>THOMAS T. SMITH</b>	<b>Date</b>
<b>Colonel</b>	
<b>Garrison Commander</b>	

**US Army Environmental Center Concurrence Signatures  
for Fort Riley Installation Action Plan**

  
\_\_\_\_\_  
**JAMES D. DANIEL** 1 Sep 06  
Cleanup Division Date  
US Army Environmental Center

  
\_\_\_\_\_  
**KENNETH E. WIGGANS** 31 Aug 06  
Chief, Oversight Northwest/Alaska Branch Date  
US Army Environmental Center

## Acronyms & Abbreviations

ACSIM	Assistant Chief of Staff for Installation Management
AEC	Army Environmental Center
AEDB-R	Army Environmental Database - Restoration (formerly DSERTS)
AGL	Abandoned Gasoline Line
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminants of Concern
DDT	Dichlorodiphenyltrichloroethane
DERA	Defense Environmental Restoration Account
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
EE/CA	Engineering Evaluation/Cost Analysis
ER, A	Environmental Restoration, Army (formerly DERA)
ESI	Extended Site Investigation
FFA	Federal Facilities Agreement (same as IAG)
FS	Feasibility Study
FY	Fiscal Year
gpm	gallons per minute
HRS	Hazard Ranking System
IAP	Installation Action Plan
IRA	Interim Remedial Action
IRP	Installation Restoration Program
IWSA	Installation-Wide Site Assessment
KDHE	Kansas Department of Health and Environment
KDWP	Kansas Department of Wildlife and Parks
KRBCA	Kansas Risk-Based Corrective Action
LTM	Long-Term Management
MC	Munitions Constituent
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NPL	National Priorities List
OB/OD	Open Burning/Open Detonation
OE	Ordnance and Explosives
OU	Operable Unit
PA	Preliminary Assessment

## Acronyms & Abbreviations

PAH	Polycyclic Aromatic Hydrocarbons
PCE	perchloroethylene/tetrachloroethylene
POL	Petroleum, Oil, and Lubricants
PP	Proposed Plan
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RAB	Restoration Advisory Board
RAP	Remedial Action Plan
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SEFL	Southeast Funston Landfill
SI	Site Investigation
SWMU	Solid Waste Management Unit
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbons
TPH-DRO	TPH-Diesel Range Organics
TNT	Trinitrotoluene
ug/g	microgram per gram
ug/L	microgram per liter
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (replaced by USACHPPM)
USATHAMA	United States Army Toxic and Hazardous Material Agency (replaced by AEC)
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant

**Installation Locale:** Fort Riley is located on 100,656 acres of land in portions of Clay, Geary, and Riley Counties in northeast Kansas. Interstate 70, Junction City (population 20,000), and Ogden (population 1,600) bound the installation to the south. Fort Riley is west of Manhattan (population 38,000). Milford Lake (16,020 acres) bounds part of the western side of the installation.

**Installation Mission:** The 24th Infantry Division (Mech) and Fort Riley provide training, readiness, and deployment support for two Brigade Combat Teams and one Engineer Group and other Corps forces; serves as higher headquarters providing training/readiness oversight, pre-and post-mobilization training, and mobilization validation for three enhanced Separate Brigades; provides planning, mobilization, validation, and demobilization for Active Component and Reserve Component units and individuals; and provides safe and secure environment and exemplary well-being for soldiers and their families, and civilians.

**Lead Organization:** Installation Management Agency, Northwest Region

**Lead Executing Agencies:**  
USACE, Kansas City District  
U.S. Geological Survey

### **Regulatory Participation**

**Federal:** USEPA, Region VII

**State:** KDHE, Bureau of Environmental Remediation and KDHE Bureau of Environmental Field Services - North Central District Office

**National Priorities List (NPL) Status:** NPL Installation (entire installation), 1990, CERCLIS Site KS6214020756

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) / Resource Conservation and Recovery Act (RCRA) Federal Facility Agreement (FFA), Effective June 1991

RCRA Part B Permit, 1998

No Notices of Violations have been issued for any of Fort Riley's IRP sites. However, a stipulated penalty was assessed for missing a deadline on a primary document. It was negotiated down and paid in FY97.

**Projected Dates for Construction Completion:** No NPL construction will take place.

**Projected Date for NPL Removal:** Unknown at this time.



### **Installation Restoration Advisory Board (RAB)/Technical Review Committee**

**Technical Assistance for Public Participation Status:** The Fort Riley RAB is active and meets once per year or when a public comment document is due.

### **Installation Program Summaries**

#### **IRP**

Primary Contaminants of Concern: Chlorinated solvents, pesticides, petroleum hydrocarbons, metals, explosives, and perchlorate

Affected Media of Concern: Groundwater, soil, and surface water

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 2008

Funding to date (from FY89 to FY05): \$65,919,600

Current year funding (FY06): \$ 2,014,000

Cost-to-Complete (FY07+): \$ 8,239,000

#### **MMRP**

Primary Contaminants of Concern: Munitions Constituents

Affected Media of Concern: Soil

Estimated Date for RIP/RC: 2016

Funding to date (up to FY05): \$ 285,675

Current year funding (FY06): \$ 6,000

Cost-to-Complete (2007+): \$ 4,354,000

**BRAC** – There are no BRAC sites at Ft. Riley.

# Cleanup Program Summary

## ***Installation Historic Activity***

Fort Riley's history is closely linked to the history of American westward expansion and development. As early as the 1840s, travelers along the Oregon and Santa Fe Trails began a massive migration across the high plains of Kansas, which created the need for a series of military installations to protect them as they traveled west.

In 1852, Major E.A. Ogden established a temporary camp called Camp Center, north of the Kansas River, near the junction of the Smoky Hill and Republican Rivers. The U.S. Congress authorized a permanent installation to be established there in 1853 and renamed the encampment Fort Riley, in honor of Maj. Gen. Bennett C. Riley who led the first military escort along the Santa Fe Trail in 1829.

Fort Riley evolved from a frontier outpost to a military training installation in the first sixty years following its inception in 1853. Industry was limited to a few shops (e.g. blacksmiths) and storehouses in the beginning. Early sewers dumped directly into the rivers. Military operations were limited to small arms, horse-mounted cavalry, and horse-drawn artillery. Practice ranges were located near the barracks areas in the lowlands, and river bluffs were used as natural backstops for the ranges.

During World War I, there was a build-up of forces at Fort Riley. Camp Funston was established during WWI and, in approximately three months, 1,401 temporary buildings were erected there to house troops. Camp Whitside was also built-up for World War I. Military training activities became more complex and infrastructure became more elaborate. Motor pools and auto repair shops replaced stables and blacksmith shops. Marshall Army Air Field became operational in 1921. The installation areas were electrified and wastewater treatment plants were constructed. Prior to WWII and through the 1940s, Fort Riley expanded its transportation and industrial activities. Many motor pools were established in Camp Funston, Camp Whitside, Camp Forsyth, and Main Post. Underground storage tanks were installed, and a gasoline pipeline was run from the rail spur on the north side of the Kansas River to Marshall Army Air Field. There were service stations for private cars. The installation infrastructure included laundry and dry cleaning facilities, numerous vehicle repair shops, boiler plants, and an asphalt plant. Through the early years of WWII, the installation included the last vestiges of horse-mounted troops, including an animal dip facility on the rail spur for animals brought on installation. The horse-mounted cavalry was dissolved in 1949.

The heavy weapons training was focused on the main Impact Area, which was acquired in 1942, but small arms ranges were still prevalent along the river bluffs especially in the Camp Forsyth, Camp Whitside, and Camp Funston areas.

During the period between World War II and Vietnam, many of the temporary facilities built for WWII, especially those in Camp Forsyth, Camp Funston, and Camp Whitside, became obsolete and surplus, so they were demolished. The First Infantry Division was assigned to Fort Riley in 1955. Troop barracks and tactical equipment shops were built on Custer Hill and integrated with troop support facilities for health and recreational services. Family housing also expanded. Small arms training shifted to the ranges around the Impact Area.

## Cleanup Program Summary

Prior to this period, solid, hazardous, and industrial liquid materials were disposed of in the most expedient possible way. A number of landfills were created in Funston, Forsyth, Main Post, and Whitside.

During the Vietnam Era, wastewater treatment plants and controlled landfills were put into use.

During the installation's Vietnam Era, the older industrial activities were frequently upgraded or centralized. Transportation and industrial facilities that had been abandoned were demolished and liquidated. Systematic review and upgrade of facilities proceeded with regard to several environmental concerns including underground storage tanks, PCB-containing transformers, and asbestos-containing materials used in buildings.

New weapons and training forced the installation to acquire large new areas of land for armored vehicle fire and maneuver exercises.

During the installation's Vietnam Era, environmental concerns came to the forefront. The passage of stricter Federal and State laws governing air and water pollution, protection of natural resources, waste management, and environmental regulation progressively focused on the management of industrial and military activities.

Currently, Fort Riley is home to the 24<sup>th</sup> Infantry Division, and is expecting expansion within the next couple of years. The 6<sup>th</sup> Brigade, 25<sup>th</sup> Infantry Division was transferred to Fort Riley in 2005.

Fort Riley has been used to train Army personnel. The installation's history does not include large-scale manufacturing activities. Rather, development of Fort Riley included ancillary activities to support overall installation operations, including print shops, photographic process, laboratories, furniture repair, dry cleaning, paint shops, sewage treatment plants, and numerous vehicle maintenance and wash facilities. Hazardous materials used include the following:

- Ordnance (of which there is no evidence of release of toxic chemical agents and no evidence of release of radioactive substances);
- Chlorinated solvents associated with furniture repair, dry cleaning, and cleaning of printing equipment
- Pesticides, insecticides, and herbicides for clearing of brush, pest and termite control, and routine maintenance of facility grounds;
- A variety of small quantities of chemicals associated with laboratories;
- Silver-bearing solutions from the photographic processing (and x-ray) facilities;
- PCB fluids in electrical equipment; and
- Large quantities of petroleum-based fuels and cleaners associated with vehicle use, maintenance, and repair.

In addition to the wastes outlined above, the installation has generated typical, non-hazardous municipal waste and construction debris throughout its operational life.

## Cleanup Program Summary

Past activities at Fort Riley have environmentally impacted several areas of the installation, primarily as the result of spills and leaks, and from previously approved waste disposal and handling practices. Cleanup of Fort Riley began in 1990-1991 in response to the Army's IRP and the FFA.

Major tenants include the Kansas Army National Guard, the Army Reserve, and the Irwin Army Community Hospital.

The installation was listed on the NPL in 1990 and placed on the NPL with a Hazard Ranking System score of 33.8. A FFA was signed by the USEPA Region VII, the KDHE, and the Army and became effective 28 February 1991. The FFA requires the installation address all significant environmental releases under CERCLA and RCRA.

In the Status boxes in the IRP Sites Description section, the yellow highlighting indicates that the phase is active.

### ***IRP***

Fort Riley plans to have all Record of Decision (RODs) for the Operable Units (OUs) in place by 1<sup>st</sup> Quarter FY08.

As a result of a 2004 Pilot Study using potassium permanganate at FTRI-031, 354 Area Solvent Detections Area, the technology to be utilized at that site will be monitored natural attenuation (MNA) with institutional controls.

As a result of new data at FTRI-027, Dry Cleaning Facilities Area, a Pilot Study was completed in 2006 using soil excavation, chemical oxidation, and MNA.

Based on negotiations between Fort Riley, USEPA and the KDHE, a group of 49 sites will be evaluated to determine if they can receive regulatory close out with limited sampling and analysis.

### ***MMRP***

A SI report has been generated for Fort Riley.

***BRAC:*** There are no BRAC sites at Fort Riley.

# FORT RILEY

## Installation Restoration Program

**Total AEDB-R IRP Sites / AEDB-R sites with Response Complete:** 75/61

**Different Site Types:**

3 Fire/Crash Training Areas	1 Contaminated Building
2 Contaminated Groundwater	1 Surface Disposal Area
1 Disposal Pit/Dry Well	1 Dip Tank
1 Firing Range	1 Industrial Discharge
4 Incinerators	8 Landfills
1 POL Lines	2 Pesticide Shops
4 Storage Areas	2 Surface Impoundments/Lagoons
3 Small Arms Range	11 Spill Site Areas
4 Sewage Treatment Plants	4 Above Ground Storage Tanks
17 Underground Tank Farms	1 Explosive Ordnance Disposal Area
2 Unexploded Munitions/Ordnance Area	
1 Soil Contamination after Tank Removal	

**Most Widespread Contaminants of Concern:** Chlorinated Solvents, Pesticides, Petroleum Hydrocarbons, Metals, and Perchlorate

**Media of Concern:** Ground water, Soil, Surface water

**Completed Removal (REM)/Interim Remedial Action (IRA)/Remedial Action (RA):**

A number of removal actions have been completed and are listed on pages 38-43.

**Total IRP Funding**

Prior years (FY89 to FY05):	\$ 65,919.6K
Current year funding (FY06):	\$ 2,014K
<u>Future Requirements (FY07+):</u>	<u>\$ 8,239K</u>
Total:	\$ 76,172.7K

**Duration of IRP**

Year of IRP Inception: 1980

Year of IRP RIP/RC: 2008

Year of IRP Completion including Long-Term Management (LTM): 2027

## ***IRP Contamination Assessment Overview***

The Army initially began environmental restoration-related investigations as a result of the 1981 closure of the Southwest Funston Landfill where monitoring indicated ground-water contamination.

Five IRP sites have been designated as OUs. The five OUs are: FTRI-003 Southwest Funston Landfill, FTRI-030 Pesticide Storage Facility, FTRI-027 Dry Cleaning Facilities Area, FTRI-019 Former Fire Training Area-Marshall Army Airfield, and FTRI-031 354 Area Solvent Detections site. These sites have been identified as sites with contamination due to past operational activities resulting in spills and releases to the environment. The primary contaminants of concern are chlorinated solvents and pesticides.

The Southwest Funston Landfill was operated from the mid-1950s through 1981. Post-closure monitoring and Remedial Investigation (RI)/Feasibility Study (FS) sampling efforts detected contaminants such as chlorinated solvents, petroleum hydrocarbons, and metals in the ground water at low levels. The ROD was signed August 6, 1997. Institutional controls and long-term monitoring have been implemented. As a result of vinyl chloride being present above the Maximum Contaminant Level (MCL), five-year reviews will be conducted per the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Prior to 1994, the Pesticide Storage Facility had pesticides stored and mixed. Pesticides were released to the environment through past operational and disposal practices. Contamination by pesticide and arsenic was the primary concern. A ROD for No Further Action for this site was completed in FY97. As residual contamination is still most likely present, five-year reviews will be conducted per the NCP.

The Dry Cleaning Facilities Area has two sites with soil and ground-water contamination from dry cleaning operations using perchloroethylene/tetrachloroethylene (PCE). Dry cleaning occurred at Building 180/181 (demolished in 2000) and Building 183 (demolished in 2002). There is minimal contamination at Building 183. The eastern ground-water plume originates at Building 180/181 with two hotspots - one east of the building centered on a sewer manhole and one at the southwest corner of the building. A utility trench appears to be the conduit for transporting PCE to the west, with the western ground-water plume centered on well DCF02-42. Both plumes move off the terrace into the alluvium and are negatively impacting Kansas River water quality.

The Former Fire Training Area-Marshall Army Airfield site has contamination that resulted from past operational practices. There were petroleum hydrocarbons and PCE present on and off post in the soil and ground water. Private wells in the area are affected by the ground-water contamination plume and are being monitored. Two alternative wells were drilled to replace the impacted private wells. They were drilled outside the boundaries of the ground-water contamination plume. The ROD has been signed and the RD/RAP approved.

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## IRP Contamination Assessment

The alternative of MNA with institutional controls will be put in place the first year post-ROD, there will be semi-annual sampling events. The next two events will be annual. If no contaminants remain above the MCLs, a modification to the ROD will be generated. There are no contaminants of concern above the MCLs currently.

The 354 Area Solvent Detections site has contamination that was discovered during investigations of a Petroleum, Oil, and Lubricants (POL)/Underground Storage Tank (UST) site. There are volatile organic compounds to include PCE, Trichloroethylene (TCE), DCE, and benzene. The ROD is under review.



## **IRP Cleanup Exit Strategy**

### Exit Strategy from the NPL for Fort Riley

The principal objectives of the Fort Riley IRP are to protect human health and the environment while working toward the ultimate goal of delisting the installation from the NPL. There is the potential that some of the sites will not reach unlimited use/unrestricted exposure but they will be continuously monitored and under the installation's control. The installation's Real Property Master Plan will preclude their utilization for unacceptable land uses. In order to accomplish these objectives, it has been determined that the efforts delineated in the following list are essential and must be achieved.

1. Complete OU 005 (FTRI-031) through ROD by 4<sup>th</sup> quarter FY06, and OU 003 (FTRI-027) by 3<sup>rd</sup> quarter FY07.
2. Implement the alternatives selected in the Proposed Plans (PP) for each OU and begin long-term monitoring.
3. Perform the Five-Year Review requirements as required under the CERCLA for all sites that are at RC/RIP and have hazardous substances left in place above the MCLs that do not allow for unlimited use and unrestricted exposure. This includes, but is not limited to: FTRI-003, 019, 027, 030, and 031.
4. Generate the Extended Site Investigation-Multi-Sites (ESI) to address 49 sites that were improperly placed in RC/RIP categories. These sites will then reach site closure with regulatory concurrence per the FFA that addressed both CERCLA and RCRA. This includes the following sites: FTRI-002, 004, 005, 006, 007, 008, 010, 011, 012, 013, 014, 015, 016, 017, 018, 020, 022, 023, 024, 025, 026, 028, 029, 036, 037, 039, 040, 041, 043, 045, 047, 048, 049, 050, 051, 052, 055, 057, 059, 060, 064, 065, 067, 069, 070, 071, 072, and 073. FTRI-044 Former Asphalt Plant (near Bldg 354) and FTRI-061 Former Gas Service Station Bldg 354 were addressed under OU 005 and should not need further work.
5. Complete delineation and free-product recovery efforts on the POL/UST sites (FTRI-063, 066, and 068) that contain free product that could pose a danger to down-gradient water supplies. Sites FTRI-054, FTRI-057, and FTRI-062 require close out. FTRI-057 and FTRI-062 currently are not believed to contain free product and FTRI-054 had small amounts of POL released into a fractured bedrock zone that will preclude any possible recovery if it is still extant. They will require additional sampling to confirm.
6. The Open Burning/Open Detonation (FTRI-009) has perchlorate and TCE contamination. Currently there is no defined risk to human health or environmental impacts. This site will remain active for training and emergency disposal of Unexploded Ordnance (UXO) per a letter from the KDHE.

7. A removal action will be performed at the Abandoned Gas Line (FTRI-056).
8. There are four sites that will likely remain active throughout the installation's active existence. FTRI-032 is the Impact Zone, FTRI-033 is the Douthit Range, FTRI-034 is the Impact Area Small Arms Ranges, and FTRI-035 is the Non-Impact Area Small Arms Ranges.
9. FTRI-046 is the Former Direct Support/General Support – Bldg 1693 and Adjacent Areas. Two pits were capped with concrete but contain very high levels of metals and POL contamination. These contaminations exist in alluvial materials of the Kansas River just above the ground-water level and pose a potential contamination source for down-gradient well fields. Complete an investigation of site FTRI-074. This is WWI Incinerator, NW Camp Funston that underwent a limited x-ray fluorescence analysis that found high levels of metals in the soil around the incinerator. The report was only in draft form and then the site was placed in RIP/RC without regulatory concurrence or further sampling and analysis.
10. FTRI-038 is the Forsyth Landfill(s). There is an on-going requirement for maintenance and upkeep of the river-bank stabilization structure and inspection of the Republican River for UXO that was washed from the former landfills prior to the bank stabilization project.

### **Southwest Funston Landfill (OU 001)**

- Long Term Monitoring Report 2005, Environmental Chemical Corporation, March 2006

### **Dry Cleaning Facilities (OU 003)**

- Draft Final Feasibility Study Addendum, Burns & McDonnell, March 2005

### **Former Fire Training Area-Marshall Army Airfield (OU 004)**

- Draft Final Record of Decision, Burns & McDonnell, March 2005
- Draft Final Remedial Design/ Remedial Action Plan, Burns & McDonnell, January 2006

### **354 Area Solvent Detection Site (OU 005)**

- Draft Final Feasibility Study Report 354, Burns & McDonnell, December 2004
- Soil-Gas Investigation Report 354 Area Solvent Detection, February 2005
- Draft Final Proposed Plan 354 Area Solvent Detection, May 2005

### **Petroleum/Underground Storage Tanks**

- Annual Report for Long Term Monitoring of Groundwater March 2004 Sampling Event, Environmental Chemical Corporation, December 2004

### **OB/OD Ground (Range 16)**

- Technical Memorandum for Open Burning/Open Detonation Ground (Range 16) at Fort Riley, Kansas, Burns & McDonnell, October 2004

### **Abandoned Gas Line**

- Site Investigation Report AGL Terminus Area, McKinzie, September 2004
- Engineering Evaluation/ Cost Analysis, McKinzie, May 2005

# FORT RILEY

## Installation Restoration Program Site Descriptions

# SOUTHWEST FUNSTON LANDFILL (OU 001)

## SITE DESCRIPTION

The Southwest Funston Landfill site is located in the southern portion of Fort Riley, adjacent to the southwest corner of the Camp Funston cantonment area. This is an approximately 120 acre landfill that was closed in 1983.

There are detections of vinyl chloride in the ground water (above MCLs), but the site does not present a risk to human health and the environment under current conditions. The ROD has a contingency for future action. LTM efforts include repair of the native grass and soil cover, use of institutional controls to prevent on-site ground-water use, and performance of long-term, semi-annual, ground-water monitoring. An inspection of the landfill is performed annually.

The first Five-Year Review report was completed in August 2002; no changes in the remedy were needed.

## CLEANUP STRATEGY

Ground-water monitoring will continue on a semi-annual basis.

Prescribed burns will be performed every three years to enhance the native grass cover.

Annual inspections of the bank stabilization and cover will be conducted and periodic repair conducted as required.

Unnecessary monitoring wells will be removed.

Five-Year Review reports will be required. The next review is planned for August 2007.

<b>STATUS</b>		
<b>REGULATORY DRIVER:</b> CERCLA		
RRSE: High		
<b>CONTAMINANTS OF CONCERN:</b> VOCs (vinyl chloride)		
<b>MEDIA OF CONCERN:</b> Groundwater		
Phases	Start	End
PA.....	198312 .....	198412
SI.....	198706 .....	198909
RI/FS .....	199101 .....	199603
IRA .....	199312 .....	199708
RD .....	199510 .....	199603
RA(C) .....	199601 .....	199709
LTM .....	199709 .....	202709
<b>RC DATE:</b> 199709		

# FTRI-009 OB/OD GROUND (RANGE 16)

## SITE DESCRIPTION

The Open Burning/Open Detonation Ground (Range 16) is used for emergency ordnance disposal and training. Historical practices included use of chlorinated solvents in an open burn area. This practice was discontinued in the early 1980s. In 1993, TCE was detected in the ground water.

The complex hydrogeology made further characterization necessary. The ephemeral streams were sampled and contaminants of concern were not detected.

An Ecological Risk Screening Evaluation was performed and found low risk to ecological receptors.

The ground-water sampling event conducted in April 2004 and subsequent sampling identified the presence of perchlorate.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
VOCs, Perchlorate, Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater, Surface water

<u>Phases</u>	<u>Start</u>	<u>End</u>
PA.....	198312 .....	198412
SI.....	199111 .....	199809
RI/FS .....	199303 .....	200409
<b>LTM .....</b>	<b>200410 .....</b>	<b>201209</b>

**RC DATE:** 200409

## CLEANUP STRATEGY

Ground-water and surface-water monitoring will continue on an annual basis.

The installation of no more than two new monitoring wells and the decommissioning of all nested piezometers will occur.

A decision will be made on site requirements to address the perchlorate, metals, and chlorinated solvent contamination after evaluation of the existing data.

# FORMER FIRE TRAINING AREA FFTA-MAAF (OU004)

## SITE DESCRIPTION

The Former Fire Training Area – Marshall Army Airfield site consists of a former fire training area and drum storage area located at Marshall Army Airfield near the installation boundary. The former fire training area consisted of an unlined pit filled with crushed stone. The fire training area operated from the mid 1960s to 1984. A drum of PCE was accidentally released into the fire training pit in 1982. Efforts were made to recover the spilled material; however, only a portion was recovered.

In the 1990s, it was determined that there was off-post ground-water contamination above the MCLs based on the analysis of samples taken from private wells. The impacted private wells have been replaced by new wells drilled outside the ground-water contamination plume.

In 1995, a Pilot Study utilizing soil vapor extraction and bioventing successfully treated the contaminated soil source.

Currently, all ground-water contaminant concentrations are below their respective MCLs.

The ROD and the RD/RAP were approved by the USEPA, Region 7. The remedy is MNA with Institutional Controls.

This site was addressed in the site-wide Five-Year Review report that was completed in August 2002.

## CLEANUP STRATEGY

Semi-annual ground-water sampling will be conducted the first year, post-ROD, and then annually for two or more years.

The next Five-Year Review report is planned for August 2007. If the contaminants of concern (COCs) are below the MCLs for three consecutive years, the site will be open for unlimited use/unrestricted exposure and the Five-Year Review reports will not be required.

After the sampling event results in 2008 have been analyzed, a decision will be made on future actions at the site. If the COCs have remained below the MCLs for three consecutive years, the need for no further action will be documented.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
VOCs

**MEDIA OF CONCERN:**  
Groundwater

Phases	Start	End
PA.....	198706 .....	198909
SI.....	199111 .....	199305
RI/FS.....	199303 .....	200509
IRA.....	199411 .....	200210
<b>LTM.....</b>	<b>200510 .....</b>	<b>200809</b>

**RC DATE:** 200509

# FTRI-022

## FORMER WWTP & SLUDGE BEDS-CAMP FUNSTON (ANCHOR)

### SITE DESCRIPTION

FTRI-022 is the anchor site for the following Wastewater Treatment Plant (WWTP) sites: FTRI-020, -023, -024, -025, and -026. The anchor site is a result of the lack of a regulator-approved document officially closing out these listed sites. The listed sites are a subset of the 49 potentially contaminated sites being investigated under the ESI Multi-Sites. The intention is to take the data that exists in the Installation-Wide Site Assessment (IWSA), other Site Investigations (SIs), and/or long-term monitoring reports and compare it to a new round of confirmatory sampling. After the analyses are complete, a determination of eligibility to close under a No Further Remedial Action Planned (NFRAP) designation will be made.

If any site is found to have COCs that exceed regulatory standards, it will be addressed under a separate action.

**FTRI-022** is the Former WWTP & Sludge Beds – Camp Funston consisting of the site of the demolished plant (demolished in 1988-89).

### CLEANUP STRATEGY

Ground-water and soil sampling will be conducted to confirm the status found in the IWSA and specific SIs in order to achieve regulatory site closure.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** NE

**CONTAMINANTS OF CONCERN:**  
Metals

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA.....	198706	..... 198909
SI.....	198706	..... 198909
<b>LTM.....</b>	<b>200510</b>	<b>..... 200705</b>

**RC DATE:** 199305



## DRY CLEANING FACILITIES AREA (OU 003)

### SITE DESCRIPTION

The former Dry Cleaning Facilities Area (DCFA) is located in the southwest corner of the Main Post cantonment area, about 800 feet north of the Kansas River. The DCFA operated until 2002. The primary dry cleaning solvent was PCE. Chlorinated solvent contamination above regulatory standards was found in soil and ground water.

The baseline risk assessment indicates minimal risk associated with the site under current and anticipated land use. A decision was made to conduct a pilot study to determine the best available technology(ies) to remediate the site.

This site was addressed in the site-wide Five-Year Review report that was completed in August 2002.

### CLEANUP STRATEGY

Ground-water monitoring will continue on an annual basis.

Continue Pilot Study.

Implement the Remedial Action.

Five-Year Review reports will be required.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
VOCs

**MEDIA OF CONCERN:**  
Groundwater, Soil

Phases	Start	End
PA.....	198312 .....	198412
SI.....	198706 .....	198909
<b>RI/FS .....</b>	<b>199106 .....</b>	<b>200703</b>
IRA .....	199406 .....	199502
RD .....	200704 .....	200802
RA(C) .....	200803 .....	200809
RA(O) .....	200810 .....	201110
LTM .....	201111 .....	201409

**RIP DATE:** 200810

**RC DATE:** 201110

# PESTICIDE STORAGE FACILITY (MIXING) (OU002)

## SITE DESCRIPTION

It has been determined that prior to the mid 1970s, pesticide wastewaters and inadvertent spills that occurred during pesticide mixing were allowed to run onto the ground in the equipment-washing area behind the facility. Sampling conducted in 1983-1984 detected pesticide contamination in the soil and in sediments in the lined channel behind the building.

In 1994, a Removal Action to excavate pesticide-contaminated soil was conducted.

A No Further Action ROD was signed in September 1997. This decision was based on continued industrial land use and was annotated in the installation master plan for consideration if land-use changes.

The first Five-Year Review report was completed in August 2002; no changes in the remedy were needed.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Pesticides, Arsenic

**MEDIA OF CONCERN:** Soil

Phases	Start	End
PA.....	198312 .....	198412
SI .....	198706 .....	198909
RI/FS .....	199106 .....	199709
IRA .....	199312 .....	199406
<b>LTM .....</b>	<b>200201 .....</b>	<b>202209</b>

**RC DATE:** 199709

## CLEANUP STRATEGY

Soil sampling will be conducted to support production of the Five-Year Review report.

## 354 AREA SOLVENT DETECTIONS (OU 005)

### SITE DESCRIPTION

Fuel and solvent storage/dispensing occurred near building 354 in the Public Works yard. USTs were used to store fuel and removed in 1990-91. There are no existing records to determine if solvents were stored in drums, USTs, or above-ground storage tanks (ASTs). PCE, its degradation products, carbon tetrachloride, and fuels-related petroleum hydrocarbons are present. The site extends from just north of building 430 (Main Post Fire Station) to the "point bar" on the north bank of the Kansas River. At building 430, the only contaminant is carbon tetrachloride.

In 2004, a Pilot Study, using soil excavation and potassium permanganate, successfully treated the PCE contaminated soil source adjacent to Building 367.

Currently, PCE and its degradation products are detected above MCLs in ground-water samples only in three terrace wells that do not pose a risk and are, currently, not impacting the Kansas River alluvial aquifer. One well in the transition zone has benzene above the MCL.

This site was addressed in the site-wide Five-Year Review report that was completed in August 2002.

### CLEANUP STRATEGY

Ground-water sampling will be performed annually post-ROD.

The next Five-Year Review report is planned for August 2007. If the COCs are below the MCLs for three consecutive years, the site will be open for unlimited use/unrestricted exposure and the Five-Year Review reports will not be required.

After the sampling event results in 2008 have been analyzed, a decision will be made on future actions at the site. If the COCs have remained below the MCLs for three consecutive years, the need for no further action will be documented.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** High

**CONTAMINANTS OF CONCERN:**  
VOCs, Benzene

**MEDIA OF CONCERN:**  
Groundwater

Phases	Start	End
PA.....	199111 .....	199305
SI.....	199312 .....	199507
<b>RI/FS .....</b>	<b>199609 .....</b>	<b>200606</b>
LTM .....	200607 .....	201109

**RC DATE:** 200606

# FTRI-036

## SOUTHEAST FUNSTON LANDFILL (ANCHOR)

(PAGE 1 OF 2)

### SITE DESCRIPTION

FTRI-036 is the anchor site for these sites: FTRI-036, -004, -011, -029, -037, and -052. The anchor site is a result of the lack of a regulator-approved document officially closing out these listed sites. The listed sites are a subset of the 49 potentially contaminated sites being investigated under the ESI Multi-Sites. The intention is to take the data that exists in the IWSA, other SIs, and/or long-term monitoring reports and compare it to a new round of confirmatory sampling. After the analyses are complete, a determination of eligibility to close under a NFRAP designation will be made.

If any site is found to have COCs that exceed regulatory standards, it will be addressed under a separate action.

**FTRI-036** is the Southeast Funston Landfill (SEFL). The SEFL is a former municipal solid waste landfill that occupied approximately 50 acres in the southeast portion of the installation. The SEFL was divided into east and west areas by the construction of highway K-18 in the 1970s. The west area is approximately 15 acres. The east portion was excessed to the State of Kansas.

**FTRI-029** is the SEFL incinerator area in the east portion of the SEFL. The landfill and incinerator were operated into the mid-1950s. Ground-water sampling and analysis conducted since 1995 have not shown ground-water contamination. In 1999, the soil containing lead concentrations greater than the industrial risk level of 1,000 mg/kg was removed from the incinerator site and was placed in the SEFL.

**FTRI-004** is the Main Post Landfill north of the Kansas River and south of Marshall Avenue. This site was used for the disposal of refuse during the post-WWII era. The site is covered with well-established vegetation and contamination of surface soil covering the landfill is not expected. Results from ground-water sampling indicate arsenic contamination above the MCL.

**FTRI-011** is the Camp Funston Area Groundwater. This site will be dropped and viable wells associated with it will be dispersed to other sites.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
VOCs, SVOCs, Metals

**MEDIA OF CONCERN:**  
Groundwater, Soil

Phases	Start	End
PA.....	198312 .....	198909
SI.....	199111 .....	199305
RI/FS .....	199307 .....	200809
IRA .....	199901 .....	200012
LTM .....	200810 .....	202302

**RC DATE:** 200809

# FTRI-036 SOUTHEAST FUNSTON LANDFILL (ANCHOR)

(PAGE 2 OF 2)

**FTRI-037** is the Old Whitside Incinerator, located one-quarter mile southwest of the First Capitol of Kansas just north of the Kansas River. This medical incinerator was used for Camp Whitside from WWI to perhaps 1955. Very little information is available regarding historical operations of the incinerator. The area is wooded with many mature trees. A public nature walk exists along the river and is adjacent to the incinerator on the north side. Soil sample results indicated arsenic, barium, cadmium, chromium, silver, and lead were present below regulatory standards. One shallow soil sample down slope from the incinerator had an elevated level of lead at 550 mg/kg.

**FTRI-052** is the Inactive Landfills-Camp Whitside. Very little is known about this site from existing documents, but is composed of two small debris landfills adjacent to a ravine.

## CLEANUP STRATEGY

Ground-water and soil sampling will be conducted to confirm the status found in the IWSA and specific SIs in order to achieve regulatory site closure.

# FTRI-038 FORSYTH LANDFILL(S)

## SITE DESCRIPTION

The Forsyth Landfill(s) consists of five separate areas. One area can be observed in aerial photos as early as 1936. There were no identified contaminants in either soil or ground water in four of the five sites. In Area 2, as a result of the 1993 flood, landfill debris was exposed in the bank of the Republican River as observed from the riverbed.

In 1998, UXO eroded out of the landfill, was found on a sandbar adjacent to Area 2.

In 2000 and 2001, a rock revetment was built to prevent further erosion.

In May 2002, Fort Riley posted a series of warning signs between the Riverbank Stabilization Area and the nature trail to notify the public of the possibility of the presence of UXO in the area.

## CLEANUP STRATEGY

Conduct LTM and perform maintenance and/or repair of river-bank stabilization as required.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
Metals, Explosives

**MEDIA OF CONCERN:** Soil,  
Surface Water

Phases	Start	End
PA.....	198312 .....	198909
SI.....	199111 .....	199305
RI/FS.....	199403 .....	200104
IRA.....	199805 .....	200109
<b>LTM.....</b>	<b>200201 .....</b>	<b>201506</b>

**RC DATE:** 200109

**FTRI-040**  
**FORMER OIL TESTING LAB (BLDG 1022)**  
**(ANCHOR)**  
(PAGE 1 OF 2)

**SITE DESCRIPTION**

FTRI-040 is the anchor site for the combined fuel, metals, solvent, and pesticides related sites: FTRI-040, -013, -016, -017, -028, -041, and -051. The anchor site is a result of the lack of a regulator-approved document officially closing out these listed sites. The listed sites are a subset of the 49 potentially contaminated sites being investigated under the ESI Multi-Sites. The intention is to take the data that exists in the IWSA, other SIs, and/or long-term monitoring reports and compare it to a new round of confirmatory sampling. After the analyses are complete, a determination of eligibility to close under a NFRAP designation will be made.

If any site is found to have COCs that exceed regulatory standards, it will be addressed under a separate action.

**STATUS**

**REGULATORY DRIVER:** CERCLA

**RRSE:** NE

**CONTAMINANTS OF CONCERN:** VOCs, TPH-DRO, Metals, Pesticides

**MEDIA OF CONCERN:** Soil, Groundwater

Phases	Start	End
PA.....	199111	199305
LTM .....	200510	200809

**RC DATE:** 199305

**FTRI-040** is the Former Oil Testing Lab (Bldg 1022) and consists of a building that was utilized for oil testing and storage of small quantities of various pesticides. There were no reported releases or any evidence of releases.

**FTRI-013** was the Abandoned VOC Tanks North of Irwin Army Community Hospital and consists of two ASTs that held various VOCs. They are no longer present.

**FTRI-016** was the Waste Oil AST for 3<sup>rd</sup> Battery and consists of a pod on the hardstand. The AST was a pod that was emptied and no evidence of contamination exists.

**FTRI-017** was the Waste Oil AST for 4<sup>th</sup> Battery and consists of a pod on the hardstand. The pod was emptied and no evidence of contamination exists.

**FTRI-028** was the Former Fire Training Area – Camp Funston and consists of an area where practice fires were set and extinguished.

**FTRI-041** was the Furniture Repair Shops (3) and consists of three separate buildings where paint strippers containing VOCs were used. No evidence was found to indicate contamination.

**FTRI-040**  
**FORMER OIL TESTING LAB (BLDG 1022)**  
**(ANCHOR)**  
**(PAGE 2 OF 2)**

**FTRI-051** was the Bldg 727 Waste Pit and consists of grease rack pit that contained petroleum hydrocarbons. The material was removed and the area covered by a concrete floor.

**CLEANUP STRATEGY**

Ground-water and soil sampling will be conducted to confirm the status found in the IWSA and specific SIs in order to achieve regulatory site closure.



# FTRI-047 FORMER LIVESTOCK DIPPING FACILITY (ANCHOR)

## SITE DESCRIPTION

FTRI-047 is the anchor site for the following pesticide/PCB sites: FTRI-047, -010, and -048. The anchor site is a result of the lack of a regulator-approved document officially closing out these listed sites. The listed sites are a subset of the 49 potentially contaminated sites being investigated under the ESI Multi-Sites. The intention is to take the data that exists in the IWSA, other SIs, and/or long-term monitoring reports and compare it to a new round of confirmatory sampling. After the analyses are complete, a determination of eligibility to close under a NFRAP designation will be made.

If any site is found to have COCs that exceed regulatory standards, it will be addressed under a separate action.

**FTRI-047** is the Former Livestock Dipping Facility and consists of dipping tanks and other functional areas to treat livestock with possibly DDT, methylarsonic acid, and lead arsenate.

**FTRI-010** is the Pesticide (2,4D) UST – Camp Funston and consists of an underground storage tank at a former service station that was utilized to store pesticide for a short period of time prior to the tank's removal.

**FTRI-048** is the Former Pesticides Facility and consists of a temporary wooden structure at the golf course used to store dry, granular, ready-to-use formulations of various pesticides and fertilizers.

## CLEANUP STRATEGY

Ground-water and soil sampling will be conducted to confirm the status found in the IWSA and specific SIs in order to achieve regulatory site closure.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
Pesticides, Mercury, Lead

**MEDIA OF CONCERN:**  
Groundwater, Soil

Phases	Start	End
PA.....	199111 .....	199305
SI .....	199111 .....	199305
RI/FS .....	199403 .....	199504
<b>LTM .....</b>	<b>200510 .....</b>	<b>200809</b>

**RC DATE:** 199507

# ABANDONED GASOLINE LINE

## SITE DESCRIPTION

The Abandoned Gasoline Line site consists of an abandoned 1.1-mile steel pipeline and the Terminus Area where three USTs (25,000 gallons each) were formerly located. The USTs where various fuels were stored were removed in 1987.

There is soil and ground-water contamination of fuel-related hydrocarbons at the terminus area above regulatory standards.

## CLEANUP STRATEGY

Execute the Interim Removal Action outlined in the EE/CA. Conduct ground-water monitoring as stated in the EE/CA.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RRSE:** Medium

**CONTAMINANTS OF CONCERN:**  
BTEX, VOCs (historical)

**MEDIA OF CONCERN:**  
Groundwater, Soil

Phases	Start	End
PA.....	199111 .....	199409
SI.....	199408 .....	199603
RI/FS .....	199803 .....	200908

**RC DATE:** 200908

**FTRI-057**  
**6200 AREA FUEL OIL LINE**  
**(ANCHOR)**  
(PAGE 1 OF 4)

**SITE DESCRIPTION**

FTRI-057 is the anchor site for the following combined fuel-related sites: FTRI-054, -043, -057, -062, -063, -064, -065, -066, -067, -068, -069, -70, -071, -072, and -073. The anchor site is a result of the lack of a regulator-approved document officially closing out these listed sites. The listed sites are a subset of the 49 potentially contaminated sites being investigated under the ESI Multi-Sites. The intention is to take the data that exists in the IWSA, other SIs, and/or long-term monitoring reports and compare it to a new round of confirmatory sampling for the majority of the sites. After the analyses are complete, a determination of eligibility to close under a NFRAP designation will be made.

If any site is found to have COCs that exceed regulatory standards, it will be addressed under a separate action.

Five sites (FTRI-054, -062, -063, -066, -068) will be addressed using Kansas Risk-Based Corrective Action (KRBCA) protocols in cooperation with the KDHE Bureau of Environmental Field Services, Salina Office.

**FTRI-057** is the 6200 Area Fuel Oil Line site that consists of a former heating oil dispensing system. There were two USTs and a pump house that serviced 100 housing units. Heating oil was released within the tank hold and along piping trenches, which also held the water lines and other utilities serving the housing units. In 1996, the USTs, associated piping, and contaminated soil were removed.

**FTRI-054** is the Custer Hill PX USTs Bldg 5320 site. This site was closed and soil contamination below KDHE action levels was documented during the tank removal. In 1997, the KDHE placed the site in "on hold" status for closure pending additional ground-water data to support "closure". Ground-water sampling results indicated BTEX above regulatory standards.

**FTRI-043** is the Former Gas Station Garages that consists of several abandoned and former gasoline dispensing stations. They may have had abandoned USTs. There is soil contaminated with fuels or chlorinated solvents.

**STATUS**

**REGULATORY DRIVER:** CERCLA

**RRSE:** Low

**CONTAMINANTS OF CONCERN:**  
VOCs, Fuel

**MEDIA OF CONCERN:** Soil,  
Groundwater

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	199010 .....	199012
SI .....	199312 .....	199502
RI/FS .....	199606 .....	200706
IRA .....	199601 .....	201009

**RC DATE:** 201010

**FTRI-057**  
**6200 AREA FUEL OIL LINE**  
**(ANCHOR)**  
**(PAGE 2 OF 4)**

**FTRI-062** is the TMP Gas Station, Building 388 and consists of a former UST area located on Main Post. The site is currently an active dispensing station serving Main Post. Two 12,000-gallon capacity fiberglass underground storage tanks were used to store diesel and unleaded gasoline. They were replaced with ASTs in April 1998. Ground-water sampling results indicate BTEX is no longer present above regulatory standards and no free product remains.

**FTRI-063** is the Former Bldg 1044 Dispensing Station and consists of a former fuel dispensing station on the west side of Camp Funston with five 12,000-gallon steel USTs installed in 1942. The tanks were removed in July 1990 along with some of the associated underground piping. Contaminated soil encountered during the removal was excavated and treated. Subsequent investigations indicate measurable free-product contamination of the ground water.

**FTRI-064** is the Former Bldg 1090 Dispensing Station and consists of a former UST area located in Camp Funston with two 5,250-gallon steel USTs installed in 1942. They were used to store fuels. The tanks were removed in August 1990, but the underground piping remains in place. Subsequent sampling indicates there is no fuel-related contamination above regulatory standards or free product at the site.

**FTRI-065** is the Former Bldg 1190 Dispensing Station and consists of a former UST area located in Camp Funston with two 5,250-gallon steel USTs installed in 1942. They were used to store fuels. The tanks were removed in August 1990. The underground piping remains in place. Subsequent sampling indicates there is no fuel-related contamination above regulatory standards or free product at the site.

**FTRI-066** is the Former Bldg 1245 Dispensing Station and consists of a former UST area located in Camp Funston with five 12,000-gallon steel USTs installed in 1942. The tanks were partially above ground and were used to store fuels. The tanks were removed in July 1990 along with some of the associated underground piping. There is measurable free-product contamination of the ground water.

**FTRI-067** is the Former Bldg 1539 Dispensing Station and consists of a former UST area in Camp Funston with four 12,000-gallon steel USTs installed in 1942 and used to store fuels. The tanks were removed in August 1990. Approximately 500 feet of underground piping remains in place. Subsequent sampling indicates there is no fuel-related contamination above regulatory standards or free product at the site.

**FTRI-057**  
**6200 AREA FUEL OIL LINE**  
**(ANCHOR)**  
**(PAGE 3 OF 4)**

**FTRI-068** is the Former Bldg 1637 Dispensing Station and consists of a former UST area located in Camp Funston with seven 12,000-gallon steel USTs. The tanks were installed in 1942 and were used into the 1980s. They originally contained diesel, but prior to removal in 1990, they stored used oil. Approximately 7,200 feet of underground piping may remain in place. There is measurable free-product contamination of the ground water.

**FTRI-069** is the Former Bldg 1890 Dispensing Station. The site is a former UST tank farm with four 12,000-gallon underground steel tanks installed in 1942 and used to store diesel, leaded gasoline, and unleaded gasoline. The tanks were removed in August 1990. Approximately 1,000 feet of underground product piping from valve boxes to the pump house and to 10 suction dispensers was not removed. A sheen was observed on the ground water in 1994. No free product was measured.

**FTRI-070** is the Former Bldg 2341 Dispensing Station. The site is located in Camp Forsyth with two 5,300-gallon USTs installed in 1942 and used to store gasoline and diesel. The tanks were removed in May 1990. Subsequent assessment of the site indicated petroleum hydrocarbon constituents in the soil below KDHE standards. The benzene concentration in the ground water exceeded the MCL and no free product was measured.

**FTRI-071** is the Former Bldg 2345 Dispensing Station with two 12,000-gallon steel USTs installed in 1942 and used to store gasoline and diesel. Leaks were discovered during the tank excavations and product line removals in December 1990. Subsequent investigation indicated petroleum hydrocarbon constituents below KDHE standards adjacent to the former tank pits and in and around the piping trenches.

**FTRI-072** is the Bldg 8340 Fuel Oil UST. Two fuel oil tanks were installed at the site in 1978. One tank is a 1,000-gallon fiberglass tank currently used to store used oil. The other tank was a 20,000-gallon fiberglass tank used to supply fuel oil to heat Bldg 8340. This tank was discovered to be leaking and was excavated in February 1991 and pavement, backfill, and supply and return lines from the tank were removed in March 1991. The site contained only a very minor area of total petroleum hydrocarbons (TPH) above the KDHE standard. Ground-water analyses of samples were below KDHE standards during field investigations in 1993 and 1994.

**FTRI-057**  
**6200 AREA FUEL OIL LINE**  
**(ANCHOR)**  
**(PAGE 4 OF 4)**

**FTRI-073** is the Bldg 8360 Fuel Oil UST. Two 10,000-gallon fiberglass tanks were installed at the site in 1981 and removed from service in 1991. The tanks were used to store fuel oil. One supply line leading from the tanks to Bldg 8360 failed the pressure test.

An investigation performed at the time of tank removal indicated contamination to a depth of 6 feet. However, the concentrations of petroleum hydrocarbon constituents were within KDHE standards. Borings confirmed that the contamination was minimal and appeared to be contained in the backfill material around the tanks. Ground water was not encountered to a depth of 28 feet.

### **CLEANUP STRATEGY**

For the majority of the sites, limited ground-water and soil sampling will be conducted to confirm the status found in the IWSA and specific SIs in order to achieve regulatory site closure.

For the five sites (FTRI-054, -062, -063, -066, -068), the cleanup strategy is to complete SI Work Plans in 2005 for further site characterization and free-product removal, implement SI field work in 2006 and complete KRBCA reports in 2007, and continue LTM and annual reports until free product is no longer measurable and contaminants are below MCLs.

**Initiation of IRP:** 1980

## **Past Phase Completion Milestones**

### **1983-1984**

- Installation Assessment (By USATHAMA)

### **1988-1989**

- Solid Waste Management Unit Survey (By USAEHA)
- IRP Initiation

### **1990**

- NPL Listing Published
- FFA - Dept. Army and Fort Riley Signature

### **1991**

- FFA - USEPA Region VII and KDHE Signature
- FFA - Effective Date

### **1993**

- PA/SI Installation Wide Site Assessment
  - FTRI-001, Custer Hill Sanitary Landfill
  - FTRI-019, Former Fire Training Area-Marshall Army Airfield
  - FTRI-027, Dry Cleaning Facilities Area
  - FTRI-032, Impact Zone
- RI/FS FTRI-003, Southwest Funston Landfill
- FTRI-030, Pesticide Storage Facility

### **1994**

- PA/SI FTRI-019, Former Fire Training Area-Marshall Army Airfield
- RI/FS FTRI-003, Southwest Funston Landfill
- FTRI-027, Dry Cleaning Facilities Area
- FTRI-030, Pesticide Storage Facility
- REM FTRI-030, Pesticide Storage Facility, Excavation of pesticide contaminated soil
- FTRI-035, Non-Impact Area Small Arms Ranges, Excavation of lead contaminated soil at Colyer Manor
- IRA FTRI-003, Southwest Funston Landfill, Riverbank stabilization and cover repair/improvements (FY94-96)
- FTRI-027, Dry Cleaning Facilities Area, Sewer line replacement-OMA funded (FY94-96)

## **Past Phase Completion Milestones (Cont.)**

### **1995**

- PA/SI FTRI-019, Former Fire Training Area-Marshall Army Airfield, Site Investigation Report
- RI/FS FTRI-003, Southwest Funston Landfill  
FTRI-027, Dry Cleaning Facilities Area  
FTRI-030, Pesticide Storage Facility
- IRA FTRI-019, Former Fire Training Area-Marshall Army Airfield, Soil vapor extraction and bioventing Pilot Study  
FTRI-027, Dry Cleaning Facilities Area, Soil vapor extraction Pilot Study  
FTRI-062, TMP Gas Station (Bldg 388), Free-product recovery  
FTRI-063, Former Bldg 1044 Dispensing Station, Free-product recovery

### **1996**

- RI/FS FTRI-019, Former Fire Training Area-Marshall Army Airfield  
FTRI-027, Dry Cleaning Facilities Area  
FTRI-030, Pesticide Storage Facility
- REM FTRI-057, 6200 Area, Soil removal
- ROD FTRI-003, Southwest Funston Landfill

### **1997**

- RAB Formation
- DECISION FTRI-067 and FTRI-069, No Further Action required
- PA/SI FTRI-006, DRMO & Wherry Substation, Site Investigations
- RI/FS FTRI-019, Former Fire Training Area-Marshall Army Airfield, Draft Final Work Plan  
FTRI-027, Dry Cleaning Facilities Area, Draft Revised FS  
FTRI-030, Pesticide Storage Facility, RI Addendum  
FTRI-031, 354 Area Solvent Detections Site, Field investigations
- IRA FTRI-003, Southwest Funston Landfill, Removal Action Report  
FTRI-019, Former Fire Training Area-Marshall Army Airfield, Exposure Control EE/CA
- PP FTRI-030, Pesticide Storage Facility
- ROD FTRI-030, Pesticide Storage Facility



## **Past Phase Completion Milestones (Cont.)**

### **1997 (Cont.)**

- LTM FTRI-003, Southwest Funston Landfill, Long-Term Monitoring, Long-Term Operations, Maintenance Plans  
FTRI-054, -063, -066, -068, Remedial Action Plans

### **1998**

- DECISION FTRI-various, Multi-Sites and DRMO Memorandum  
FTRI-004 (Main Post Landfill), -051 (727), and multiple UST sites
- RI/FS FTRI-009, Open Burning/Open Detonation, SI Addendum Report  
FTRI-019, Former Fire Training Area-Marshall Army Airfield, RI/FS Draft Final Work Plan  
Basic Plans, Plume Characterization, Natural Attenuation Work Plan  
FTRI-027, Dry Cleaning Facilities Area, RI Addendum/FS  
FTRI-029, Southeast Funston Incinerator, SI Addendum Report  
FTRI-031, 354 Area Solvent Detections Site, Initial Field Investigations Report
- REM FTRI-029, Southeast Funston Landfill Incinerator, EE/CA, Preliminary Design
- IRA FTRI-036, Southeast Funston Landfill, EE/CA, Preliminary IRA Design  
FTRI-038, Forsyth Bank, Area 2, Stabilization, EE/CA
- PP FTRI-027, Dry Cleaning Facilities Area, Draft Proposed Plan
- LTM FTRI-003, Southwest Funston Landfill, Final Institutional Controls Plan, Annual Monitoring Report, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater Detections, Annual Monitoring Report  
FTRI-054, Custer Hill PX USTs, Ground-water sampling  
FTRI-062, TMP Gas Station (Bldg 388), Ground-water sampling  
FTRI-063, Former Building 1044 Dispensing Station, Ground-water sampling  
FTRI-066, Former Building 1245 Dispensing Station, Ground-water sampling  
FTRI-068, Former Building 1637 Dispensing Station, Ground-water sampling

### **1999**

- RI/FS FTRI-009, Open Burning/Open Detonation, Risk Screening Report  
FTRI-019, Former Fire Training Area-Marshall Army Airfield, Tracer Study, Microcosm Study  
FTRI-031, 354 Area Solvent Detections, RI/FS Work Plans, Phase I Field Investigations  
FTRI-053, POL Tank Farm, RI/FS Work Plan
- REM FTRI-029, Southeast Funston Landfill Incinerator, EE/CA, Action Memorandum

## **Past Phase Completion Milestones (Cont.)**

### **1999 (Cont.)**

- IRA FTRI-036, Southwest Funston Landfill, EE/CA, Action Memorandum  
FTRI-038, Forsyth Landfill, Area 2, Action Memorandum, Bank Stabilization Design  
FTRI-057, 6200 Area Fuel Oil System, Removal Action Report
- PP FTRI-027, Dry Cleaning Facilities Area, Dispute Resolution (Jan – Apr 99)
- LTM FTRI-003, Southwest Funston Landfill, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater Detections, Annual Monitoring Report, Groundwater Isotope Report  
FTRI-030, Pesticide Storage Facility, Land Use Management Plan  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling

### **2000**

- RI/FS FTRI-009, Open Burning/Open Detonation, Surface-water monitoring  
FTRI-027, Dry Cleaning Facilities Area, Additional site evaluation  
FTRI-031, 354 Area Solvent Detections, Remedial Investigations, preliminary evaluation
- IRA FTRI-019, Former Fire Training Area-Marshall Army Airfield, Construction of Exposure  
Controls pending real estate issues  
FTRI-036, Southwest Funston Landfill, River Bank Stabilization initiated
- LTM FTRI-003, Southwest Funston Landfill, Maintenance Construction, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater Detections, Annual Monitoring Report  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling

### **2001**

- PA/SI FTRI-053, POL Tank Farm, Site Investigations  
FTRI-056, Abandoned Gasoline Line, Site Investigations
- RI/FS FTRI-009, Open Burning/Open Detonation, Surface-water monitoring  
FTRI-027, Dry Cleaning Facilities Area, Investigations  
FTRI-029, Southeast Funston Landfill Incinerator, Land use control development  
FTRI-031, 354 Area Solvent Detections Area, Additional Investigations  
FTRI-036, Southeast Funston Landfill, Draft Decision Memorandum  
FTRI-036, Southwest Funston Landfill, River Bank Stabilization completed
- LTM FTRI-003, Southwest Funston Landfill Annual Monitoring Report, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater, Annual Monitoring Report  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling

## **Past Phase Completion Milestones (Cont.)**

### **2002**

- RI/FS FTRI-009, Open Burning/Open Detonation, Surface-water sampling  
FTRI-019, Former Fire Training Area-Marshall Army Airfield, Treatability Study  
FTRI-027, Dry Cleaning Facilities Area, Perform additional investigations  
FTRI-029, Southeast Funston Landfill Incinerator, Develop land use controls
- IRA FTRI-019, Former Fire Training Area-Marshall Army Airfield, Implement exposure control
- LTM FTRI-003, Southwest Funston Landfill, cover repair, Annual Monitoring Report, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater Detections, Annual Monitoring Report  
FTRI-036, Southeast Funston Landfill, Long-Term Maintenance every 2 years for 15 years  
FTRI-038, Forsyth Landfill(s), Bank stabilization inspection  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling
- Five-Year Review FTRI-003, Southwest Funston Landfill FTRI-030, Pesticide Storage Facility

### **2003**

- RI/FS FTRI-009, Open Burning/Open Detonation, Surface-water sampling  
FTRI-019, Former Fire-Training Area - Marshall Army Airfield, Draft Final FS Report, ground-water sampling  
FTRI-027, Dry Cleaning Facilities Area, Performed additional investigations, ground-water sampling  
FTRI-029, Southeast Funston Landfill Incinerator, Memorandum of Agreement signed by the KDWP  
FTRI-031, 354 Area Solvent Detections, ground-water sampling  
FTRI-053, POL Tank Farm, Performed additional study, ground-water sampling
- IRA FTRI-019, Former Fire-Training Area, Final Report on Alternate Water Supply
- LTM FTRI-003, Southwest Funston Landfill, Annual Monitoring Report, Annual Inspection Report  
FTRI-011, Camp Funston Groundwater Detections, Annual Monitoring Report  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling  
FTRI-038, Forsyth Landfill(s), Bank Stabilization inspection and ordnance disposal

## **Past Phase Completion Milestones (Cont.)**

### **2004**

- RI/FS FTRI-009, Open Burning/Open Detonation, Surface and ground-water sampling, Technical Memorandum  
FTRI-027, Dry Cleaning Facilities Area, Draft Final RI Addendum Report, ground-water sampling  
FTRI-031, 354 Area Solvent Detections, Draft Final RI Report, Remedial Action Objectives/Applicable or Relevant and Appropriate Requirements/Technologies Identification/Detailed Analysis of Alternatives Tech Memo, ground-water sampling  
FTRI-053, POL Tank Farm, Free-product recovery and ground-water sampling  
FTRI-056, Abandoned Gasoline Line, Site Assessment Report, and EE/CA.
- REM FTRI-031, 354 Area Solvent Detections, Conducted Pilot Study for soil remediation and removal
- PP FTRI-019, Former Fire-Training Area - Marshall Army Airfield
- LTM FTRI-001, Custer Hill Sanitary Landfill, ground-water sampling, prescribed burn of cover and annual inspection  
FTRI-003, Southwest Funston Landfill, Annual Monitoring Report, Annual Inspection Report  
FTRI-038, Forsyth Landfill(s), Bank Stabilization inspection  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling

### **2005**

- RI/FS FTRI-031, 354 Area Solvent Detections, Draft Final FS Report, ground-water sampling  
FTRI-027, Dry Cleaning Facilities Area, Draft Final FS Addendum, Pilot Study Work Plan
- REM FTRI-031, 354 Area Solvent Detections, Pilot Study Report
- PP FTRI-031, 354 Area Solvent Detections, Draft Final Proposed Plan
- ROD FTRI-019, FFTA-MAAF, Draft Final ROD, Remedial Action Plan, ground-water sampling
- LTM FTRI-001, Custer Hill Sanitary Landfill, Annual inspection, ground-water sampling  
FTRI-003, Southwest Funston Landfill, Annual Monitoring Report, Annual Inspection Report  
FTRI-038, Forsyth Landfill(s), Bank Stabilization inspection  
FTRI-054, 062, 063, 066, 068, POL/UST Sites ground-water sampling

***Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates:***

FTRI-031, 354 Area Solvent Detections, 3<sup>rd</sup> Quarter FY06

FTRI-027, Dry Cleaning Facilities Area, 1<sup>st</sup> Quarter FY08

***Projected Construction Completion Date of IRP:*** Remedy-in-Place - Completion of Construction of final remedial action: 2008

***Projected Date for Removal from NPL:*** Unknown

***Schedule for Next Five-Year Review:*** 2007

***Estimated Completion Date of IRP (including LTM phase):*** IRP Completion Date  
Includes LTM: 2034

## FORT RILEY IRP SCHEDULE

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
FTRI-003	LTM									2027
FTRI-009	LTM									
FTRI-019	LTM									
FTRI-022	LTM									
FTRI-027	RI/FS									
	RD									
	RA(C)									
	RA(O)									
	LTM									
FTRI-030	LTM									2022
FTRI-031	LTM									
FTRI-036	LTM									2023
FTRI-038	LTM									
FTRI-040	LTM									
FTRI-047	LTM									
FTRI-056	RI/FS									
FTRI-057	IRA									

**Prior Years Funds**

**Total Funding up to FY04: \$63,841K**

<b>Year</b>	<b>Site Information</b>	<b>Expenditures</b>	<b>FY Total</b>
<b>FY05</b>	LTM FTRI-003	\$ 39.9K	
	LTM FTRI-009	\$ 235.9K	
	LTM FTRI-011	\$ 18.9K	
	RI/FS FTRI-019	\$ 69.9K	
	RD FTRI-019	\$ 46.9K	
	RI/FS FTRI-027	\$1,089.8K	
	RI/FS FTRI-031	\$ 62.7K	
	RI/FS FTRI-036	\$ 268.8K	
	RI/FS FTRI-053	\$ 8.0K	
	RI/FS FTRI-057	\$ 225.7K	
	RI/FS FTRI-056	\$ 12.1K	<b>\$2,078.6K</b>

**Total Prior Year Funds: \$65,919.6K**

**Current Year Requirements**

<b>Year</b>	<b>Site Information</b>	<b>Requirements</b>	<b>FY Total</b>
<b>FY06</b>	LTM FTRI-003	\$165K	
	LTM FTRI-009	\$189K	
	LTM FTRI-019	\$224K	
	LTM FTRI-022	\$ 5K	
	RI/FS FTRI-027	\$275K	
	LTM FTRI-030	\$ 20K	
	RI/FS FTRI-031	\$123K	
	RD FTRI-031	\$ 60K	
	RI/FS FTRI-036	\$ 12K	
	RI/FS FTRI-056(05 Shortfall Plus Up)	\$386.2K	
	RI/FS FTRI-057(05 Shortfall Plus Up)	\$554.9K	<b>\$2014.1K</b>

**Total Future Requirements: \$8,239K**

**Total IR Program Cost (from inception to completion of the IRP): \$75,299.6K**

**Fort Riley  
FY07 - FY15+ Required Cost-to-Complete**

AEDB-R #	Site Title	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Description of Work	
FTRI-003	Southwest Funston Landfill (OU-001)	LTM	170	315	275	275	382	232	232	232	2,216	4,329	4,329	Monitoring ~10 wells semi-annual \$79K/yr until FY11 then \$38K/yr, Annual report \$37K/yr, USGS \$29K/yr, quality assurance (QA) \$5K/yr until FY11 then \$3K/yr, \$50K in FY11 to mod ROD to reduce LTM, COE \$20K/yr; cover repairs & maintenance, bank stabilization= FY08-10 & FY12-14 \$100K, FY11 \$200K, FY15+ \$500K, \$40K for well abandonment in FY08.	
FTRI-009	OB/OD Grounds (Range 16)	LTM	114	101	101	101	101	101				619	619	\$70K per GW/SW sampling-FY07-12, 10 points (w/UXO support), COE support \$25K in FY07, \$15K/yr FY08-12. USGS \$13K/yr FY07-12, QA \$6K in FY07, FY08-FY12=\$3K per yr.	
FTRI-019	Former Fire Training Area (FFTA-MAAF) (OU-004)	LTM	82	82	82	108						354	354	FY07-10 Real estate leases \$8K, FY07-09 USGS \$25K, COE \$20K, QA \$4K, \$25K/yr for GW sampling, Well abandonment FY10 \$100K.	
FTRI-022	Former WWTP & Sludge Beds Camp Funston (Anchor)	LTM	25									25	25	To cover all ESI multi-sites PY S&R.	
FTRI-027	Dry Cleaning Facilities Area (OU-003)	RI/FS	85									85	1,003	Annual GW event (27 wells) \$30K, COE \$30K, COE QA \$6K, USGS \$19K	
		RD	100									100		Design \$100K	
		RA(C)		255										255	Construction of supplemental RA (SVE, enhanced biodegradation and/or potassium permanganate oxidizer) \$160K, \$30K monitoring costs, USGS \$19K, COE \$40K, QA \$6K
		RA(O)			77	210								287	Re-injection of bioremediation enhancing compounds FY10 \$133K, FY09-FY10 monitoring cost \$30K/yr, USGS \$19K/yr, COE \$20K/yr, COE QA \$8K/yr annually
		LTM					108	56	56	56				276	FY11-14 monitoring cost \$30K/yr, abandon 13 wells \$52K in FY11, COE \$20K/yr, COE QA \$6K/yr annually
FTRI-030	Pesticide Storage Facility (Mixing) (OU-002)	LTM					20				60	80	80	Sampling for five-year reviews soils and sediments for pesticides and metals.	



**Fort Riley  
FY07 - FY15+ Required Cost-to-Complete**

AEDB-R #	Site Title	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Description of Work
FTRI-031	Building 354 Area Solvent Detections (OU-005)	LTM	83	83	83	83	60	74				466	466	FY07-10 USGS \$29K, COE \$20K/yr. GWM ~16 wells, annually \$30K. QA \$4K annually. COE PY S&R \$10K FY11. Closure report in FY11-\$50K. FY12 sampling \$30K, COE \$10K, QA \$4K, well abandonment \$30K
FTRI-036	Southeast Funston Landfill - Inactive (Anchor)	RI/FS	140	145								285	285	FY07 PY COE S&R \$20K, \$10K QA. FY07 \$100K additional field work in support of ESI, \$10K COE cost. FY08 additional field work in support of ESI \$100K, PY COE S&R \$15K, COE \$30K
FTRI-038	Forsyth Landfill(s)	LTM						70	200			270	270	FY12 Work plan \$70K. FY13 Bank stabilization \$200K.
FTRI-040	Former Oil Testing Lab (BLDG 1022) (Anchor)	LTM		50								50	50	\$45K contract, \$5K COE (at building 1022)
FTRI-047	Former Livestock Dipping Facility (Anchor)	LTM		100								100	100	\$90K contract, \$10K COE(at dipping tank)
FTRI-056	Abandoned Gasoline Line	RI/FS	15	15	30							60	60	FY07 COE \$15K, FY08 (Field work) COE \$15K, FY09 COE (close-out report) \$30K
FTRI-057	6200 Area Fuel Oil Line (Anchor)	RI/FS	281	113	118	118						630	630	FY07 \$222K for free product removal & management, \$40K COE, \$6K QA, USGS \$13K, FY08 \$81K for recovery system O&M, \$15K COE support, \$4K QA, USGS \$13K. FY09-FY10 \$86K free product recovery system O&M; \$15K COE, \$4K QA, USGS \$13K; (increase in FY09 & FY10 is due to increase in O&M cost)
<b>Totals in Thousands of \$</b>			<b>1,095</b>	<b>1,259</b>	<b>766</b>	<b>895</b>	<b>671</b>	<b>533</b>	<b>488</b>	<b>288</b>	<b>2,276</b>		<b>8,271</b>	
<b>POM (as of 3 April 2006)</b>			<b>1,286</b>	<b>1,434</b>	<b>766</b>	<b>1,501</b>	<b>639</b>							
<b>Difference</b>			<b>191</b>	<b>175</b>	<b>0</b>	<b>606</b>	<b>-32</b>	<b>-533</b>	<b>-488</b>	<b>-288</b>	<b>-2,276</b>			
			<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	<b>FY10</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15+</b>			

**Fort Riley  
FY07 - FY15+ Programmed Cost-to-Complete**

AEDB-R #	Site Title	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Description of Work	Start Date	End Date	
FTRI-003	Southwest Funston Landfill (OU-001)	LTM	170	315	275	275	350	232	232	232	2,216	4,297	4,297	Monitoring ~10 wells semi-annual \$79K/yr until FY11 then \$38K/yr, Annual report \$37K/yr, USGS \$29K/yr, quality assurance (QA) \$5K/yr until FY11 then \$3K/yr, \$50K in FY11 to mod ROD to reduce LTM, COE \$20K/yr; cover repairs & maintenance, bank stabilization= FY08-10 & FY12-14 \$100K, FY11 \$168K, FY15+ \$500K, \$40K for well abandonment in FY08.	199709	202709	
FTRI-009	OB/OD Grounds (Range 16)	LTM	114	101	101	101	101	101				619	619	\$70K per GW/SW sampling-FY07-12, 10 points (w/UXO support), COE support \$25K in FY07, \$15K/yr FY08-12. USGS \$13K/yr FY07-12, QA \$6K in FY07, FY08-FY12=\$3K per yr.	200410	201209	
FTRI-019	Former Fire Training Area (FFTA-MAAF) (OU-004)	LTM	82	82	82	108						354	354	FY07-10 Real estate leases \$8K, FY07-09 USGS \$25K, COE \$20K, QA \$4K, \$25K/yr for GW sampling, Well abandonment FY10 \$100K.	200510	200809	
FTRI-022	Former WWTP & Sludge Beds Camp Funston (Anchor)	LTM	25									25	25	To cover all ESI multi-sites PY S&R.	200510	200705	
FTRI-027	Dry Cleaning Facilities Area (OU-003)	RI/FS	85									85	1,003	Annual GW event (27 wells) \$30K, COE \$30K, COE QA \$6K, USGS \$19K	199106	200703	
		RD	100									100		Design \$100K	200704	200802	
		RA(C)		255										255	Construction of supplemental RA (SVE, enhanced biodegradation and/or potassium permanganate oxidizer) \$160K, \$30K monitoring costs, USGS \$19K, COE \$40K, QA \$6K	200803	200809
		RA(O)			77	210								287	Re-injection of bioremediation enhancing compounds FY10 \$133K, FY09-FY10 monitoring cost \$30K/yr, USGS \$19K/yr, COE \$20K/yr, COE QA \$8K/yr annually	200810	201110
		LTM						108	56	56	56			276	FY11-14 monitoring cost \$30K/yr, abandon 13 wells \$52K in FY11, COE \$20K/yr, COE QA \$6K/yr annually	201111	201409
FTRI-030	Pesticide Storage Facility (Mixing) (OU-002)	LTM					20					60	80	80	Sampling for five-year reviews soils and sediments for pesticides and metals.	200201	202209

**Fort Riley  
FY07 - FY15+ Programmed Cost-to-Complete**

AEDB-R #	Site Title	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Description of Work	Start Date	End Date	
FTRI-031	Building 354 Area Solvent Detections (OU-005)	LTM	83	83	83	83	60	74				466	466	FY07-10 USGS \$29K, COE \$20K/yr. GWM ~16 wells, annually \$30K, QA \$4K annually, COE PY S&R \$10K FY11. Closure report in FY11-\$50K, FY12 sampling \$30K, COE \$10K, QA \$4K, well abandonment \$30K	200607	201109	
FTRI-036	Southeast Funston Landfill - Inactive (Anchor)	RI/FS	140	145								285	285	FY07 PY COE S&R \$20K, \$10K QA, FY07 \$100K additional field work in support of ESI, \$10K COE cost. FY08 additional field work in support of ESI \$100K, PY COE S&R \$15K, COE \$30K	199307	200809	
FTRI-038	Forsyth Landfill(s)	LTM						70	200			270	270	FY12 Work plan \$70K. FY13 Bank stabilization \$200K.	200201	201506	
FTRI-040	Former Oil Testing Lab (BLDG 1022) (Anchor)	LTM		50								50	50	\$45K contract, \$5K COE (at building 1022)	200510	200809	
FTRI-047	Former Livestock Dipping Facility (Anchor)	LTM		100								100	100	\$90K contract, \$10K COE(at dipping tank)	200510	200809	
FTRI-056	Abandoned Gasoline Line	RI/FS	15	15	30							60	60	FY07 COE \$15K, FY08 (Field work) COE \$15K, FY09 COE (close-out report) \$30K	199803	200908	
FTRI-057	6200 Area Fuel Oil Line (Anchor)	RI/FS	281	113	118	118						630	630	FY07 \$222K for free product removal & management, \$40K COE, \$6K QA, USGS \$13K, FY08 \$81K for recovery system O&M, \$15K COE support, \$4K QA, USGS \$13K. FY09-FY10 \$86K free product recovery system O&M; \$15K COE, \$4K QA, USGS \$13K; (increase in FY09 & FY10 is due to increase in O&M cost)	199601	200706	
<b>Totals in Thousands of \$</b>			<b>1,095</b>	<b>1,259</b>	<b>766</b>	<b>895</b>	<b>639</b>	<b>533</b>	<b>488</b>	<b>288</b>	<b>2,276</b>		<b>8,239</b>				
<b>POM (as of 3 April 2006)</b>			<b>1,286</b>	<b>1,434</b>	<b>766</b>	<b>1,501</b>	<b>639</b>										
<b>Difference</b>			<b>191</b>	<b>175</b>	<b>0</b>	<b>606</b>	<b>0</b>	<b>-533</b>	<b>-488</b>	<b>-288</b>	<b>-2,276</b>						
			<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	<b>FY10</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15+</b>						

# FORT RILEY

## Military Munitions Response Program



## ***MMRP Contamination Assessment Overview***

The Military Munitions Response Program (MMRP) manages the environmental and health issues associated with munitions constituents (MC); and munitions and explosives of concern (MEC). In 2000, Fort Riley completed the Advance Range Survey followed by an Active/Inactive (A/I) Range Inventory in 2002. The Closed, Transferring, and Transferred Range/Site Inventory Report was completed in 2003 that identified the Sherman Heights Small Arms Range and the Southeast Funston Landfill Incinerator Site as inactive ranges requiring further investigation. The Historical Records Review on these two sites was completed in April 2005. Site Inspection Work Plan was completed July 1, 2005. The Site Inspection is scheduled for summer 2005.

There is a low potential for MEC, MC, and UXO at the two sites. Sherman Heights is a small arms range that is wholly contained on the installation. Lead-contaminated soil was removed from Sherman Heights (Colyer Manor) in 1994 under CERCLA. The Southeast Funston Landfill Incinerator Site was transferred to the Kansas Department of Wildlife and Parks (KDWP). Lead-contaminated soil and unexploded ordnance were removed from the Southeast Funston Landfill Incinerator Site in 1999. While the possibility exists for UXO, there is no supporting evidence for the need for further action at this time.

There is a third site at Forsyth Landfills along the Republican River has been evaluated and established as another site. The site contains mainly inert munitions that eroded out of 1950s-1960s era landfills. During the 1993 flood, the edge of the landfill eroded and some munitions materials washed into the Republican River. There have been three occasions where UXO removal or blow in place has been required. The site is on the installation boundary and can be accessed by the general public in a relatively uncontrolled manner.

## ***MMRP Cleanup Exit Strategy***

See individual sites for each exit strategy.



## INSTALLATION LOCATION Fort Riley, Kansas

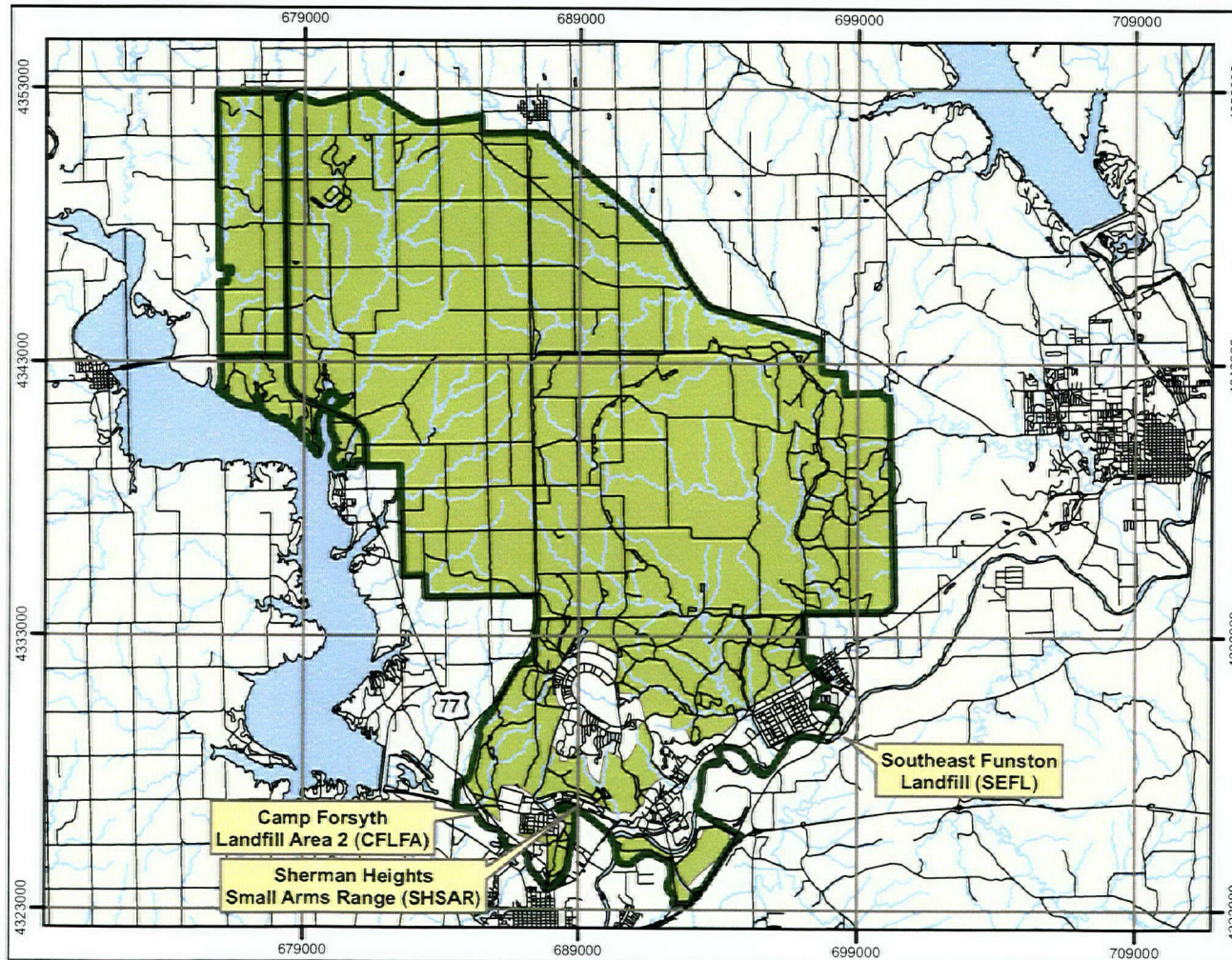
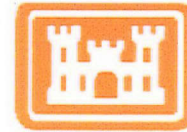


Figure 2



- Installation Boundary
- Road
- Stream
- Water
- Area Status**
- Operational Range
- MR Site

Projection: UTM, Zone 14  
 Horizontal Datum: NAD83  
 Units: Meters  
 Grid: 10,000 Meter

1:250,000

0 1 2 3 4 5 Kilometers

0 1 2 3 4 5 Miles



WORK PLAN  
FORT RILEY, KS

Source: Produced for the U.S. Army Corps of Engineers  
by engineering-environmental Management Inc. (e\*MI).

Date: July 2005  
Edition: Final



# MUNITIONS RESPONSE SITE LOCATIONS Fort Riley, Kansas

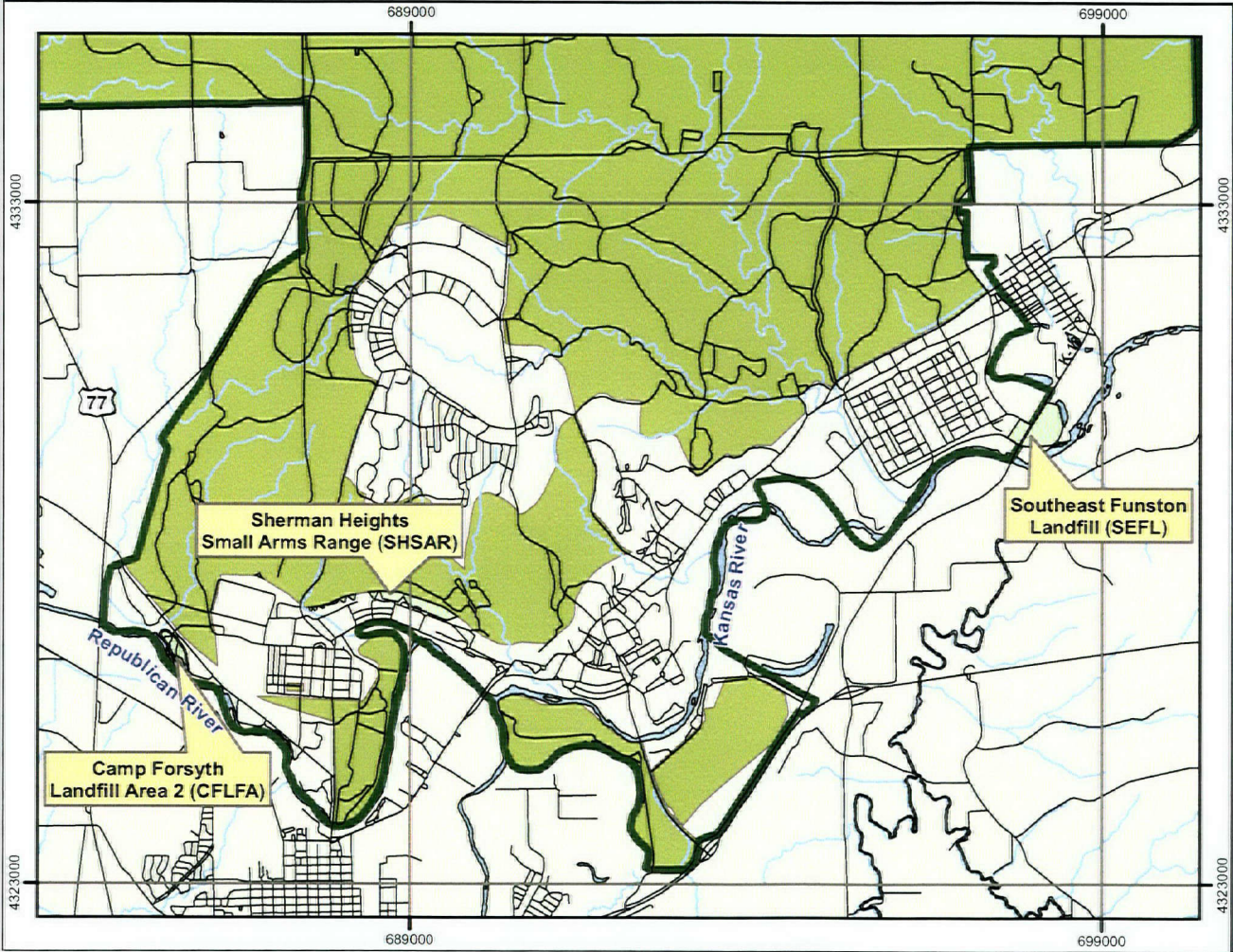


Figure 3



- Installation Boundary
- Road
- Stream
- Water

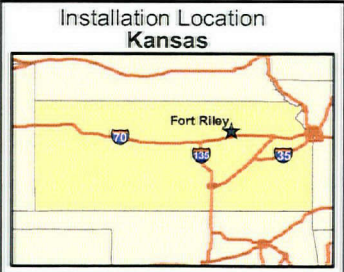
**Area Status**

- Operational Range
- MR Site

Projection: UTM, Zone 14  
Horizontal Datum: NAD83  
Units: Meters  
Grid: 10,000 Meter

Scale: 1:100,000

0 0.5 1 1.5 2 2.5 Kilometers  
0 0.4 0.8 1.2 1.6 2 Miles



WORK PLAN  
FORT RILEY, KS

Source: Produced for the U.S. Army Corps of Engineers  
by engineering-environmental Management Inc. (e™).  
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### **1993**

- Action Memorandum for Removal Action Sensitive-Receptor Lead Site - Colyer Manor Area, Fort Riley Military Installation Fort Riley, Kansas, December 1993

### **1994**

- Draft Final Project Report for Rapid Response Removal of Contaminated Soils Pesticide Storage
- Facility and Colyer Manor Sites, Fort Riley, Kansas (5 Volumes), June 1994

### **2000**

- Action Memorandum and Responsiveness Summary Removal Action at Southeast Funston
- Landfill and Incinerator Area, Fort Riley, Kansas, April 2000
- Removal Action Report Landfill Cover Repair and Incinerator Area Contaminated Material
- Removal Southeast Funston Landfill and Incinerator Area Fort Riley, Kansas, August 2000

### **2002**

- U.S. Army Active/Inactive (A/I) Range Inventory Range Inventory Binder Fort Riley, Kansas, March 2002

### **2003**

- Closed, Transferring, and Transferred Range/Site Inventory Report Fort Riley, Kansas, October 2003

### **2005**

- Stakeholder Final of the Military Munitions Response Program Historical Records Review Fort Riley, Kansas, April 2005

# FORT RILEY

## Military Munitions Response Program Site Descriptions

# FTRI-001-R-02 SHSAR IMPACT SLOPE

## SITE DESCRIPTION

The SHSAR MRA is located near the center of FTRI, northeast of Camp Forsyth and is bordered by Sherman Heights to the north and the Republican River to the south. The SHSAR was reportedly operational from the 1880s until about 1945. The SHSAR complex was used primarily as a practice firing range for small arms and machine guns. The ranges that comprised the SHSAR included pistol, 9 millimeter (mm), .22 caliber, .38 caliber, small caliber qualification anti-tank and .22 caliber anti-aircraft machine gun, .45 caliber, and 4.2-inch mortar ranges. The ranges covered approximately 198.93 acres and overlapped to form an arc shaped area north of the Republican River. Firing was to the north toward Sherman Heights. This site is the impact area of the Sherman Heights Small Arms Range.

## STATUS

**REGULATORY DRIVER:** CERCLA

**RAC SCORE:** 2 - Serious

**CONTAMINANTS OF CONCERN:**  
Munitions Constituents

**MEDIA OF CONCERN:** Soil

<b>Phases</b>	<b>Start</b>	<b>End</b>
PA.....	200105 .....	200205
SI.....	200406 .....	200605
RI/FS .....	200610 .....	200709
RD .....	201410 .....	201509
RA(C) .....	201510 .....	201609
LTM.....	201610 .....	204609

**RC DATE:** 201609

## CLEANUP STRATEGY

Planned RI/FS will include OE Site Characterization and Removal Assessment.

# FTRI-003-R-01

## CAMP FORSYTH LANDFILL AREA 2

### SITE DESCRIPTION

The Camp Forsyth Former Landfill Area 2 (hereinafter referred to as Area 2) is approximately 24.86 acres and lies between Camp Forsyth and the Republican River. Area 2 is located in a floodplain of the Republican River known as the Republican Flats, and is adjacent to a section of the Republican River extending 1500 feet along the northern bank. The northern 300 feet of the bank is vegetated and covered with concrete rubble. The remainder of the bank extending approximately 1200 feet downstream to the next channel bend is undergoing active erosion, with banks characterized by steep vertical walls in the top 10 feet of the bank which then falls off to approximately a 45-degree slope for the lower 10 feet of bank, which has minimal vegetation present.

Area 2 was identified as a landfill by the USEPA Environmental Monitoring Systems Laboratory in November 1983. Aerial photographs taken in 1950, 1956, and 1957 show evidence of trench-type land filling. Photographs taken later in 1962, 1969 and 1976 show no evidence of landfill activity. Inspections conducted along the banks of the Republican River adjacent to Area 2 identified miscellaneous debris protruding from the soil.

Regional flooding in the summer of 1993 caused significant erosion of the banks of the Republican River. In this flood, the Republican River overflowed its banks for a period of approximately 30 days. During the spring of 1994, a sand bar in the Republican River approximately 700 feet downstream from Area 2 was found to contain significant quantities of unexploded ordnance (UXO). The ordnance consisted of approximately two hundred 3.5- and 2.36-inch rockets, M1 mines and a variety of small arms ammunition.

The Fort Riley Explosive Ordnance Disposal Detachment detonated the rockets and mines in-place during the summer of 1994, and the remaining ordnance was relocated to the Fort Riley Explosive Ordnance Disposal Range and properly destroyed.

### CLEANUP STRATEGY

MEC and MC regularly exposed by river action. Some MEC and MC may have been carried by the river off post. Need to accelerate cleanup for public safety.

### STATUS

**REGULATORY DRIVER:** CERCLA

**RAC SCORE:** 1 - High

**CONTAMINANTS OF CONCERN:**  
Munitions Constituents

**MEDIA OF CONCERN:** Soil,  
Groundwater

Phases	Start	End
PA.....	200303 .....	200310
SI.....	200406 .....	200605
RI/FS .....	200610 .....	200809
RD .....	201503 .....	201509
RA(C) .....	201510 .....	201609
LTM .....	201610 .....	204609

**RC DATE:** 201609

# MMRP No Further Action Sites Summary

AEDB-R #	Site Title	Documentation/Reason for RC	RC Date
FTRI-001-R-01	Sherman Heights Small Arms Range	Made RC after Site Investigation based on no MEC or MC Contamination.	200605
FTRI-002-R-01	Southeast Funston Landfill	Made RC after Site Investigation based on no MEC or MC Contamination.	200605

**Initiation of MMRP:** 2003

**Past Phase Completion Milestones**

**2003**

- Preliminary Assessment, Sites FTRI-001-R-01, FTRI-002-R-01, FTRI-003-R-01, October

**2005**

- Site Investigation, Sites FTRI-001-R-01, FTRI-002-R-01, FTRI-003-R-01, December

**Projected ROD/DD Approval Dates:** Unknown

**Projected Construction Completion:** 2016

**Estimated Completion Date of MMRP including LTM:** None planned

## FORT RILEY MMRP SCHEDULE

(Based on current funding constraints)

AEDB-R #	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
FTRI-001-R-02	RI/FS									
	RD									
	RA(C)									2016
	LTM									2046
FTRI-003-R-01	RI/FS									
	RD									
	RA(C)									2016
	LTM									2046

***Prior Years Funds***

**Total Funding up to FY04: \$268.7K**

<b>Year</b>	<b>Site Information</b>	<b>Expenditures</b>	<b>FY Total</b>
<b>FY05</b>		<b>\$ 17K</b>	<b>\$17K</b>

***Total Prior Year Funds: \$285.7K***

***Current Year Requirements***

<b>Year</b>	<b>Site Information</b>	<b>Requirements</b>	<b>FY Total</b>
<b>FY06</b>		<b>\$ 6K</b>	<b>\$6K</b>

***Total Future Requirements: \$ 4,354 K***

***Total IR Program Cost (from inception to completion of the IRP): \$4,645.7K***



**Fort Riley  
FY06 MMRP Cost-to-Complete**

AEDB-R#	Site Title	Phase	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+	Phase Total	Site Total	Description of Work	
FTRI-001-R-02	SHSAR Impact Slope	RI/FS	1,305									1,305	2,487	Feasibility Study, Groundwater Monitoring Well, OE Site Characterization and Removal Assessment, Remedial Investigation	
		RD									22	22		Remedial Design	
		RA(C)										740		740	Excavation, OE Institutional Controls, OE Removal Action, Off-site Transportation and Landfill Disposal
		LTM										420		420	OE Monitoring, 2 Events
FTRI-003-R-01	Camp Forsyth Landfill Area 2	RI/FS	1,178									1,178	1,867	Feasibility Study, Groundwater Monitoring Well, OE Site Characterization and Removal Assessment, Remedial Investigation	
		RD										9		9	Remedial Design
		RA(C)										260		260	Excavation, OE Institutional Controls, OE Removal Action, Off-site Transportation and Landfill Disposal
		LTM										420		420	OE Monitoring, 2 Events
<b>FY TOTALS IN THOUSANDS OF DOLLARS</b>			<b>2,483</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,871</b>	<b>4,354</b>		
			<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	<b>FY10</b>	<b>FY11</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15+</b>				

### ***Formation of Fort Riley's Restoration Advisory Board:***

Fort Riley held its orientation meeting September 30, 1997 for members of the community who may be interested in participating on a RAB. Adjacent landowners, local environmental groups, local college professors, mayors and other public officials, members of the local Chambers of Commerce, and select individuals recommended to the Directorate of Environment and Safety were invited to the orientation meeting by direct mail. Newspaper advertisements and television and radio announcements were additional methods used to announce the formation of Fort Riley's RAB.

At the orientation meeting, interested community members were asked to complete an application, a biographic information form and a demographic information form, if they had not completed and returned an application to Fort Riley before the meeting. A Community Co-Chair was elected by community representatives in attendance. Due to the number of applications received at that time, everyone that applied to be a member of the RAB served. Approximately 20 people attended the orientation meeting.

### ***RAB Membership:***

The current members include representatives from the Fort Riley military community, local environmental businesses, private business, Unified School District 475, Geary County Extension Office, Riley County Planning Board, Geary County (Commissioner), Clay County (Commissioner), Kansas State University, city of Ogden (former Mayor and Mayor), USEPA, and KDHE.

### ***RAB Activities:***

In July 2004, the members provided public comment on the Former Fire Training Area (FTRI-019) Proposed Plan. The repository was eliminated in Clay Center, KS at Clay Center's request.

In 2005, a new Community Involvement Plan was developed. The members also provided public comment on the 354 Area Solvent Detections (FTRI-031) Proposed Plan.

Over the next year, RAB members will continue to gain knowledge of Fort Riley's sites and regulatory issues; review documents; provide technical advice; and participate in formal public comment period activities.

The RAB meets on an as needed basis or once per year in January.

July 19, 2006

DPW-Environmental Division  
Bldg 407, Pershing Court  
Fort Riley, KS 66442

Mr. Shields:

Enclosed are two hard copies of your Installation Action Plan (IAP) as well as an electronic copy on CD.

Please route one signature page for installation representatives' signatures. After collecting the appropriate signatures, please scan and e-mail or mail that signature page to Ms. Maddie Schaefer at the address below. She will route that page for USAEC representatives' signatures.

US Army Environmental Center  
SFIM-AEC-CDN  
ATTN: Maddie Schaefer  
5179 Hoadley Road  
Aberdeen Proving Ground-EA, MD 21010-5401  
maddie.schafer@us.army.mil

Ms. Schaefer will scan and send the completed signature page to you so you may include it in your two hard copies. I will also e-mail a copy of this report to Ms. Schaefer to be included in the USAEC permanent library.

Thank you for your assistance in finalizing this IAP in a timely manner.

Sincerely,



Michelle Hauser  
Engineering & Environment, Inc.  
195 S. Rosemont Rd., Ste. 118  
Virginia Beach, VA 23452  
Ofc: 757-457-0002 ext 234  
Fax: 757-457-3636  
mhauser@eeimail.com