

HF-786



ECS MID-ATLANTIC, LLC

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Geotechnical • Construction Materials • Environmental • Facilities

April 20, 2015

Mr. Larry Moore
National Park Service
PO Box 65
Harper's Ferry, WV 25425
Larry_moore@nps.gov

ECS Project No. 01:24343

Reference: Asbestos Containing Materials and Lead Based Paint Survey, Murphy Farm House, 123 Murphy Road, Harper's Ferry, WV

Dear Mr. Moore:

ECS Mid-Atlantic, LLC (ECS), is pleased to provide you with the results of the above referenced non-invasive Asbestos Containing Material and Lead Based Paint Survey for the subject building. This work was performed in general conformance with ECS Proposal No. 01:50740-EP, dated March 30, 2015. The following is a summary of results of the above referenced work performed on April 6, 2014. This survey is limited to the exterior windows and roof only.

ECS appreciates this opportunity to provide these testing services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS MID-ATLANTIC, LLC

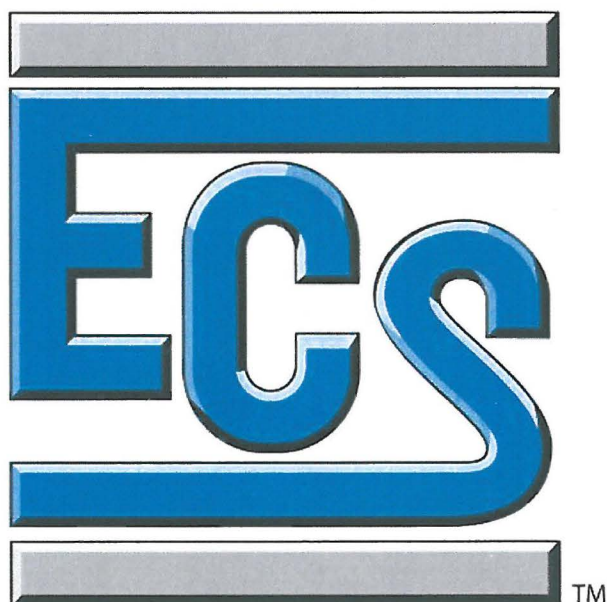
A handwritten signature in blue ink, appearing to read 'Beverly Sedon'.

Beverly Sedon
Senior Environmental Project Manager

A handwritten signature in blue ink, appearing to read 'Chris Chapman'.

Christopher J. Chapman, CIH
Director of Industrial Hygiene

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**REPORT OF ASBESTOS CONTAINING MATERIALS AND
LEAD BASED PAINT SURVEY**

**MURPHY FARM HOUSE
HARPER'S FERRY, WEST VIRGINIA**

ECS PROJECT NO. 01:24343

FOR

NATIONAL PARK SERVICE

APRIL 20, 2015

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SITE DESCRIPTION

The subject site is located at 123 Murphy Road in Harper's Ferry, West Virginia. The survey was performed for the exterior windows that are proposed for repairs and the lower metal roof system that is proposed for removal. No other areas of the interior and exterior of the structure were included in this assessment. The shingle roof system was also not included in this assessment. The windows consist of painted wood frames with glazing and associated caulk. The lower roofing system consisted of a metal roof with membranes, tar patches, and an adjoining chimney.

During the survey, ECS attempted to access suspect asbestos-containing building materials in readily accessible areas. However, due to the destructive means required to access some materials, certain areas were deemed inaccessible (i.e. behind walls or sub grade materials) and were not surveyed for suspect ACMs. Unidentified suspect asbestos-containing materials may be located in these and/or other inaccessible areas. Interior window cavity components such as flashings and glazings, if present, were not accessible.

METHODS AND RESULTS

Asbestos

The asbestos survey was performed by West Virginia Licensed asbestos inspector (AI007755) who has received EPA accredited training. Samples of suspect asbestos-containing materials (ACMs) were collected utilizing hand tools and placed into individual, labeled plastic bags. Unique bulk suspect ACM samples were sent to Scientific Analytical Institute, Inc. (SAI) for analysis via Polarized Light Microscopy in accordance with current EPA-600 methodology. Materials consisting of additional layers were analyzed separately. SAI is listed as an accredited laboratory by the National Voluntary Laboratory Accreditation Plan (NVLAP) managed by the National Institute of Standards and Technology (NIST) for bulk sample analysis.

Samples were collected in general accordance with EPA Standard 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act (AHERA) and OSHA Standard 29 CFR 1926.1101 Inspection Protocol. Multiple samples of each unique material were submitted. Samples were analyzed using "Positive Stop" methodology. If one sample of a homogeneous material is reported to contain asbestos, the remaining samples of that material are not analyzed. EPA regulations stipulate that if one sample contains asbestos the entire quantity of that material contains asbestos, regardless of additional analysis. In total, 10 bulk representative samples were submitted to the laboratory of which 10 layers were analyzed.

Table 1 below summarizes the materials reported to contain asbestos. A list of the all of the materials sampled during this survey and reported results are located in Table 3 attached to

this report. Photographs of collected samples reported as asbestos containing are also attached to this report.

TABLE 1
ASBESTOS-CONTAINING MATERIALS SUMMARY

<u>General Location</u>	<u>Material</u>	<u>Friability</u>
Lower Metal Roof	Black Roof Membrane on Metal Roof	Category I Non-Friable
Lower Metal Roof	Black Tar Patch with Silver Paint	Category I Non-Friable
Lower Metal Roof at Chimney	Black Chimney Flashing with Tar	Category I Non-Friable

The roofing materials were observed to be in fair condition. Similar materials referenced above as asbestos containing may be present in other areas of the building

Suspect/Assumed Asbestos Containing Materials

Suspect asbestos containing materials may be present in areas that were inaccessible during our survey. The suspected asbestos containing materials should be tested or treated as ACMs if they are discovered during renovation activities. This list is not comprehensive, but does include materials typically present in similarly constructed buildings.

Inaccessible areas that are suspected to contain asbestos containing materials include:

- Interior window cavity flashings and glazings, if present.

Lead-Based Paint

The Lead-Based Paint (LBP) survey was performed by a West Virginia licensed Lead Inspector (PI000308). Painted and/or glazed surfaces were assessed for lead content using a Direct-Read X-Ray Fluorescence (XRF) Spectrometer manufactured by Innov-X Systems.

The survey was conducted utilizing the EPA definition of lead-based paint. Under this definition, painted surfaces which contain lead in concentrations equal to or greater than 1.0 milligrams per square centimeter ($\geq 1.0 \text{ mg/cm}^2$) are classified as coated with LBP. Paints

with concentrations of lead detectable by the XRF are considered lead-containing paints. Additionally, fixtures or components that are manufactured with a factory applied glazing (i.e., sinks, toilets, ceramic tiles, etc.) are tested as these factory-applied finishes often contain lead. Lead-containing glazes, while not lead-based paints by the EPA definition, are regulated by OSHA (29 CFR 1926.62), if removed or otherwise disturbed in a manner that will potentially expose contractor employees or other occupants to lead.

The representative survey included taking readings from the exterior window components and roofing components. Walls are listed by letter with wall "A" being the entrance of the subject building, proceeding clockwise to "B, C, D", etc. A total of 17 readings were collected during the survey, including calibration readings. A list of XRF readings collected from the building is included in the Table 4 attached to this report. The following component was reported to have lead concentrations ≥ 1.0 mg/cm².

TABLE 2
XRF LEAD BASED PAINT SUMMARY

Reading	Location	Room	Side	Substrate	Color	Component	Pb
25	Exterior	Roof	A	Metal	Black	Roof Panel	1.00

Note: Pb – Lead in milligrams per square centimeter (mg/cm²)

The remaining collected readings of painted surfaces were reported to have lead concentrations ranging from 0.05 to 0.27 mg/cm².

Although the EPA defines lead based paint as any paint containing equal to or greater than 1.0 mg/cm², OSHA has no specific action level for lead in paint or glazings. Work activities disturbing painted or glazed surfaces with measurable concentrations of lead should be performed in accordance with 29 CFR 1926.62. Please refer to the attached Table 4 for the complete listing of readings and results.

RECOMMENDATIONS

This survey was performed for the exterior windows proposed for renovations and the lower roof metal system. Additional materials containing asbestos and/or lead based paint may be present in other areas of the building not included in this assessment. This report should not be used to represent all materials and surfaces within the entire building.

Asbestos

The materials listed in Table 1 consist of non-friable materials which contain greater than one percent (> 1%) asbestos. By definition, these materials are considered ACMs. Friable

materials will easily produce airborne asbestos fibers if disturbed. Non-friable materials may also produce airborne asbestos fibers if disturbed.

ECS recommends where a material type has been identified as asbestos containing that all similar type materials throughout the buildings be assumed to contain asbestos. Suspect asbestos containing materials not observed due to inaccessibility during the survey may be encountered during demolition activities and should be tested for asbestos content or assumed as asbestos containing.

Federal and state regulations require asbestos-containing materials be removed prior to disturbance by renovation/demolition operations by a qualified contractor.

If asbestos-containing materials are to be removed, it is recommended that an industrial hygienist monitor the project. This involves collecting air samples from within and outside abatement work areas to monitor the abatement contractor's work practices over the course of the project. The industrial hygienist should inform the building owner if the asbestos abatement contractor is not performing the work in accordance with project specifications, West Virginia regulations, and local regulations (for asbestos) as well as EPA regulation 40 CFR Part 61-National Emission Standards for Hazardous Air Pollutants Subpart M: National Emission Standard for Asbestos, and U.S. Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 – Asbestos in Construction which, in part, requires the contractor to perform personal exposure monitoring for all workers abating and disposing of asbestos containing materials.

The industrial hygienist should assess each work area to monitor the removal of asbestos-containing materials. ECS can provide these services for an additional fee if requested.

At the time of the survey, destructive means were not used to locate or sample suspect ACMs; therefore, additional suspect ACMs may remain within the building hidden behind inaccessible areas that include, but are not limited to, sub-grade walls, structural members, topping slabs, exterior areas, sub-grade sealants, flooring located below underlayments, areas behind walls, pipe chases, vapor barriers, etc. were deemed inaccessible and were not assessed. If additional suspect asbestos-containing materials are uncovered during renovation activities which were not accessible during this survey, it is recommended that these materials be sampled immediately upon discovery for asbestos content by a licensed asbestos inspector in accordance with 29 CFR 1926.1101.

If the ACM materials will remain in place, ECS recommends that they be placed within an Operations and Maintenance Plan for continued monitoring.

Lead-Based Paint

Based on the findings of this screening, one of the tested components was reported to have lead concentrations greater than 1.0 mg/cm². However, the lead concentrations were

detected in several components or tested areas to range from 0.05 to 0.27 mg.cm². Based on this information, all of the window components should be considered as lead containing. It is recommended that where LBP is to be disturbed that work be performed in accordance with the US EPA Renovation Repair, and Painting Rule using a certified contractor under 40 CFR 745.

Although the EPA defines lead based paint as any paint containing equal to or greater than 1.0 mg/cm², OSHA has no specific action level for lead in paint or glazings. Work activities disturbing painted or glazed surfaces with measurable concentrations of lead should be performed in accordance with 29 CFR 1926.62.

The OSHA standard also gives no guidance on acceptable levels of lead in paint at which no exposure to airborne lead (above the action level) would be expected. Rather, OSHA defines airborne concentrations, and references specific types of work practices and operations from which a lead hazard may be generated (reference 29 CFR 1926.62, section d). Environmental and personnel monitoring should be conducted during any removal/demolition process (as appropriate) to verify that actual personal exposures are below the Permissible Exposure Limit (PEL). All paint that is scheduled to be disturbed during this project may potentially contain small amounts of lead. Under OSHA requirements, the contractor performing renovation work will be required to conduct this monitoring and follow applicable requirements under 29 CFR 1926.62 if disturbing paint.

During renovation activities, ECS recommends a Toxicity Characteristic Leaching Procedure (TCLP) sample to be collected from the demolition debris prior to disposal of the waste stream. Waste tested which results in a lead content in the leachate of greater than or equal to five parts per million (5 ppm) is to be considered hazardous, handled and disposed in accordance with local, city, state and federal regulations

GENERAL

ECS recommends that a project specification to delineate and quantify known and suspect hazardous and regulated materials in the building and to outline proper procedures for the abatement be performed. This will help protect the owner's liability in better defining the scope of work and contractors' roles and responsibilities in the abatement process and holding the contractor accountable for the performance of the project. The specification typically define the Contractor's scope of work and outline requirements and procedures that must be followed for this project. The intent of the specification is to give performance requirements for the Contractor so that the project can be completed safely and in compliance with applicable federal and state regulations. Typically, the specification document serves as part of the site owner's contract with the contractor.

Should any identified or assumed hazardous material remain in place, ECS recommends the development and implementation of a site-specific Operations and Maintenance Plan detailing routine maintenance and repair operations and contractor notification procedures.

LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

During this study, suspect asbestos samples were submitted for analysis at an NVLAP-accredited laboratory via polarized light microscopy. As with any similar survey of this nature, actual conditions exist only at the precise locations from which suspect asbestos samples were collected. Certain inferences are based on the results of this sampling and related testing to form a professional opinion of conditions in areas beyond those from which the samples were collected. No other warranty, expressed or implied, is made.

Our recommendations are in part based on federal and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.

The client agrees to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, information that may be necessary to prevent any danger to public health, safety, or the environment.

ATTACHMENT

**TABLE 3
BULK SAMPLING OF SUSPECT
ASBESTOS-CONTAINING MATERIALS**

TABLE 3
BULK SAMPLING OF SUSPECT ASBESTOS-CONTAINING MATERIALS

<u>Sample #</u>	<u>Sampling Location</u>	<u>Material/Description</u>	<u>Analytical Results</u>
1	Rear Lower Roof	Black Membrane on Metal Roof	Asbestos: 4% Chrysotile
2	Rear Lower Roof	Black Membrane on Metal Roof	Asbestos: 4% Chrysotile
3	Rear Lower Roof	Tan Felt Paper under Metal Roof	NAD
4	Rear Lower Roof	Tan Felt Paper under Metal Roof	NAD
5	Rear Lower Roof	Black Tar Patch with Silver Paint	Asbestos: 4% Chrysotile
6	Rear Lower Roof	Black Tar Patch with Silver Paint	Asbestos: 4% Chrysotile
7	Rear Lower Roof	Black Chimney Flashing	Asbestos: 7% Chrysotile
8	Rear Lower Roof	Black Chimney Flashing	Asbestos: 7% Chrysotile
9	Exterior Windows	Exterior White Window Glazing	NAD
10	Exterior Windows	Exterior White Window Glazing	NAD

NAD = No Asbestos Detected
N/A = Sample Not Analyzed; Positive Stop

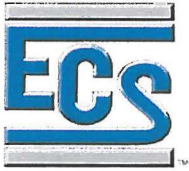


**TABLE 3
XRF LEAD BASED PAINT RESULTS**

Murphy House
ECS Project No. 01:24343
April 2015

<u>Date</u>	<u>Reading</u>	<u>Bldg/Unit</u>	<u>Room</u>	<u>Side</u>	<u>Substrate</u>	<u>Color</u>	<u>Component</u>	<u>Pb</u>	<u>Pb +/-</u>
4/6/2015	1		Standardization						
4/6/2015	2		Calibration					1.12	0.06
4/6/2015	4		Calibration					1.11	0.06
4/6/2015	5		Calibration					1.15	0.08
4/6/2015	25	Murphy House	Lower Roof	A	Metal	Black	Metal Roof	1.00	0.09
4/6/2015	26	Murphy House	Lower Roof	A	Metal	Black	Lower Roof	0.19	0.04
4/6/2015	27	Murphy House	Lower Roof	A	Metal	Black	Lower Roof	0.27	0.04
4/6/2015	28	Murphy House	Lower Roof	A	Concrete	Red	Chimney	0.00	0.00
4/6/2015	29	Murphy House	Exterior	D	Wood	White	Window Sill	0.00	0.00
4/6/2015	30	Murphy House	Exterior	D	Wood	White	Window Casing	0.22	0.08
4/6/2015	31	Murphy House	Exterior	D	Wood	White	Window Sash	0.05	0.02
4/6/2015	32	Murphy House	Exterior	D	Wood	White	Siding	0.18	0.09
4/6/2015	33	Murphy House	Exterior	D	Concrete	White	Siding	0.00	0.00
4/6/2015	34	Murphy House	Exterior	D	Wood	White	Window Casing	0.26	0.11
4/6/2015	35		Calibration					1.15	0.07
4/6/2015	36		Calibration					1.08	0.04
4/6/2015	37		Calibration					1.07	0.03

Notes:

Bold - Lead Based Paint

Pb - Lead in milligrams per square centimeter

**ATTACHMENT
PHOTOGRAPHS**



1. View of the Murphy Farm House, and front upper roof.



2. View of the lower metal roof with black membrane (ACM), Samples 1-2.



3. View of the paper membrane beneath the metal roof.



4. View of the chimney flashing (ACM), Samples 7-8.



5. Typical view of the window.



6. Typical view of the window glazing.

Murphy Farm House
123 Murphy Road
Harper's Ferry, West Virginia



Site Photographs
ECS Project No. 01:24343
April 2015

ATTACHMENT

LABORATORY RESULTS AND CHAINS OF CUSTODY



Environmental Hazards Services, L.L.C.

7469 Whitepine Rd

Richmond, VA 23237

Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 15-04-00862

Client: ECS Mid-Atlantic - Chantilly
14026 Thunderbolt Pl
Suite 100
Chantilly, VA 20151

Received Date: 04/07/2015

Analyzed Date: 04/09/2015

Reported Date: 04/10/2015

Project/Test Address: Murphy/24343; Harpers Ferry, WV

Client Number:

201119

Fax Number:

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
15-04-00862-001	1		Black Tar-Like; Fibrous; Silver Paint-Like; Inhomogeneous	4% Chrysotile	40% Cellulose 5% Fibrous Glass 10% Synthetic 41% Non-Fibrous
Total Asbestos: 4%					
Could not cleanly separate materials. Chrysotile present in black tar-like and silver paint-like materials.					
15-04-00862-002	2		Black Tar-Like; Fibrous; Silver Paint-Like; Inhomogeneous	4% Chrysotile	25% Cellulose 5% Fibrous Glass 10% Synthetic 56% Non-Fibrous
Total Asbestos: 4%					
Could not cleanly separate materials. Chrysotile present in black tar-like and silver paint-like materials.					
15-04-00862-003	3		Brown Fibrous; Homogeneous	NAD	98% Cellulose 2% Non-Fibrous
15-04-00862-004	4		Brown Fibrous; Homogeneous	NAD	98% Cellulose 2% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 201119

Report Number: 15-04-00862

Project/Test Address: Murphy/24343; Harpers Ferry, WV

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
15-04-00862-005	5		Black Tar-Like; Fibrous; Silver Paint-Like; Inhomogeneous	4% Chrysotile	25% Cellulose 5% Fibrous Glass 10% Synthetic 56% Non-Fibrous
Total Asbestos: 4%					
Could not cleanly separate materials. Chrysotile present in black tar-like and silver paint-like materials.					
15-04-00862-006	6		Black Tar-Like; Fibrous; Silver Paint-Like; Inhomogeneous	4% Chrysotile	25% Cellulose 5% Fibrous Glass 10% Synthetic 56% Non-Fibrous
Total Asbestos: 4%					
Could not cleanly separate materials. Chrysotile present in black tar-like and silver paint-like materials.					
15-04-00862-007	7		Black Tar-Like; Fibrous; Tan Adhesive; Inhomogeneous	7% Chrysotile	15% Cellulose 5% Fibrous Glass 5% Synthetic 68% Non-Fibrous
Total Asbestos: 7%					
Chrysotile present in black tar-like material.					
15-04-00862-008	8		Black Tar-Like; Fibrous; Tan Adhesive; Inhomogeneous	7% Chrysotile	15% Cellulose 5% Fibrous Glass 5% Synthetic 68% Non-Fibrous
Total Asbestos: 7%					
Chrysotile present in black tar-like material.					
15-04-00862-009	9		White Granular; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
15-04-00862-010	10		White Granular; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 201119
Project/Test Address: Murphy/24343; Harpers Ferry, WV

Report Number: 15-04-00862

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
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QC Sample: 77-M22010-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Timothy Harris

Reviewed By Authorized Signatory:



Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714 NVLAP #101882-0. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection.

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

* All California samples analyzed by Polarized Light Microscopy, EPA Method 600/M4-82-020, Dec. 1982.

LEGEND: NAD = no asbestos detected



208

www.leadlab.com

Turn Around Time: If no TAT is specified, samples will be processed as 3-Day TAT

Analysis: PLM

15-04-00862



E T

Bonnie King	BK Incy	4-17-15

Fed Ex # 8055 55068353