

TECHNICAL EXHIBIT 5
LEAD EVALUATION PROTOCOL

5.0 CONDUCTING LEAD-BASED PAINT EVALUATIONS

Under this contract, lead-based paint inspections and risk assessments shall be conducted concurrently in the same randomly selected dwelling units, common areas and exterior sites (exterior areas). Lead-based paint evaluations (lead-based paint inspections, and risk assessments, as applicable) shall be conducted using a systematic approach consisting of a series of activities. These evaluation activities are discussed in a stepwise progression below. The contractor may choose to conduct several of the activities simultaneously as needed to complete each lead-based paint evaluation.

5.0.1 General Provisions.

5.0.1.1 Protocols. The contractor shall conduct lead evaluations according to the protocols detailed herein.

5.0.1.2 Applicable Regulations. The contractor shall conduct each lead evaluation in accordance with all applicable regulations. Should any of the requirements in this contract differ with those by the applicable regulations, the requirements of the applicable regulations shall be followed. When more than one regulatory provision applies to a condition or activity, the most stringent shall be used. Applicable regulations are those that are in force when and where the lead evaluation is conducted, including, but not limited to:

- U.S. Department of Housing and Urban Development (HUD): 24 CFR 35
- U.S. Occupational Safety and Health Administration: 29 CFR 1910, 1926
- U.S. Environmental Protection Agency (EPA): 40 CFR 260-266, 745
- U.S. Department of Transportation: 49 CFR 171-177
- State or Indian Tribe regulations
- Local regulations

5.0.1.3 Personnel Qualifications. All lead evaluations shall be carried out by qualified risk assessors as required through certification or licensing under applicable EPA, or EPA-authorized State, Indian tribal or local regulations. Qualifications of all personnel to be involved in the evaluation shall be identified and reported as part of the deliverable to the Government Technical Representative. At a minimum, this shall include a listing (with document numbers and effective dates) of the relevant certifications, licenses, training, and experience for persons participating in the conduct of the evaluation.

5.0.1.4 Laboratory Qualifications. Laboratories selected for use shall hold all accreditations, certifications and recognitions needed to conduct lead testing services as governed by regulatory agencies having jurisdiction over such work. At a minimum, the laboratory used by the contractor shall be recognized by the U.S. Environmental Protection Agency (EPA) National Lead Laboratory Accreditation Program (NLLAP) for the analyses performed under this contract, and shall, for work under this contract, use the same analytical method used for obtaining the most recent NLLAP recognition.

5.1 CONDUCTING LEAD-BASED PAINT INSPECTIONS.

Lead-based paint inspections shall be conducted in randomly selected dwelling units, common areas and exterior sites. (These same selections shall be used for concurrent risk assessments performed during the evaluation.) Lead-based paint inspections shall be conducted using a systematic approach consisting of

a series of activities. These inspection activities are discussed in a stepwise progression below. The contractor may choose to conduct several of the activities simultaneously as needed to complete each evaluation. To minimize the number of disruptions to occupants, the Government intends that lead-based paint inspections and risk assessments shall be performed concurrently in each selected dwelling unit, common area and exterior site. A lead-based paint inspector who is not a risk assessor may perform the lead-based paint inspection concurrently with a risk assessor who is in the same dwelling unit, common area or exterior site.

5.1.1 Single-family housing property inspection site selection. The contractor shall perform a lead-based paint inspection of each single-family property identified in the work order.

5.1.2 Multi-family housing property inspection site selection.

5.1.2.1 The contractor shall perform a lead-based paint inspection of each multifamily housing property identified in the work order. The contractor shall group buildings and exterior sites within a multifamily housing property which have a common construction based on written documentation or visual evidence of similar construction type, construction history, for purposes of random selection for inspection as provided in this paragraph.

5.1.2.2 The contractor shall determine the numbers of distinct dwelling units, of common areas and of exterior sites to be inspected within each group in accordance with the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997 revision), chapter 7, table 7.3, Number of Units to be Tested in Multifamily Developments, using, for values not explicitly displayed, linear interpolation or extrapolation, as applicable, with upward rounding of fractional results.

5.1.2.3 The contractor shall use Government-provided random number information to select specific dwelling units, common areas, and exterior sites to test, and shall document these selection processes. The contractor shall:

- a. Use a Government-furnished list of random integers within the range from 1 to the number of dwelling units from which the selection will be made. The list shall be furnished in either electronic or hard-copy format, and be generated by a random number generator meeting the randomness quality measure specified in American Society for Testing and Materials D 5124-96, "Standard Practice for Testing and Use of a Random Number Generator in Lumber and Wood Products Simulation," or its HUD-approved equivalent.
- b. Randomly sort units and areas. The contractor shall list each dwelling unit in the housing group; and match the dwelling unit sequence with the random number sequence to select units to inspect.
- c. The contractor shall repeat the selection process for the set of common areas and for the set of exterior areas.
- d. When access can not be gained to a selected dwelling unit, common area or exterior area, the contractor shall select the next such location on the corresponding sorted list.

5.1.3 Acquiring any needed signed permission releases. The Government will be obtaining O/A permission to enter the property and conduct the lead-based paint inspection and risk assessment. The contractor shall acquire whatever additional signed permission releases are needed, if any to enter the dwelling and conduct the lead-based paint inspection, such as:

- a. Permission to enter the property.
- b. Permission to acquire and review available property construction records, inspection records, previous lead-based paint hazard assessment

or risk assessment records, and any other records appropriate to the conduct of the lead-based paint hazard assessment.

- c. Permission to conduct in situ paint testing, and any intrusive paint chip sampling deemed necessary or appropriate; and,
- d. Permission to conduct interviews of the O/A and their personnel, as appropriate, and occupants.

5.1.4 Acquire background information. As appropriate, and to the extent reasonably feasible, if not already available from HUD, the contractor will obtain from the O/A, their personnel, or the occupants, background information, which will include, but not be limited to:

- a. Property construction or structural records including year of construction and building construction type.
- b. Existing floor plans.
- c. Any appropriate existing environmental testing records such as lead-based paint inspection and/or risk assessment records.
- d. A statement as to the current general use of the structure.

5.1.5 Assemble Testing and Sampling Materials. Assemble, inventory, and pack for shipment to the assessment site relevant testing and sampling materials, and protocols needed to conduct the lead-based paint inspection.

5.1.6 Portable XRF Testing.

- a. Any portable X-ray fluorescence (XRF) instrument used to test for lead in paint (or other coatings) shall have a valid XRF Performance Characteristic Sheet issued by HUD with no inconclusive range for any substrate for the mode of operation used to collect measurements.
- b. Each portable XRF instrument used shall be used in accordance with its XRF Performance Characteristic Sheet issued by HUD. (The Performance Characteristic Sheets can be downloaded without charge from www.hud.gov/lea, or obtained without charge from the National Lead Information Center, at toll-free, 1-800-424-LEAD.
- c. The requirements of American Society for Testing and Materials standard PS 95-98, 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, shall be used.

5.1.7 Paint Sample Collection Specifications. Lead determination of paint (or other coatings) not applicable for X-ray fluorescence (XRF) testing (highly curved, ornate or restricted space locations) shall be tested by sample collection followed by laboratory analysis. The contractor shall keep disturbance of the coating to the minimum necessary for paint sampling. Responsibility for repair of the disturbed coating shall be the responsibility of others. For collected coating samples, the contractor shall ensure that all area dimensions are collected and recorded in inches (with precision to the nearest 1/16th inch). The requirements of American Society for Testing and Materials standard E 1729-99, Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques, or its HUD-approved equivalent, shall be used for paint sample collection. For each submitted sample, the contractor shall provide the laboratory with the collection dimensions in inches, and obtain the results from the laboratory required for reporting under this contract (see, for example, paragraphs 5.1.9.2 and 5.1.10.3b). The contractor shall document the chain of custody of samples sent to the laboratory so as to ensure that the laboratory reports reflect the collected samples.

5.1.8 Additional Testing Requirements. The contractor shall include the following additional testing requirements when conducting lead-based paint inspections:

5.1.8.1 Laboratory Qualifications. Laboratories used by the contractor shall hold all accreditations, certifications and recognitions needed to conduct lead testing services as governed by regulatory agencies having jurisdiction over such work. At a minimum, laboratories shall be recognized by the EPA National Lead Laboratory Accreditation Program (NLLAP) for the analyses performed under this contract, and shall use the same analytical method used for obtaining the most recent NLLAP recognition.

5.1.8.2 For each testing combination in the dwelling unit, common area or exterior area, one location per testing combination shall be tested, except for interior and exterior walls, where one location on each wall (up to a maximum of 4 walls within the same testing combination) per room or room equivalent shall be tested.

5.1.8.3 All tests shall be directed to locations that represent all layers of the coating on the component in the judgment of the evaluator.

5.1.8.4 Each and every testing combination tested by the contractor shall be reported regardless of the classification as to containing or not containing lead-based paint. Null readings shall be reported.

5.1.8.5 For each dwelling unit, common area or exterior area inspected, the contractor shall either acquire an existing floor plan or create a new floor plan of the dwelling unit, common area or exterior area. This floor plan shall clearly indicate the major architectural features, such as windows, doors, and closets and orientation. It does not need to be drawn to scale but should be recognizable to an occupant of the dwelling. . The contractor shall place on the floor plan a unique label for each room equivalent, common area or exterior area (such as living room, bedroom 1, bedroom 2, hallway, etc.) and a wall orientation designation using the letters A, B, C, and D, with side A for single-family housing being the street side for the address, side A for multifamily housing dwelling units being the dwelling unit entry door side, and side A for multifamily housing common areas being the street side for the address; and continuing clockwise. These designations shall be used to record and report locations of tests made on testing combinations. The intent of the floor plan is to provide the Department with a visual definition map for codes and terms used by the inspector to track and report results. The contractor shall ensure that reported test result locations correlate with designations used on the floor plan.

5.1.8.6 Wallpaper shall be assumed to cover paint and shall be tested.

5.1.8.7 Components not listed in Table 7.1 of the 1997 revision of the HUD Guidelines Chapter 7 that are coated with paint, varnish, shellac, wallpaper, stain, or other coatings shall also be considered as a separate testing combination and tested as such.

5.1.8.8 Exteriors shall be included for testing.

5.1.8.9 The contractor shall regard parts of the building components as separate testing combinations if they have evidence that different parts have separate distinct painting histories.

5.1.8.10 Painted furniture that is physically attached to the building shall be included for testing.

5.1.8.11 Substrates shall be identified as one of the following types: brick, concrete, drywall, metal, plaster, or wood. Other substrate types shall be assigned in the judgment of the evaluator to the closest among the designated types based on density, porosity, and other physical factors, with the inspection record annotated with the actual substrate type.

5.1.8.12 Response to finding low frequency of lead-based painted components. All frequencies of lead-based paint findings shall be reported as found. Any additional work to further define or check the low frequencies of lead-based paint findings shall be discussed and may be negotiated between the O/A and the GTR. The GTR shall seek the input of the contractor and/or the lead-based paint inspector/risk assessor as necessary.

5.1.9 Lead-Based Paint Inspection Reporting.

5.1.9.1 The contractor shall conform with applicable regulatory reporting requirements, and provide reports as provided in this contract.

5.1.9.2 Providing the lead-based paint inspection report. The contractor shall provide the lead-based paint inspection report, prepared in accordance with 24 CFR 35.1320(a), to HUD by the time specified in the work order after the last sample or reading has been collected. The lead-based paint inspection report shall address each dwelling unit, common area or exterior site for which a lead-based paint inspection was performed in part or whole. For a lead-based paint inspection performed concurrently with the risk assessment, a single, integrated lead-based paint inspection and risk assessment report that contains the information required in the report of either evaluation may be provided in place of separate reports.

5.1.9.3 Providing the lead-based paint inspection project report. The contractor shall provide the inspection project report, prepared in accordance with the section, Lead-Based Paint Inspection Project Report, to HUD by the time specified in the work order after the last sample or reading has been collected. The inspection project report shall address each dwelling unit, common area or exterior site for which a project was performed in part or whole. For a lead-based paint inspection performed concurrently with the risk assessment, a single, integrated lead-based paint inspection and risk assessment project report that contains the information required in the report of either evaluation may be provided in place of separate project reports.

5.1.10 Lead-Based Paint Inspection Project Report. The contractor shall prepare and issue a Lead-Based Paint Inspection Project Report ("inspection project report") as the final deliverable for each dwelling where a lead-based paint inspection was ordered and performed. This report provides the following general information: a summary of the lead-based paint inspection activities, a summary of the findings, and all field and laboratory data collected during the lead-based paint inspection. Federal, State or Indian Tribe or local regulation governing lead-based paint inspections may have specific regulatory requirements and shall be followed. However, such requirements shall not lessen the record keeping identified herein. At a minimum, the following information must be documented and reported in the Lead-Based Paint Inspection Report for each dwelling:

5.1.10.1 Summary of the Lead-Based Paint Inspection Activities:

a. Client information:

- (1) Name, address and telephone number of the person and of the organization which ordered the lead-based paint inspection.
- (2) Relationship(s) of the person and of the organization which ordered the lead-based paint inspection to the property (owner, buyer, tenant, lender, insurer, etc.).

b. Information on the evaluated property, including:

- (1) Address of the evaluated property, including the address and, as applicable, other unique identifier of each building, dwelling unit, common area, and exterior site.
- (2) Name, address and telephone number of the owner of the evaluated property (if known to the contractor).

- (3) Name, address and telephone number(s) of the manager(s) of the evaluated property (if applicable).
 - (4) The type of building (single family residence, apartment, etc.), year of construction, and as applicable, the identifier (such as number or geographic site) of each dwelling unit, common area or exterior site, on the evaluated property, and the identifier of each that was evaluated in whole or part.
- c. Name, address, telephone number, and EPA or State or Indian Tribe lead-based paint inspection or risk assessment firm certification/license number and expiration date, of the contractor firm which performed the work.
 - d. Name and signature, address, telephone number, and EPA or State or Indian Tribe lead discipline certification or license numbers and expiration dates of each risk assessor, inspector, sampling technician and/or other person who participated in the lead-based paint inspection.
 - e. For each laboratory utilized, the names, address and telephone number of the laboratory, along with the National Lead Laboratory Accreditation Program recognition status of this laboratory for analysis for lead in the medium analyzed, at the time samples were processed.
 - f. Starting and ending times and date(s) the inspection was performed.
 - g. Makes/brands, models and serial numbers of all field sampling equipment and Certified Reference Materials, plus any relevant calibration or performance related information for this equipment, including, for each XRF instrument, source type, source date, Performance Characteristic Sheet name, edition and publication date, and calibration validation check standard nominal values.
 - h. A list of definitions used throughout the inspection project report. This shall include but not be limited to the following:
 - (1) Federal, State or Indian Tribe, or local lead action levels used to determine the presence or absence of lead-based paint.
 - (2) A list of defined technical terms (glossary) used to report the results. At a minimum, this list (glossary) shall contain definitions for building component names and codes (such as wall orientation and sampling identification codes) used in reporting lead measurement results. This may be done by enclosing (with authorship citation) standard nomenclature text containing building component names and definitions. Any unique or local name for building components used in the report shall also be defined.
 - i. A statement whether there were any variations in testing protocols used to collect the data from the standard methods, and describing such variations.
 - j. A statement that (if found) that the presence of lead-based paint must be disclosed by sellers to potential new buyers (purchasers) and by lessors renters (lessees) prior to obligation under a sales contract or lease, in accordance with Federal law (see 40 CFR part 745, subpart F).

5.1.10.2 Summary of the Findings

- a. A summary statement of the total number of separate testing combinations tested.
- b. A tabular listing of all testing combinations classified as lead-based paint. At a minimum, this listing shall contain the following information for each reported testing combination:
 - (1) The unique test identification number (ID) for each testing combination result.
 - (2) The location description of the testing combination where any XRF measurement or paint sample was collected, as provided in the tabular listing of All Field Data Collected During the Lead-Based Paint Inspection required under this contract.
 - (3) The XRF and/or laboratory analysis measurement value with units of measure, i.e., for paint, mg/sq.cm.

- (4) The lead classification result, according to the HUD standard of 1 mg/sq. cm. If the State or Indian tribe has a more stringent standard, also report the classification with respect to that standard.

5.1.10.3 All Field Data Collected During the Lead-Based Paint Inspection.

- a. A tabular listing of all testing combinations tested in the dwelling regardless of lead classification. At a minimum, this listing shall contain the following information for each reported testing combination that was tested:
 - (1) The unique test identification number (ID) for each testing combination (unique from any other ID number assigned to a testing combination result listed in the reports about the property under this contract).
 - (2) The location description of the testing combination where the XRF measurement was obtained or the paint sample was collected, including room equivalent and site within the room equivalent, component type, substrate type, and, where needed to identify the testing combination, paint color.
 - i. "Room equivalent" shall mean an identifiable part of a residence, such as a room, a house exterior, a foyer, staircase, hallway, or an exterior area, such as a play area, swing set, sandbox, garden where edible vegetables are planted, or foundation/dripline area. An individual side of a building exterior or a yard is not a separate room equivalent unless there is visual or other evidence that its paint history is different from that of the other sides. For multifamily housing, common areas and exterior sites are treated as separate types of units, not as room equivalents.
 - ii. At a minimum, the location description shall be sufficient to distinguish among like building components that may have different painting histories present within the same room equivalent (such as "left interior window sill on west wall in dining room on first floor"). For a paint sample, the dimensions of the sample shall be provided. Codes may be used to provide this information if the codes are defined in the lead-based paint inspection report.
 - (3) If an XRF instrument used has multiple modes of operation available, a statement of which mode of operation was used for each measurement.
 - (4) Date and approximate clock time of the XRF measurement, or paint sample collection.
 - (5) The XRF and/or laboratory analysis measurement value with units of measure, i.e., mg/sq.cm.
 - (6) The lead classification result.
 - (7) Any relevant notes regarding the testing at a testing location.
- b. Laboratory reports, providing at least the following results:
 - (1) The laboratory's National Lead Laboratory Accreditation Program (NLLAP) recognition number for analysis for lead in the matrix analyzed at the time of the analysis.
 - (2) All other information required by NLLAP, the analytical method used, and as otherwise required.
 - (3) For each paint analysis for lead:
 - i. The total collected sample mass in grams.
 - ii. The sub-sample mass digested and used to make the lead determination.
 - iii. The total micrograms of lead found per square centimeter of sampled area.
 - iv. The total micrograms of lead found per gram of sample.
 - v. The minimum reporting limit in milligrams per square centimeter, and in micrograms per gram.

- (3) In addition, if not in a laboratory report, a tabular listing of the location description of each testing combination associated with each analytical result.
- c. For XRF calibration check measurements results as discussed in ASTM standard PS 95, and of results of other checks recommended by the manufacturer of the XRF instrument, a listing of values, date(s) and approximate clock times.
 - d. A copy of the floor plan with designations generated during the lead-based paint inspection.
 - e. A copy of all signed permission releases obtained to enter the property and/or dwelling unit(s) and to conduct the lead-based paint inspection.
 - f. Any remaining data, miscellaneous forms, diagrams, photos or videos taken as part of the investigation.

5.1.11 Lead-Based Paint Inspection Record Keeping.

5.1.11.1 The Contractor shall maintain records of the data collected during for each lead-based paint inspection in each dwelling unit, common area or exterior site. Records may be in any type of medium such as hard copy (such as pre-printed forms, field notebooks or floor plans) or electronic media.

5.1.11.2 All records themselves shall contain sufficient information to allow an independent reviewer to verify the lead-based paint inspection report. At a minimum, each record shall identify the date of record creation, the person(s) generating the record, and the data contained within the record.

5.1.11.3 The contractor shall generate and maintain a hard copy summary record, one for each dwelling unit, common area or exterior site, which categorizes or lists all the various records containing data for the lead-based paint inspection. This categorization shall summarize the general identity of each record containing data, the type of media, and where the record is stored or maintained. This summary record shall serve as an index to generated data.

5.1.11.4 The contractor shall maintain and make available to the Government Technical Representative all records and reports for a period of not less than three years.

5.2 CONDUCTING RISK ASSESSMENTS

Risk assessments shall be conducted in randomly selected dwelling units, common areas and exterior sites which are the same selections used for lead-based paint inspections performed during the evaluation. Risk assessments shall be conducted using a systematic approach consisting of a series of activities. These risk assessment activities are discussed in a stepwise progression below. The contractor may choose to conduct several of the activities simultaneously as needed to complete each evaluation. To minimize the number of disruptions to occupants, the Government intends that lead-based paint inspections and risk assessments shall be performed concurrently in each selected dwelling unit, common area and exterior site.

5.2.1 Prepare for lead risk assessment.

5.2.1.1 Acquire whatever signed permission releases are needed to enter the dwelling and conduct the lead risk assessment. This may include any of the following items:

- a. Permission to enter the property.
- b. Permission to acquire and review available property construction records, inspection records, previous lead-based paint hazard assessment

or risk assessment records, and any other records appropriate to the conduct of the lead-based paint hazard assessment.

- c. Permission to conduct testing: dust sampling, soil sampling, in situ paint testing; and any intrusive paint chip sampling deemed necessary or appropriate; and,
- d. Permission to conduct interviews of the O/A and their personnel, as appropriate, and occupants.

5.2.1.2 Acquire background information as appropriate from the O/A, their personnel, or the occupants. If they can be acquired with reasonable effort, specific background items shall include, but not be limited to the following:

- a. Property construction or structural records including construction date.
- b. Existing floor plans.
- c. Past property usage records.
- d. Home inspection records.
- e. Any appropriate existing environmental testing records such as a lead-based paint inspection and/or or risk assessment.
- f. A statement as to the current general use of the structure.
- g. The number of occupants, and the demographics of the occupants.
- h. Any exposure related records from the occupants of the structure.

5.2.1.3 Assemble a property profile. Using the background information acquired above, assemble a profile of the property including information on all the items presented in Table 1, Items to be Included in a Lead Evaluation Property Profile.

5.2.1.4 Assemble testing and sampling materials. Assemble, inventory, and pack for shipment to the assessment site relevant testing, sampling materials, and protocols needed to conduct the lead risk assessment.

5.2.1.5 Prepare site visit preparation summary. All data gathered above shall be reviewed, evaluated, and summarized into an internal site visit preparation summary by the risk assessor before visiting the site. This summary shall be used by the risk assessor to direct efforts during the on-site visit. Permission-related releases shall be grouped together and attached to the summary for quick reference. At a minimum, the body of this summary shall consist of a listing of physical locations identified as being high priority locations within the randomly-selected dwelling units, common areas or exterior areas for detailed examination during the risk assessment. The background information and property profile data previously collected shall be used to construct this listing. This listing also shall include relevant informational notes for each of the high priority locations.

5.2.2 Conduct Visual Inspection. The contractor shall travel to the site with all equipment, materials, and supplies needed to conduct the on-site investigation of the dwelling. The contractor shall conduct a visual inspection concurrently with the lead-based paint inspection to identify and record those locations that may pose a lead-based paint hazard as discussed below:

5.2.2.1 Walk-through of dwelling. The contractor shall review the internal site visit preparation summary just before conducting a quick walk-through of the dwelling. Use this review as a reminder to ensure the areas where the lead-based paint hazards are most likely to be present are included in the visual inspection.

5.2.2.2 Identify, categorize and record all deteriorated paint and bare soil. Using the site visit preparation summary as a guide and the final working floor plan as a recording mechanism, all items that are deteriorated paint or bare soil shall be identified and recorded by the risk assessor. (The absence of a recorded item indicates that the lead risk assessor believes that

the missing item was not deteriorated paint or bare soil). At a minimum, the following identifiers shall be recorded for each identified and recorded item:

- a. Record the location of the deteriorated paint and bare soil.
- b. Record a description of the deteriorated paint and bare soil.
- c. Record the type of deteriorated paint and bare soil. Types of lead-based paint hazard areas to be identified during the visual inspection include paint, dust, and soil are detailed in Tables 2-4. Each instance of the types presented in these tables shall be identified.
- d. Record and categorize the condition of the deteriorated paint and bare soil. General condition information to be recorded is indicated in Tables 2-4. In addition to recording this information, which will be of value during the later data reviews, categorize the physical condition of each item into one of two physical hazard categories: either 'major' or 'minor.'
- e. For deteriorated paint, identify the likely cause of the deterioration. For each incidence of deteriorated paint, record the most probable cause(s) of the deterioration.

5.2.3 Review Collected Data. Review, evaluate, and summarize all available data gathered from visual inspection and previously collected data following the visual inspection and before conducting personal interviews to provide a frame of reference for asking questions and understanding answers acquired from the personal interviews.

5.2.4 Conduct Environmental Testing and Lead Determinations. All environmental testing for lead determinations required by State or Indian Tribe or federal regulations shall be performed. Environmental testing, including types, locations and frequency of testing, shall be performed in accordance with the most recent applicable Federal, State or Indian Tribe or local regulations and, as applicable, guidance. All testing shall include appropriate quality control for the determinations (in-situ or ex-situ) being performed.

5.2.4.1 Required Testing. Environmental testing shall, at a minimum, require determination of lead in those media specified in 24 CFR 35.1320, i.e., deteriorated paint, settled dust and bare soil:

- a. Deteriorated Paint. Test:
 - (1) Each incidence of deteriorated paint within each living area that appears to have a different painting history or construction history including being constructed from a different substrate.
 - (2) Each incidence of other painted surfaces having a distinct painting history within each living area believed to represent a likely lead-based paint hazard (living areas where the lead risk assessor has identified, from the rough preliminary assessment, any painted items having a "high" and "moderate" likely risk category).
- b. Settled Dust. Test:
 - (1) The floor of each room or common area within each living area likely to be frequented by children (one or more children, under age 6).
 - (2) The floors of each room or common area within each living area where damaged paint, deteriorated paint or paint chips is found.
 - (3) The interior window sills of each room or common area within each living area likely to be frequented by children (one or more children, under age 6); and,
 - (4) The interior window sills of each room or common area within each living area where damaged paint, deteriorated paint, or paint chips are found.
- c. Bare Soil. Test:
 - (1) Exterior children's play areas where bare soil is present; and,
 - (2) Drip-line/foundation and mid-yard areas where bare soil is present.

5.2.4.2 Testing Procedures. Testing shall be conducted using specified documented procedures. The contractor shall document the chain of custody of samples sent to the laboratory so as to ensure that the laboratory reports reflect the collected samples.

- a. Deteriorated Paint. Lead determination of a deteriorated coating for which a reliable lead-based paint inspection result has not been obtained shall be tested, after dust sampling is conducted:
 - (1) If an adjacent un-deteriorated portion of the coating with the same painting history can be tested by XRF testing as provided in the Protocol for Conducting Lead-Based Paint Inspections under this contract, by such XRF testing; or
 - (2) If there is no adjacent un-deteriorated portion of the coating with the same painting history that can be tested by XRF testing as provided in the Protocol for Conducting Lead-Based Paint Inspections under this contract, by sample collection followed by laboratory analysis. The requirements of American Society for Testing and Materials standard E 1729-99, Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques, or its HUD-approved equivalent, shall be used for paint sample collection. The contractor shall ensure that all area dimensions are collected and recorded in inches to the nearest 1/16th inch. The Contractor shall submit collected paint samples with the collection dimensions (in inches) to a qualified laboratory, and obtain the results from the laboratory required for Risk Assessment Reporting under this contract (see, for example, paragraphs 5.2.6.3 and 5.2.7.3c).
- b. Settled Dust. The requirements of American Society for Testing and Materials standard E 1728-99, Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques, or its HUD-approved equivalent, shall be used for settled dust collection. All tests of settled dust shall include collection of dust samples having a minimum collection area of 1 square foot unless the area on the component being sampled is smaller than this amount, in which case (such as for some window sills), the entire component area shall be sampled. The contractor shall not collect composite samples. The contractor shall ensure that all area dimensions are collected and recorded in inches to the nearest 1/16th inch. The Contractor shall submit collected dust samples with the collection dimensions (in inches) to a qualified laboratory, and obtain the results from the laboratory required for Risk Assessment Reporting under this contract (see, for example, paragraphs 5.2.6.3 and 5.2.7.3c).
- c. Bare Soil. The requirements of American Society for Testing and Materials standard E 1727-99, Standard Practice for the Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques, or its HUD-approved equivalent, shall be used for soil collection. The Contractor shall submit collected soil samples to a qualified laboratory for lead determination, and obtain the results from the laboratory required for Risk Assessment Reporting under this contract (see, for example, paragraphs 5.2.6.3 and 5.2.7.3c).
- d. Laboratory Qualifications. Laboratories used by the contractor shall hold all accreditations, certifications and recognitions needed to conduct lead testing services as governed by regulatory agencies having jurisdiction over such work. At a minimum, laboratories shall be recognized by the EPA National Lead Laboratory Accreditation Program (NLLAP) for the analyses performed under this contract, and shall use the same analytical method used for obtaining the most recent NLLAP recognition.

5.2.5 Final Review of Collected Data. A final data evaluation shall be conducted upon receipt of laboratory results for collected samples. The

purpose of this evaluation is to catalog the findings usable for developing lead hazard management programs and in making lead hazard mitigation recommendations. Findings shall be determined by creating a final tabular listing of items identified during visual inspection and assigning one of three lead hazard management categories (high, moderate, or low) to each of the items. This final assessment of lead hazard risk listing shall be included in the lead hazard assessment report to the Government Technical Representative and it serves to provide a summary of the visual inspection. The following shall be used to create the final tabular categorized listing for each item identified as likely to be a lead hazard:

5.2.5.1 Record the location, description, type, and condition as determined during the site visit. For deteriorated paint items, include the likely cause of the deterioration on the tabular listing.

5.2.5.2 Record any appropriate use of or use pattern notes that go with the item as determined during the site visit.

5.2.5.3 Record the location and sampling parameters of each environmental sample collected, their analysis results, and a general statement regarding the lead levels found with respect to the applicable federal, State or Indian Tribe, or local lead hazard level.

5.2.5.4 Assign and record a lead hazard management category (e.g., high, moderate, or low) to each item as indicated in Table 5.

5.2.6 Risk Assessment Reporting.

5.2.6.1 The contractor shall conform with applicable regulatory reporting requirements, and provide reports as provided in this contract.

5.2.6.2 Reserved.

5.2.6.3 Providing the risk assessment report. The contractor shall provide the risk assessment report, prepared in accordance with 24 CFR 35.1320(b), to HUD by the time specified in the work order after the last sample or reading has been collected. The risk assessment report shall address each dwelling unit, common area or exterior site for which a risk assessment was performed in part or whole. For a risk assessment performed concurrently with the lead-based paint inspection, a single, integrated lead-based paint inspection and risk assessment report that contains the information required in the report of either evaluation may be provided in place of separate reports.

5.2.6.4 Providing the risk assessment project report. The contractor shall provide the risk assessment project report, prepared in accordance with the section, Risk Assessment Project Report, to HUD by the time specified in the work order after the last sample or reading has been collected. The risk assessment project report shall address each dwelling unit, common area or exterior site for which a project was performed in part or whole. For a risk assessment performed concurrently with the lead-based paint inspection, a single, integrated lead-based paint inspection and risk assessment project report that contains the information required in the report of either evaluation may be provided in place of separate project reports.

5.2.7 Risk Assessment Project Report. The contractor shall prepare and issue a Risk Assessment Project Report as the final deliverable for each dwelling where a lead-based paint inspection was ordered and performed. This report provides the following general information: a summary of the lead-based paint inspection activities, a summary of the findings, and all field data collected during the lead-based paint inspection. Federal, State or Indian Tribe or

local regulation governing lead-based paint inspections may have specific regulatory requirements and shall be followed. However, such requirements shall not lessen the record keeping identified herein. At a minimum, the following information must be documented and reported in the Risk Assessment Report for each dwelling:

5.2.7.1 Summary of the Risk Assessment Activities.

- a. Client information:
 - (1) Name, address and telephone number of the person and of the organization which ordered the risk assessment.
 - (2) Relationship(s) of the person and of the organization which ordered the risk assessment to the property (owner, buyer, tenant, lender, insurer, etc.).
- b. Information on the evaluated property, including:
 - (1) Address of the evaluated property, including the address and, as applicable, other unique identifier of each building, dwelling unit, common area, and exterior site.
 - (2) Name, address and telephone number of the owner of the evaluated property (if known to the contractor).
 - (3) Name, address and telephone number(s) of the manager(s) of the evaluated property (if applicable).
 - (4) The type of building (single family residence, apartment, etc.), year of construction, and as applicable, the identifier (such as number or geographic site) of each dwelling unit, common area or exterior site, on the evaluated property, and the identifier of each that was evaluated in whole or part.
- c. Name, address, telephone number, and EPA or State or Indian Tribe risk assessment firm certification/license number and expiration date, of the contractor firm which performed the work.
- d. Name and signature, address, telephone number, and EPA or State or Indian Tribe lead discipline certification or license numbers and expiration dates of each risk assessor, sampling technician and/or other person who participated in the risk assessment.
- e. For each laboratory utilized, the names, address and telephone number of the laboratory, along with the National Lead Laboratory Accreditation Program recognition status of this laboratory for analysis for lead in the medium analyzed, at the time samples were processed.
- f. Starting and ending times and date(s) the risk assessment was performed.
- g. Makes/brands, models and serial numbers of all field sampling equipment and Certified Reference Materials, plus any relevant calibration or performance related information for this equipment, including, for each XRF instrument, source type, source date, Performance Characteristic Sheet name, edition and publication date, and calibration validation check standard nominal values.
- h. A list of definitions used throughout the risk assessment project report. This shall include but not be limited to the following:
 - (1) Federal, State or Indian Tribe, or local lead action levels used to determine the presence or absence of lead-based paint and lead-based paint hazards.
 - (2) A list of defined technical terms (glossary) used to report the results. At a minimum, this list (glossary) shall contain definitions for building component names and codes (such as wall orientation and sampling identification codes) used in reporting lead measurement results. This may be done by enclosing (with authorship citation) standard nomenclature text containing building component names and definitions. Any unique or local name for building components used in the report shall also be defined.
- i. A statement whether there were any variations in testing protocols used to collect the data from the standard methods, and describing such variations.

- j. A statement that (if found) that lead-based paint hazards must be disclosed to potential new buyers and renters (lessees) prior to obligation under a sales contract or lease.

5.2.7.2 Summary of the Findings.

- a. A summary statement of the total number of separate testing combinations tested.
- b. A tabular listing of all lead-based paint hazards. At a minimum, this listing shall contain the following information for each reported testing combination that was tested:
 - (1) The unique test identification number (ID) for each testing combination identified as a lead-based paint hazard.
 - (2) A summary of the visual inspection findings.
 - (3) A description of the location, type, and severity of identified lead-based paint hazards, as provided in the tabular listing of All Field Data Collected During the Risk Assessment required under this contract. Lead classification results shall be reported according to the HUD standards of 24 CFR 35.1320(b)(2). If the State or Indian tribe has a more stringent (lower) standard, also report the classification with respect to that standard.
 - (4) A description of interim controls and/or abatement options for each identified lead-based paint hazard and a suggested prioritization for addressing each hazard. If the use of an encapsulant or enclosure is recommended, the contractor's report shall recommend a maintenance and monitoring schedule for the encapsulant or enclosure.

5.2.7.3 All Field Data Collected During the Risk Assessment.

- a. Tabular categorized listings of items identified as likely to be a lead hazard from the rough preliminary assessment of lead hazard risk listing, and the final assessment of lead hazard risk listing.
- b. A tabular listing of the location, type, and severity of identified lead-based paint hazards, any other likely lead hazards, on the property. At a minimum, this listing shall contain the following information for each reported testing combination that was tested, regardless of whether the testing combination was found to be lead-based paint or a lead-based paint hazard:
 - (1) The unique test identification number for each testing combination (unique from any other identification number assigned to a testing combination result listed in the reports about the property under this contract).
 - (2) The description of the location of each testing combination, and, if it is a lead-based paint hazard, the type and severity of the lead-based paint hazard:
 - i. The description shall include the room equivalent, common area or exterior area and site within the room equivalent, common area or exterior area, component type, substrate type (if applicable), where needed to identify the testing combination, paint color, and condition (e.g., of paint deterioration; dust prevalence; or soil area of bareness). The dimensions of the sample shall also be provided.
 - ii. At a minimum, the location and severity description shall be sufficient to distinguish among like building components that may have different painting histories present within the same room equivalent (such as "cracking paint on entire 8 in. x 6 ft. right side casing trim of left interior window sill on west wall in dining room on first floor") or common area or exterior area (such as "composite of five sub-samples of soil from center and mid-lines of X pattern covering 4 ft. x 11 ft. vegetable garden"). Codes may be used to provide this information if the codes are defined in the risk assessment report.

- (3) If an XRF instrument used has multiple modes of operation available, a statement of which mode of operation was used for each measurement.
 - (4) Date and approximate clock time of the XRF measurement, or paint or soil sample collection.
 - (5) A description of interim controls and/or abatement options for the lead-based paint hazard and a suggested prioritization for addressing the hazard. If the use of an encapsulant or enclosure is recommended, the contractor's report shall recommend a maintenance and monitoring schedule for the encapsulant or enclosure.
 - (6) Any relevant notes regarding the visual inspection or testing at a visual inspection or testing location.
- c. Laboratory reports, providing at least the following results:
- (1) The laboratory's National Lead Laboratory Accreditation Program (NLLAP) recognition number for analysis for lead in the matrix analyzed at the time of the analysis.
 - (2) All other information required by NLLAP, the analytical method used, and as otherwise required.
 - (3) For each paint analysis for lead:
 - i. The total collected sample mass in grams.
 - ii. The sub-sample mass digested and used to make the lead determination.
 - iii. The total micrograms of lead found per gram of sample.
 - iv. The total milligrams of lead found per square centimeter of sampled area.
 - v. The minimum reporting limit in milligrams per square centimeter, and in micrograms per gram.
 - (4) For each dust analysis for lead:
 - i. The total micrograms of lead found per square foot of sampled area.
 - ii. The minimum reporting limit in milligrams per square foot.
 - (5) For each soil analysis for lead:
 - i. The sub-sample mass digested and used to make the lead determination.
 - ii. The total micrograms of lead found per gram of sample.
 - iii. The minimum reporting limit in micrograms per gram.
 - (6) In addition, if not in a laboratory report, a tabular listing of the location description of each testing combination associated with each analytical result.
- d. For XRF calibration check measurements results as discussed in ASTM standard PS 95, and results of other checks recommended by the manufacturer of the XRF instrument, a listing of values, date(s) and approximate clock times.
- e. A copy of the floor plan with designations generated during the risk assessment.
- f. A copy of all signed permission releases obtained to enter the property and/or dwelling unit(s) and to conduct the risk assessment.

5.2.8 Risk Assessment Record Keeping.

5.2.8.1 Records of the data collected during for each risk assessment in each dwelling unit, common area or exterior site shall be maintained by the contractor. Records may be in any type of medium such as hard copy (such as pre-printed forms, field notebooks or floor plans) or electronic media.

5.2.8.2 All records themselves shall contain sufficient information to allow an independent reviewer to verify the risk assessment report. At a minimum, each record shall identify the date of record creation, the person(s) generating the record, and the data contained within the record.

5.2.8.3 The contractor shall generate and maintain a hard copy summary record, one for each dwelling unit, common area or exterior site, which categorizes or lists all the various records containing data for the risk assessment. This categorization shall summarize the general identity of each record containing data, the type of media, and where the record is stored or maintained. This summary record shall serve as an index to generated data.

5.2.8.4 The contractor shall maintain and make available to the Government Technical Representative all records and reports for a period of not less than three years.

Table 1. Items to be Included in a Lead-Based Paint Evaluation Property Profile

Name, address and telephone number of owner/management agent, and relationship to property (owner, buyer, tenant, lender, insurer, etc.)
Address of property assessed
Description of the property assessed (home, apartment, commercial structure, etc.)
Age of property
Past, current or planned renovations or repainting
Existing lead testing and/or inspection reports or previous lead hazard assessment reports
Incidents of lead poisoning in the property (if available from owner/management agent)
All other information on sources of lead in the property, its concentration or condition

Table 2. Lead Hazards from Paint or Other Coatings	
Type	Description and Discussion
Deteriorated paint or other coatings	Inspect painted surfaces for deteriorated conditions. Record the presence of any defective paint surface since these surfaces can cause lead poisoning from direct ingestion of paint chips, be a primary source of lead levels in dust, and be a primary source of lead levels in soil. Deteriorated conditions include paint or other coatings that are peeling or separating from substrate, chalking, checking, cracking, or flaking. Data to be recorded for each observed incidence shall include the location, the type of deteriorated condition, the magnitude of the deteriorated condition, the likely cause of the deterioration, and whether the location can be reached by children under age 6. The identification of deteriorated paint is based, in large part, on the judgment of the individual conducting the lead hazard assessment. As such, incidental blemishes in painted surfaces due to factors such as nail holes, etc., may or may not be classified as deteriorated paint by the risk assessor.
Paint chip accumulation	Inspect areas prone to paint chip/dust accumulation including, but not limited to window areas, along baseboard moldings, room corners at the edges of door thresholds, beneath radiators, on window sills beneath air conditioners, and on other surfaces near or under surfaces with deteriorated conditions. Airflow dynamics of the structure should be considered to help inspect areas likely to accumulate paint chips and/or dust. Data to be recorded for each observed incidence shall include the location and the magnitude of any accumulation.
Friction surfaces	Inspect friction surfaces for signs of paint wear including, but not limited to window areas, door areas, painted stair treads or banisters, or any other observed friction surfaces. Data to be recorded for each observed incidence shall include the location, the magnitude of the deteriorated condition, and whether the location is an accessible surface.
Mouthable or chewable surfaces	Inspect all chewable surfaces specifically for signs of mouthing or bite marks. Painted chewable surfaces, such as window sills, stairway spindles, painted furniture or toys, etc. on which a child might teethe can lead to the direct ingestion of the lead paint. If there is direct evidence that such surfaces containing leaded paint are being chewed, this becomes a high priority for mitigation. Data to be recorded for each observed incidence shall include the location and the magnitude of the deteriorated condition.
Impact surfaces	Inspect impact surfaces for signs of damage. Impact surfaces should be distinguished from generally deteriorated paint or other coatings. Baseboards, door jambs and outside corners of walls are examples of surfaces that are frequently banged or bumped leading to the production of small chips of paint which can be easily ingested by the child. Evidence of frequent impact means mitigation is warranted. Data to be recorded for each observed incidence shall include the location, the type of damage, the magnitude of the damage, type of impact, and whether the location is an accessible surface.
Enamel coatings and glazes	Inspect enameled coatings (bathtubs and basins) and glazes on tiles for damage and proximity to activities where they may represent a likely lead hazard. Data to be recorded for each observed incidence shall include the location, the current condition, and whether the location is an accessible surface.

Table 3. Lead Hazards from Dust

Type	Description/Discussion
General Dust Accumulation	Inspect areas prone to general dust accumulation including, but not limited to: window areas; along baseboard moldings; room corners; at the edges of door thresholds and other entries; beneath radiators; on window sills beneath air conditioners; dusty carpets/rugs/upholstery; and, on other surfaces near or under surfaces with deteriorated conditions. The movement of air through doors, windows, and ventilation systems should be considered to help inspect areas likely to accumulate dust. Particular attention should be paid to the presence of fine paint particles in the dust. Data to be recorded for each observed incidence shall include the location, appearance, and the magnitude of any accumulation.
Entryway Dust Accumulation	Inspect all outside to inside entryway areas for tracked-in dust or soil. Data to be recorded for each observed incidence shall include: the location; the location of any nearby sources of paint or other likely lead hazard; observations on the make-up of the dust or soil (particularly the presence of any fine or course paint chips); and, the relative amount of the observed dust or soil.

Table 4. Lead Hazards from Soil

Type	Description/Discussion
Outside play areas for children	Inspect all outside areas frequented by children for bare soil. Data to be recorded for each play area shall include the location and condition, location of any nearby sources of paint or other likely lead hazard, observations on the make-up of the soil (particularly the presence of any paint chips), and the size of the bare area.
Outside entryway areas	Inspect all outside entries and pathways leading to and from the assessed unit for bare soil. Data to be recorded for each incidence shall include the location, location of any nearby sources of paint or other likely lead hazard, observations on the make-up of the soil (particularly the presence of any paint chips), and the size of the bare area.
Pet sleeping areas	Inspect all normal indoor and outdoor pet sleeping areas. For outdoor sleeping areas, inspect for the proximity to sources of paint and presence of paint chips. For indoor sleeping areas, inspect for the presence of paint chips, bare soil or dust likely carried in by the pet. Data to be recorded for each incidence shall include the location, observations on the make-up of the soil (particularly the presence of any paint chips), and the magnitude of the soil in the indoor pet sleeping area.
Garden areas	Inspect all garden areas and proximity to sources of paint. Data to be recorded shall include the location, location and condition of any nearby sources of paint or other likely lead hazard, observations on the make-up of the soil (particularly the presence of any paint chips), and proximity to children's play areas.

Table 5. Lead Hazard Management Categories for Various Identified Conditions

Use Pattern Indicates Frequent Contact with Item?	Physical Hazard Condition of Item	Lead Level Y found for an Item, as Compared to the Hazard Action Level of x, where DL is the Detectable Level for the test method used	Lead Hazard Management Category
Yes	Major	$5x < Y$	High
		$x < Y \leq 5x$	High
		$DL < Y \leq x$	Moderate
		$Y \leq DL$	Low
	Minor	$5x < Y$	High
		$x < Y \leq 5x$	Moderate
		$DL < Y \leq x$	Moderate
		$Y \leq DL$	Low
No	Major	$5x < Y$	Moderate
		$x < Y \leq 5x$	Moderate
		$DL < Y \leq x$	Moderate
		$Y \leq DL$	Low
	Minor	$5x < Y$	Moderate
		$x < Y \leq 5x$	Low
		$DL < Y \leq x$	Low
		$Y \leq DL$	Low