

Analysis of Brownfield Cleanup Alternatives

Fort Bayard Lead-Based Paint
and Asbestos Abatement
Brownfield Cleanup Project

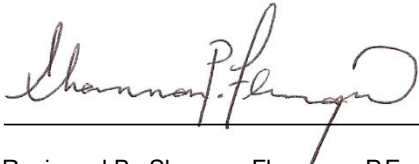
100 Calle El Centro
Fort Bayard, New Mexico

Analysis of Brownfield Cleanup Alternatives

100 Calle El Centro
Fort Bayard, New Mexico



Prepared By Catherine Farlee, EIT



Reviewed By Shannon Flanagan, P.E., LEED AP



Approved By Dale Flores, PG, PMP

Contents

1.0	Introduction	1
2.0	Background.....	1
	2.1 Site Location and Description	1
	2.2 Previous Site Uses and Site History.....	2
	2.3 Site Assessment Findings	3
	2.3.1 Phase I ESA	3
	2.3.2 Phase II ESA and Regulated Building Materials Survey	3
	2.4 Project Goal	4
3.0	Cleanup Goals and Objectives.....	4
	3.1 Cleanup Oversight Responsibility	4
	3.2 Cleanup Approaches for Asbestos and Lead	5
	3.3 Cleanup Standards Asbestos and Lead.....	6
	3.4 Laws & Regulations Applicable to the Cleanup	6
4.0	Alternatives Considered	9
	4.1 Cleanup Alternatives Considered.....	9
	4.2 Cleanup Alternative Evaluation	9
	4.2.1 Alternative #1 - No Action	9
	4.2.2 Alternative #2 - Removal of all ACM and LCP	9
	4.2.3 Alternative #3 - Repair, Removal, and Encapsulation of ACM and LBP/LCP	10
5.0	Selected Alternative and Proposed Cleanup Plan.....	11

List of Tables

Table 1: Subject Properties Summary	1
Table 2: Previous Investigations Summary.....	3
Table 3: General Asbestos Removal Procedures	5
Table 4: General Lead Paint Removal/Stabilization Procedures	5
Table 5: General Biological Removal Procedures	7

List of Figures

Figure 1 – Site Map

Acronyms

ABCA	Analysis of Brownfield Cleanup and Alternatives
ACM	asbestos-containing material
AHERA	Asbestos Hazard Emergency Response Act
APE	Area of Potential Effects
CFR	Code of Federal Regulations
ESA	Environmental Site Assessments
f/cc	fibers per cubic centimeter
HEPA	High efficiency particulate filter
HUD	The Department of Housing and Urban Development
LBP	lead-based paint
LCP	lead-containing paint
MAP	Model Accreditation Plan
NESHAP	National Emission Standard for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NIOSH	National Institute of Occupational Safety and Health
NMED	New Mexico Environment Department
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RBM	Regulated Building Materials
RCRA	Resource Conservation and Recovery Act
RECs	recognized environmental conditions
RRP	Renovation, Repair and Painting Program
SHPO	State Historic Preservation Officer
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service

1.0 Introduction

This Analysis of Brownfield Cleanup and Alternatives (ABCA) report has been prepared for the New Mexico Environment Department (NMED) regarding the Fort Bayard Site located at 100 Calle El Centro in Fort Bayard, New Mexico (herein referred to as “Site”). The proposed Brownfields cleanup project will include asbestos-containing material (ACM) abatement, which may be accomplished by removal, repair, and/or encapsulation, and the removal and disposal of damaged lead-based paint (LBP) and lead-containing paint (LCP) in accordance with local, state, and federal guidelines. The Fort Bayard Site is within the Fort Bayard Historic District, which is listed in the National Register of Historic Places (NRHP) and the New Mexico State Register of Cultural Properties, and has also been designated as a National Historic Landmark. Therefore, the cleanup must also comply with applicable federal and state historic preservation laws.

This ABCA report includes the following:

- A summary of the Site background and the future use of the property;
- A description of the previous environmental investigations and their findings, including the Phase I and Phase II Environmental Site Assessments (ESAs);
- Analysis of potential remediation alternatives for cleanup of the Site; and
- Description of the selected alternative.

2.0 Background

2.1 Site Location and Description

The Site is in Fort Bayard east of Silver City and directly north of the Village of Santa Clara in southwestern New Mexico. Fort Bayard was established by the U.S. Army as a military post in 1866 and was subsequently converted to a tuberculosis sanatorium in 1899. It continued to operate as a hospital under federal jurisdiction until 1965 and under state jurisdiction until 2010.

The Site includes the following five buildings within two areas of interest:

- Commanding Officer’s Residence/Museum (Building 54) and Yucca Lodge (Building 149), which face the former parade ground.
- Nurses’ Recreational Building (Building 59), Nurses’ Dormitory Building (Building 67), and the Head Nurse Residence (Building 70) within the former Nurses’ Residential Area on a hill northwest of the parade ground.

Further descriptions of the subject properties can be found below in **Table 1**.

Table 1: Subject Properties Summary

Building Name	Building Number	Description*	Paint Summary	ACM Summary
Nurses’ Recreational Building	59	One-story structure with a basement. Interior: lath/plaster walls, vinyl tile floor Exterior: stucco walls, metal roof	Lead present in paint on exterior windows and frames, shutters, stucco siding, fascia, soffits, and rafters, and interior plaster walls and ceilings.	ACM detected in the kitchen countertop. Asbestos insulated piping throughout including the crawlspace.
Head Nurse Residence	70	One-story structure. Interior: lath/plaster walls, vinyl tile floor Exterior: stucco walls, metal roof	Lead present in paint on interior plaster walls and ceilings; interior and exterior doors and window components; exterior stucco, trim, rafters, soffits, and fascia.	ACM detected in the kitchen countertop. Asbestos insulated piping throughout including the crawlspace.

Building Name	Building Number	Description*	Paint Summary	ACM Summary
Nurses' Dormitory Building	67	Two-story structure with a basement and attic. Interior: lath/plaster walls; carpeted, vinyl-tile, and wood floors Exterior: stucco walls, tile roof Note: Significant bat guano is present throughout the attic spaces	Lead present in paint on interior plaster walls and ceilings; interior doors, interior stairs; exterior windows, porch floor, porch components, stucco, rafters, soffits, and fascia.	ACM floor tiles and mastic in various rooms. Asbestos insulated piping throughout including attic and crawlspace.
Yucca Lodge Commanding Officer's	149	Two-story structure with one-story wings with crawl spaces. Interior: sheetrock walls, vinyl tile and linoleum floor Exterior: stucco walls, tile roof	Lead present in paint on interior stairwell components and doors; exterior window components; exterior porch railings and walls; and exterior stucco.	ACM not detected. Interior was renovated in 2000s.
Residence/Museum	54	Two-story structure with attic and basement with a crawl space. Interior: plaster walls and wooden subfloors Exterior: stucco walls, tile roof	Lead present in paint on interior windows, radiators, trim, baseboard, molding, stairs, doors, walls, and fireplace; and exterior stucco, trim, rafters, framing, and porches.	ACM floor tiles and levelling compound in various rooms and ACM countertop in bathrooms. Asbestos insulated piping throughout including crawlspace. Additionally, <1% asbestos present in exterior window glazing compound.

* Incidental areas with potential biological contaminants such as water damaged materials, mold, and guano may be present in each building.

The area northeast of the Nurses' Residential Area and the museum includes a series of scattered abandoned structures consisting of a water tank, water tower, cistern, garage, and sheet metal shed. Undeveloped land lies beyond the aforementioned structures. The Fort Bayard National Cemetery is west of the Site. To the south sits several unused residential structures and a former maintenance shop, which includes of a shop building, garage, storage structure, and two Quonset storage huts. The Nurses' Residential Area encompasses approximately 7.5 acres with all the structures located atop a small hill. The Commanding Officer's Residence/Museum and Yucca Lodge sit on flat land. The locations of the subject properties are depicted in **Figure 1**.

The Site's topography slopes towards the south-southwest and the subject properties slope towards the northeast. However, the Site is generally flat. The approximate elevation of the Site is 6,139 feet above mean sea level. Vegetation appears to generally consist of local plant varieties. The subject properties are not located within a floodplain, and no surface water bodies are present. A dried creek bed lies to the east of the Site and an arroyo occupies the area to the west.

2.2 Previous Site Uses and Site History

The known historic and current uses of the Site, based on the review of available records, are as follows:

- 1866-1899: The U.S. Army established and operated Fort Bayard to protect settlers in nearby mining camps during the Apache wars. The subject properties remained undeveloped during this era.
- 1899-1920: In 1899, the U.S. Army converted Fort Bayard into its first tuberculosis sanatorium. The Army constructed the subject properties to support this function. The Nurses' Dormitory (Building 67) and the Head Nurse Residence (Building 70) were constructed in 1908, the Yucca Lodge (Building 149) was built in 1909, the Commanding Officer's Residence/Museum (Building 54) was constructed in 1910, and the Nurses' Recreational Building (Building 59) was built in 1918.
- 1920-1922: The U.S. Army transferred Fort Bayard to the U.S. Public Health Service. Fort Bayard continued to operate as a tuberculosis sanatorium. The subject properties continued to support the hospital.
- 1922-1965: The U.S. Public Health Service transferred Fort Bayard to the U.S. Veterans Bureau. The subject properties continued to support the hospital.
- 1965-2010: In 1965, the federal government transferred Fort Bayard to the State of New Mexico, which continued to operate Fort Bayard as a long-term healthcare facility. One of the subject properties, Yucca Lodge, was converted into an 18-bed chemical dependency treatment center and operated in that capacity until 2009.

- 2010-present: In 2010, the State of New Mexico moved hospital operations to a new building off-site. The former Commanding Officer’s Residence (Building 54) is currently in use as a museum. The other four subject properties are vacant.

2.3 Site Assessment Findings

The following environmental investigations have been completed for this Site and its adjacent properties:

- **Phase I ESA**
 - Weston Solutions, Inc. (Weston), November 2019. Phase I ESA, 100 Calle Centro, Fort Bayard, Grant County, New Mexico 88036.
- **Phase II ESA and Regulated Building Materials (RBM)**
 - AECOM, November 2020. Sampling Analysis Plan Phase II ESA, 100 El Calle Centro, Fort Bayard, Grant County, New Mexico.
 - AECOM, April 2021. Regulated Building Materials and Limited Subsurface Soils Assessment Report, 100 El Calle Centro, Fort Bayard, Grant County, New Mexico, (included Buildings 59, 67, 70, and 149).
- **RBM, Building 54**
 - AECOM, June 2022. Regulated Building Materials Assessment Report Sampling and Analysis Plan, Building 54, 100 El Calle Centro, Fort Bayard, Grant County, New Mexico (Scope of Work)
 - AECOM, August 2022. Submittal of Task 3, Letter Report of Findings, Opinion, and Conclusions Asbestos Contaminated Materials and Lead Based Paint Survey, Fort Bayard, Building No. 54 (Museum Building) Santa Clara in Grant County, New Mexico.

These previous environmental investigations are further described in the following sections.

2.3.1 Phase I ESA

The Phase I ESA Report, prepared by Weston (2019) and funded by the United States Environmental Protection Agency (USEPA) under a Targeted Brownfields Assessments Grant. The investigation revealed no evidence of recognized environmental conditions (RECs) in connection with the Site; however, a former landfill located east of the maintenance shop area near the subject properties was identified and is considered a REC. The report did identify the potential presence of ACM or LCP as a Business Environmental Risk. Both ACM and LBP/LCP have been found to be the primary sources of contamination on Site.

2.3.2 Phase II ESA and Regulated Building Materials Survey

The NMED Brownfields Program funded a RBM Survey and Phase II ESA Limited Subsurface Soils Assessment Investigation at the Site, which was completed by AECOM and Acme Environmental. AECOM prepared the RBM and Limited Subsurface Soils Assessment Report, which summarized the results of the investigation (dated April 2021). An RBM survey was performed at the Fort Bayard Museum Building (Building No. 54) in August 2022. The scope of work and results of each of these investigations are summarized below in **Table 2**.

Table 2: Previous Investigations Summary

Investigation	Scope of Work	Results
Phase II ESA and RBM – Buildings 59, 67, 70, and Building 149 (AECOM 2021)	<p>Performed an RBM survey including an asbestos and lead paint sampling to identify ACM and LBP/LCP within building materials located within the interior and exterior (excluding roofs) of the buildings.</p> <p>Performed a Phase II ESA to evaluate the potential for onsite surface or near surface soils to have been impacted by historical</p>	<p>ACMs defined by USEPA and Occupational Safety and Health Administration (OSHA) as materials containing greater than 1% asbestos were identified in all buildings except Building 149. ACMs identified include floor tile and mastic, pipe insulation and associated debris, and vinyl countertops. LBP defined by USEPA as a paint containing 1.0 mg/cm² or greater concentration of lead and LCP defined by OSHA as paint containing any detectable amount of lead, were present in all buildings. The extent of damaged LBP/LCP varied by building with exterior paints with the most damage and areas of localized damage on painted interiors.</p>

Investigation	Scope of Work	Results
	landfilling activities near the maintenance area of the property.	The Phase II ESA did not identify evidence of impacts to onsite surface or near surface soils.
RBM –Building 54 (AECOM 2022)	Performed an RBM survey including an asbestos and lead paint sampling to evaluate the potential for ACM and LBP/LCP within building materials located within the interior of Building 54.	ACMs defined by USEPA and OSHA as materials containing greater than 1% asbestos were identified in Building 54. ACMs identified include floor tile and mastic, floor leveling compound, pipe insulation and associated debris, and vinyl countertops. In addition, exterior window glazing compound contained <1% asbestos and is regulated by OSHA. LBP defined by USEPA as a paint containing 1.0 mg/cm ² concentration of lead and LCP defined by OSHA as paint containing any detectable amount of lead, were present.

The investigations listed above found that asbestos and lead were present in amounts regulated by applicable USEPA, Federal OSHA, and state and local regulations in the subject properties. The following regulations apply to the site buildings:

- OSHA Standard 29 Code of Federal Regulations (CFR) 1910.1001 Asbestos in General Industry and 1926.1101 Asbestos in Construction
- USEPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR 61, Subparts A and M
- OSHA 29 CFR 1926.62 "Lead in Construction"
- USEPA Resource Conservation and Recovery Act (RCRA) 40 CFR Parts 239 through 282
- USEPA Lead Renovation, Repair and Painting Program (RRP) Rule 40 CFR Part 745
- USEPA Lead Requirements for LBP Activities in Target Housing and Child-Occupied Facilities 40 CFR Part 745 (HUD)
- NMED Hazardous Waste Bureau and Solid Waste Bureau

2.4 Project Goal

The clean-up project would support the planned rehabilitation of the subject properties for use as offices for the United States Forest Service (USFS), benefiting USFS and the surrounding community. The LBP/LCP and ACM cleanup and containment activities to be performed under this grant are critical steps in advancing the Site cleanup for rehabilitation and re-use.

3.0 Cleanup Goals and Objectives

3.1 Cleanup Oversight Responsibility

The primary contaminants to be addressed under this grant are asbestos and lead. The responsible regulatory entities that regulate asbestos and lead cleanup include USEPA, Federal OSHA, and NMED Hazardous Waste Bureau and Solid Waste Bureau. The project will be overseen by the NMED Voluntary Remediation & Brownfields Program. Documents prepared for this site will be submitted to the applicable agencies, and work will be performed by appropriately licensed contractors following applicable regulations and abatement design documents. NMED and its qualified environmental consultant will coordinate clearance activities with the selected contractor including visual inspections, air monitoring, and wipe sampling.

3.2 Cleanup Approaches for Asbestos and Lead

The LBP/LCP and ACM cleanup general approaches are summarized in the following **Table 3** and **Table 4**.

Table 3: General Asbestos Removal Procedures

Asbestos		
Building Material	OSHA Class and NESHAP Category	Summarized Procedures
Floor tile and mastic	Class II/Cat. I Non-friable ACM	Asbestos regulated area (demarcation signs and asbestos warning tape), certified workers, worker personal protective equipment (PPE), critical barriers, wet removal methods, prompt disposal, pre-abatement and clearance air monitoring.
Floor levelling compound	Class II non-intact/RACM	Asbestos regulated area with negative pressure enclosure (containment), certified workers, worker PPE, critical barriers, wet removal methods, prompt disposal, pre-abatement and clearance air monitoring.
Hard block pipe insulation	Class I/RACM	Asbestos regulated area with negative pressure enclosure (containment) or glove bag removal, certified workers, worker PPE, critical barriers, wet removal methods, prompt disposal, pre-abatement and clearance air monitoring. Apply bridging encapsulant on exposed insulation ends when running inside walls.
Hard block pipe insulation debris in soil	Class I/RACM	Asbestos regulated area with negative pressure enclosure (containment), certified workers, worker PPE, critical barriers, wet removal methods, prompt disposal, pre-abatement and clearance air monitoring.
<1% asbestos window glazing compound	OSHA: Un-classified asbestos work	Trained workers, wet removal methods, prompt clean-up and disposal.
	NESHAP: not regulated	
Vinyl countertops with asbestos-containing paper backing	Class II non-intact/RACM	Removal as whole unit and packing and disposal as ACM in a regulated area (demarcation signs and warning tape). It is not recommended to try and salvage the countertop by removing the ACM first.

Table 4: General Lead Paint Removal/Stabilization Procedures

Lead paint (LCP and LBP)	
Building Material	Summarized Procedures
Exterior Stucco	Complete removal of paint: If using soda or sand blasting, full, negative pressure containment is used. Blast media can cause significant damage to subsurface like stucco. Paint stabilization (removal of damaged flaking paint and preparation for new paint: Options include manual scraping, sanding, or scrubbing. Scraping may cause damage to stucco substrate. Use of ice blasting or pressure washing may be suitable for exterior work on stucco. Typically performed in a containment but not under negative pressure.
Exterior windows and associated trim	Lead paint removal may include temporary window removal with paint removal performed with chemicals to protect wood subsurface. Window frames and sills would be manually scraped and sanded using a localized containment to prevent dispersion of dust to the environment.
Exterior painted wooden components	Lead paint removal may include manually scraping and sanding using a localized containment to prevent dispersion of dust to the environment. Sanding can also be performed using shrouded sanders with HEPA exhaust. Some removal and replacement of rotten wood components should be expected.
Interior and exterior painted doors	Similar to window work, lead paint removal/stabilization may include temporary door removal with paint removal performed with chemicals to protect wood subsurface. Door frames would be manually scraped and sanded using a localized containment to prevent dispersion of dust to the environment.
Painted radiators	Similar to window work, lead paint removal/stabilization from radiators may include paint removal performed with chemicals (dip tanks) or off-site blast booth.

3.3 Cleanup Standards for Asbestos and Lead

The primary contaminants to be addressed (asbestos and lead) each have multiple post-abatement and cleanup standards and guidelines. During the abatement and cleanup design development, NMED and its qualified environmental consultant will identify the applicable regulatory standards for re-occupancy, and where there is not an applicable standard, NMED and its qualified environmental consultant will detail the recommended cleanup levels for this site.

Asbestos Abatement

An asbestos regulated work area is cleared when airborne fiber levels are at or below 0.1 fibers per cubic centimeter (f/cc) or pre-abatement levels, whichever are lower. The steps to verify abatement has been complete are as follows:

- For asbestos removal, each work area will have a visual inspection performed to verify that no ACM, dust, or debris remains. This inspection is typically performed by the abatement contractor's onsite competent person and a third-party inspection.
- Once the visual inspection is successfully completed in a work area, clearance air sampling will be performed as required by OSHA. The air samples will be collected and analyzed according to the National Institute of Occupational Safety and Health (NIOSH) Method 7400 and analyzed by properly accredited laboratories or analysts.
- Typically, each work area's clearance activities are documented on a form that is signed by inspection personnel and the owner's representative.

Clearance air sampling is not required for asbestos outdoor work and a visual inspection conducted as outlined above is performed and documented.

In New Mexico, it is not required to submit post-abatement clearance sampling or visual inspections to any State agency. However, the records including forms, air monitoring data, and waste manifests should be kept for the life of the building.

Lead Remediation and Stabilization

For LBP removal and stabilization, there are no re-occupancy standards that are directly applicable to this site. However, the use of the USEPA's Lead RRP clearance standards or USEPA HUD lead abatement wipe standards may be used. Wipe standards look at specific building components such as floors, walls, and window sills and compare the post-remediation or clean-up wipe levels from surfaces for total lead to the established HUD standards for child-occupied buildings. NMED and its qualified environmental consultant will identify an interim step between wipe sampling for re-occupancy and further construction activities. Since LCP and LBP may remain in the buildings, the team will likely refer to OSHA's guidance regarding cleanliness for employee lunchrooms (200 micrograms per cubic foot of total lead) for a release criterion for lead abatement to additional construction activities.

In New Mexico, it is not required to submit post-abatement clearance sampling or visual inspections to any State agency. However, the records including forms, air monitoring data, and waste manifests should be kept for the life of the building.

3.4 Cleanup Approach, Procedures, and Standards for Biological Contaminants

Biological contaminants may be present in various locations throughout the buildings. Areas of observed and noted biological contaminants include bat guano in the attic spaces on Building 67. Additional areas may be encountered during abatement and clean-up activities. When encountered, biological contaminants will be removed following procedures to protect workers, to decontaminate or remove impacted building materials, and to identify and prevent the source contaminants. In most cases, the PPE and procedures to remove and clean-up ACM and/or LCP/LBP will cover the related concerns with biological contaminants. If warranted, specialized personnel and equipment may be used and additional material decontamination procedures will be developed and followed during the work.

Most biological contaminants pose a potential risk to workers disturbing the contaminants. Engineering controls such as negative pressure high-efficiency particulate filtered (HEPA) air machines and vacuums will be used to reduce potential air contamination during removal. Hand and face wash station and site showers may also be used for worker decontamination.

Table 5: General Biological Removal Procedures

Biological Contaminants		
Contaminant	Worker Protections	Summarized Procedures
Bird and bat guano	Hazard communication training, respiratory protection, disposal suits, eye protection, and personnel decontamination	Controlled area including demarcation, critical barriers, HEPA filtered air machines, HEPA vacuums, dust controls, porous material removal, replacement, and encapsulation. Waste will be removed and sealed in poly bags for disposal as general construction debris.
Visible mold growth		Post clean-up and removal clearance procedures include visual inspections and possible wipe or swab sampling.

Biological Contaminant Cleanup Standards

There are no specific regulations in New Mexico related to biological contaminants aside from general hazard communication and PPE requirements for workers impacting these materials and conditions. Visual inspections will be performed to document the removal of these contaminants.

3.5 Laws & Regulations Applicable to the Cleanup

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, Section 106 of the National Historic Preservation Act, state environmental and cultural properties law, and local regulations. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed. All appropriate permits (e.g., notification of intent to remove ACM) will be obtained prior to the work commencing. Additional laws and regulations are discussed in more detail below:

OSHA Lead in Construction 29 CFR 1926.62

Due to the presence of lead in the coatings at the site, employers who will be impacting the LCP where their employees may be occupationally exposed to lead, must follow the OSHA Lead in Construction Code 29 CFR 1926.62. This code requires specified training, engineering controls, and administrative controls for employees impacting lead as part of construction activities.

OSHA Asbestos 29 CFR 1926.1101

The asbestos standard for the construction industry (29 CFR Part 1926.1101) regulates asbestos exposure for the following activities:

- demolishing or salvaging structures where asbestos is present;
- removing or encapsulating ACM;
- constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates;
- installing asbestos-containing products;
- cleaning up asbestos spills/emergencies; and
- transporting, disposing, storing, containing, and housekeeping involving asbestos or asbestos-containing products on a construction site.

EPA NESHAP 40CFR Part 61, Subpart M

Air toxics regulations under the Clean Air Act specify work practices for asbestos to be followed during demolitions and renovations of all facilities, including, but not limited to, structures, installations, and buildings (excluding residential buildings that have four or fewer dwelling units). The regulations require a thorough inspection where the demolition or renovation operation will occur.

The regulations require the owner or the operator of the renovation or demolition operation to notify the appropriate delegated entity (often a state agency) before any demolition, or before any renovations of buildings that contain a certain threshold amount of regulated ACM. The rule requires work practice standards that control asbestos emissions. Work practices often involve removing all ACM, adequately wetting all regulated ACM, sealing the material in leak tight containers,

and disposing of the asbestos-containing waste material as expediently as practicable, as the regulation explains in greater detail.

EPA AHERA 40CFR Part 763, Appendix C

The Model Accreditation Plan (MAP) in the Asbestos Hazard Emergency Response Act (AHERA) code requires the use of certified and accredited personnel for the inspection, abatement design, and workers and supervisors/contractors performing asbestos abatement work for commercial and public buildings.

- NMED administers the federal asbestos air quality NESHAP standard including abatement and demolition notifications.
- New Mexico Solid Waste Bureau regulates the transportation and disposal of asbestos waste.
- New Mexico OSHA administers the federal OSHA regulations for asbestos worker protection.

Section 106 of the National Historic Preservation Act

Because the cleanup will be funded by a Brownfield Cleanup Grant provided by the USEPA Region 6, the USEPA is responsible for complying with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 United States Code 300101 et seq.), which requires federal agencies to take into account the effects of their activities and programs on historic properties, and its implementing regulations in 36 CFR Part 800. Compliance with Section 106 is necessary because all five buildings proposed for cleanup were previously identified as contributing properties to the Fort Bayard Historic District, which was listed in the NRHP in 2002 and designated as a National Historic Landmark in 2004.

Under Section 106, the Criteria of Adverse Effect pursuant to 36 CFR 800.5(a)(1) are applied to assess effects of the cleanup (undertaking) on historic properties within the area of potential effects (APE), which was defined to address both direct and indirect impacts on historic properties.

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

With the New Mexico State Historic Preservation Officer's (SHPO's) agreement, if a property is restored, rehabilitated, repaired, maintained, stabilized, remediated, or otherwise changed in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, then it will not be considered an adverse effect. The standards were designed to preserve a building's historic materials and its distinguishing character, which includes the visual aspects and physical features that compose the appearance of the building. Character-defining features include the overall shape of the building, its materials, craftsmanship, decorative details, interior spaces, and features, as well as aspects of its site and environment.

New Mexico Cultural Properties Act

The Fort Bayard Historic District is also listed in the New Mexico State Register of Historic Properties and is located on land owned by the State of Mexico. Therefore, the cleanup also must comply with the New Mexico Cultural Properties Protection Act (New Mexico Statute §§ 18-6-1 through 17) and its implementing regulations (New Mexico Administrative Code, Title 4, Chapter 10), and the Prehistoric and Historic Sites Preservation Act (New Mexico Statute §§ 18-8-1 through 8). The Cultural Properties Act and the Prehistoric and Historic Sites Preservation Act provide for the preservation, protection and enhancement of structures, sites, and objects of historical significance within the state in conformance, but not limited to the provisions of the NHPA. State agencies with jurisdiction over properties listed in the New Mexico State Register of Historic Properties are required to coordinate planning of undertakings to preserve, protect, and avoid or minimize adverse effects on those properties.

4.0 Alternatives Considered

4.1 Cleanup Alternatives Considered

The proposed cleanup will include abatement of ACM, which may be accomplished by removal, repair, and/or encapsulation, and LBP/LCP paint stabilization, including removal of flaky, peeling paint, stabilization of paint using encapsulation, and removal. When encountered, biological contaminant removal and decontamination will occur.

Additional actions may include the preparation of an Asbestos and Lead Management Plan (Management Plan) for the Site including requirements for periodic surveillance, operation and maintenance procedures, and hazard communication plans. Since portions of the ACM and LBP/LCP may remain in place, the Management Plan will describe the procedures and requirements for work that may impact the remaining materials.

A preliminary evaluation of remedial alternatives was performed. Alternatives that were determined to have low effectiveness, low implementability, or prohibitive costs were not evaluated further. The following alternatives warranted further consideration and have been evaluated in subsequent sections:

Alternative #1: No Action

Alternative #2: Removal of all ACM and LBP/LCP

Alternative #3: Repair, Removal, and Encapsulation of ACM and LBP/LCP and establishment of a written Management Plan

4.2 Cleanup Alternative Evaluation

Cleanup approaches proposed to address the ACM and LBP/LCP were evaluated based on the following established criteria:

- Effectiveness - Protection of human health and the environment, proven long- and short-term effectiveness of the remedy, regulatory compliance, reduction in toxicity/mobility/volume.
- Implementability – Probability of success, feasibility and schedule.
- Cost.

The three alternatives that were evaluated are summarized below.

4.2.1 Alternative #1 - No Action

Alternative #1 No Action would leave the asbestos and lead in its current state and would restrict the Site to authorized users through signage and other controls.

Effectiveness: Alternative #1 is not considered effective. No Action would leave the Site in its current state and would not address damaged ACM and LBP/LCP. Areas of the Site would need to be restricted to authorized personnel wearing personal protective equipment (e.g., respirators), and the Site would not meet the requirements under USEPA AHERA 40 CFR 763 and OSHA Asbestos or Lead regulations for General Industry. Additionally, exterior damaged contaminated materials could be released to the environment and pose possible public exposure.

Implementation: The ease of implementing Alternative #1 is simple/effortless. Actions include securing areas with friable ACM and damaged LBP/LCP and posting access restriction signs. Historic properties would not be affected.

Cost: The costs to implement Alternative #1 would be minimal.

4.2.2 Alternative #2 - Removal of all ACM and LCP

Alternative #2 would include full removal of asbestos and lead including destructive access to ACM and LBP/LCP within walls and above hard deck ceilings. Alternative #2 would require the complete removal of painted interior and exterior finish components (e.g., windows, trim, fascia, plaster) to access all of the asbestos and lead. Alternative #2 would include biological contaminant removal and decontamination when encountered.

Effectiveness: The effectiveness of Alternative #2 is high. Complete removal of ACM and LBP/LCP would remove the potential for exposure to these hazardous materials to the community, building occupants, contractors, and visitors and be protective of human health and the environment. Alternative #2 would also allow for rehabilitation and construction work to proceed to meet the needs of future building occupants.

Implementation: The implementation of Alternative #2 would be highly complex and challenging. The extent of ACM and LBP/LCP would require significant demolition to access and remove the ACM and LBP/LCP from the interior and exterior of each building. All interior demolition and removal work would require the establishment of negative pressure enclosures with work performed by qualified abatement firms with certified personnel. The removal of exterior LBP/LCP would require establishment of exterior containments to prevent the dispersion of the contaminants to the environment including air, soil, and water. Alternative #2 would also require the replacement of demolished materials. Many of the materials and building components are considered character-defining features of the historic properties within the Site, and Alternative #2 would require additional review and approval by the SHPO.

Interior removal work would require daily air monitoring and inspections by qualified personnel, as well as post abatement and remediation air and wipe samples. During the removal of exterior ACM and LCP, community air monitoring is recommended.

Cost¹: The estimated rough order of magnitude costs of Alternative #2 would be approximately \$970,250.

4.2.3 Alternative #3 - Repair, Removal, and Encapsulation of ACM and LBP/LCP

Alternative #3 would include removal of accessible ACM and associated debris (e.g., floor tiles, pipe insulation and debris) with encapsulation of exposed ends of piping insulation running up into walls, and removal of loose and flaky paint in order to stabilize it and encapsulation of remaining paint to reduce future occupants' potential exposure. Alternative #3 would also include removal and repair of painted components being impacted by the planned renovations and biological contaminant removal and decontamination when encountered.

Effectiveness: The effectiveness of Alternative #3 is high. Alternative #3 would remove friable ACM and damaged LBP/LCP; repair remaining ACM and LBP/LCP; encapsulate remaining ACM and LBP/LCP; and establish procedures for maintaining the remaining ACM and LBP/LCP in a manner that protects human health and the environment. Alternative #3 also includes removal of ACM that is scheduled for impact by the planned renovations and mechanical upgrades including ACM in walls, ceilings, attics, and crawlspace where planned activities could potentially expose contractors performing future work. The USEPA has established regulations and guidance for this approach to abating and managing ACM and LCP in schools, child-occupied housing, and public and commercial buildings.

Additional actions may be implemented including the development of a written Management Plan for the Site that would document the updated ACM and LBP/LCP surveys identifying the remaining materials in the buildings, regular visual inspections of the ACM and LCP to evaluate the current conditions, procedures for repairing damaged ACM or LCP if observed, and procedures for future construction or maintenance activities that may impact these materials.

Implementation: The ease of implementing Alternative #3 is moderate. Removal of accessible ACM means only ACM which will be impacted by scheduled rehabilitation would be removed. There will be remaining ACM located within walls and above hard deck ceilings, but building occupants would be protected from exposure during normal operations of an office setting. For the LBP/LCP, the remediation focuses on damaged LBP/LCP where the paint would be stabilized by removing loose, flaking, and damaged paint allowing for the surface preparation and repainting. The selection of paint would include paint that would encapsulate the remaining surfaces. During the surface preparation and repainting, the OSHA Lead in Construction code and USEPA disposal requirements would apply. Some lead hazardous waste would be generated and be managed in accordance with applicable regulations.

Remaining ACM and LBP/LCP would be managed under a written Management Plan for the site that includes periodic surveillance, communication of hazards, procedures not to disturb the materials, and procedures if the materials are disturbed or planned to be disturbed.

¹ The rough order of magnitude costs for Alternative #2 does not include replacement of demolished materials such as interior plaster walls to access ACM inside of walls and above hard deck ceilings. Alternative #2 could also have significant impact to exterior stucco surfaces with LCP that may require application of new stucco. Costs for exterior stucco replacement is not included in the rough order of magnitude costs.

The criteria of adverse effect were applied in accordance with Section 106 of the NHPA to assess the effects of Alternative #3 on the historic properties within the Site. Under Alternative #3, the remediation of LBP/LCP would directly alter character-defining features of the buildings. However, Alternative #3 would adhere to the Secretary of the Interior's Standards for the Treatment of Historic Properties, and a finding of No Adverse Effect per 36 CFR Part 800.5(b) was recommended as appropriate. USEPA will need to consult with the SHPO to obtain concurrence with that recommendation.

Cost: The estimated rough order of magnitude costs to implement removal, repair, encapsulation, and management of ACM and LCP and biological contaminant removal and decontamination when encountered is \$541,650.

5.0 Selected Alternative and Proposed Cleanup Plan

The recommended cleanup alternative is **Alternative #3 Removal, Repair, and Encapsulation**.

Alternative #1 No Action cannot be recommended since it does not address site risks to human health and the environment or achieve the project goal of rehabilitating the Site for future planned re-use. Both Alternative #2 and Alternative #3 are effective remedial options that reduce potential exposures to building occupants and the environment to ACM and LBP/LCP. Alternative #2 is difficult to implement due to the extent of ACM and LBP/LCP. Alternative #2 is likely to result in additional alterations to the character-defining features of the historic properties, would generate the most lead hazardous waste, and require the most cost and effort to repaint and restore the surfaces once LBP/LCP was removed. Alternative #3 is moderately difficult but would prevent exposures to ACM and LBP/LCP to building occupants and the environment and it appears to meet the Secretary of the Interior's Standards for the Treatment of Historic Properties. Alternative #3 would need to be coordinated with the planned building rehabilitations and upgrades. The estimated remediation cost of Alternative #3 (approximately \$541,650) is approximately 45% less than the estimated cost of Alternative #2 (approximately \$970,250).

Figure 1 – Site Map



FIGURE 1: SITE MAP