Final

Lead-Based Paint Surveys and Risk Assessments (Phase I)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Task Order CK14
Contract Number DACA21-96-D0018
IT Project Number 805593

January 2001

Revision 0

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List of Acronyms

DOD	U.S. Department of Defense
EPA	U.S. Environmental Protection Agency
FTMC	Fort McClellan
HEPA	high-efficiency particulate air
HUD	U.S. Department of Housing and Urban Development
IT	IT Corporation
LBP	lead-based paint
$\mu g/ft^2$	micrograms per square foot
mg/cm^2	milligrams per square centimeter
ppm	parts per million
USACE	U.S. Army Corps of Engineers
XRF	x-ray fluorescence

1.0 Introduction and Site Description

1.1 Introduction

The U.S. Army Corps of Engineers (USACE), Mobile District, retained IT Corporation (IT) to perform lead-based paint (LBP) surveys, LBP risk assessments, and composite surface soil sampling for lead at multiple buildings located at Fort McClellan (FTMC), located in Calhoun County, Alabama. Unified Testing Services, Inc. of Birmingham, Alabama performed the LBP survey and risk assessment. Unified Testing Services, Inc. is a licensed Alabama LBP consulting firm (#ALPb-0214, issue date November 24, 1999). The surface soil sampling was performed by IT. The LBP surveys and risk assessments were performed from March 27 through April 6, 2000. Soil sampling was performed on April 27 and 28, 2000. Schneider Laboratories, Inc., of Richmond, Virginia analyzed lead-wipe samples and soil samples.

Of approximately 1,100 units, 173 units had an x-ray fluorescence (XRF) LBP survey performed in 1994. Fifty-nine of the 173 units are scheduled for demolition. The remaining 114 units required a LBP risk assessment. However, risk assessments were only performed for those units that will be transferred within the next 12 months. An XRF LBP survey was performed in 88 units which were not originally surveyed for LBP.

This report presents results for the LBP surveys, risk assessments, and soil sampling performed in the following buildings:

Activity	Building Number(s)
LBP Survey	57, 3133, 3134, 3136
LBP Risk Assessment	9, 13, 25, 27, 28, 29, 30, 57, 81, 83, 85, 87, 89, 90, 103, 105, 106, 107, 3133, 3134, 3136, 3313, 3314, 3316, 3319, 3322, 3324, 3325, 3327, 3328, 3330, 3331, 3336, 3337, 3339, 3340, 3341, 3343, 3401
Lead-in-Soil Sampling	57, 3133, 3134, 3136

Tables 1-1, 1-2 and 1-3 summarize the specific areas where the samples were collected. Table 1-1 lists the areas where XRF measurements were made as part of the LBP survey. Table 1-2 summarizes the areas and number of wipe samples collected to support the LBP risk assessment. Table 1-3 summarizes the location and number of soil samples collected in association with the lead-in-soil sampling event.

Table 1-1

Sampling Summary - Lead-Based Paint Survey
Fort McClellan, Calhoun County, Alabama

Building Number	Sample Location/Area(s)	Room Types						
		Living room	Hallway	Kitchen	Bedroom	Bedroom	Bathroom	Closet(s)
57	Mac Donnell Suite	X	X	X	X		X	X
	Unit #1	X	X	X	X		X	X
	Unit #2	X	X	X	X		X	X
	Unit #3	X	X	X	X	X	X	X
	Unit #4	X	X	X	X	X	X	X
	Unit #25	X	X	X	X	X	X	X
	Unit #24	X	X	X	X	X	X	X
	Unit #23	X	X	X	X		X	X
	Unit #22	X	X	X	X		X	X
	Unit #21	X	X	X	X		X	X
	Building 57 Exterior							
	2nd Floor Laundry Room							
	2nd Floor Bathroom							
	2nd Floor Utility Room							
	1st Floor Laundry Room							
3133	Unit 201	X	X	X	X	X	X	
	Unit 202	X	X	X	X	X	X	
	Unit 101	X	X	X	X	X	X	
	Unit 102	X	X	X	X	X	X	
	Unit 204	X	X	X	X	X	X	
	Unit 203	X	X	X	X	X	X	
	Unit 103	X	X	X	X	X	X	
	Unit 104	X	X	X	X	X	X	
	Unit 206	X	X	X	X	X	X	
	Unit 205	X	X	X	X	X	X	
	Unit 106	X	X	X	X	X	X	
	Unit 105	X	X	X	X	X	X	
	Exterior							
	Entranceway Units 101/102							
	Stairwell 1st/Top Landings							
	Entranceway Units 103/104							
	Stairwell Mid/Top Landings							
	Entranceway Units 105/106							
	Stairwell Mid/Top Landings							

Table 1-1

Sampling Summary - Lead-Based Paint Survey
Fort McClellan, Calhoun County, Alabama

Building Number	Sample Location/Area(s)	Room Types						
		Living room	Hallway	Kitchen	Bedroom	Bedroom	Bathroom	Closet(s)
3134	Unit 103	X	X	X	X	X	X	
	Unit 101	X	X	X	X	X	X	
	Unit 102	X	X	X	X	X	X	
	Unit 201	X	X	X	X	X	X	
	Unit 202	X	X	X	X	X	X	
	Unit 104	X	X	X	X	X	X	
	Unit 203	X	X	X	X	X	X	
	Unit 204	X	X	X	X	X	X	
	Unit 105	X	X	X	X		X	
	Unit 106	X	X	X	X		X	
	Unit 205	X	X	X	X		X	
	Unit 206	X	X	X	X		X	
	Exterior							
	Stairwell (Units 101/202)							
	Entryway (Units 103/104)							
	Stairwell Entryway Landing							
	Top Landing (Units 203/204)							
	Entryway (Units 105/106)							
	Stairwell Entryway Landing							
	Top Landing (Units 205/206)							
3136	Unit 110	X		X	X		X	
	Unit 111	X		X	X		X	
	Unit 116	X		X	X		X	
	Unit 107	X		X	X		X	
	Unit 106	X		X	X		X	
	Unit 101	X		X	X		X	
	Unit 208	X		X	X		X	
	Unit 205	X		X	X		X	
	Unit 212	X		X	X		X	
	Unit 215	X		X	X		X	
	Unit 308	X		X	X		X	
	Unit 304	X		X	X		X	
	Unit 302	X		X	X		X	
	Unit 310	X		X	X		X	
	Unit 314	X		X	X		X	
	Unit 406	X		X	X		X	
	Unit 403	X		X	X		X	
	Unit 416	X		X	X		X	
	Unit 413	X		X	X		X	

Table 1-1

Sampling Summary - Lead-Based Paint Survey
Fort McClellan, Calhoun County, Alabama

Building Number	Sample Location/Area(s)	Room Types						
		Living room	Hallway	Kitchen	Bedroom	Bedroom	Bathroom	Closet(s)
3136 (cont)	Unit 502	X		X	X		X	
	Unit 508	X		X	X		X	
	Unit 510	X		X	X		X	
	Unit 509	X		X	X		X	
	Unit 516	X		X	X		X	
	5th Floor Hallway							
	5th Floor Stairwell							
	4th Floor Hallway							
	3rd Floor Hallway							
	3rd Floor Stairwell							
	2nd Floor Hallway							
	2nd Floor Stairwell							
	1st Floor Hallway							
	1st Floor Stairwell							
	Basement							
	Exterior							

Table 1-2

Sampling Summary - Lead-Based Paint Risk Assessment
Fort McClellan, Calhoun County, Alabama

Building Number	Sample Location/Area(s)	No. of Wipe Samples
9	Basement, 1st Floor, 2nd Floor	8
13	Basement, 1st Floor, 2nd Floor	5
25	Unit B	3
27	Unit A	2
28	Unit A	3
29	Unit A	3
30	Unit A	3
81	Basement, 1st Floor	7
83	Basement, 1st Floor	5
85	Basement, 1st Floor	4
87	Basement, 1st Floor	4
89	2nd Floor	2
90	1st Floor	1
103	1st Floor	1
105	1st Floor	1
106	1st Floor	1
107	1st Floor	1
3133	Units 101/102, 103/104	4
3134	Units 101/102,103/104,105/106	3
3136	Stairwells	1
3313	Unit A, 1st Floor	2
3314	Units A/B, 1st Floor	4
3316	Units A/B, 1st Floor	4
3317	Unit B, 1st Floor	2
3319	Units A/B, 1st Floor	4
3322	Unit B, 1st Floor	2
3324	Unit A, 1st Floor	2
3325	Unit A, 1st Floor	2
3327	Unit B, 1st Floor	2
3328	Unit B, 1st Floor	2
3330	Unit A, 1st Floor	2
3331	Unit A, 1st Floor	2
3336	Unit A, 1st Floor	1
3337	Units A/B, 1st Floor	2
3339	Unit A, 1st Floor	1
3340	Unit A, 1st Floor	1
3341	Unit B, 1st Floor	1
3343	Unit A, 1st Floor	1
3401	Unit A, 1st Floor	1

Table 1-3

Sampling Summary - Lead-in-Soil
Fort McClellan, Calhoun County, Alabama

Building Number	Sample Location/Area(s)	No. of Soil Samples
57	Drip Line, Midyard	2
3133	Drip Line, Midyard	2
3134	Drip Line, Midyard	2
3136	Drip Line, Midyard	2

The work was performed in accordance with the December 1999 U.S. Department of Defense (DOD) and U.S. Environmental Protection Agency (EPA) interim final document titled *Lead-Based Paint Guidelines for Disposal of Department of Defense Residential Real Property – A Field Guide* (hereafter referred to as the DOD field guide [DOD/EPA, 1999]). In addition to the DOD field guide, work was also performed in accordance with the February 2000 statement of work for Task Order CK14. The government is planning to transfer this property by July 2000. The DOD field guide requires that a LBP risk assessment be performed within 12 months of the date of transfer; therefore, final reports must be completed and submitted to the USACE by June 2000. This report provides details of the procedures and analytical methods used to perform the LBP surveys, LBP risk assessments, and composite surface soil sampling for lead. All field health and safety requirements were performed in conjunction with the IT installation-wide safety and health plan, which is Appendix A of the installation-wide sampling and analysis plan (IT, 2000). This report and all work were performed in accordance with EM 200-1-3 (USACE, 1994).

The LBP surveys and the collection of risk assessment wipe samples were conducted by licensed State of Alabama LBP inspectors/risk assessors working for a consulting firm also licensed by the State of Alabama to provide LBP consulting services. In addition, all individuals who were on site were trained and certified to meet the requirements of the sampling work plan and the IT installation-wide safety and health plan. Copies of licenses and certifications are provided in Appendix A.

1.2 Site Description

LBP surveys, LBP risk assessments, and composite surface soil sampling for lead were performed at FTMC. The LBP surveys consisted of XRF analyses in 88 units. The LBP risk assessments consisted of dust wipe sample collection in 39 units. The composite surface soil was sampled for lead at the dripline and midyard of four buildings (Buildings 57, 3133, 3134, and 3136).

Sampling was performed in the following housing developments: Buckner Housing, Baltzell Housing, Drennen Housing, Avery Housing, Lillibrant Housing, Baker Housing, and Morton Housing. Several buildings had multiple levels containing greater than 20 units. Most buildings were single level, containing 3 to 5 residential housing units. These units were multiple- or single-bedroom units containing one kitchen, one bathroom, and a living room. At the time this survey was performed, all windows were covered and secured with plywood.

2.0 Sampling and Analytical Methodologies

2.1 LBP Survey

Building LBP surveys were performed by the following licensed State of Alabama LBP inspectors risk assessors:

- Tony Matthews – Alabama Accreditation Number LIN1099M0674, expiration date October 20, 2002
- Marty Summers – Alabama Accreditation Number LIN0299S1468, expiration date February 9, 2002
- Scott Minyard – Alabama Accreditation Number LIN1099M3497, expiration date October 20, 2002.

These individuals are unified lead inspectors certified and trained to perform LBP surveys using the XRF unit manufactured by NITON Corporation. The criterion for LBP used in this survey was the U.S. Department of Housing and Urban Development (HUD) standard of 1.0 milligram per square centimeter (mg/cm^2) (HUD, 1995). In addition, the survey was performed in accordance with the DOD field guide.

The survey results included the analysis of room-by-room components for lead utilizing a NITON XL spectrum analyzer lead detector (XRF). Using the XRF, each component was tested at least once. Additional tests were performed if initial tests proved inconclusive. Test measurements were performed for a sufficient period of time (in seconds) until desired accuracy and precision were achieved. The minimum time required for a positive result was 5 seconds. The XRF performs tests on paint using both "L-shell" x-rays and "K-shell" x-rays. In most cases initial results can be determined within 20 seconds using the "L-shell." A reading of "K-shell" x-rays is not displayed before 20 seconds. At the end of 20 seconds, the spectrum is typically developed enough to allow the operator to decide how much longer to continue the reading. When the measurement using the "L" x-rays exceeds the HUD action level of 1.0 mg/cm^2, it is a reliable answer. The NITON XL can detect lead in 5 seconds when the lead is near the surface, and typically detects deeply buried lead in 20 seconds of less. In rare circumstances, more than 20 seconds of reading time is required using the "L" x-rays.

When the measurement of deeply buried lead is below the action level, the reading must be checked using "K" x-rays. Under practical circumstances, "K" tests will detect through any amount or composition of paint up to 100 mils thick. A 2-minute reading gives good precision;

however, not every test requires a 2-minute reading. The survey teams were more concerned with any component containing lead greater than 1.0 mg/cm^2 than whether a component contained 3.5 mg/cm^2 of lead or 4.0 mg/cm^2 of lead (i.e., negative component verses a positive component). As previously mentioned, "L" shell x-rays produce results within about 5 seconds, and these are the results most frequently used. However, survey teams did collect several "K" x-rays when the "L" results showed obscured or deeply buried lead with a result close to the action level, requiring greater precision.

In addition, "K" readings were collected whenever a spectrum appeared atypical. The NITON unit uses "L" and "K" x-rays excited by a cadmium-109 radioactive source, and provides a spectrum graph with each reading. The NITON gives fast results without being affected by any substrate. The NITON unit detects Compton or backscatter substrate and automatically subtracts the effect of the substrate. This provides the NITON unit with a graph of just the alpha, beta, and gamma lead lines (if they are present) separate from the substrate. The pattern of these three lines is unmistakable for lead. If these three lines are observed, lead is detected.

The survey teams collected at least one photograph of each positive lead-based component. Photographs are presented in the appropriate building tabs.

2.2 Risk Assessment Wipe Sampling

For the risk assessment, wipe samples were collected by Unified Testing Services, Inc., as required in the DOD field guide. The wipe sample results are summarized in Section 3.0.

Wipe samples were only collected from positive LBP-painted window sills and troughs (wells) and from floors where LBP-painted walls were observed. Composite sampling was performed for each of the above components within each unit as defined in the DOD field guide. For floor composite samples, a pre-formed square measuring approximately 1 square foot was used. Dust wipe samples were then collected with commercially-available, nonalcohol and nonaloe-containing baby wipes. The risk assessor wore disposable latex gloves. When applicable, the measured area was wiped in an S-pattern, the wipe was folded inward, and then the area was wiped again in an opposite S-pattern. The dust wipe was then folded inward again and placed into a centrifuge tube. The surface area of each wipe was recorded to accurately convert analytical results into micrograms per square foot (µg/ft^2). Each composite sample location was recorded on a facility drawing. Composite sample points were marked with a red paint pen or equivalent. Composite wipe samples from similar component samples collected from within

each individual unit were combined into the same centrifuge tube. No more than four composite wipe samples were placed into one centrifuge tube.

Each sample was given a unique sample identification number. The sample identification number included the following: FTMC-3700/1A-0327-W001. In this sample identification scheme, "FTMC" means Fort McClellan; "3700/1A" refers to Building 3700, unit number 1A; "0327" refers to the date (month and day) the sample was collected; and "W001" refers to wipe sample number 001.

The LBP hazard criterion in dust as defined in the DOD field guide is greater than or equal to 40 $\mu g/ft^2$ on carpeted and uncarpeted interior floors. For window sills, the standard is greater than or equal to 250 $\mu g/ft^2$. As per HUD guidelines, the LBP hazard criterion in dust for a window trough is greater than or equal to 800 $\mu g/ft^2$.

2.3 Soil Sampling

In accordance with the DOD field guide and the February 2000 statement of work for Task Order CK14, IT performed lead-in-soil sampling from Buildings 57, 3133, 3134, and 3136. IT collected composite soil samples from the first 1/2 inch of soil from the dripline/foundation, and from the midyard areas where bare soil is present. Two composite samples were collected from bare soil areas in the midyard and dripline, respectively. Each composite sample was made up of at least two but not more than ten subsamples. For the aforementioned buildings, children's play areas were not observed. Therefore, separate children's play area composite samples were not collected. Bare soil areas exceeded 9 square feet.

The arithmetic mean, or the average of the composite samples, was used to define a yardwide average of soil lead concentrations. If the arithmetic mean of the composite samples equaled or exceeded the hazard standard of 2,000 parts per million (ppm) in bare soils, then additional sampling was performed to define the extent of soil requiring abatement.

All composite sample locations were marked with yellow pin flags or equivalent. Composite sample location points were marked on a plot plan and are included in this final report. All surface soil sampling was performed using hand tools. Equipment was decontaminated between sample locations. Each sample was given a unique sample identification number. The sample identification number included the following: FTMC-3700-0327-SDL001. In this sample identification scheme, "FTMC" means Fort McClellan; "3700" refers to Building 3700; "0327" refers to the date (month and day) the sample was collected; and "SDL001" refers to soil sample,

dripline, and number 001. (Other soil samples ended with the suffix "SMY001," which refers to soil sample, midyard, number 001.)

2.4 Analytical

Dust wipe samples and soil samples were analyzed using atomic absorption (AA) spectrometry by EPA Method 3050B/7420. Analytical results for dust wipe and soil samples were compared to the lead hazard criteria presented in the DOD field guide. All soil and wipe sample analyses were performed by Schneider Laboratories. Schneider Laboratories is recognized by the EPA under the National Environmental Lead Laboratory Accreditation Program.

3.0 Building-Specific Results

3.1 Building 9

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected nine composite wipe samples (W046 through W054) from within Building 9. Sample W054 was collected from the floor within the basement (only one sample, no composites), and had a lead concentration of 84.1 µg/ft^2. This exceeds the DOD field guide criterion of 40 µg/ft^2 for floors. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 9" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.2 Building 13

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected five composite wipe samples (W055 through W059) from within Building 13. All wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 13" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.3 Building 25

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls and window sills. IT collected three composite wipe samples (W001 through W003) from within Building 25 (Unit 25A). All wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 25" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.4 Building 27

The 1994 original LBP survey did not detect LBP at concentrations greater than 1.0 mg/cm^2 in the walls and window sills. IT collected two composite wipe samples (W004 and W005) from within Building 27 (Unit 27A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 27" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.5 Building 28

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls and window sills. IT collected three composite wipe samples (W006 through W008) from within Building 28 (Unit 28A). All wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 28" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.6 Building 29

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls and window sills. IT collected three composite wipe samples (W009 through W011) from within Building 29 (Unit 29A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 29" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.7 Building 30

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls and window sills. IT collected three composite wipe samples (W012 through W014) from within Building 30 (Unit 30A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 30" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.8 Building 57

3.8.1 LBP Survey

An LBP survey was performed throughout the interior and exterior of all the units located at Building 57. All work was performed in accordance with HUD guidelines (HUD, 1995). All work was also performed in accordance with the DOD field guide and the State of Alabama Lead-Based Paint Accreditation Program (Chapter 420-3-27 and Chapter 37A of Title 22, *Code of Alabama*, 1975).

The LBP survey detected LBP or lead-containing surfaces at concentrations greater than 1.0 mg/cm^2 in the following locations:

- Brown, ceramic-tiled bathroom walls in the MacDonnell Suite, Units 1, 2, 3, 4, 21, 22, 23, 24, and 25
- In the following exterior components: dark-brown steel support columns, dark-brown steel stair treads, dark brown steel stair risers, dark brown steel stair stringers, dark brown steel baseboards, dark brown metal posts, dark brown metal hand rails, dark brown steel soffit, and dark brown steel support beams.

LBP XRF sampling results are presented in the tab labeled "Building 57" located at the end of this report.

3.8.2 Risk Assessment

A risk assessment was not performed. It was deemed unnecessary by the lead risk assessor, due to the nature of the interior lead-containing components.

3.8.3 Lead-in-Soil Survey

A lead-in-soil survey was performed. One composite sample and one field duplicate sample were collected from seven points along the dripline of the building. Also, one composite sample was collected from four points around the midyard of the building. Samples were collected from the first 1/2 inch of soil and placed in an 8-ounce jar. All lead concentrations were less than 2,000 ppm, which is the guideline for bare residential soil where there is minimal or no child contact, as per HUD guidelines and the DOD field guide.

Lead-in-soil sample analytical results are presented in the tab labeled "Building 57" located at the end of this report.

3.9 Building 81

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected eight composite wipe samples (W015 through W023) from within Building 81. Sample W017, collected from the basement floor (only one sample, no composites), had a lead concentration of 111.3 $\mu g/ft^2$. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 81" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.10 Building 83

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected six composite wipe samples (W024 through W029) from within Building 83. Sample W026, collected from the basement floor (only one sample, no composites), had a lead concentration of 58.7 $\mu g/ft^2$. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 83" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.11 Building 85

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected four composite wipe samples (W030 through W033) from within Building 85. Sample W031, collected from the basement floor (only one sample, no composites), had a lead concentration of 251.1 $\mu g/ft^2$. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 85" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.12 Building 87

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls, window sills, and window troughs. IT collected four composite wipe samples (W034 through W037) from within Building 87. Sample W034, collected from the basement floor (only one sample, no composites), had a lead concentration of 54.0 µg/ft^2. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 87" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.13 Building 89

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected two composite wipe samples (W038 and W039) from within Building 89. The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 89" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.14 Building 90

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W040) from within Building 90. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 90" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.15 Building 103

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W041) from within Building 103. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 103" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.16 Building 105

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W042) from within Building 105. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 105" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.17 Building 106

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected two composite wipe samples (W043 and W044) from within Building 106. The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 106" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.18 Building 107

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W045) from within Building 107. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 107" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.19 Building 3133

3.19.1 LBP Survey

An LBP survey was performed throughout the interior and exterior of all the units located at Building 3133. All work was performed in accordance with HUD guidelines (HUD, 1995). All work was also performed in accordance with the DOD field guide and the State of Alabama Lead-Based Paint Accreditation Program (Chapter 420-3-27 and Chapter 37A of Title 22, *Code of Alabama*, 1975).

The LBP survey detected LBP or lead containing-surfaces at concentrations greater than 1.0 mg/cm^2 in the following locations:

- Exterior components – light brown metal hand rail, brown metal railing, dark brown metal door, dark brown metal door jamb, and brown metal hand rail
- In the entranceway to Units 101 and 102 – tan, wood baseboard
- In the entranceway to Units 103 and 104 – tan, wood baseboard
- In Unit 103 – tan, wood, living room door.

LBP XRF sampling results are presented in the tab labeled "Building 3133" located at the end of this report.

3.19.2 Risk Assessment

Based on the XRF sampling results, IT collected four composite wipe samples (W103 through W106) from within Building 3133. Composite samples were collected from the floor in the entranceway to Units 101 and 102, from the floor in the entranceway to Units 103 and 104, from the floor at the entrance door to Unit 103, and from the kitchen floor. All wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3133" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.19.3 Lead-in-Soil Survey

A lead-in-soil survey was performed. One composite sample, one composite matrix spike sample, and one composite matrix spike duplicate sample were collected from eight points along the dripline of the building. Also, one composite sample was collected from four points around the midyard of the building. Samples were collected from the first 1/2 inch of soil and placed in an 8-ounce jar. All lead concentrations were less than 2,000 ppm, the guideline for bare residential soil with minimal or no child contact, as per HUD guidelines and the DOD field guide.

Lead-in-soil sample analytical results are presented in the tab labeled "Building 3133" located at the end of this report.

3.20 Building 3134

3.20.1 LBP Survey

An LBP survey was performed throughout the interior and exterior of all the units located at Building 3134. All work was performed in accordance with HUD guidelines (HUD, 1995). All work was also performed in accordance with the DOD field guide and the State of Alabama Lead-Based Paint Accreditation Program (Chapter 420-3-27 and Chapter 37A of Title 22, *Code of Alabama*, 1975).

The LBP survey detected LBP or lead-containing surfaces at concentrations greater than 1.0 mg/cm^2 in the following locations:

- Stairwell for Units 101 through 202 – white wood baseboard and white wood chair rail
- Exterior – brown metal hand rail, brown metal door, and brown metal safety guardrail
- Entranceway to Units 103 and 104 – tan wood baseboard
- Entranceway to Units 105 and 106 – tan wood baseboard.

LBP XRF sampling results are presented in the tab labeled "Building 3134" located at the end of this report.

3.20.2 Risk Assessment

Based on XRF sampling results, IT collected three composite wipe samples (W107 through W109) from within Building 3134. Composite samples were collected from the floor in the entranceway to Units 103 and 104, from the floor in the entranceway to Units 105 and 106, and from the floor in the entranceway to Units 101 and 102. All wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3134" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.20.3 Lead-in-Soil Survey

A lead-in soil-survey was performed. One composite sample was collected from eight points along the dripline of the building. Also, one composite sample was collected from three points around the midyard of the building. Samples were collected from the first 1/2 inch of soil and placed in an 8-ounce jar. All lead concentrations were less than 2,000 ppm, which is the guideline for bare residential soil where there is minimal or no child contact, as per HUD guidelines and the DOD field guide.

Lead-in-soil sample analytical results are presented in the tab labeled "Building 3134" located at the end of this report.

3.21 Building 3136

3.21.1 LBP Survey

An LBP survey was performed throughout the interior and exterior of all the units located at Building 3136. All work was performed in accordance with HUD guidelines (HUD, 1995). All work was also performed in accordance with the DOD field guide and the State of Alabama Lead-Based Paint Accreditation Program (Chapter 420-3-27 and Chapter 37A of Title 22, *Code of Alabama*, 1975).

The LBP survey detected LBP or lead-containing surfaces at concentrations greater than 1.0 mg/cm^2 in the following locations:

- Fifth Floor Stairwell – tan steel stair stringer, tan steel stair riser, and tan steel hand rail
- Third Floor Stairwell – tan steel stair stringer, tan steel stair riser, and tan steel hand rail
- First Floor Stairwell – tan steel stair stringer, tan steel stair riser, and tan steel hand rail
- Exterior – brown steel stair stringer (north side and south side) and brown steel hand rail (south side).

LBP XRF sampling results are presented in the tab labeled "Building 3136" located at the end of this report.

3.21.2 Risk Assessment

Based on XRF sampling results, IT collected one composite wipe sample (W102) from within Building 3136. The composite sample was collected from the floors in the first, third, and fifth floor stairwell landings. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3136" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.21.3 Lead-in-Soil Survey

A lead-in-soil survey was performed. One composite sample was collected from four points along the dripline of the building. Also, one composite sample was collected from three points around the midyard of the building. Samples were collected from the first 1/2 inch of soil and placed in an 8-ounce jar. All lead concentrations were less than 2,000 ppm guideline for bare residential soil with minimal or no child contact, as per HUD guidelines and the DOD field guide.

Lead-in-soil sample analytical results are presented in the tab labeled "Building 3136" located at the end of this report.

3.22 Building 3313

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W061 and W062) from within Building 3313. The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3313" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.23 Building 3314

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected four composite wipe samples (W063 through W066) from within Building 3314 (Units 3314A and 3314B). Samples W064 and W066, collected from the window troughs, had lead concentrations of 212.7 $\mu g/ft^2$ and 90.4 $\mu g/ft^2$, respectively. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3314" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.24 Building 3316

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected five composite wipe samples (W067 through W071) from within Building 3316 (Units 3316A and 3316B). Samples W068 and W070, collected from the window troughs, had lead concentrations of 49.2 $\mu g/ft^2$ and 78.1 $\mu g/ft^2$, respectively. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3316" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.25 Building 3317

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W072 and W073) from within Building 3317 (Unit 3317B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3317" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.26 Building 3319

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected four composite wipe samples (W074 through W077) from within Building 3319 (Units 3319A and 3319B). Samples W074 and W075, collected from the window troughs, had lead concentrations of 65.9 µg/ft^2 and 486.1 µg/ft^2, respectively. All other wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3319" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.27 Building 3322

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W078 and W079) from within Building 3322 (Unit 3322B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3322" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.28 Building 3324

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected three composite wipe samples (W080 through

W082) from within Building 3324 (Unit 3322A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3324" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.29 Building 3325

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W083 and W084) from within Building 3325 (Unit 3325A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3325" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.30 Building 3327

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W085 and W086) from within Building 3327 (Unit 3327B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3327" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.31 Building 3328

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W087 and W088) from within Building 3328 (Unit 3328B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3328" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.32 Building 3330

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W089 and W090) from within Building 3330 (Unit 3330A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3330" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.33 Building 3331

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the window sills and window troughs. IT collected two composite wipe samples (W091 and W092) from within Building 3331 (Unit 3331A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3331" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.34 Building 3336

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected two composite wipe samples (W093 and W094) from within Building 3336 (Unit 3336A). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3336" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.35 Building 3337

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected two composite wipe samples (W095 and W096) from within Building 3337 (Units 3337A and 3337B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3337" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.36 Building 3339

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W097) from within Building 3339 (Unit 3339A). The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3339" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.37 Building 3340

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W098) from within Building 3340 (Unit 3340A). The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3340" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.38 Building 3341

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected two composite wipe samples (W099 and W100) from within Building 3341 (Unit 3341B). The wipe sample results were below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3341" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.39 Building 3343

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W101) from within Building 3343 (Unit 3343A). The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3343" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

3.40 Building 3401

The 1994 original LBP survey detected lead at concentrations greater than 1.0 mg/cm^2 in the walls. IT collected one composite wipe sample (W060) from within Building 3401. The wipe sample result was below either HUD guidelines or DOD field guide risk assessment concentration levels for lead dust.

LBP wipe sample risk assessment analytical results are presented in the tab labeled "Building 3401" located at the end of this report. Figures showing composite sample location points are also presented in this building-specific section.

4.0 Conclusions and Recommendations

The USACE-Mobile District retained IT to perform LBP surveys, LBP risk assessments, and composite surface soil sampling for lead at multiple buildings located on FTMC. The LBP surveys and risk assessments were performed by Unified Testing Services, Inc. of Birmingham, Alabama. Unified Testing Services is a licensed Alabama LBP consulting firm (#ALPb-0214, issue date November 24, 1999). The surface soil sampling was performed by IT. The LBP surveys and risk assessments were performed from March 27 through April 6, 2000. Soil sampling was performed on April 27 and 28, 2000. Schneider Laboratories of Richmond, Virginia, analyzed lead-wipe samples and soil samples.

Of approximately 1,100 units, 173 units have had an XRF LBP survey. Fifty-nine of the 173 units are scheduled for demolition. The remaining 114 units required an LBP risk assessment. However, risk assessments were only performed for those units that will be transferred within the next 12 months. An XRF LBP survey was performed in 88 units which were not originally surveyed for LBP.

Lead-in-soil sampling was performed at four buildings. Sampling was performed in accordance with DOD LBP guidelines (DOD, 1999).

One hundred nine wipe samples were collected from floors, window sills, and window wells during the risk assessment phase of this project. The standards for leaded dust clearance levels by wipe sampling as per the DOD field guide are: floors - 40 $\mu g/ft^2$, interior window sills – 250 $\mu g/ft^2$, and window troughs – 800 $\mu g/ft^2$.

Elevated concentrations of lead dust were detected in the following locations:

- Building 81 – basement floor
- Building 83 – basement floor
- Building 85 – basement floor
- Building 87 – basement floor.

The following steps may be taken to reduce the levels of leaded dust:

1. Have a State of Alabama-approved LBP contractor clean these areas. The contractor should vacuum the area with a high-efficiency particulate air (HEPA) vacuum, wet clean the area with a cleaning solution and hot water, and then HEPA vacuum the area again.

2. Once the areas have been cleaned, have a State of Alabama-approved LBP consulting contractor collect additional dust wipe samples to confirm that these areas are below the clearance standard.

An XRF LBP survey was performed in Buildings 57, 3133, 3134, and 3136. The LBP survey detected lead at concentrations greater than 1.0 mg/cm^2, which is the standard as per the DOD field guide and HUD guidelines in the following locations:

- ***Building 57:***
  - Brown, ceramic-tiled bathroom walls in the MacDonnell Suite, Units 1, 2, 3, 4, 21, 22, 23, 24, and 25
  - The following exterior components: dark brown steel support columns, dark brown steel stair treads, dark brown steel stair risers, dark brown steel stair stringers, dark brown steel baseboards, dark brown metal posts, dark brown metal hand rails, dark brown steel soffit, and dark brown steel support beams.
- ***Building 3133:***
  - Exterior components – light brown metal hand rail, brown metal railing, dark brown metal door, dark brown metal door jamb, and brown metal hand rail
  - In the entranceway to Units 101 and 102 – tan, wood baseboard
  - In the entranceway to Units 103 and 104 – tan, wood baseboard
  - In Unit 103 – tan, wood, living room door.
- ***Building 3134:***
  - Stairwell for Units 101 through 202 – white wood baseboard and white wood chair rail
  - Exterior – brown metal hand rail, brown metal door, and brown metal safety guardrail
  - Entranceway to Units 103 and 104 – tan wood baseboard
  - Entranceway to Units 105 and 106 – tan wood baseboard.
- ***Building 3136:***
  - Fifth Floor Stairwell – tan steel stair stringer, tan steel stair riser, and tan steel hand rail

- Third Floor Stairwell – tan steel stair stringer, tan steel stair riser and tan steel hand rail

- First Floor Stairwell – tan steel stair stringer, tan steel stair riser, and tan steel hand rail

- Exterior – brown steel stair stringer (north side and south side) and brown steel hand rail (south side).

If the USACE anticipates any building renovations or demolition, IT recommends that any components identified as "lead containing" be removed by a licensed lead abatement contractor prior to any activities that may disturb the material and potentially create lead dust. All lead-containing interior components were found to be in good condition, which indicates the paint is intact with no signs of peeling or damage and should be managed in place. All lead-containing exterior components were found to be in fair or poor condition. Fair condition means the paint shows signs of wear from age, moisture, or physical contact. Poor condition means the paint is delaminating or peeling. Though the exterior components were found to be in fair or poor condition, lead-in-soil sample results from samples collected adjacent to and around Building Nos. 57, 3133, 3134 and 3136 indicate that soil lead concentrations are all below the 2,000 ppm, DOD and HUD standard for bare residential soil with minimal or no child contact.

All other LBP dust wipe sample results, LBP XRF sample results, and lead-in-soil sample results, were below their applicable standards as per the DOD field guide and HUD guidelines.

5.0 References

IT Corporation (IT), 2000, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, March.

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U.S. Department of Housing and Urban Development (HUD), 1995, ***Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing,*** Chapter 7 revised 1997, Office of Lead Hazard Control, June.