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	Engineering and Design PRE-DESIGN LEAD/ASBESTOS SURVEY STANDARD SCOPE OF WORK	
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DEPARTMENT OF THE ARMY
U. S. Army Corps of Engineers
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Pamphlet
No. 1110-1-30

31 August 2001

Engineering and Design
PRE-DESIGN LEAD/ASBESTOS SURVEY
STANDARD SCOPE OF WORK

1. Purpose. The standard Scope of Work (SOW) described in this Engineer Pamphlet (EP) provides a framework for developing project-specific scopes of work to complete pre-design lead/asbestos surveys preliminary to DA project design.

2. Applicability. This pamphlet applies to all USACE Commands responsible for designs that must address lead or asbestos disturbance, worker exposure, or disposal issues.

3. Distribution. Approved for public release; distribution is unlimited.

4. References. References are included in Appendix A, Paragraph 1.1.

5. Discussion.

a. This EP provides a standard SOW for conducting lead and/or asbestos surveys during the pre-design phase of projects including renovation and demolition planned at DA facilities.

b. This EP provides a framework based on Federal regulations and guidance in effect as of the EP date of publication. The SOW editor shall ensure that updated Federal requirements, as well as applicable state and local (or Outside Continental United States (OCONUS)) requirements are addressed in using this SOW.

c. Those responsible for designing conducting pre-design lead/asbestos surveys shall be familiar with the concepts and procedures described in the references in Appendix A.

FOR THE COMMANDER:

ROBERT CREAR
Colonel, Corps of Engineers
Chief of Staff

2 APPENDICES
APP A – Pre-Design Lead/
Asbestos
Standard Scope of Work
APP B - Tables and Forms

APPENDIX A
PRE-DESIGN LEAD/ASBESTOS SURVEY
STANDARD SCOPE OF WORK
TABLE OF CONTENTS

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NOTE TO PROJECT SCOPE EDITOR:
This standard Scope of Work (SOW) is to be used to collect detailed lead and/or asbestos content and location data at the pre-design stage of projects associated with remodeling, renovation and demolition of existing facilities. The collected data will be used to properly design the project as it relates to lead or asbestos abatement requirements, hazard controls and protection for health and safety, and environmental compliance.

The SOW is also used to evaluate whether lead waste generated during the project will be considered hazardous or non-hazardous waste under the USEPA Resource Conservation and Recovery Act (RCRA) requirements. Demolition projects may not require use of the SOW for performing a complete lead survey if there is no question of potential lead exposures to the demolition workers. If that is the case, the survey for demolition requires only gathering a representative sample of the debris to be generated and performing a TCLP for lead.

The SOW can be used for performing a survey to determine whether any asbestos waste generated by the project will be considered regulated or non-regulated waste under the USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The SOW also can identify contaminated soil impacted by the planned project through both visual examination of bare soil for non-residential or non child-occupied facilities, and through soil sampling for residential or child-occupied facilities.

This SOW is not to be used to identify the nature and severity of lead and/or asbestos hazards addressed using the SOWs contained Engineering Pamphlets (EP) 1110-1-28 for installation lead survey risk assessments, EP 1110-1-31 for installation combined lead inspection/risk assessment for property transfers, and EP 1110-1-23 for installation asbestos surveys. This SOW allows the use of an X-Ray fluorescence (XRF) instrument for initial testing for lead content. If XRF testing yields negative results, compared to project-specific action levels, the SOW allows the Contractor to collect paint chip samples for laboratory analysis from surfaces where the XRF method failed to detect lead.

Asbestos Containing Building Material (ACM) is material containing greater than 1% asbestos. The SOW provides determining the presence of ACM based both on OSHA and EPA requirements.

The SOW uses the Asbestos Hazard Emergency Response Act (AHERA) survey and sample collection procedures for bulk sampling found in 40 CFR 763, Subpart E.

This SOW is written to survey for both lead and asbestos. If the project requires surveying for only one or the other, the Scope Editor must edit the Scope to remove all references and text for the material being excluded from the survey. As an example, all references and text for lead must be deleted if the survey is to be performed for asbestos only.

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1.0 PROJECT OVERVIEW, OBJECTIVES, AND DESCRIPTION OF WORK

1.1 REFERENCES

1.1.1 Federal

1.1.1.1 U.S. Department of Housing and Urban Development (HUD)

a. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Chapter 7 (revised 1997) HUD, Government Printing Office, Washington, D.C. June 1995.

b. XRF Performance Characteristic Sheets (PCS). (http://www.hud.gov/lea/leadwnlo.html/.)

1.1.1.2 U.S. Environmental Protection Agency (EPA)

a. Asbestos-Containing Materials in Schools, 40 CFR Part 763, Subpart E

b. Debris That Continues to Exhibit the Toxicity Characteristic Due to Fabrication With Toxic Metals; Land Disposal Restrictions for Debris and Newly Listed Wastes: EPA Proposed Rule (57 FR 990, 9 January 1992) Adopted as Final, 57 FR 37221 – 37282, 18 August 1992.

c. Method for the Determination of Asbestos in Bulk Building Materials, EPA Method 600/R-93-116. July 1993.

d. National Lead Laboratory Accreditation Program, Laboratory, (NLLAP) A list of NLLAP-recognized laboratories is available at the AIHA website; (http://www.aiha.org).

e. National Emission Standards for Asbestos; Standard for Demolition and Renovation, 40 CFR Part 61. Subpart M.

1.1.1.3 Occupational Safety and Health Administration (OSHA)

a. Construction Industry Standards for Lead, 29 CFR 1926.62

b. Construction Industry Standards for Asbestos, 29 CFR 1926.1101

1.1.2 U.S. Army (DA)

a. DA Hazardous Asbestos and Lead Optimal Management System (HALO)

(http://owww.cecer.army.mil/painterl)

b. U.S. Army Corps of Engineers (USACE) Engineering Manual (EM) 385-1-1, Safety & Health Requirements Manual (www.hnd.usace.army.mil)

c. U.S. Environmental Hygiene Agency Interim Final Report: Lead-Based Paint Contaminated Debris Waste Characterization Study. Study No. 37-26-JK44-92, May

1992 – May 1993. (Contact U. S. Army Center for Health Promotion and Preventive Medicine, Hazardous & Medical Waste Program for copies: 410-436-3651.)

1.1.3 State and Local

[ ]

1.1.4 Other Organizations

1.1.4.1 American Association for Laboratory Accreditation (A2LA).

a. (Provides laboratory accreditation under EPA contract for the EPA National Lead Laboratory Accreditation Program (NLLAP) (www.a2la.org)).

1.1.4.2 American Industrial Hygiene Association (AIHA)

a. National Lead Laboratory Accreditation Program (NLLAP). See http://www.aiha.org for listing of NLLAP recognized labs.

b. Bulk Asbestos Proficiency Analytical Testing Program (BAPAT) (http://www.aiha.org).

1.1.4.3 American Society for Testing and Materials (ASTM).

a. E1605, Standard Terminology Relating to Abatement of Hazards from Lead-Based Paint in Buildings and Related Structures.

b. E1727, Standard Practice for Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques.

c. E1729, Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques.

d. PS95-98, Standard Provisional Practice for Quality Systems for Conducting In Situ Measurements of Lead Content in Paint or Other Coatings using Field-Portable X-Ray Fluorescence (XRF) Devices.

1.1.4.4 National Institute for Standards and Technology (NIST)

a. National Institute for Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP). A list of NVLAP-recognized laboratories is available at the NIST website: (http://ts.nist.gov/ts/htdocs/210/214/214.htm/.)

1.2 REGULATORY REQUIREMENTS

1.2.1 Regulatory Authority/Requirements

The Contractor shall conduct all work in accordance with Federal, State and local requirements. Where inconsistencies exist, the Contractor shall follow the most stringent requirement.

1.2.1.1 Federal Requirements

a. Survey Procedures and Requirements.

Lead in paint and soil shall be identified, sampled, analyzed and validated in accordance with the applicable standards published by ASTM using NLLAP recognized laboratories. Asbestos shall be identified, sampled, analyzed and validated in accordance with the requirements of 40 CFR 763, Subpart E.

b. Safety and Health

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NOTE: If a XRF instrument is used, require that the manufacturer's radiation safety precautions be addressed in an Accident Prevention Plan (APP). Also ensure that all federal, state, and installation permitting and licensing requirements are met; an Army Radiation Permit may need to be obtained from the Installation Commander if the XRF is a NRC specifically licensed instrument. Air Force and Navy installations may also require a permit to be obtained. See AR 11-9 for details on Army Radiation Permit requirements. If the survey involves potential entry into confined spaces (i.e., crawl spaces, duct work, vaults, etc., which meet the definition of a confined space) 29 CFR 1910.146 requirements must be included in the Accident Prevention Plan.

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The Contractor shall comply with applicable OSHA standards and the USACE Safety and Health Requirements Manual EM 385-1-1 to include the submission of an Accident Prevention Plan (APP) [with instructions on [obtaining an [Army] Radiation Permit, and] following the XRF manufacturer's radiation safety precautions]. The APP shall address the potential for entry into confined spaces as defined in 29 CFR 1910.146, fall protection, and electrical hazards. The APP shall be submitted to the Contracting Officer (See Glossary) prior to performing survey tasks. The survey shall not begin without acceptance of the APP by the Contracting Officer.

1.2.1.2 State and Local Requirements

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NOTE: Reference state, local, or installation-specific requirements that differ from the federal requirements cited in this SOW that are applicable to the examination and sampling procedures to be performed.

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[The Contractor shall comply with the following [state/local] [and installation] requirements in completing the activities required by this SOW [insert applicable references]]

1.3 SITE CHARACTERISTICS, OBJECTIVES AND DESCRIPTION OF WORK

1.3.1 Site Location/Characteristics

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NOTE: Describe building location(s) function and physical characteristics (e.g., industrial, commercial, or residential facility) including individual unit

designations in multiple unit facilities and surfaces within each unit/facility to be examined and tested. Use Table B-1 as appropriate in randomly selecting units from multiple unit populations for lead surveys. Asbestos surveys do not require the use of random selection strategy in multiple unit populations of similar construction, but can be designed using a sampling approach of selecting a simple percentage such as 10% or 20%. In combined lead/asbestos surveys, sampling for asbestos when performing lead sampling in randomly selected units for the lead survey is performed for the sake of sampling efficiency, not because of regulatory requirements to randomly select units for asbestos sampling. No regulatory requirement exists defining asbestos sampling strategy other than federal asbestos sampling requirements for schools. Depending on the customer agreement, the survey would only entail examining and sampling those locations within a building(s) that would be impacted by the project being planned.

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The survey shall be performed at [state unit locations]. The Contractor shall take into account the following [unit/facility functions and physical characteristics] while performing the survey. [See Table B-1].

1.3.2 Previous Studies and Results

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NOTE: Include any previous lead or asbestos survey data regarding the project areas to be surveyed that is judged to be valid, and that is to be reviewed by the Contractor prior to performing this survey.

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Prior to initiating the field activities required by this SOW, the Contractor shall review the results of previous lead/asbestos surveys completed at the units/facilities identified in Paragraph 1.3.1 provided as an attachment to this SOW.

1.3.3 Project Work Tasks and Description of Work

Survey work tasks include: [list and describe each work task to be performed in performing the survey and gathering and evaluating the data as outlined in task 2, 3, and 4 of this SOW] at the units/facilities identified in Paragraph 1.3.1. The survey shall identify through visual examination and sampling, the existence or absence of [lead containing paint (See Glossary)], [and lead contaminated soil] [ACM]. [For identified lead-containing paint, the survey shall further identify whether the waste stream(s) estimated to be generated by the project being planned, will be considered hazardous or non-hazardous waste. The determination shall be by: (1) checking with Federal, state and local regulatory agencies to determine if the tasks to be performed producing the waste stream, are excluded from hazardous waste disposal regulations, (2) if not excluded, by testing the waste streams for leachable lead using representative sampling in accordance with [insert applicable Army guidance] and the Toxicity Characteristic Leaching Procedure (TCLP) or (3) if the state or local entity determines another waste stream characterization process is required, using that process to assess lead TCLP.]. All samples and analyses shall be compared to the action levels identified in Table A-1. [The Contractor shall

develop CADD or line drawings that identify the presence and locations of ACM and lead-containing paint based on a comparison of sample results to Table A-1 for each area surveyed.]

1.3.4 Data Quality Objectives

The Contractor shall meet project-specific data quality objectives (See Glossary) for sampling, analysis, and Quality Assurance/Quality Control (QA/QC) by meeting the requirements of Paragraphs 2.2 and 2.3. DQOs must be met in order to provide required data quality. The data thus collected shall be compared to the survey action levels provided in Table A-1 below.

Table A-1

Lead/Asbestos Survey Action Levels

Sample Matrix	Action Level
Asbestos-Containing Material (ACM)	> 1% Asbestos
Asbestos Containing Waste Stream	[Will asbestos waste stream generated be considered regulated or non-regulated waste under NESHAP? Consult with Federal, state and local regulators where project will occur to determine status.]
Lead Containing Paint (XRF)	Positive reading according to PCS sheet parameters. If negative reading then confirm with paint chip sample and analysis.
Lead Containing Paint (Paint Chip)	Greater than detectable using ASTM sampling techniques and NLLAP recognized laboratories referenced in this SOW for analysis.
[Soil (Lead)]	Project specific based on customer goals. Levels less than 400 Parts per Million (PPM) unregulated at federal level. Check with State and Local Regulators to consider goals for customer and project.
[Lead Containing Material Waste Stream]	[Is lead containing waste stream EXEMPT from regulation due to the work activity to be performed? Check with Federal, State and Local Government.]
[Lead Containing Waste Stream]	[If not exempt, representative sample characterization using Army protocol.] TCLP: greater than 5 PPM lead
[Lead Containing Waste Stream]	[If Army protocol not allowed by regulator, representative sample protocol required by Federal, state or local regulator.] TCLP: check with regulator

1.3.5 Bid Assumptions

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NOTE: Include explicit project-specific assumptions that the Contractor must use in developing a cost estimate. The assumptions might be presented to the

Contractor in tabular format. The bid must solicit a unit cost for collecting and analyzing a lead sample by XRF and also by paint chip, along with the unit cost for collecting and analyzing ACM bulk samples. Samples identified for lead analysis should be collected and prioritized for analysis based on probability of obtaining positive results. Only the minimum number of samples should be taken. Analysis of the samples should cease once a positive result is obtained demonstrating the need for project compliance with 29 CFR 1926.62(d). The Contractor must use best professional judgment in identifying the number and prioritizing the analysis of the samples taken from commercial/industrial buildings. The Contractor's rationale for sampling must be presented and agreed upon in the Contractor's project work plan. ACM must be sampled by bulk samples for the homogeneous area of suspect ACM material the sample represents. Check with local laboratories that meet the lead and asbestos analysis qualifications specified in this SOW, to determine a reasonable cost for analyzing lead paint chips, soil and bulk asbestos samples and TCLP tests. Two TCLP tests are usually taken per structure at an analytical cost averaging $100.00 but can range up to $300.00 per sample. Typically, 135 XRF shots are taken in a three-bedroom home with a cost range per shot of $1.50 to $2.00 each. Residential units would typically require considerably more XRF shots than other buildings such as commercial spaces or industrial facilities. Lab paint chip sample analysis cost should range from $5.00 to $10.00. Paint chips should be collected where the XRF cannot be used properly such as on curved surfaces, when the XRF readings are inconclusive according to the PCS Sheet for the instrument, and as a QA/QC of 1% to 5% of the total XRF samples. If XRF is not to be used by the Contractor, then each separate paint component system must be sampled by paint chip analysis with a QC of 2% to 5% of the total number of paint chips analyzed. Sampling for lead can halt when a positive sample is obtained from the project area and it is accordingly determined that the 29 CFR 1926.62 is applicable.

Typical cost for analysis for each asbestos sample can range from $5.00 to $8.50 for PLM and $60.00 to $90.00 for TEM. Assume the QC samples for asbestos will equal 5% to 10% of total asbestos samples analyzed. Doing a walk-through would add clarity and detail in drafting the bid assumptions as a part of drafting this SOW, to roughly identify the number of separate paint component systems and potential ACM homogenous areas to be sampled.

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Bid Assumptions include [insert bid assumptions]

2.0 PROJECT REQUIREMENTS

2.1 CURRENT CONDITIONS/PROJECT WORK PLAN

2.1.1 Background Data

[Prior to commencing the sampling activities, the Contractor shall review the available information regarding the facility characteristics and use patterns, as described in Paragraph 1.3.2, relevant to identification of lead containing paint and ACM in the facilities that will be surveyed.]

2.1.2 Project Boundaries Identification/Floor Plans

Facility floor plans/sketches identifying the building locations and that contain detailed drawings identifying the specific building areas incorporating the survey project boundaries are [provided in CADD format and] attached to this SOW. The Contractor shall use the [CADD] floor plans, sketches, and drawings when performing Task 2 in order to identify and record all lead/asbestos samples and potential hazardous debris and waste stream areas of the buildings that will be impacted by the planned project.

2.1.3 Preliminary Site Visit/Walkover

The Contractor shall conduct a preliminary site visit/walkover in order to verify building access and the information provided.

2.1.4 Project Work Plan

- The Contractor shall prepare a project work plan after the preliminary site visit/walkover and a preliminary review of this SOW that addresses the project requirements as follows: Project work tasks/description of work including recommended changes following preliminary project review including the [CADD] floor plans, sketches and drawings provided, and the walkover.

- Accident Prevention Plan.

- Sampling Plan including strategy and analytical procedures that will be followed.

- Identification and qualifications of each laboratory that will be used to analyze lead/asbestos samples.

- Identification and qualifications of the Contractor's personnel performing the survey.

2.2 CONDUCT LEAD/ASBESTOS SURVEY

A visual examination of the future project site shall be performed for lead substrates, ACM identification, and the sample location documentation. The sampling shall be performed concurrently during one walkthrough, eliminating the need for gaining access more than once to the project work area that is described in the Description of Work. Information gathered in the visual examination affecting the decisions to be made in the Survey Report not addressed on

forms and facility floor plans, sketches and drawings provided with this SOW shall be recorded in field notes submitted as an attachment to the Survey Report.

2.2.1 Visual Examination

a. Lead: The Contractor shall conduct a visual examination of both vertical and horizontal interior and exterior surfaces/component systems to be impacted by the work for determining the presence of lead. Examples of potential lead-containing surfaces/component systems are listed in Table B-2.

b. Asbestos: At the same time the Contractor is identifying potential sources of Lead-Based Paint to be impacted by the work that requires sampling, the Contractor shall conduct a thorough visual examination of interior and exterior areas for the purpose of determining the presence of ACM. The Contractor shall identify all potential ACM that will be impacted by the project. Potential asbestos-containing materials found in buildings are listed in Table B-3. The Contractor shall determine the friability of all suspected ACM as classified by NESHAP, i.e. Friable, Non-friable Category I or Non-friable Category II. Each homogeneous area shall be identified and noted as such in the field notes for selecting sample locations.

2.2.2 Sample Location Selection

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NOTE: In certain situations, it is acceptable to allow the Contractor to use previously collected asbestos survey data for the determination that a homogeneous area is asbestos-containing rather than collecting and analyzing new bulk samples. Coordinate with the customer (installation POC) and determine if previous installation asbestos survey data for the building(s) areas to be included in the project design should be provided to the Contractor. If it is determined that pre-existing data is valid, then it shall be attached to this SOW and the bracketed paragraph selected. The Contractor will be required to review and accept the data prior to considering it in selecting sample locations, or provide justification why such data cannot be used. Coordinate with the customer (Installation POC) for scheduling the survey sampling including destructive sampling during occupied and/or non-occupied hours.

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The Contractor shall select sample locations for the lead containing painted surfaces [and soil] and ACM during the visual assessment. [Prior to selecting the ACM sample locations, the Contractor shall review per-existing asbestos survey data provided as an attachment to this SOW and take the data into consideration in selecting the sample locations. If the Contractor determines that some or all of the pre-asbestos survey data provided is not acceptable for consideration in the survey, the Contractor shall state in writing to the Contracting Officer the reasons why the data cannot be used. The CO shall make the final decision regarding the usability of any pre-existing data provided to and rejected by the Contractor. The final decision by the Contracting Officer on rejected pre-existing data will be given to the Contractor prior to the Contractor's sample location selection.] Each location shall be described in field notes or indicated on the facility [CADD] floor plans, sketches and drawings and by filling in the

identifying information on Forms 1, 2, or 3 (Figure B-1, B-2, or B-3, Appendix B) [for approval by the Contracting Officer prior to the start of sampling]. The marked facility [CADD] floor plans, sketches, drawings and forms indicating the sample locations shall be attached at the completion of the survey to the Survey Report.

2.2.3 Lead Sampling

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NOTE: It is important to understand that OSHA does not consider X-Ray Fluorescence (XRF) to be an acceptable method of analysis for lead in paint for evaluating worker exposure and the applicability of OSHA 1926.62 to a project. However, as a matter of cost effectiveness, the XRF can be used to back-up an assumption that lead IS present for a given project (but not to document that lead is not present for a project). See Decision Chart, Table B-5 of this SOW.

Generally, for structures to be demolished that were built before 1960, allow the use of the XRF to screen for lead, concentrating on exterior surfaces, interior door and window systems, and "wet rooms" (kitchen and bathrooms, and trim).

If a structure was built between 1960 and 1978, and is to be demolished, use the XRF to screen for lead, primarily concentrating on exterior painted components and interior wet rooms.

For both pre-1960, and 1960 through 1978 testing, stop the XRF screening when a positive result has been noted.

For structures to be demolished that were built after 1978, and for structures to be renovated, perform paint chip testing in all cases where objective historical data available to the designer does not eliminate the possible presence of lead in paint. In addition, for buildings to be renovated, paint chip sample only those painted surfaces impacted by the renovation.

XRF results must be obtained by using the instrument in accordance with the published Performance Characteristics Sheet for the instrument and the ASTM Provisional Standard PS95-98. If no XRF readings are positive, inconclusive and negative readings require paint chip sampling with analysis by the analytical lab. Check with the XRF Manufacturer/NIST/ASTM for soil sampling using the XRF instrument.

Should a TCLP test determine that a demolition waste stream is hazardous waste, it is advisable to perform XRF testing to determine which components contain lead-based paint. Components that test positive by XRF should be identified in the survey for removal using abatement procedures and disposed of as hazardous waste. Additional TCLP testing should be performed on the remaining waste stream to ensure that it is not hazardous waste.

In general, TCLP testing of whole building demolition waste streams are not positive for hazardous waste. Waste streams generated by renovations (particularly component) are more likely to result in hazardous waste, however, by chip sampling, you will know lead content of each component, and can

perform abatement accordingly.

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[Use the following paragraph for buildings to be demolished

The Contractor shall define a sampling strategy in the Sampling Plan submitted as part of the Project Work Plan that emphasizes taking only the very minimum number of samples required to determine the presence of lead on the building components. Surfaces selected for sampling shall be prioritized to analyze first those having the highest probability of containing lead based paint. [Based on year of construction, insert guidance on surfaces to be tested from the above "Note".]. When paint chips are taken of component systems, the Contractor shall rank order the samples for laboratory analysis with instructions to the laboratory to stop the analyses once a positive result is obtained demonstrating the need for compliance with 29 CFR 1926.62(d), based on the action levels listed in Table A-1. If the XRF is used for field-testing, sampling shall be prioritized by the Contractor to minimize the number of readings taken, typically one XRF reading per component system. XRF test results shall be interpreted using the Performance Characteristics Sheet (PCS) for the instrument and ASTM Provisional Standard PS95-98, "Standard Provisional Practice for Quality Systems for Conducting In-Situ Measurements of Lead Content in Paint or Other Coatings using Field-Portable X-Ray Fluorescence (XRF) Devices." If no XRF test results are positive for a component system, (above the test threshold for LBP), inconclusive and negative XRF results shall be supplemented by laboratory paint chip analysis with paint chips collected directly from the XRF tested substrate that best represents the quantified in cubic centimeters (cc) of surface area for the component system. The paint chip shall be a destructive sample collected and submitted to the laboratory following the laboratory's SOP for collecting paint chip samples to determine lead loading per cc of surface area, and ASTM's *Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques* (E 1729).]

[Use the following for buildings to be renovated

The Contractor shall extract paint chip samples from all components that will be affected by the renovation. The paint chip shall be a destructive sample collected and submitted to the laboratory following ASTM's Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques (E 1729). All paint chip samples shall be analyzed.]

[Use the following for soil sampling

[Soil samples shall be collected following ASTM *Standard Practice for Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques* (E 1727).] [Soil samples shall be composites that include no less than two (2) and no more than ten (10) sub-samples collected from distinct locations roughly equidistant from each other along an axis. Sub-samples along drip lines shall generally be collected two to six feet from each other. In other sampling locations such as area sampling, sub-samples shall be collected from approximately equidistant

locations along each leg of an X-shaped pattern. Soil samples shall be collected from the ground surface, including only the top 1 inch of the soil.] [Samples shall be collected only from areas of bare soil.]]

[The Contractor shall photograph each sample location.]

2.2.4 Asbestos Sampling

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NOTE: It will be necessary to determine exact locations and quantities of ACM. In order to perform this, a thorough search including inaccessible areas will need to be performed by the contractor. This includes wall cavities ("all interstitial areas"), attic areas, crawl spaces, etc., all areas where ACM could have been applied as a surface, insulation (typically duct or pipe), fireproofing, etc. The Contractor should be required to penetrate inaccessible spaces for sample collection. If the structure is unoccupied after the survey, penetration holes may not need to be repaired. If the structure is to be occupied after the destructive sampling, then require the repair of all penetrations, e.g., penetrations into interstitial spaces and roof will require some repair. Determine with the customer who shall repair the penetrations, the customer or the Contractor.

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The Contractor shall enter all areas identified for sampling ACM; identify the ACM by bulk sample or assumption; record the results of the samples or assumptions on the [CADD] floor plan, sketch, or drawing; and quantify the amount that will be included in the project waste stream generated that requires special disposal. Destructive sampling to locate ACM in interstitial or inaccessible areas is required. Destructive bulk sampling of roofing materials for ACM [is] [is not] authorized. The Contractor [is] [is not] required to patch all entries and penetration holes into interstitial areas. The [Contractor] [Installation] shall repair all material locations where actual destructive samples are taken, which in all cases shall be repaired. [The Contractor shall hire a professional roofer to patch roof sample locations.]

The Contractor shall use the procedures and techniques for bulk sample collection described in 40 CFR Part 763.86, and as otherwise described below:

a. Friable Surfacing Material

Collect three bulk samples in a random manner from each homogeneous area of friable surfacing material consisting of a total surface area of 1000 ft^2 or less; five samples from areas greater than 1000 ft^2, but less than or equal to 5000 ft^2; and seven samples from areas greater than 5000 ft^2.

b. Thermal System Insulation

Collect, in a random manner, three bulk samples from each homogeneous area of thermal system insulation (TSI), one bulk sample from patched area of TSI of less than 6 linear or square feet, and one bulk sample from insulated mechanical systems where cement or plaster has been used

on fittings (e.g., tees, elbows, valves). Bulk samples are not required where the TSI has been identified as fiberglass, foam glass, rubber, or other non-ACM.

c. Miscellaneous Material

The Contractor shall collect samples in a quantity sufficient to determine whether the material contains asbestos at a concentration of greater than 1%.

- Category I Nonfriable Asbestos-Containing Material

Collect asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing product samples in a quantity sufficient to determine whether the material contains asbestos at a concentration of greater than 1%.

- Category II Nonfriable Asbestos-Containing Material

Collect asbestos-containing material excluding Category I nonfriable asbestos-containing material that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure, in sufficient quantities to determine whether the material contains asbestos at a concentration of greater than 1%.

[The Contractor shall photograph each sample location.]

2.2.5 Waste Characterization and Quantity Estimation

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NOTE: The intent of characterizing waste prior to the actual project work (demolition or renovation) is to determine if the anticipated waste stream will be hazardous or non-hazardous waste due to lead. The determination is accomplished by the Toxicity Characteristic Leaching Procedure (TCLP) test and must be performed by an NLLAP laboratory capable of performing the test. To prepare for the test, the Contractor must estimate the anticipated waste stream that will be produced by the demolition/renovation or remodeling, and estimate the approximate quantities of each building material making up the waste stream as a percent of the total, regardless of the material's LBP content (see Table B-4). Materials that are to be recycled (typically metal) should be excluded from the sample. The Contractor must then collect field samples of each material in quantities sufficient for the laboratory to take samples of each material proportional to the percent of each material to the whole. For instance, if the intent is to demolish a building, there should be representative samples and approximate percent quantities to the whole sample of footers/foundations, wall studs, roofing material, glass, brick facade, in addition to painted interior and exterior materials, such as doors, wall, ceilings, windows, etc. The Contractor provides the laboratory each of the representative samples. The lab then typically composites a 120-gram sample, and performs the TCLP test, using the percent

equivalent of each unique building material sample to the whole. If the analytical result is at or above the hazardous waste threshold (currently 5 PPM for lead) the waste stream is a classified hazardous waste, and must be disposed of as such. If the result is below the threshold, the waste stream is non-hazardous and can also be disposed of as such. The only other decision to make is whether to have the contractor repair the sample locations. Due to the requirements of this type of test, it is difficult and expensive to repair sample locations. For this reason, it is advisable to perform this sampling when people are removed from the building.

Determining the waste stream composition and classification during pre-design provides the project Contractor the ability to control the amount of each waste to be generated should the TCLP test identify the composite waste stream as hazardous. With the TCLP test results available, the contractor can separate hazardous components from non-hazardous components as these materials are being generated and thus reduce the overall amount to be disposed as hazardous waste. This process can save considerable cost. Typically, a whole building demolition generates non-hazardous waste, but individual component removal during a renovation, as opposed to a demolition, can generate hazardous waste.

****

a. Asbestos

The Contractor shall perform asbestos-containing material waste stream assessment and characterization to determine if the asbestos containing waste streams will be considered regulated or non-regulated under Federal or state NESHAP requirements. The Contractor shall estimate the quantity (e.g., the square or linear feet) of each building component sampled for the presence of asbestos. The Contractor shall estimate the volume of debris or waste potentially requiring disposal under the asbestos NESHAP requirements. Information gathered in the visual examination shall be recorded in the field notes that will then be submitted as an attachment to the Survey Report.

b. Lead

The Contractor shall determine if waste to be generated as a result of the demolition/renovation or remodeling work will be characterized as hazardous or non-hazardous waste under Federal or state RCRA requirements. This shall be accomplished by estimating the quantity (e.g., the square or linear feet) of each building component (See Table B-4: Typical Building Materials Comprising a Toxicity Characteristic Leaching Procedure (TCLP) Sample); the total volume of all building component materials comprising the waste stream; and the percent of each building material component in the waste stream to be generated. Samples of each building material component shall be sized in the same percentage found in the total waste stream, and shall be sent in the same proportion to an NLLAP recognized laboratory for analysis. The Contractor shall assure the laboratory performs the Toxicity Characteristic Leaching Procedure (TCLP) test

in accordance with RCRA requirements, or any applicable State or local criteria. The contractor [is] [is not] required to patch and repair sample locations.

The contractor shall submit as a part of the Survey Report the following minimum information to characterize waste to be generated by the project, for laboratory performance of a TCLP test:

- A list of the building materials to be sampled that comprise the waste stream
- Volume percentage of each building material identified relative to the total building materials that will comprise the waste stream
- Number of TCLP samples to be analyzed by the laboratory
- Laboratory to perform the TCLP analysis
- Laboratory's SOP in preparing the representative composite sample of the building materials submitted to be analyzed
- Written documentation of steps performed in determining how many samples to analyze
- Written documentation of steps performed to determine most stringent applicable regulation.

2.2.6 Sample Identification

ACM bulk samples, paint chip samples, [and soil samples] shall be identified using unique sample numbers. Any field or laboratory blanks or spiked samples submitted to the laboratory for QA/QC purposes shall be numbered in such a way that the sample identity will not be revealed to personnel conducting the analysis.

2.2.7 Sample Chain-of Custody

The Contractor shall follow a standard chain-of-custody protocol to document and ensure a continuous record of sample possession from sample collection to receipt by the laboratory. The Contractor shall complete and maintain chain-of-custody forms for each set of samples shipped to the laboratory, and a copy of each form shall accompany the shipment of samples. Copies of all chain-of-custody forms shall be included in the Survey Report. See Form4, Figure B-4, Appendix B.

2.3 TASK 3 SAMPLE DATA ANALYSIS, EVALUATION OF FINDINGS

2.3.1 Analytical Methods

2.3.1.1 Laboratory Sample Analysis (Lead)

The Contractor shall send all lead samples that require laboratory analysis to an NLLAP recognized laboratory. The Contractor shall verify in the Survey Report that the selected laboratory is accredited by NLLAP for each type of analysis to be performed.

2.3.1.2 Laboratory TCLP Sample Analysis (Lead)

Analysis shall be performed in accordance with EPA's TCLP test method 1311 in the most recent version of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", See EPA Publication SW-846.

2.3.1.3 Field Analysis of Paint Samples (Lead)

XRF analysis of painted surfaces shall be performed in accordance with ASTM's *Standard Provisional Practice for Quality Systems for Conducting In Situ Measurements of Lead Content in Paint or Other Coatings using Field-Portable X-Ray Fluorescence (XRF) Devices* (PS95-98), and with the appropriate PCS for the instrument as provided by the instrument manufacturer. The contractor shall verify with the laboratory prior to beginning the field survey that the laboratory has an SOP in place to be used by the Contractor to collect paint chips based on surface area, allowing the laboratory to calculate lead loading on the substrate tested in mg/cc, corresponding to XRF readings in mg/cc.

2.3.1.4 Bulk Asbestos Sample Preparation and Analysis

****

NOTE: To minimize laboratory costs, the "positive-stop" method of analysis should be used to ensure that no additional samples from a homogeneous area will need to be analyzed after one of the samples has been found to contain greater than 1% asbestos. The cost savings from this method could be significant on larger projects. Note that some laboratories may charge a reduced amount for the remaining samples, in order to cover the sample preparation costs or to comply with their standard contract provisions. The Contractor should consider this when choosing a laboratory. In general, point counting should not be used unless the installation manager is confident that point counting will yield a result less than 1%. This might occur if a very few sample results are 1 to 2% asbestos by PLM, for a structure that is otherwise "asbestos free". Otherwise, accept the PLM results, as it is generally not cost effective to re-analyze samples by point counting only to confirm that a material contains asbestos.

****

The Contractor shall send all bulk asbestos samples (including waste stream characterization samples) to a laboratory accredited by NVLAP or AIHA. For samples analyzed by visual estimation Polarized Light Microscopy (PLM) (Appendix E, Subpart E, 40 CFR Part 763, Section L, Polarized Light Microscopy) and the analysis yields results less than 10% asbestos content, the material [shall be treated as positive for ACM] [shall be verified for ACM content by point counting according to the following criteria: (1) A sample in which no asbestos is detected by PLM shall not be point counted, (2) If the analyst detects asbestos in the sample and estimates, by visual estimation, the amount to be between 10% and 1%, the material shall be [considered positive for ACM] [point counted for ACM verification], (3) Point count results that differ from visual estimation shall have precedence over the visual estimation.] [shall be verified by Transmission Electron Microscopy (TEM) analysis.] The EPA TEM method shall be used

when the PLM method cannot be used because sample preparation is difficult, i.e. asphaltic bound matrix. The Contractor shall assure that the laboratory uses the "positive-stop" method when analyzing bulk samples after the first positive (asbestos greater than 1%) sample is determined in a set of samples from the same homogeneous area, no more samples from that homogeneous area shall be analyzed.

2.3.1.5 Laboratory Turnaround Time

The Contractor shall require the laboratory to report analytical results back to the Contractor within [ ] days of the samples' receipt by the laboratory.

2.3.2 Project Data Review and Assessment

The Contractor shall review all data collected as part of the survey. This shall include verifying that all applicable NLLAP (for lead analysis) and NVLAP or AIHA (for asbestos analysis) laboratory QA/QC requirements have been met for the samples analyzed. The Contractor shall accomplish this by reviewing the internal QA/QC sample data generated by the Laboratory for each sample batch submitted by the Contractor and provided by the Laboratory in the Laboratory Report.

2.3.3 Quality Assurance/Quality Control

The Contractor shall perform QC/calibration checks on the XRF instrument in accordance with Paragraph 7.4 of ASTM's Standard Provisional Practice for Quality Systems for Conducting In-Situ Measurements of Lead Content in Paint or Other Coatings using Field-Portable X-Ray Fluorescence (XRF) Devices (PS95-98); in accordance with the instrument manufacturer's PCS. At a minimum, calibration checks for each XRF instrument shall be completed at the beginning and the end of each survey, and every two hours or less during surveys. The calibration checks performed according to this paragraph that fall within the specification for the instrument shall demonstrate reading validity.

2.3.4 Laboratory Report Requirements

The Contractor shall require the laboratory to provide the information necessary for the Contractor to comply with the data evaluation/validation procedures outlined in this SOW. This shall include a data package containing the following information:

- Cover page information including methods, dates, instruments, digestions, and signature of the laboratory director.
- Sample information including identification and the results for samples, blanks, QC samples, dilution factors, and batch identification.
- Laboratory certification that all applicable NLLAP (for lead analyses) and NVLAP or AIHA (for asbestos analyses) QA/QC requirements have been met for the samples analyzed.

2.3.5 Contractor Certification of Project Data Validation

The Contractor shall certify in the Survey Report that all field data have been validated:

- in accordance with QA/QC Protocol required for XRF analysis;

- in accordance with Appendix II of 40 CFR 261 (for TCLP analyses);
- following NLLAP (for total lead analyses); and
- following NVLAP or AIHA (asbestos analyses) laboratory analysis requirements.

The data shall also meet the established DQOs.

2.3.6 Comparison with Lead and Asbestos Survey Criteria

****

NOTE: The specifier shall determine the format by which the Contractor shall provide the comparison of validated data to Action Levels in Table A-1 and describe this requirement in the blank bracket.

****

The Contractor shall compare the validated data with the lead and asbestos action levels listed in Table A-1. The comparison shall be documented in the Survey Report by listing the results and Table A-1 action levels in matrix format listing the sample area location down the first column and the Table A-1 action levels across the first row. Only sample values exceeding the Table A-1 action levels shall be indicated.

2.4 TASK 4 SURVEY REPORT

2.4.1 General Report Contents

In addition to the information described in Paragraphs 2.4.2 through 2.4.6 below, the Survey Report shall include:

- Installation Name and Address
- Installation point of contact (POC), title, organization and address
- Facility Address
- [Facility or unit number(s)]
- Date of building construction

2.4.2 Project Work Plan

Note any discrepancies between the project work plan and the actual project activities performed.

2.4.3 Sample Location Selection

Note any discrepancies between the Sample Location Selection [as approved] and any changes made during sampling, along with explanation of differences.

2.4.4 Survey Results

****

NOTE: If an XRF instrument is used, specify the format that will be used to present the XRF data (i.e., in the drawings).

****

- Date(s) of the survey and sample collection
- [Identification of field-portable methods used during the survey and applicable calibration check results]
- Laboratory report and chain-of-custody forms
- Comparison of the sample results to the criteria listed in this SOW as presented in matrix format.
- CADD or line drawings that indicate areas of ACM and lead-containing paint.
- Other field QA/QC procedures followed during the survey.

2.4.5 Contractor Data Certification

The report shall contain the certification from the Contractor that data used to develop conclusions and recommendations have been reviewed and validated, and have met DQOs.

2.4.6 Electronic HALO/Installation Data Downloading into Installation System

****

NOTE: All data collected during activities specified in this SOW will be provided to the DA in a format compatible with HALO or, if the installation does not utilize HALO, compatible with the installation's data management system requirements. HALO is a hazard management system designed to track lead/asbestos hazards and the actions taken in response to the identified lead/asbestos hazards. HALO requires an IBM-compatible personal computer (with a Pentium® processor), Windows 95, 16 MB of RAM, 10MB of available hard disk space, Microsoft Word, and display resolution of 800x600 pixels. The current POC for HALO is:

USACE Engineering Research & Development Center/Construction Engineering Research Laboratory (ERDC/CERL)

Construction Engineering Resource, Materials and Structures Branch (CER CF-M)
(217) 352-6511, ext. 7239 (commercial)

Where the installation has no unique data management system for LBP/asbestos data, HALO will be the default program for all deliverables under this SOW. The SOW should detail the procedure for the Contractor to follow in providing the results of the lead/asbestos survey to the COR for uploading into HALO or other system used by the installation.

At a minimum, the Contractor must be provided with a copy of the HALO Data Dictionary. The dictionary identifies the table names, field names, data types, and any required default values. The Dictionary is part of the HALO program and can be obtained through the installation, or by contacting USACE CER CF-M. In every case, electronic archives should be produced for the record.

****

[The Contractor shall provide laboratory data to the COR in [both hard copy and] electronic format. The electronic data report shall be provided in [HALO format] [ ].]

2.4.7 Contractor Conclusions

The report shall contain conclusions based on the analytical results, on substrates and materials found to contain lead and asbestos, the location and the quantities of these materials, the

characterization of lead waste streams to be generated, and the linear and square feet of ACM requiring disposal as a result of the project.

3.0 SUPPLEMENTAL REQUIREMENTS FOR CONTRACTED SERVICES

3.1 CONTRACTOR FIRM/PERSONNEL QUALIFICATIONS

3.1.1 Contractor Firm Experience

The contracted firm shall have a minimum of [ ] years experience in conducting lead/asbestos surveys and have a qualified staff as described in Paragraph 3.1.2. [Three] references, at a minimum, shall be required for completed projects equal in complexity to the one described in this SOW.

3.1.2 Contractor Surveyor/Project Manager Qualifications

****

NOTE: Some states or local jurisdictions may use different terminology for individuals certified to complete the services described in this SOW (i.e., the lead certificate may include titles other than "inspector" or "risk assessor," and the asbestos certificate may include titles other than "inspector" or "management planner.") In addition, the state may require licensing or registration, instead of or in addition to, certification. Include requirements specific to the jurisdiction in which the project is that will be completed.

****

The Contractor shall employ (an) accredited lead risk assessor(s) and accredited asbestos inspector(s) [or management planner] to complete the survey activities described in this SOW.

3.1.2.1 EPA Certification

The Contractor shall provide proof in the Project Work Plan of EPA certification or other required certifications under an EPA-approved state program pursuant to 40 CFR 745.226 (64 FR 42849, 6 August 1999) for the lead risk assessor surveyors [and accreditation as asbestos inspector(s) pursuant to 40 CFR Part 763 Subpart E requirements.]

3.1.2.2 Record of Experience

A resume of each surveyor ('s) experience related to the project activities of this SOW, shall be provided as a part of the Project Work Plan.

3.1.2.3 Use of Survey Teams

****

NOTE: If necessary, for large, complex projects indicate the number and size of survey teams.

****

[The Contractor shall specify in the Project Work Plan the number of [two] person survey teams to be assigned to conduct the surveys. The survey leader for each team shall have a minimum of

three years experience in conducting lead/asbestos surveys. The Contractor shall provide in the Project Work Plan a resume of each survey leader that verifies the work experience.]

3.1.3 Contracted Laboratory Qualifications

The Contractor shall provide, as part of the Project Work Plan evidence of current NLLAP and/or NVLAP/AIHA accreditation for each laboratory used by the Contractor for analysis of samples collected or prepared under the terms of this SOW.

3.1.4 Contractor Errors and Omissions Liability Insurance

****

NOTE: Consult with the COR to develop requirements for Contractor errors and omissions liability insurance that are appropriate for the scope of the project.

****

The Contractor shall demonstrate coverage under an errors and omissions liability insurance policy. [Insert errors and omissions text as appropriate]

3.2 PROJECT RECORDS

****

NOTE: Require that all work (surveys, drawings, custody sheets, field data sheets, etc) shall be provided in both hard copy and electronic format. All designs will now be preformed electronically. Lead and asbestos surveys shall be attached in total to the specifications of the design. This has helped significantly in reducing "designer error/liability" claims, as the Contractor has access to all the same data that the designer has. (In addition, disks are easier to store than binders.) Include project-specific requirements for electronic submittal format(s).

****

[The Contractor shall provide all project records in electronic format. [ ]]

3.2.1 Record keeping Requirements

****

NOTE: PWTB 420-70-8 requires that records relating to the status of asbestos-containing materials in a building be maintained indefinitely. Check with customer.

****

The Contractor shall maintain records related to the survey activities for at least [ ] years, following completion of the activities outlined under this SOW. Records shall include:

- Project Work Plan
- Survey Report including Laboratory Report
- [Progress Reports]

- Correspondence, Conference Notes, Other Documentation Pertinent to Decisions Made Affecting Outcome of Survey

3.3 PROJECT COORDINATION

The Contractor shall coordinate activities through the COR. Contact with installation personnel, including the installation POC, members of the installation lead hazard/asbestos management teams, building occupants, and other installation personnel shall be coordinated through the COR.

3.4 GOVERNMENT SUPPORT

****

NOTE: Little standard language is offered in this paragraph, since the requirements will be very project-specific. The specific language will need to be defined with the customer. Include in the following paragraphs provisions for utilities, water, phone lines, computers, and transportation while on the installation, etc. specifying who is responsible for these items.

****

3.4.1 Government Quality Control Oversight

[Insert Appropriate Provisions]

The COR reserves the right to audit the survey, the lead or asbestos survey sample selection location documentation and actual sample locations used during the survey for any survey area at any time during the course of the survey.

3.4.2 Security and Escorts

****

NOTE: The Contractor survey personnel may need an escort, especially if the survey is to be conducted in residential units that are occupied. In the case of residential surveys, the escort should introduce the surveyors on behalf of the Housing Office, state how long the work is expected to take, answer questions, and observe the team while it works. This is good public relations and protects the installation, the Contractor, and the occupants from disputes about claims of loss and damage. It reassures occupant members, especially those who have no knowledge about lead or asbestos surveys. If occupants (especially spouses) are likely not to understand English, a bilingual escort should be provided.

If an escort cannot by provided, special precautions must be taken to protect all parties.

- A notice to occupants about the impending work should be provided in advance and include information on how Contractor personnel should identify themselves at the door.
- Contractor personnel should be directed to never enter a unit unless there is an adult present or, at a minimum, an older responsible adolescent (18 years or older) who clearly understands the intended work and agrees to the team entering. Personnel should be directed not to ask children who answer the door whether a parent is home, but rather whether a parent is free to come to the door. This is to avoid encouraging children to tell strangers that no adult is home.
- Agreement should be reached on what Contractor personnel can tell occupants about the work or in response to questions, as opposed to referring occupants to the Housing Authority.

It is not practical for a single person to introduce multiple survey teams to each occupant because it is not possible to predict in advance how long each survey will take.

The Contractor is responsible for the security of their equipment (especially XRF units), their employees, ands to re-lock doors upon exit.

If special security arrangements must be made for the work, this should be noted below. This might include both personnel and vehicle passes, as well as any information or passes to enter secure locations.

****

[Insert Appropriate Provisions]

3.4.3 Temporary Office/Equipment/Storage/Staging Areas

The installation shall provide space for the duration of the field activities that the Contractor may use as a temporary office, equipment/storage, and staging area. [The Government] [The

Contractor] shall provide [insert appropriate text for utilities, phone lines, computers, transportation, permits, etc.]

3.5 TRAVEL AND MEETINGS

The Contractor's project or task manager and the survey team leader(s) shall attend all meetings.

3.5.1 Preliminary Project Site Visit/Walkover

The Contractor's survey team leader(s) shall visit the project site to be surveyed with the Contracting Officer [and the installation POC]. [The survey leader(s) shall visit a representative number of units to be surveyed with the Contracting Officer]

3.5.2 Project Work Plan Review and Startup Meeting

The Contractor shall attend a startup meeting to review, finalize and approve the Project Work Plan to include the Accident Prevention Plan, the Sampling Strategy Plan, laboratory and personnel credentials immediately prior to beginning field activities. The Contractor shall generate meeting minutes that will be submitted to the Contracting Officer within [two weeks] of the meeting.

3.5.3 Sampling Data Certification/Progress Report Meeting(s)

****

NOTE: Data certification may also be discussed at the Final Survey Report Meeting to help limit the number of required meetings.

****

[The Contractor shall attend a meeting with the COR to review status of data certification provided to the Contractor by the laboratory and the progress of the survey.]

3.5.4 Final Survey Report Meeting

The Contractor shall attend a final survey report meeting with the COR to discuss the findings and conclusions of the report prior to final submittal.

3.5 5 Additional Meetings [insert any additional meeting requirements]

3.6 SCHEDULES

****

NOTE: Consult with the customer to determine schedule milestones. Combine meeting topics where appropriate. At a minimum, the schedule milestones are:

1) Site visit/project walkover

2) Project Work Plan submission/Start-up meeting

3) Data certification/progress report submission

4) Final Survey Report submission

****

[Insert appropriate schedule milestones]

3.7 SUBMITTALS

3.7.1 Project Work Plan

3.7.2 Survey Progress Reports

[The Contractor shall provide [ ] project progress reports to the COR. The reports shall be due to the COR [ ] The reports shall address [ ]]

3.7.3 Survey Data Submission in Electronic [HALO] [ ] Format

The Contractor shall provide a survey data submission in electronic [HALO] [ ] format, as described in Paragraph 2.4 above.

3.7.4 Survey Report

The Contractor shall provide a survey report, as described in Paragraph 2.4 above.

3.8 MISCELLANEOUS

3.8.1 Glossary

This paragraph contains a glossary of terms used in this SOW, or commonly used in reference to lead and asbestos surveys.

Asbestos	The asbestiform varieties of: Chrysotile (serpentine); crocidolite (riebeckite); amosite, anthophyllite; tremolite; and actinolite. (40 CFR 763.83)
Asbestos-containing material (ACM)	Any material or product which contains more than 1 percent asbestos. Including surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts. (40 CFR 763.83)
Asbestos debris	Pieces of ACM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM. (40 CFR 763.83)
Asbestos-containing waste materials	Mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing material waste and

	materials contaminated with asbestos including disposable equipment and clothing. (40 CFR 61.141)
Category I nonfriable ACM	Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy. (40 CFR 61.141)
Category II nonfriable ACM	Any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (40 CFR 61.141)
Common area	A portion of a building that is generally accessible to all occupants. Such an area may include, but is not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, garages, and boundary fences. (40 CFR 745.223)
Component or component system	Unique design or structural elements or element systems of a building, that are distinguished from each other by form, function, and location. These include interior and exterior components or component systems.
Data Quality Objective	The qualitative and quantitative statements, guidelines, and requirements presented in paragraphs 2.2 and 2.3 of this SOW that clarify study objectives, define the appropriate type of data, and specify the tolerance levels of potential errors that will be used as the basis for establishing the quality of the data needed to support decisions. See EM 200-1-2 Appendix G DQO Attainment Verification Worksheet for further refinement of the DQO definition.
Distinct painting history	The application history, as indicated by its visual appearance or a record of application, over time, of paint or other surface coatings to a component or room. (40 CFR 745.223)
Friable asbestos material	Any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763 section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM. (40 CFR 61.141)
Functional space	A room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling and the floor or roof deck above), such as classroom(s), a cafeteria, gymnasium, hallway(s), designated by a person accredited to prepare management plans, design abatement projects, or conduct response actions. (40 CFR 763.83)
HALO	The DA's Hazardous Asbestos and Lead Optimal Management System, which is a management system designed to track lead hazards and actions taken in response to identified lead hazards.
QA	Quality assurance; defined by NLLAP as an "integrated system of activities involving planning, QC, quality assessment, reporting, and quality improvement to ensure that a product or service meets defined standards of quality within a state level of confidence." (NLLAP LQSR Revision 2.0 (August 1, 1996))
QC	Quality control; defined by NLLAP as the "overall system of technical activities whose purpose is to measure and control the quality of a

activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users. The aim is to provide quality that is satisfactory, adequate, dependable, and economical. (NLLAP LQSR Revision 2.0 (August 1, 1996))

Surfacing Material	Material that is sprayed-on, troweled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing material on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.
Thermal Insulation Material (TSI)	Material applied to pipes, fittings, boilers, breaching, tanks, ducts or other interior structural components to prevent heat loss or gain or water condensation.

APPENDIX B - STANDARD PRE-DESIGN SURVEY TABLES AND FORMS

This appendix contains tables and example forms to be used in completing lead and asbestos Pre-Design Surveys. These tables and forms include:

Table B-1
Building/Units to be Surveyed

Building Identification	Areas to be included in Project Survey	Approximate Square Feet of Project Areas	Type of Survey			
			Lead		Asbestos	
			Interior	Exterior	Interior	Exterior

Table B-2
Examples of Interior and Exterior Building Component Types

Interior Painted Components that should be tested for lead include:	
Air Conditioners	Fireplaces
Balustrades	Floors
Baseboards	Handrails
Bathroom Vanities	Newel Posts

Beams	Other Heating Units
Cabinets	Shelves and Supports
Ceilings	Painted Electrical Fixtures
Chair Rails	Window Sashes and Trim
Columns	Stair Stringers
Counter Tops	Stair Treads and Risers
Crown Molding	Stools and Aprons
Doors and Trims	Walls

Exterior Painted Components that should be tested for lead include:	
Air Conditioners	Handrails
Balustrades	Lattice Work
Bulkheads	Mailboxes
Ceilings	Painted Roofing
Chimneys	Railing Caps
Columns	Rake Boards
Corner Boards	Sashes
Doors and Trim	Siding
Fascia	Soffits
Floors	Stair Risers and Treads
Gutters and Downspouts	Stair Stringers
Joists	Window and Trim
Fences	Storage Sheds and Garages
Laundry Line Posts	Swing Sets and Other Play Equipment

Source: Table 7.1 of the 1997 Revision to the HUD Guidelines

Table B-3
Asbestos-Containing Materials Found in Buildings

Subdivision	Generic Name	Asbestos(%)	Dates of Use*	Binder/Sizing
Preformed Thermal Insulating Products	Batts, Blocks, and Pipe Covering			
	85% Magnesia	15	1926-1949	Magnesium Carbonate
	Calcium Silicate	6-8	1949-1971	Calcium Silicate
Textiles	Cloth Blankets (Fire)	100	1910-Present	None
Surfacing Material	Sprayed- or Troweled-On	1-95	1935-1970	Sodium Silicate, Portland Cement, Organic Binders
	Felts:	90-95	1920-Present	Cotton/Wool
	Blue Stripe	80	1920-Present	Cotton
	Red Stripe	90	1920-Present	Cotton
	Green Stripe	95	1920-Present	Cotton
	Sheets	50-95	1920-Present	Cotton/Wool
	Cord/Rope/Yarn	80-100	1920-Present	Cotton/Wool
	Tubing	80-85	1920-Present	Cotton/Wool
	Tape/Strip	90	1920-Present	Cotton/Wool
	Curtains (Theater, Welding)	60-65	1945-Present	Cotton
Cementitious Concrete-Like Products	Extrusion Panels	8	1965-1977	Portland Cement
	Corrugated	20-45	1930-Present	Portland Cement
	Flat	40-50	1930-Present	Portland Cement
	Flexible	30-50	1930-Present	Portland Cement
	Flexible Perforated	30-50	1930-Present	Portland Cement
	Laminated (Outer Surface)	35-50	1930-Present	Portland Cement
	Roof Tiles	20-30	1930-Present	Portland Cement
	Clapboard and Shingles	20-50	1930-Present	1930-Present
	Clapboard	12-15	1944-1945	Portland Cement
	Siding Shingles	12-14	Unknown-Present	Portland Cement
	Roofing Shingles	20-32	Unknown-Present	Portland Cement
	Pipe	12-15	1935-Present	Portland Cement
Roofing Felts	Smooth Surface	10-15	1910-Present	Asphalt
	Mineral Surface	10-15	1910-Present	Asphalt
	Shingles	1	1971-1974	Asphalt

Subdivision	Generic Name	Asbestos(%)	Dates of Use*	Binder/Sizing
	Pipeline	10	1920-Present	Asphalt
Asbestos-Containing Compounds	Caulking Putties	30	1930-Present	Linseed Oil
	Adhesive (Cold Applied)	5-25	1945-Present	Asphalt
	Joint Compound	5	1945-1975	Asphalt
	Roofing Asphalt	5	Unknown-Present	Asphalt
	Mastics	5-25	1920-Present	Asphalt
	Asphalt Tile Cement	13-25	1959-Present	Asphalt
	Roof Putty	10-25	Unknown-Present	Asphalt
	Plaster/Stucco	2-10	Unknown-Present	Portland Cement
	Spackle	3-5	1930-1975	Starch, Casein, Sythetic Resins
Asbestos-Containing Compounds	Sealants, Fire/Water	50-55	1935-Present	Caster Oil Or Polyisobutylene
	Cement, Insulation	20-100	1900-1973	Clay
	Cement, Finishing	55	1920-1973	Clay
	Cement, Magnesia	15	1926-1950	Magnesium Carbonate
Asbestos Ebony Products		50	1930-Present	Portland Cement
Flooring Tile And Sheet Goods	Vinyl/Asbestos Tile	21	1950-Present	Poly(Vinyl)Chloride
	Asphalt/Asbestos Tile	26-33	1920-Present	Asphalt
	Sheet Goods/ Resilient	30	1950-Present	Dry Oils
Wallcovering	Vinyl Wallpaper	6-8	Unknown-Present	--
Paints And Coatings	Roof Coating	4-7	1900-Present	Asphalt
	Air Tight	15	1940-Present	Asphalt

Source: Table 2-1 from PWTB 420-70-8, Installation Asbestos Management Program

*The source table was compiled in 1981. Some materials with dates of use extending to "present" may no longer be in use.

Table B-4

Typical Building Materials Comprising a Toxicity Characteristic Leaching Procedure (TCLP Sample)

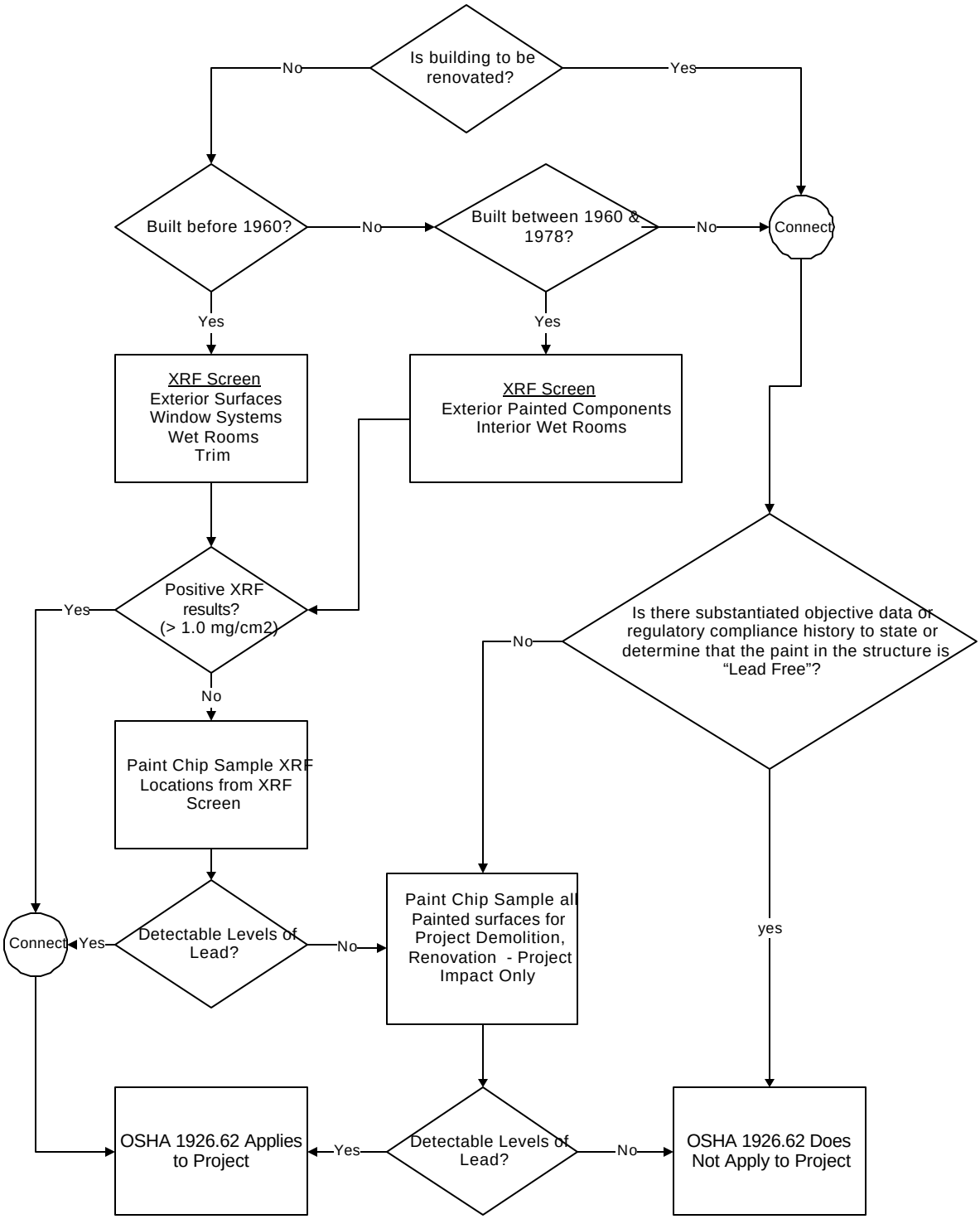
Baseboards	Handrails*
Beams	Headers
Brick*	Insulation (wall, ceiling, etc.)
Cabinets	Joists*
Ceilings (plaster, gypsum, etc.)	Rafters*
Chair Rails	Roofing Materials
Columns	Shelves and Supports
Concrete*	Siding*
Corner Boards	Soffits
Crown Molding	Stair Systems
Doors and Trim	Studs
Fascia	Walls (plaster, gypsum, etc.)
Floors	Window Systems*
Gutters and Downspouts*	Shutters and Misc. exterior trims

*These materials are most likely to be recyclables

Procedure:

1) List all building components
2) Determine those building materials/components to be recycled (i.e. glass, metal, bricks, masonry, HVAC units, etc.)
3) Identify the waste stream (the waste stream is all remaining components to be demolished)
4) Quantify waste stream materials, whether painted or not
5) Estimate each of these materials as a percentage of the total building
6) Extract a sample of each
7) Submit to laboratory (Laboratory takes piece of each sample in percentage of total building, creating a composite sample of @ 120 grams)
8) Laboratory performs TCLP test and provides results.

Table B-5
Decision Tree
Lead Sampling for Buildings to be Renovated/Demolished



FORM 1
PAINT SAMPLING FORM

Installation: _____ POC: _____

Address: _____ City: _____ State: _____ Housing Group: _____

Date/Time Cleanup Completed: _____

Date/Time Inspection Initiated: _____

Sample ID #	Room Name and Number	Component	Sub-strate	Paint Color	Paint Condition	Test Location	Result	Units	Above Action Level? (yes or no)

Total number of samples on this page: _____

Date/Time of sample collection: _____ Date sent to lab: _____

(Note: Attach a Copy of the Chain-of-Custody Form to this Form. See Lab Report for QA/QC Information.)

NOTES:

_____

Name of Inspector (print): _____

Certification Number(s): _____
(EPA, State, as applicable)

Signature: _____ Date: _____

Figure B-1: Paint Sampling Form

FORM 2 EP 1110-1-30
LEAD SOIL SAMPLING FORM 31 Aug 01
(Composite Sampling)

Installation: _____ POC: _____

Address: _____ City: _____ State: _____ Housing Group: _____

Date Inspected: _____ Dwelling Selection Protocol: _____

Sketch a soil sampling plot plan. Indicate sample locations. Collect only the top 1 inch of soil.

Sample ID#	Location	Bare or Covered	Lab Results	Units	High Contact? (yes or no)
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	
				µg/g (ppm)	

Total number of samples on this page: _____

Date/Time of sample collection: _____ Date sent to lab: _____

(Note: Attach a Copy of the Chain-of-Custody Form to this Form. See Lab Report for QA/QC Information.)
NOTES:

_____

Name of Inspector (print): _____

Certification Number(s): _____
(EPA, State, as applicable)

Signature: _____ Date: _____

Figure B-2: Lead Soil Sampling Form

EP 1110-1-30 FORM 3

31 Aug 01 ASBESTOS SAMPLING FORM

Installation: _____ POC: _____

Address: _____ City: _____ State: _____ Housing Group: _____

Date Inspected: _____ Dwelling Selection Protocol: _____

Sample ID #	HA #	Material Location	Sample Location	Quantiy	Type of ACBM	Friability	Physical Condition	Potential for Disturbance

(Note: Attach a Copy of the Chain-of-Custody Form to this Form. See Lab Report for QA/QC Information.)
NOTES:

_____

Name of Inspector (print): _____

Certification Number(s): _____
(EPA, State, as applicable)

Signature: _____ Date: _____

Figure B-3: Asbestos Sampling Form

FORM 4
EXAMPLE CHAIN OF CUSTODY FORM

Page _____ of _____

Project Name _____ Project Number _____

Installation _____

Project Manager _____

Company Name _____

Company Address _____

_____ Phone _____

Sample Preparation/Analysis Required (check the appropriate box)

Sample ID	Sample Date	Time	Sample Matrix (wipe, paint chip, soil, other)	Laboratory ID	ASTM E1644	ASTM E1645	ASTM E1726	ASTM E1979	ASTM E1613	Other (specify)

Sampler:

_____
1.1.1.1 Signature

_____
Printed Name/Certification Number

_____
Company Name

_____
Date/Time

1. Released by:

_____
1.1.1.2 Signature

_____
Printed Name

_____
Company Name

_____
Date/Time

2. Received by:

_____
1.1.1.3 Signature

_____
Printed Name

_____
Company Name

_____
Date/Time

Special Instructions/Comments:

Figure B-4: Example Chain of Custody Form

FORM 5

PRE-DESIGN LEAD/ASBESTOS SURVEY

ASBESTOS DATA SUMMARY SHEET

1. Sample Number : _____
2. Sample Location: _____
3. Brief Description of Material Sampled: (See Table B-3)

   a. Type of Asbestos _____

   b. Percent Asbestos Content _____

4. EPA NESHAP Friability Designation for Work Task

   Friable _____ Non-Friable Category I _____ Non-Friable Category II _____

5. Condition of ACM: Good _____ Fair _____ Poor _____

6. Quantity: Meters _____, Square Meters _____

7. Quantity: Linear Feet: _____, Square Feet _____

Figure B-5: Example Asbestos Data Summary Sheet