US Army Corps
of Engineers
ST. LOUIS
ENGINEER DISTRICT

RADIOLOGICAL HISTORICAL ASSESSMENT PELHAM RANGE

Fort McClellan
Anniston, Alabama

FINAL REPORT

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Prepared by
US ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

HISTORICAL ASSESSMENT - PELHAM RANGE

FORT McCLELLAN
ANNISTON, CALHOUN COUNTY
ALABAMA

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1.0 GLOSSARY OF TERMS, ACRONYMS AND ABBREVIATIONS

GLOSSARY AND ACRONYMS

AA	Anti-Aircraft
AAF	Army Airfield
AAR	After Action Report
AFP	Artillery Firing Point
AOC	Area of Concern
AEC	Army Environmental Center
AFP	Artillery Firing Point
AGO	Adjutant General's Office
AIT	Advance Individual Training
AOC	Area of Concern
AP	Armor Piercing
APDS	Armor Piercing Discarding Sabot
APERS	Antipersonnel
APT	Armor Piercing with Tracer
ASP	Ammunition Supply Point
ASR	Archives Search Report
Aux	Auxiliary
B	Bivouac Area
BAR	Browning Automatic Rifle
BD	Base Detonating
BD/DR	Building Demolition/Debris Removal
BE	Base Ejection
BGR	Bombing and Gunnery Range
BIRTC	Branch Immaterial Replacement Training Center
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
CADD	Computer-Aided Design/Drafting
Cal	Caliber
CBDA	Chemical and Biological Defense Agency
CBDCOM	Chemical and Biological Defense Command
CBR	Chemical, Biological, Radiological
CDTF	Chemical Decontamination Training Facility
CMTC	Citizens Military Training Camps
CE	Corps of Engineers

CEHNC	Corps of Engineers, Huntsville Engineering and Support Center
CEHND	Corps of Engineers, Huntsville Division (Old)
CEMVS	Corps of Engineers, St. Louis
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
COE	Chief of Engineers
COMP	Composition
CTG	Cartridge
CSM	Chemical Surety Material
CSM	Command Sergeant Major
CWM	Chemical Warfare Material
CWS	Chemical Warfare Service
CX	Center of Expertise
DA	Department of the Army
DARCOM	Development and Readiness Command
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DERP-FUDS	Defense Environmental Restoration Program-Formerly Used Defense Sites
D&I	Detection and Identification
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
EBS	Environmental Baseline Survey
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EOD	Explosives Ordnance Disposal
EPA	Environmental Protection Agency
ERDA	Environmental Restoration Defense Account
FDE	Findings and Determination of Eligibility
FFE	Flame Field Expedient
FFMC	Federal Farm Mortgage Corporation
FLCH	Flechette
FORSCOM	Forces Command
FS	Feasibility Study
FTMC	Fort McClellan
FWS	U.S. Fish and Wildlife Service
FUDS	Formerly Used Defense Sites
GIS	Graphic Information System
GSA	General Services Administration
HE	High Explosive
HEAT	High Explosive Anti-Tank
HEI	High Explosive Incendiary

HEP	Plastic
HE-S	Illuminating
HTRW	Hazardous Toxic and Radioactive Waste
HTW	Hazardous and Toxic Waste
IAS	Initial Assessment Study
IAIT	Infantry Advance Individual Training
ICM	Isotope Committee Meeting
INPR	Inventory Project Report
IRP	Installation Restoration Program
IRTC	Infantry Replacement Training Center
KD	Known Distance
LAW	Light Anti-Tank Weapons
MFP	Mortar Firing Point
MG	Machine Gun
MG	Major General
mm	Millimeter
MT	Mechanical Time
MTSQ	Mechanical Time Super Quick
NARA	National Archives and Records Administration
NAS	Naval Air Station
NBC	Nuclear, Biological, Chemical
NCDC	National Climatic Data Center
NCP	National Contingency Plan
NFS	National Forest Service
NG	National Guard
NGB	National Guard Bureau
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NOFA	No Further Action
NPRC	National Personnel Records Center
NRC	National Records Center
NRC	Nuclear Regulatory Commission
OE	Ordnance and Explosives
OEW	Ordnance and Explosive Waste
OP	Observation Point
ORC	Organized Reserve Corps
OSHA	Occupational Safety and Health Act
PA	Preliminary Assessment
PD	Point Detonating
PIBD	Point Initiating, Base Detonating
PL	Public Law
QASAS	Quality Assurance Specialist Ammunition Surveillance
R	Range
RA	Removal Action
RAC	Risk Assessment Code
RD	Remedial Design

RG	Record Group
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROTC	Reserved Officers Training Corps
RTC	Recruit Training Center
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SDZ	Surface Danger Zone
SLD	St. Louis District, Corps of Engineers
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SWMU	Solid Waste Management Units
T	Training Area
TA	Training Area
TAY	Toxic Agent Yard
TECOM	Test Evaluation Command
TEU	Technical Escort Unit
TMDE	Test Measuring and Diagnostic Equipment
TNT	Trinitrotoluene
TP	Target Practice
USA	United States of America
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USADACS	U.S. Army Defense Ammunition Center and School
USAED	U.S. Army Engineer District
USAEDH	U.S. Army Engineer Division, Huntsville, AL (Old)
USAESCH	U.S. Army Engineering and Support Center, Huntsville, Alabama
USATHMA	U.S. Army, Corps of Engineers, Toxic and Hazardous Materials Agency
USC	United States Code
USDA	U.S. Department of Army
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTES	Unit Training Equipment Site
UXO	Unexploded Ordnance
WAA	War Assets Administration
WD	War Department
WNRC	Washington National Records Center

CHEMICAL GLOSSARY AND ACRONYMS

CG	Phosgene	Choking
DP	Diphosgene	Choking
GA	Tabun	Nerve

GB	Sarin	Nerve
GD	Soman	Nerve
VX	VX	Nerve
AC	Hydrogen Cyanide	Blood
CK	Cyanogen Chloride	Blood
SA	Arsine	Blood
HD	Distilled Mustard	Blister
HN-1	Nitrogen Mustard	Blister
HN-2	Nitrogen Mustard	Blister
HN-3	Nitrogen Mustard	Blister
CX	Phosgene Oxime	Blister
L	Lewisite	Blister
HL	Mustard-lewisite	Blister
PD	Phenyldichloro-arsine	Blister
ED	Ethyldichloro-arsine	Blister
MD	Methyldichloro-arsine	Blister
DA	Diphenylchloro-arsine	Vomiting
DM	Adamsite	Vomiting
DC	Diphenylcyano-arsine	Vomiting
CN	Chloroaceto-phenone	Tear
CNC	Chloroaceto-phenone in Chloroform	Tear
CNS	Chloroaceto-phenone and Chloropicrin in Chloroform	Tear
CNB	Chloroaceto-phenone in benzene and Carbon Tetrachloride	Tear
CA	Bromobenzylcyanide	Tear
CS	O-chlorobenzyl-malononitril	Tear
BZ	BZ	Incapacitating
BG	Bacillus globigii	Biological Simulants
SM	Serratia marcescens	Biological Simulants

OTHER CHEMICAL CORPS TERMS

BW	Biological Warfare
CBR	Chemical, Biological, Radiological
NBC	Nuclear, Biological, Chemical
Rad.	Radiological

2.0 EXECUTIVE SUMMARY

The purpose of this Historical Assessment is to identify any buildings and areas, which may have been associated with the use, storage, handling, disposal or burial of radioactive isotopes at the Pelham Range Area of Fort McClellan. The St. Louis Engineer District used the Archives Search Report process to identify areas, which previously to this investigation, were unknown.

New areas identified as being associated with radioactive materials are:

Area 10A: The fenced area at Range I and the surrounding area may have been used for radiological survey familiarization training as part of the Chemical, Biological, Radiological (CBR) Field Familiarization Course. The fenced area may have contained the radioactive material storage wells.

Area 10B: Lima Pond was originally used as an 'A-Bomb' crater for the CBR Field familiarization Course. Range K may have been used for the radioactive material storage wells. Additionally, the fenced area may have been used to conduct radioactive survey training. The 1954 aerial photographs show a grid like area northeast of what is now Rideout Hall. This area may also have been used for radiological survey training.

Area 9D: The south part of this Training Area was identified in the 1977 Initial Assessment of Fort McClellan as a possible Radiological Training Site. The area is across the road to the northeast of the Range K area. No follow on investigations for this area could be found.

Previously identified sites are:

The 300 source well field known as Radiological Survey Area #3.
Rideout Field with 1024 source wells.
The Pelham Range Radiological Burial Grounds

Recommendations for these specific areas may be found in Section 8.0, Conclusions.

3.0 PURPOSE OF THE HISTORICAL SITE ASSESSMENT (SCOPE)

3.1 Authority

Since 1988, Congress has enacted legislation providing for the closure, in part or in whole, of military bases/facilities and the realignment of others. The principal mechanism for implementing the policy in both statutes has been an independent, bipartisan commission. Two of the most pressing issues are: (1) providing assistance to local communities economically impacted by base closures; and (2) establishing a cost-effective program of environmental cleanup at bases prior to their disposition.

Congress introduced base closure procedures in Public Law 100-526, enacted 24 October 1988. The statute established a bipartisan commission to make recommendations to Congress and the Secretary of Defense on closures and realignments, commonly referred to as the Base Closure and Realignment Commission (BRAC).

On 5 January 1989, the Secretary of Defense approved the commission's report, BRAC 88, recommending closure of 86 installations, partial closure of 5, and realignment of 54 others. Since the commission approach adopted by Congress was successful, new base closure legislation was introduced (Public Law 101-510) which again relied upon the services of an independent commission. The Defense Base Closure and Realignment of 1990 (1990 Base Closure Act), Public Law 101-510 established the process by which Department of Defense (DoD) installations would be closed and/or realigned. This commission, in accordance with a statutory provision, met in 1991, 1993 and 1995. Fort McClellan, Alabama, was among the installations that were recommended to be closed in the BRAC 95 report.

3.2 Subject

Fort McClellan abuts the city of Anniston, Alabama and lies within Calhoun County. During the Spanish American War (1898), units stationed at Camp Shipp in the Blue Mountain area may have used the area for artillery training. Documented military use began in 1912 when the Alabama National Guard used part of the site as a Field Artillery Range. In 1917, Congress authorized the establishment of Camp McClellan. In 1929, the camp became officially designated as Fort McClellan. Following World War II, the Fort was put into an inactive status in June of 1947. The Fort was reactivated in January of 1950 and has remained an Active Army Installation. The U.S. Army Chemical School was a tenant activity from 1951 to 1973 and again from 1979 to 1999.

This report covers the Pelham Range area only. It does not cover main post and the Choccolocco Corridor.

3.3 Purpose

This Historical Assessment compiles information obtained through historical research at various archives and records holding facilities, interviews with persons associated with Pelham Range or its operations, and a team inspection of the site. The search directs efforts towards determining possible use or disposal of Radiological Materials on the site. The research places particular emphasis on establishing the types, quantities, and area of disposal. This process obtains information for use in developing recommendations for further action at Pelham Range.

3.4 Scope

This investigation focuses on the potential that Radiological Contamination could remain on Pelham Range. The primary focus was the use of Radioactive Isotopes by the Chemical School from 1952 to 1973. Of specific interest was 1952 to 1957 timeframe, when the Chemical School was not required to have a license from the Atomic Energy Commission (AEC). This report presents the following:

- A brief history of Pelham Range at Fort McClellan
- Historic use of Radioactive Isotopes
- A listing of related site investigations
- Findings of the site inspection
- Description of Radiological uses identified with the site

These factors represent the basis for the evaluation of potential Radiological Contamination and associated risks at Pelham Range.

4.0 PROPERTY IDENTIFICATION

4.1 Physical Characteristics

4.1.1 Name - Pelham Range

4.1.2 Location - Anniston, Alabama

4.1.3 Topography - Not included as part of the scope of this Historical Assessment.

4.1.4 Stratigraphy - Not included as part of the scope of this Historical Assessment.

4.2 Environmental Setting

4.2.1 Geology

Fort McClellan is located in the Tennessee section of the Valley and Ridge province. Consolidated rocks that range in age from Precambrian to Pennsylvanian have been sharply folded into northeastward trending synclines and anticlines complicated by thrust faults that have a general northeastward trending strike and a southeasterly dip. The predominating features of the area are the thrust faults.

Metamorphic rocks have been thrust northwestward and overlie rocks of Cambrian and Ordovician age along the eastern edge of the county. Throughout the rest of the county, the presence of faults is indicated by repetition of formations and by the absence of formations. Secondary stresses resulting from the primary folding and thrust faulting, caused numerous high-angle faults that are of more local extent. Additionally, the faulting and the attendant folding and crushing of beds caused the distribution of formations near the town of Choccolocco (Causey and Warman 1962).

4.2.2 Hydrogeology (Not applicable in this report).

4.2.3 Hydrology

Groundwater

The fault zones of the area form reservoirs and conduits for large quantities of groundwater. Abundant supplies are available over much of the area from the many springs that discharge groundwater from the fault systems. Several hundred gallons per minute commonly can be developed from drilled wells that are finished in the Shady Dolomite and the Conasauga Formation. These formations are relatively thick and crop out in large parts of the area. Locally, the Cambrian and Ordovician dolomites supply several hundred gallons per minute of ground water from springs, while drilled wells in

these rocks produce much smaller yields. Additionally, the Fort Payne Chert and the Newala Limestone in places furnish supplies of several hundred gallons per minute, but these formations are relatively small and scarce in this area.

General movement of the groundwater is to the south and west. Near Choccolocco Valley the groundwater moves southward and then westward around the southern end of the town of Choccolocco (Causey and Warman 1962).

Surface Water

Runoff from the site flows into Cane Creek and into the Coosa River. The Alabama River, at Montgomery, has a minimum flow of 52,000 cfs and a maximum flow of 284,000 cfs for the period of record 1886-1961.

4.2.4 Meteorology

Based on climatological data at Birmingham Municipal Airport, summers are long and hot. On a typical mid-summer day, the temperature will be nearly 70 degrees at daybreak, approach 90 degrees at mid-day, and level off in the low 90s during the afternoon. It is not unusual for the temperature to remain 100 degrees for several days in a row. However, every few years an extended heat wave will bring temperatures over 100 degrees. July is normally the hottest month but there is little difference from mid-June to mid-August. Rather persistent high humidity adds to the summer discomfort.

January is normally the coldest month but there is not much difference from mid-December to mid-February. Overall, winters are relatively mild. Even in cold spells, it is unusual for the temperature to remain below freezing all day. Sub-zero cold is extremely rare, occurring only a very few times this century.

Snowfall is erratic. Sometimes there is a two or three year span with no measurable snow. On rare occasions, there may be a two to four inch snowstorm. The snow usually melts quickly. In a normal year, the last 32-degree minimum temperature in the spring is in mid to late March and the first in autumn is in November.

Rainfall is abundant and is fairly well distributed throughout the year. However, some of the wetter winter months, plus March and July have twice the rainfall of October, the driest month. Summer rainfall is almost entirely from scattered afternoon and early evening thunderstorms. Serious droughts are rare and most dry spells are not severe. The stormiest time of the year with the greatest risk of severe thunderstorms and tornadoes is in spring, especially in March and April.

The prevailing wind is south with a mean speed of 7.2 miles per hour

5.0 HISTORICAL SITE ASSESSMENT METHODOLOGY

5.1 Approach and Rationale

The approach used for this Historic Assessment is the same approach as used in preparing an Archives Search Report (ASR) for Explosive Ordnance or Chemical Warfare Materials. Various Record Groups at the National Archives are searched as well as National Holding Centers for records. State and local archive holdings are also searched. On site reviews of existing records and interviews with knowledgeable sources are conducted. Aerial photos from previous over flights are interpreted if available. A site survey is conducted to confirm the historic research.

5.2 Boundaries of Site

All of the locations identified are within the boundaries of Pelham Range.

5.3 Documents Reviewed

Washington National Records Center
4205 Suitland Road
Suitland, MD 20409
POC: Velicia Chance
(301) 457-7010

Record Group 338 (Records of the U.S. Army Commands)
- Accession 68A6001
  - Boxes 1 – 2
- Accession 70B0668
  - Box 1
- Accession 71A0491
  - Boxes 1 – 2
- Accession 72B1094
  - Box 1
- Accession 72C1094
  - Boxes 1 – 3
- Accession 72D1094
  - Box 1
- Accession 73B5398
  - Box 1
- Accession 73C5398

Box 1
Accession 740688
Box 1
Accession 90-0174
Box 1
Accession 90176
Boxes 1 - 17 Destroyed in 1997.
Accession 93-0473
Boxes 1 – 5

National Archives I
8th and Pennsylvania
Washington, DC 20408
POC: Mitch Yockelson
(202) 501-5385

Record Group 77 (Records of the Chief of Engineers)
Entry 393
Boxes 138 - 140

National Archives at College Park
8601 Adelphi Road
College Park, MD 20740
POC: Ken Schlessinger
(301) 713-6800

Record Group 112 (Records of the Office of the Surgeon General)
Entry 31 Geographic Series, 1945-46.
Box 41 One folder on Fort McClellan.

Record Group 175 (Records of the Chemical Warfare Service)
Entry 1. US Army Schools; Chemical Corps School.
Boxes 1 – 10. Fort McClellan.
The Chemical Corps School Fort McClellan, AL General Records, 1949-50.
Box 1
Records of the Office of the Chief Chemical Officer, 1948-60.
Boxes 11 – 13.
Accession 67A4900 Records of the Chief Chemical Officer, 1946-54.
Boxes 372, 373, 422, 479, 481.
General Correspondence, Miscellaneous Series, 1955-59.
Boxes 23 – 26, 45, 46, 49, 67, 68, 73, 74, 75, 82, 102.
General Correspondence, Subject Series, 1955-60.
Boxes 1 – 10, 124, 145 – 149, 166, 181, 182, 192 – 195, 197.
General Correspondence, Station Series, 1955-59.
Boxes 24 – 28, 37 – 44, 53 – 68, 75.
Historian Background Files, 1951-54.

Boxes 7 – 13.

Record Group 337 (Records of the Army Ground Forces)
Entry 1
Box 15 Two folders on Fort McClellan.

U.S. Army Corps of Engineers
Office of History
7701 Telegraph Road
Fort Belvoir
Alexandria, VA 22315
POC: Lisa Wagner
(703) 428-6558

Copied Fort McClellan installation maps.

U.S. Army Center for Health Promotion and Preventive Medicine
Health Physicists Department, Building 5158
Edgewood Area, Aberdeen Proving Ground, MD
POC: Mr. Harris Edge
(410) 436-8395

The research team copied several reports pertaining to Fort McClellan radiological studies.

U.S. Army Center for Military History
103 3rd Avenue
Fort McNair, DC 20319-5058
POC: Mary Haynes
(202) 685-4042

The research team carefully viewed the appropriate history and found no pertinent information.

National Personnel Records Center
Military Personnel Records
9700 Page Avenue
St Louis, MO 63132-5100
POC: Wilson Sullivan
(314) 538-4085

Record Group 338 (Records of the U.S. Army Commands)
Accession 56A0434

Boxes 1 – 2 Copied documents on Talladega Forest Maneuver Area and Morrisville Training Area.

Accession 59A4097

Box 1 Decimals 010.3 – 674. Copied documents on Talladega Forest , HEW Demonstration Area, Pelham Fires.

Accession 69A4172

Box 1 Computer print out cards.

Accession 780758

Boxes 1 – 2 Vault boxes.

Chemical School Library
Building 1081
Fort McClellan, AL 36205-4414
POC: Richard Pastorett
(205) 848-4414

The research team carefully viewed all the pertinent files and made numerous copies.

U.S. Army Chemical Corps Museum
Building 2299
Fort McClellan, AL 36205-5020
POC: Thomas Miller
(256) 848-4449

The research team carefully viewed all the pertinent files and made numerous copies.

5.4 Property Inspections

During the investigation, three site visits were made during 1999. These site visits were made in May, September and November of 1999. Summaries of these visits are:

1. During 24-26 May the following radiological sites were visited:

   a. Lima Pond Area, Range L, the two military tanks on the hill to the east were inspected. There is a sign on the ground "Contaminated, Keep Off." The crater area is fenced and was not entered.

   b. Range K Area, the old fenced area was walked as were areas outside the fence. Numerous pieces of ordnance, which had been vented, using shape charges were found, along with partially buried bleach cans.

c. Range I Area, original fenced area still exists. There is a small concrete marker just inside the gate and a man made mound in the rear. Outside the fence to the south were 5 metal posts spaced approximately 75' apart in a row. This may have been the Radiological Survey Area, which was part of the Chemical Officer Field Familiarization Course.

d. Radiological Burial Area (north end of Battle Drill Area). This is the old Pelham Range Radiological burial ground. Two of the corner fence posts were still present. This area originally had a fence with a perimeter of 400 yards.

2. During 20-23 September the following radiological sites were visited:

   a. The area south of Range I was re-walked. No other signs of training other than the five 4" pipes were found.

   b. The road between Lima Pond and Range K was walked. Training aids such as expended smoke grenades and slap flares were found.

3. During 1-4 November 1999 the following radiological sites were visited:

   a. The area north of the grassy area at Range I was walked. Three more 4" pipes were found in a general east-west line. Two of the pipes were erect and one was near the edge of the road, on the west side of Range I.

   b. The eastern portion of Area 10B was walked. Some expended slap flares were discovered in the area.

   c. A Toxic Gas sign was discovered nailed to a tree on the north end of the western edge of Area 10A. The immediate area was walked, no evidence of CWM use was discovered.

   d. The service road between the Toxic Area (10A) and the Rideout Field (Area 24C) was inspected. All signage warning of Toxic Dangers or Radiological Dangers have been removed.

5.5 Personal Interviews

Dr. John May of the U.S. Army Chemical School was informally interviewed for general information concerning the use of radioactive material at Pelham Range. Information was also obtained from retired Sergeant Major Bart Truffa's interview done by USACHPPM (see Appendix B-Cited Documents). Bart Truffa was on site during the removal operations at Rattlesnake Gulch in 1971 (Main Post). In 1995 he assisted Dr. May in relocating the burial site on Main Post.

6.0 HISTORY AND CURRENT USAGE

6.1 History

In 1915 President Woodrow Wilson reserved 1,160 acres in Alabama for military purposes which soon became Fort McClellan. In 1941, during World War II, the War Department authorized the acquisition of additional lands for a military training area; thus 26, 912.17 acres were acquired. This area was originally called the Morrisville Maneuver Area and is now known as the Pelham Range Area. This area is separated from the Fort McClellan main post by approximately 6 miles (Mobile District 1988).

The Department of the Army established the Army Chemical Training Center at Fort McClellan in 1951 and academic instruction began at the U.S. Army Chemical Corps School in 1952. The Radiological Safety Support Unit, established in 1953, was an organizational element of the Army Chemical Training Center at Fort McClellan. The Rad Unit, as it was commonly called, conducted radiological tests and research and development, which aided in the development of training and tactical doctrine. In 1963 the name of the U.S. Army Chemical Corps School changed to the U.S. Army Chemical Center and School (Brief 1954; Rosell 1960).

In June of 1952 the Isotope Committee gave permission for the purchase of 10 sources of $Cobalt^{60}$ to be used by the Chemical School. The sources would be used in the CBR Familiarization Course in the Pelham Range Area as a training aid (Area 10-A and Area 10-B). The sources were to be stored, when not in use at the site at which they were used, in a similar manner as that used in the radiological field monitoring area "Rattlesnake Gulch" (Main Post). By December 1952 the 10 sources of $Cobalt^{60}$ had been received and installed in the CBR Field Familiarization Course. Much of Area 10-B was used for the CBR Tactical Training Exercise Course. The site known as Lima Pond was actually Station No. 5 (A-Bomb). Radiological sources were placed in the crater. Students had to monitor the radiation, take appropriate actions and continue on with the exercise (Isotope Committee Meeting (ICM) #4,1952; ICM #6, 1952, Lesson Summary Sheet 1955).

In July 1954 the use of radioactive sources on Pelham Range was restricted. The ICM minutes reads:

> "Approval was granted for the use of radioactive material only in the area fenced and designated as the Toxic Gas Area of Pelham Range. Any other area was disapproved on the basis that AEC regulations cannot be complied with in other areas without extreme difficulty"

In August of 1954 approval was given for a new Pelham Range Radiological Survey Training Area. Approval was also granted to purchase up to 500 Curies of $Cobalt^{60}$ in an

unencapsulated form. By December 1954, ten salvaged medium tanks had been obtained to place in the area to add realism to the problem and to serve as landmarks. Other military salvage, such as tents, fuel cans and tires had also been obtained. In January 1955 a fence to enclose the new area was being requisitioned. A new system of source wells was to be used using a system of cables or chains to raise and lower the sources from individual source wells. Prior to this sources had been stored in a source well and manually placed on a post or other device during training ('Fishing Pole' method) (ICM #13, 1954;
ICM #14, 1954; Powell 1955).

By April of 1956 the new field at Pelham had been designated as Radiological Survey Area #3. At least 90 source wells had been placed and another 100 were ready to be placed. The same month approval was granted the field to be used by radiological ground survey classes. The field consisted of $Cobalt^{60}$ sources from 300 source wells in an open field when needed for training. These sources simulated a fallout pattern from a nuclear detonation. The field was used to train students in the procedure for planning, controlling and conducting ground and aerial radiological surveys. (ICM #17, 1956; ICM #18, 1956).

By May of 1957 a Radioactive Burial Ground had been established at Pelham Range. Use of the burial area was placed on hold until the provisions of AR 755-380 could be met. The perimeter of the burial area required 400 yards of fencing. By October of 1957 a path was being made around radiological Survey Area #3 for the installation of a new fence around the area. By 13 November, work on the fence had been completed. A recommendation was also made in November to place a marker in concrete at the burial grounds (Progress Report 1957; ICM #29, 1957; ICM #30, 1957; Wood 1957).

Beginning in 1957 the U.S. Atomic Energy Commission began issuing Byproduct Material Licenses to the U.S. Army Chemical School at Fort McClellan for activities at Pelham Range Area and on main post. The Atomic Energy Commission amended license number 01-02861-01 twenty-two times and license number 01-02861-02 four times. Both of the licenses were renewed in 1972 with an expiration date of 1977. In 1959 the U.S. Army Chemical School received a Special Nuclear Material License No. SNM-344 for U-233 and plutonium. After the U.S. Army Chemical Corps School reopened in 1979 the Atomic Energy Commission issued license 01-02861-04. This license was amended and extended for several years (Morgan 1957; Schwertner 1972; Layfield 1971).

In 1957 Fort McClellan soldiers removed radioactive waste from Fort McClellan (Iron Mountain Waste Area) and transferred it to Pelham Range for burial (ICM #25, 1957; Anderson 1971).

In April of 1958 a test was accomplished on twenty of the sources at Pelham Range. There was one possible leaker that would need to be rechecked (results unknown). By August of 1958, the sources and wells had been removed from the Field Familiarization Course at Pelham Range. The engineers had also received a granite marker, for the burial ground (Johnson 1958; Knight 1958).

During the 6 March 1959 isotope committee meeting there was a discussion on the possibility of building a new larger radiological survey field (Knight 1959).

In 1960 the Atomic Energy Commission and U.S. Army Chemical Center and School entered into an Interagency Agreement For Enriched Uranium (SNM Interagency Agreement No. 1003) at Fort McClellan (McAlduff 1970). In 1971 the U.S. Atomic Energy Commission and the U.S. Army Chemical Center and School entered into an agreement (Agreement No. 3039) for plutonium management at Fort McClellan (Craig 1971).

By 1965, Radiological Survey Area #3 had been replaced by the newer Rideout Field. This new field used hydroelectric actuators to raise and lower the sources. This allowed the field's pattern to be changed and provide more realistic training. The field was designed to provide a gamma radiation field with one thousand $Cobalt^{60}$ sources distributed in a specific area. The sources were stored on rods in wells below ground and raised by remote control when needed for training. Although more than one thousand wells were installed (estimated 1,024), operational problems with the system prevented the usage of many wells (Estimated that no more than 800 were ever operational at one time). Additional construction at Rideout Field included a classroom with remote control console (Rideout Hall), two control towers, a security fence and gate and a helicopter landing pad (Anniston Star 1970; Dedication Ceremony 1965; U.S. Army Chemical Center and School 1972)

The Chemical Center at Fort McClellan closed Rideout Field as a training area in March 1972. Fort McClellan personnel removed the $Cobalt^{60}$ sources and the old Radioactive Material Burial Site was cleared. The U.S. Army Chemical Center and School at Fort McClellan was deactivated in 1973 (U.S. Army Chemical Center and School 1972; St. Louis 1999).

In 1975 the U.S. Army Military Police School moved from Fort Gordon, Georgia to Fort McClellan. In 1979 the U.S. Army Chemical School relocated back to Fort McClellan from Aberdeen Proving Ground, Maryland. The same year saw the establishment of a Training Brigade for Basic Training at Fort McClellan.

In 1977, during the Installation Assessment, the south part of Training Area 9D was identified as a possible Radiological Training Site. The area is across the road to the northeast of the Range K area (USATHMA 1977).

During a routine survey of Rideout Field in January 1985, Fort McClellan Chemical School Health Physics Office personnel discovered a radioactive $Cobalt^{60}$ source. Military personnel immediately removed and transferred the contamination from Rideout Field to Anniston Army Depot (Kingery 1985).

6.2 Current Usage

The Fort McClellan Transition Force has recently transferred the Pelham Range Area to the National Guard Bureau.

6.3 Adjacent Land Usage

All of the radiological sites are contained within the boundaries of Pelham Range. Currently, Training Areas border the sites where radiological activities occurred.

7.0 FINDINGS

7.1 Potential Contaminants

Fort McClellan was licensed to obtain and use small quantities of Radioactive Isotopes. These are listed in the License Review (Appendix D). The two most common Radioactive Isotopes used in large quantities were $Cobalt^{60}$ and $Cesium^{137}$. $Cobalt^{60}$ was used in the CBR Field Familiarization Course, Radiological Survey Area #3 and Rideout Field. A variety of radioactive materials may have been buried in the radioactive burial ground at Pelham Range.

7.2 Potential Contaminated Areas

7.2.1 Impacted Areas – known and potential

These areas have a potential for Radiological Contamination. Detailed information on each one is listed in Section 8.0.

Area 10A Toxic Training Area
Area 10B Toxic Training Area
Area 24A South Half Rideout Field
Area 24C North Half Rideout Field
Area 9D Training Area

7.2.2 Non-Impacted Areas

Based on this Historic Assessment none of the other areas at Pelham Range have had any activity associated with radioactive isotopes.

7.3 Potential Contaminated Media

A description of each location is in the Conclusions Section 8.

7.4 Related Environmental Concerns

As a precaution, the above areas should be limited in access and use until cleared by proper authorities. Of specific concern is the unfenced burial area with only one sign, which is only visible when approaching the site from the north side.

8.0 CONCLUSIONS

AREA 10-A (Toxic Training Area)
Plate 2, EN 915 321

Part of this area is currently marked as Range I and contains a small fenced area where radiological source storage wells may have been located (EN 9195 3210). Five steel posts were found about 50 feet south of the fenced area, running in a generally straight line with about 75' between each post. These posts may have been used to support radiological sources during CBR field training (EN 9195 32205). Three more posts were found north of the grassy area in front of the fenced area. Two of these posts are upright and about 50 feet into the woods (EN 9195 3225). The third post is lying on the ground near the service road and is generally in line with the other two. In the late 50's the radiological sources and storage wells were removed.

Recommended Action: This area was not identified in previous reports. There is no documented evidence that any of the sources used in the CBR Field Familiarization Course ever leaked. Recommend random sampling for radiological contamination within the fenced area and along the two lines of steel posts (MARSSIM Class 3).

AREA 10-B (Toxic Training Area)
Plate 2, EN 928 331

Much of Area 10-B was used for the CBR Tactical Training Exercise course. The site known as Lima Pond was actually Station No. 5 (A-Bomb) (EN 9280 3315). Radiological sources were placed in the crater during training exercises. Students had to monitor the radiation, take appropriate actions and continue on with the exercise. The crater may have been used to dispose of expended ordnance and other military materiel from other stations. Range K may have been used for the radioactive storage wells (EN 9285 3360). Additionally the fenced area may have been used to conduct radioactive survey training. In the late 50's, the tactical exercise was discontinued and radiological sources and storage wells removed. The 1954 aerial photographs show a grid like area northeast of what is now Rideout Hall. This area may also have been used for radiological survey training (EN 9350 3300).

Recommended Action: This area was not identified in previous reports. There is no documented evidence that any of the sources used in the CBR Field Familiarization Course ever leaked. Recommend random sampling for radiological contamination at the three above locations (MARSSIM Class 3).

AREA 9D (Training Area)
Plate 2, EN 933 337

Area 9D: The south part of this Training Area was identified in the 1977 Initial Assessment of Fort McClellan as a possible Radiological Training Site. The area is across the road to the northeast of the Range K area. No follow on investigations for this area could be found.

Recommended Action: This area was identified in the 1977 Installation Assessment of Fort McClellan. There is no documented evidence that any of the sources used in the CBR Field Familiarization Course ever leaked. Recommend random sampling for radiological contamination in the area identified on Plate 2 (MARSSIM Class 3).

AREA 24-A (South Half Rideout Field)
Plate 2, En 925 309

Rideout Field: This is second version of the large Radiological Survey Area at Pelham Range and was operational by 1965 (EN 925 309). The total field contained some 1,000 source wells, which were remotely controlled. The field was on the north and south side of Cane Creek and was closed down in 1972.

Recommended Action: This area has been identified in previous reports involving radiological activities. Recommend no new surveys.

AREA 24-C (North Half Rideout Field & Radiological Burial Ground)
Plate 2, EN 933 327

Radiological Survey Area #3: This is the first version of the large Radiological Survey Area at Pelham Range, which was operational in 1956 (EN 931 322). The area contained 300 source wells, which were raised by use of a pulley system. The field was entirely north of Cane Creek. The new Rideout Field replaced this radiological area in 1965.

Rideout Field: This is second version of the large Radiological Survey Area at Pelham Range and was operational by 1965 (EN 933 319). The total field contained some 1,000 source wells, which were remotely controlled. The field was on the north and south side of Cane Creek and was closed down in 1972.

Pelham Range Radiological Burial Ground: This area is on the north end of the Battle Drill Area (EN 9335 3275). The area was used from 1957 to approximately 1971. Burials may include $Cobalt^{60}$ and other radiological waste. Part of the area, was removed in 1973 by Major Anderson.

Recommended Action: These areas have been identified in previous reports involving radiological activities. Recommend the placing of a fence around the burial mound within the burial area. Signage should be posted in accordance with regulations and visible when approaching from any direction. Recommend no new surveys.

9.0 REFERENCES

1993 Regulation, *Manual for Conducting Radiological Surveys in Support of License Termination,* draft report for comment, NUREG/CR-5849, ORAU-92/C57, prepared for U.S. Nuclear Regulatory Commission, reprinted December 1993.

1997 Regulation, *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM),* NUREG-1575, EPA 402-R-97-016, final, December 1997.

HISTORICAL ASSESSMENT - PELHAM RANGE

REPORT APPENDICES