

DOC# 99-3

**INDUSTRIAL AND ENVIRONMENTAL
RADIATION HISTORICAL SITE
ASSESSMENT
FORT WINGATE DEPOT ACTIVITY**

24 JULY 98 TO 28 JANUARY 99



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5403

cf: file
Larry Fisher
Tom Turner
Library
Admiral Reed
11-7

MCHB-TS-OHP (40)

25 OCT 1999

MEMORANDUM FOR Commander, U.S. Army Forces Command, ATTN:
AFPI-BC (Mr. Bonilla), Fort McPherson, GA
30330-6000

SUBJECT: Industrial and Environmental Radiation Historical Site
Assessment No. 26-MH-8659-A-99, Fort Wingate Depot Activity,
Gallup, New Mexico, 24 July 1998 - 28 January 1999

1. Copies of subject report with Executive Summary are enclosed. Findings and recommendations are provided for your consideration.
2. The conclusion of this report indicates all evidence including some prior radiation surveys exhibited no radiological impact at Fort Wingate Depot Activity. No further action is required.
3. If you have any questions, please contact MAJ Matcek at DSN 584-3502 or commercial (410) 436-3502.

FOR THE COMMANDER:

GARY J. MATCEK
MAJ, MS
Program Manager
Health Physics

CF (w/encl):
CDR, MEDCOM, ATTN: MCHO-CL-W
CDR, WBAMC, ATTN: PVNTMED SVC
✓CDR, BEC, FWDA

Rec'd 11/17/99

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U.S. Army Center for Health Promotion and Preventive Medicine

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INDUSTRIAL AND ENVIRONMENTAL RADIATION
HISTORICAL SITE ASSESSMENT NO. 26-MH-8659-A-99
FORT WINGATE DEPOT ACTIVITY
GALLUP, NEW MEXICO
24 JULY 1998 - 28 JANUARY 1999

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command; Oct 99. Requests for this document must be
referred to Commander, U.S. Army Forces Command, ATTN:
AFPI-BC (Mr. Bonilla), Fort McPherson, GA 30330-6000.

Readiness Thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

The lineage of the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) can be traced back over 50 years. This organization began as the U.S. Army Industrial Hygiene Laboratory, established during the industrial buildup for World War II, under the direct supervision of the Army Surgeon General. Its original location was at the Johns Hopkins School of Hygiene and Public Health. Its mission was to conduct occupational health surveys and investigations within the Department of Defense's (DOD's) industrial production base. It was staffed with three personnel and had a limited annual operating budget of three thousand dollars.

Most recently, it became internationally known as the U.S. Army Environmental Hygiene Agency (AEHA). Its mission expanded to support worldwide preventive medicine programs of the Army, DOD, and other Federal agencies as directed by the Army Medical Command or the Office of The Surgeon General, through consultations, support services, investigations, on-site visits, and training.

On 1 August 1994, AEHA was redesignated the U.S. Army Center for Health Promotion and Preventive Medicine with a provisional status and a commanding general officer. On 1 October 1995, the nonprovisional status was approved with a mission of providing preventive medicine and health promotion leadership, direction, and services for America's Army.

The organization's quest has always been one of excellence and the provision of quality service. Today, its goal is to be an established world-class center of excellence for achieving and maintaining a fit, healthy, and ready force. To achieve that end, the CHPPM holds firmly to its values which are steeped in rich military heritage:

- ★ Integrity is the foundation*
 - ★ Excellence is the standard*
 - ★ Customer satisfaction is the focus*
 - ★ Its people are the most valued resource*
 - ★ Continuous quality improvement is the pathway*

This organization stands on the threshold of even greater challenges and responsibilities. It has been reorganized and reengineered to support the Army of the future. The CHPPM now has three direct support activities located in Fort Meade, Maryland; Fort McPherson, Georgia; and Fitzsimons Army Medical Center, Aurora, Colorado; to provide responsive regional health promotion and preventive medicine support across the U.S. There are also two CHPPM overseas commands in Landstuhl, Germany and Camp Zama, Japan who contribute to the success of CHPPM's increasing global mission. As CHPPM moves into the 21st Century, new programs relating to fitness, health promotion, wellness, and disease surveillance are being added. As always, CHPPM stands firm in its commitment to Army readiness. It is an organization proud of its fine history, yet equally excited about its challenging future.



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EXECUTIVE SUMMARY
INDUSTRIAL AND ENVIRONMENTAL RADIATION
HISTORICAL SITE ASSESSMENT NO. 26-MH-8659-A-99
FORT WINGATE DEPOT ACTIVITY
GALLUP, NEW MEXICO
24 JULY 1998 - 28 JANUARY 1999

1. PURPOSE. The purpose of this Historical Site Assessment was to establish the history of the handling of radioactive sources/commodities at Fort Wingate Depot Activity (FWDA), Gallup, New Mexico. The locations of radioactive sources/commodities, the radionuclides in the sources/commodities, how they were utilized, accidents/incidents or leaks that may have contaminated any area(s), and the general history of radiological activities at FWDA were assessed to determine which areas/facilities should be evaluated for the presence of any residual radioactive materials.
2. CONCLUSIONS.
 - a. This Historical Site Assessment, which included interviews, revealed that there were a limited number of identifiable operations performed where radioactive sources/commodities were stored at FWDA. There were no identifiable operations where radioactive materials were used.
 - b. All evidence including some prior radiation surveys indicate that there is no radiological impact at FWDA. Interviews and records indicate that no impact should be expected.
 - c. The installation is classified as a Non-Impacted Area in accordance with the classification system in Appendix D.
 - d. A Decommissioning Plan is not required for FWDA because the criteria stated in Title 10, Code of Federal Regulations, Parts 30 and 40 are not applicable.
3. RECOMMENDATIONS. None.

Readiness thru Health





DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
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REPLY TO
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MCHB-TS-OHP

INDUSTRIAL AND ENVIRONMENTAL RADIATION
HISTORICAL SITE ASSESSMENT NO. 26-MH-8659-A-99
FORT WINGATE DEPOT ACTIVITY
GALLUP, NEW MEXICO
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1. REFERENCES.

a. NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment, June 1992.

b. NUREG-1505, A Nonparametric Statistical Methodology for Design and Analysis of Final Status Decommissioning Surveys, Draft Report for comment, August 1995.

c. U.S. Army Center for Health Promotion and Preventive Medicine, Industrial Radiation Historical Data Review Protocol.

2. AUTHORITY. Facsimile, FORSCOM, AFPI-BC, 25 January 1996, SUBJECT: Forscom Priorities for the NRC and UXO BRAC 95 Projects.

3. PURPOSE. The purpose of this Historical Site Assessment was to establish the history of the handling of radioactive sources/commodities at Fort Wingate Depot Activity (FWDA), New Mexico. The locations of the radioactive sources/commodities, the radionuclides in the sources/commodities, how they were utilized, accidents/incidents or leaks that may have contaminated any area(s), and the general history of radiological activities at FWDA were researched to determine which areas/facilities should be evaluated for the presence of any residual radioactive material.

4. GENERAL.

a. Mr. Harris Edge, former Program Manager, Industrial and Environmental Health Physics, contacted Department of the Army Licensees, the Base Realignment and Closure (BRAC) Environmental Coordinator, and various other personnel, as necessary, to obtain information to aid in identifying the areas requiring survey.

b. Mr. Charles E. Day, III, Henry M. Jackson Foundation participant, Health Physics Consultant, conducted a Historical Site Assessment of FWDA by reviewing and evaluating Nuclear Regulatory

Readiness thru Health

Commission (NRC) licenses, Department of Army radiation authorizations (DARAs), U.S. Army Center for Health Promotion and Preventive Medicine reports, installation radiation survey/leak test records, histories, photographs, maps, records of leaks, spills, accidents/incidents, contamination events, and various other documents, as applicable. He also interviewed selected employees and former employees of FWDA and selected employees of the two area hospitals.

c. A list of abbreviations is provided in Appendix A.

d. An outline of typical questions asked during interviews and the results of interviews are provided in Appendices B and C, respectively.

5. FINDINGS.

a. History of FWDA.

(1) The area currently known as FWDA was established by Executive Order in 1870, although it was preceded by 10 years, two earlier locations and the names of Fort Fauntleroy, Fort Lyon and Fort Wingate. The Executive Order also set the new name as Fort Wingate Military Reservation. The Fort was abandoned in 1910, partially reactivated in 1914 and abandoned again 2 years later. In 1918, the installation was opened again as the Fort Wingate Ordnance Reservation Depot. World War II led to the modernization of the facilities and the new name of Fort Wingate Ordnance Depot in 1942. It was renamed the Fort Wingate Army Depot in 1960. In 1971, it was placed in reserve status and renamed the Fort Wingate Depot Activity under Pueblo Army Depot. Control was transferred from Pueblo Army Depot to Tooele Army Depot in 1982.

(2) The installation had various missions prior to 1918 but they were basically related to issues in the southwest. After 1918, TNT high explosive storage became the central mission, and this was expanded over time to include repacking of munitions and shipping of munitions globally, care and preservation of munitions, and demilitarization of conventional munitions. It became the largest high-explosives munition storage site in the world. By

World War II these functions applied to other types of explosives. Ammunition was added during the Korean War, and major shipping activities occurred in support of the Vietnam War.

(3) Pershing missile launches were conducted from FWDA during the period 1964 to 1967 with White Sands Missile Range as the target. The FWDA served as the firing point only. Storage and maintenance functions were not established at FWDA.

(4) No evidence was found to suggest that any other types of equipment or materiel were consolidated or concentrated at FWDA. No evidence was found to indicate that the installation ever had a maintenance mission for military vehicles or other major end items of equipment. Military field units were not permanently stationed at FWDA, although National Guard units did use the firing ranges occasionally, and a medical unit used the installation as a staging area in the late 1970s for a support mission at the Gallup Indian Medical Center while the center underwent modernization construction. Despite missions for demilitarization of munitions by burning and demolition, there is no evidence that military Explosive Ordnance Detachments were located at FWDA, and several individuals interviewed confirmed that all demilitarization was supervised and performed by depot personnel only.

(5) Active missions ceased at FWDA in 1993. In accordance with the Defense Authorization and Base Closure Act of 1988, FWDA was recommended for closure.

b. Activities Involving Radioactive Materials.

(1) A very limited amount of radioactive materials were stored at FWDA in its recent history. No evidence was found that would indicate that radioactive materials have ever been used there. Limited other activities or functions that might suggest a radiological impact at FWDA were also identified, but the available evidence indicates that no radioactive materials were involved. The effort to assess the significance of these historic activities involves their identification plus the classification of the areas and facilities of the installation where radioactive materials would have been present. The classification system is in Appendix D. No areas/facilities were identified where radioactive materials are or may be present from past activities.

(2) Radioactive materials at FWDA have been essentially limited to temporary bulk storage of a single type of radioactive commodity. In the early 1990s, they were received as shipments to the installation and may have been stored in various igloos in Area B (probably in igloo B1007 or B1008). The shipments were not opened, serviced, modified, repackaged or changed in any way during storage at FWDA. They were eventually shipped out to customers in the original shipping materials. The operations at FWDA were limited to transshipment only. The only known radioactive commodity received, stored and shipped was the Light Antitank Weapon (LAW) radioluminescent sight incorporated into the end item. The isotope would have been promethium-147.

(3) During the site visit, radioactive material warning symbols were located on Buildings 1, 2, 3W and 4W. The basements of these buildings were designated in property book records as Civil Defense fallout shelters. The warning symbols had the word "Shelter" under them and these signs served only to indicate to employees where the shelters were located. There was no evidence of any use or storage of radioactive materials in these buildings and they are therefore classed as Non-Impacted.

(4) At one point in the history of the installation, atomic warheads were reportedly demilitarized onsite. Employees overseeing these operations recall that the warheads were delivered to FWDA without the nuclear components, and that surety procedures required verification by two man teams that all nuclear components had been removed before initiating the demilitarization procedures. This was accomplished by counting the number of vacant cavities within the warhead with witness verification and comparing the results with specifications. The process was reportedly performed more than once per warhead. The warheads contained only conventional explosives within the warhead structure. They were destroyed using normal procedures for explosive munitions.

(5) The Atomic Energy Commission (AEC) had an operation at FWDA in the 1960s and utilized Building 14 and two fenced-in and guarded igloos in Area C. Various documents prepared in the 1960s described the AEC function as a "supplementary headquarters" or "alternate headquarters and storage facilities". The mission was not related to FWDA. Later surveys of the igloos showed no levels of radioactivity above background. Some documents suggest an

arrangement for AEC and its successor organizations (Energy Research and Development Agency and Department of Energy) to use Building 14 well into the 1980s, but the former Director of Installation Support stated that the building was not used by AEC or its successor organizations after the 1960s. Subsequently the building was used by FWDA, and then by the Bureau of Indian Affairs for property management functions until the early to mid 1970s when it was condemned and no longer used.

(6) In 1991, radon surveys on the installation found no levels of radon requiring mitigation.

(7) No radioactive items were found on the premises during the site visit.

(8) Record searches revealed that there were no NRC licenses or DARAs issued specifically to FWDA or to units assigned there. The Army Dosimetry Center has never been requested to provide any dosimetry support to anyone at FWDA.

(9) No military units were permanently stationed at FWDA in modern times. The standard issue of radioactive commodities and the demands for repair, maintenance or calibration of those types of commodities did not occur at FWDA.

(10) No other uses of radioactive materials at FWDA were identified except as described above.

6. CONCLUSIONS.

a. This Historical Site Assessment, which included interviews, revealed that there were a limited number of identifiable operations performed where radioactive sources/commodities were stored at FWDA. There were no identifiable operations where radioactive materials were used.

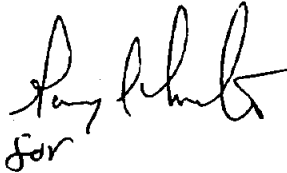
b. All evidence including some prior radiation surveys indicate that there is no radiological impact at FWDA. Interviews and records indicate that no impact should be expected.

c. The installation is classified as a Non-Impacted Area in accordance with the classification system in Appendix D.

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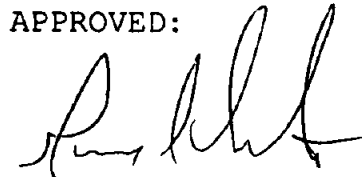
d. A Decommissioning Plan is not required for FWDA because the criteria stated in Title 10, Code of Federal Regulations, Parts 30 and 40 are not applicable.

7. RECOMMENDATIONS. None.



for
CHARLES E. DAY, III
Health Physicist
Henry M. Jackson Foundation
Participant
Health Physics Program

APPROVED:



GARY J. MATCEK
MAJ, MS
Program Manager
Health Physics

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APPENDIX A

ABBREVIATIONS

AEC	Atomic Energy Commission
BRAC	Base Realignment and Closure
DARA	Department of Army Radiation Authorization
FORSCOM	U.S. Army Forces Command
FWDA	Fort Wingate Depot Activity
LAW	Light Antitank Weapon
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide



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APPENDIX B
TYPICAL QUESTIONS ASKED



TYPICAL QUESTIONS ASKED

1. What was/is your connection with radioactive material use?
2. Where did you use the radioactive material?
3. Were you provided personnel monitoring dosimeters, medical examinations, personnel protective equipment, or a Radiac survey meter?
4. Were you provided with radiation protection training; how involved was the training? Who provided the training? Was there documentation of training?
5. What type or kind of radiation protection procedures were provided to you or your fellow workers?
6. Did your supervisors participate in the training?
7. Did your standing operating procedure address disposal of radioactive commodities: Where were the commodities disposed of? Was it ever buried onsite or transferred to a landfill as normal trash?
8. Can you name or identify the radioactive commodities you worked with?
9. Did any of the radioactive commodities have radium-226, cesium-137 or cobalt-60? How did you handle commodities that contained radium-226?
10. Describe a typical day involving radioactive commodities in your work area.
11. Describe what would happen if a radioactive commodity was damaged or broken. Whom would you tell? What special procedures would have been implemented?
12. What was your job position and title?
13. Do you recall any instance of a broken or leaking source or any other contamination incident or accident?



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APPENDIX C
SUMMARY OF INTERVIEWS



SUMMARY OF INTERVIEWS

NAME	DUTY	COMMENTS/REMARKS
Adrian Bond	Former Chief Executive Officer	<p>Worked at FWDA from 1951 until 1993. Started as mechanic and worked up to Chief, Support Division. Always worked in Support Division until becoming CEO in 1989. Recalled correctly all buildings used as fallout shelters in administration area. Stated that AEC manned Bldg 14 in the 1960s, but that it was subsequently used by FWDA for offices and then by the Bureau of Indian Affairs for offices. He stated that the time of AEC occupancy, they also used two, fenced-in igloos in Area C with a manned guard post. Correctly told where the fenced-in igloos are located.</p>
Mike Chee	Caretaker	<p>Started at FWDA in 1980 and worked in ammunition. Very familiar with radiation safety and warning signs, having worked as a uranium miner prior to arriving at FWDA. Stated that LAW missiles were reported to have been stored in B Area for about six months in the 1971-1972 time frame. Said that B1007 or B1008 was the storage sight for LAW systems, and the area was normally used to store rockets and land mines. He also reported that the clinic never had an x-ray machine.</p>

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<p>Duke Davis</p>	<p>Senior Caretaker</p>	<p>Former Fire Chief, FWDA. Provided tour of FWDA and orientation to functions of various parts of the installation. He was the sole source of records remaining at FWDA and provided them for review. He indicated no direct knowledge of radioactive materials at FWDA.</p>
<p>Timothy G. Fleming, M.D.</p>	<p>Service Unit Director</p>	<p>Dr. Fleming is a commissioned officer (06) of the U.S. Public Health Service. His most recent tour at the medical center began in 1979 when he arrived as the Chief Executive Officer. His current title is equivalent to Commander of the center. Although familiar with radiation issues, and very familiar with the longstanding relationship with FWDA (essentially due to the numbers of Indian employees at FWDA), he knows of no time, now or in the past, when the medical center provided any services that would be indicative of a radiological function at FWDA. This included consideration of mass casualty responses, occupational health physicals, requests for blood tests or bioassays, or dosimetry services.</p>

<p>A. M. "Buster" Kilpatrick</p>	<p>Former Chief, Ammunition Section</p>	<p>Started at FWDA in 1942, left periodically for military service and other work. He retired from FWDA in 1964. Provided basic information on storage categories at FWDA, and stated that Nike missiles were never stored at FWDA. Did acknowledge the demilitarization of atomic warheads at FWDA after the nuclear components had been removed somewhere else. He described the redundant surety procedures employed to assure that all nuclear components were absent leaving only the conventional explosives and the structural materials.</p>
<p>Anne Parker</p>	<p>Safety Officer</p>	<p>Assumed duties in 1992. Inherited records extending back to 1980s. She reported that none had described any issues or contingency plans with FWDA. Familiar with radiation and radiation safety.</p>
<p>Emil Rodesovich</p>	<p>Former Chief, Ammunition</p>	<p>Started at FWDA in 1942 and was drafted into World War II. Returned to FWDA in 1946 after release from service. Retired from FWDA in 1977. Started as regular laborer, working up through foreman positions to become Chief, Ammunition Section; Chief, Quality Assurance; and in 1966 became Chief, Operations under Pueblo Army Depot. Confirmed demilitarization of atomic warheads. Confirmed AEC use of igloos in area C under secure conditions. He said that at the time everyone was strongly cautioned to never mention the presence of the AEC at FWDA.</p>

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Alphonso Romero	Caretaker	<p>Started at FWDA in 1980 as a guard covering the entire installation. He went to munitions about a year later, but was used mostly in carpentry because of prior skills. Went to carpenter series in 1984 and remained that until FWDA closed in 1993. Did not make any signs related to radiation, and did not recall ever seeing radiation signs at FWDA. He had no knowledge of radioactive materials at FWDA.</p>
Sherry Shunan	Safety Officer	<p>Familiar with radiation and radiation safety. Not aware of any relationships with FWDA that would suggest a mission of radiological nature. Caused a files search to be conducted for any ties to FWDA, and provided a negative report.</p>
Malcolm Walden	Base Transition Coordinator, FWDA	<p>Involved with FWDA since 1989. Has never seen any radiation warning signs or any reference to radioactive materials at FWDA.</p>

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APPENDIX D
CLASSIFICATION OF AREAS



CLASSIFICATION OF AREAS

1. Based on a review of readily available information, an initial classification of areas/facilities was made on the potential for radioactive contamination.

a. The classifications of areas are:

(1) Affected Areas: Areas that have the potential for radioactive contamination (based upon facility operating history) or known radioactive contamination (based on past or preliminary radiological survey/surveillance). This would normally include areas where radioactive materials were used and stored, where records indicate spills or other unusual events occurred that could have resulted in the spread of radioactive contamination, and where radioactive materials were buried. Areas immediately surrounding or adjacent to locations where radioactive materials were used, stored, spilled or buried are included in this classification because of the potential for the inadvertent spread of radioactive contamination. Affected areas are further divided into those areas that are considered to have a potential for containing small areas of elevated residual radioactivity (hot spots) in excess of the regulatory guideline levels and those in which such areas of elevated radioactivity would not be anticipated. (If there is any doubt, the area should be designated as an affected area.)

(a) Affected/Non-Uniform Area. An area that has the potential for a non-uniform or spotty residual radioactivity pattern. Indoor survey units that are classified as affected/non-uniform will generally consist of a single room. NOTE: Any area that has been remediated or decontaminated shall be designated as affected/non-uniform. In general, all areas shall be treated as affected/non-uniform until substantial bases are provided to reclassify them to either affected/uniform, unaffected, or non-impacted area.

(b) Affected/Uniform Area: An area with little or no potential for non-uniform or spotty residual radiation.

(2) Unaffected Area: Any area that is not expected to contain any residual radioactivity, based on a knowledge of the site history and previous radiological survey information. The unaffected areas of a facility may consist of a single survey of unlimited size.

(3) Non-Impacted Area: Any area that has no potential for residual radiation contamination.

2. Guidelines for determining the classification of areas:

a. Areas where historical information indicates the following will be classified as affected/non-uniform:

(1) Commodity repair or maintenance, cannibalization, demilitarization, and onsite burial of commodities.

(2) Unit arms and NBC rooms; training areas; receiving, central issue, and maintenance areas; TMDE; museums; landfills; and demolition areas.

(3) Areas where radioactive materials were processed; where radioactive wastes were handled, stored, or disposed of; and where spills, fires or other incidents occurred which may have released or spread radioactive contamination.

(4) Medical facilities which conducted nuclear medicine studies or used unsealed radioactive materials for clinical investigation and medical research or sealed sources for radiation therapy.

(5) Nonmedical RDT&E activities using radioactive materials in specified physical and chemical forms, present challenging problems. Unique experiments were often performed and the documentation and record-keeping in the past have not been as detailed as current regulations require.

b. Areas that have a low probability (< 5%) of radioactive contamination (e.g., areas that stored operational or functional commodities, and areas where there are good records of leak tests, smear/wipe tests or other radiological surveys are available and support the conclusion that radioactive contamination is unlikely) will be surveyed as unaffected areas.

c. Areas that have no potential for residual radioactive contamination (e.g., family housing, post exchange, chapel, library, commissary, gym) which are not direct mission areas are classified as non-impacted areas and no radiological surveys are required prior to releasing the area for unrestricted use.



