HAZARDOUS BUILDING MATERIAL SURVEY REPORT

4106 MENDENHALL BOULEVARD
JUNEAU, ALASKA

OCTOBER 26, 2018

Prepared for:

Alaska Department of Transportation and Public Facilities
3132 Channel Drive
Juneau, AK 99801

Prepared by:

NORTECH

Accounting Office
2400 College Road
Fairbanks, Alaska 99709
p. 907.452.5688
f. 907.452.5694

3105 Lakeshore Dr, Ste A106
Anchorage, Alaska 99517
p. 907.222.2445
f. 907.222.0915

Managing Office
5438 Shaune Dr, Ste B
Juneau, Alaska 99801
p: 907.586.6813
f: 907.586.6819

www.nortechengr.com

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1.0 EXECUTIVE SUMMARY

NORTECH Environment, Energy, Health & Safety Consultants (***NORTECH***) is pleased to provide this Pre-Demolition Hazardous Materials Survey Report for the Alaska Department of Transportation and Public Facilities (ADOT&PF) to address building conditions prior to demolition for the residence and located at 4106 Mendenhall Boulevard in Juneau, Alaska.

NORTECH scope of work included visual inspection for hazardous materials, lead based paint (LBP) assessment by X-Ray Florescence (XRF), representative sampling of interior and exterior building materials for asbestos content, and a report of our findings, including conclusions and recommendations.

Based on the site inspection, and sample results, the following materials of concern were identified:

Asbestos Containing Materials (ACM)

Friable

- No Friable ACM was found

Non-Friable (Category 1)

- No Category 1 ACM was found

Non-Friable (Category 2)

- Asbestos Chimney Pipe (good condition)
- Dark Brown Vinyl Flooring (good condition)
- Light Brown Vinyl Flooring (good condition)

Lead Based Paint (LBP)

- Exterior Paint – all colors

Other Hazardous Materials

- fluorescent light bulbs
- fluorescent light ballasts
- fire extinguisher
- household chemicals/paint
- underground storage tank for home heating oil

All hazardous materials previously identified, identified during this survey, or discovered during demolition activities, must be handled carefully using appropriate work practices and disposed of properly in accordance with applicable federal and state regulatory guidelines. All information about hazardous materials associated with the building should be made available to potential buyers or transferee's, employees, demolition contractors and/or the abatement/demolition workers associated with the demolition of the building. Project demolition specifications should note these findings, address concerns identified and, where appropriate, require the contractor to submit a work-plan for approval.

2.0 BACKGROUND AND SCOPE OF WORK

NORTECH was retained by ADOT&PF to perform a hazardous materials survey to include visual inspection and sampling for asbestos containing building materials, lead based paint, identification and quantification of other miscellaneous hazardous materials, and a report for 4106 Mendenhall Boulevard in Juneau, Alaska.

Field efforts were completed in accordance with ***NORTECH***'s Hazardous Material Assessment Methodology v17 (Appendix 3) by certified EPA Asbestos Hazard Emergency Response Act

(AHERA) building inspectors Jennifer Stoutamore (certificationTBI4-1117-11384) and Haley Michael (certification TBI24-218-11734). Project efforts are overseen by an Environmental Professional Engineer and/or Certified Industrial Hygienist (CIH).

NORTECH's scope of work was to complete a hazardous building materials assessment for ACM, LBP, Polychlorinated Biphenyls (PCBs), universal wastes, and other hazards requiring special handling during demolition of the building located on Site. No site environmental was included in the project scope of work.

3.0 METHODOLOGY

For the purposes of this investigation, hazardous materials are defined as any material requiring special handling or disposal during demolition. The hazardous material survey was conducted to comply with the asbestos survey requirements of the Occupational Safety and Health Administration (OSHA) found in 29 CFR 1926. These regulations state that, before authorizing or allowing any construction, demolition, renovation, or remodeling, the owner or owner's agent, or employer, must notify contractors or other persons of the location and quantities of ACM within the work area.

U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires a thorough inspection for friable and non-friable ACM by an accredited AHERA inspector prior to any renovation or demolition activity (40 CFR 61.145). NESHAP also requires notification for removal or abatement of regulated quantities of ACM (>260 linear feet, >160 square feet, or >35 cubic feet of regulated asbestos containing material (RACM)).

The sampling collection technique used during the survey generally followed the AHERA method as defined in 40 CFR 763. Laboratory analysis of samples was completed by EHS Laboratories, of Richmond Virginia, a laboratory certified through the National Voluntary Laboratory Accreditation Program to perform asbestos analysis by polarized light microscopy (PLM) according to EPA method 600/R/93/116 to determine the percent concentration by weight as required by the current OSHA standard. Building materials containing 1% or greater asbestos content are considered to be ACM.

Quantification of lead-in-paint was performed according to NIOSH 7702, using a Thermo Fisher NITON XLp-303A (XRF), x-ray fluorescent spectrum analyzer, providing EPA accepted real-time, on-site sample results. A Performance Characteristics Sheet (PCS) for the NITON analyzer is available upon request. The PCS provides supplemental information to be used in conjunction with Chapter 7 of the HUD guidelines. The PCS indicates that substrate corrections are not required for this instrument when operated in accordance with the manufacturer's instructions and HUD guidelines. Environmental Protection Agency/Department of Housing and Urban Development (EPA/HUD) protocol for the inspection of LBP in residential structures was generally followed.

EPA and HUD Considers paint containing 1.0 mg/cm^2 or 0.5 percent (5,000 ppm) by weight to be LBP. These guidelines may not be directly applicable to this project but are a good reference for evaluating the investigation's sample results. Paint with lower concentrations of lead than these thresholds may still pose an OSHA health hazard if mishandled.

Any other miscellaneous hazardous materials posing an environmental concern or health risk were observed, quantified, and are noted in the report findings. These often include mastics, caulks, lead building materials, stored chemicals, radioactive materials in smoke detectors, mercury thermostats, power transformers, PCB containing ballasts, flammable liquids, paints, pressurized containers, and lead-acid batteries in emergency lighting.

This hazardous materials survey was developed utilizing Industrial Hygiene hazard analysis principles. Personnel with current Asbestos Hazard Emergency Response Act (AHERA) inspection certifications conducted the asbestos inspection efforts. Lead based paint assessment was completed by qualified personnel. All work was reviewed and signed off by a board CIH.

NORTECH provides a level of service that is performed within the standard of care and competence found within this practice and the engineering profession. It must be recognized that limitations in a hazardous material inspection and assessment exist. The data presented in this report should be considered representative of only the time of our inspection. In addition, changes in the condition of the facility can occur with the passing of time, due to natural processes and/or from human activities. ***NORTECH*** has performed the work, made the findings, and proposed the recommendations described in this report in accordance with generally accepted environmental engineering practices using the best technology available at the time the work was performed.

NORTECH has based its conclusions and recommendations on our current understanding of regulatory policies. The regulations concerning hazardous materials are constantly changing, including the interpretations of regulating agencies. If changes in regulations or their interpretation occur, then ***NORTECH*** reserves the right to amend or revise conclusions and/or recommendations.

4.0 FIELD ACTIVITIES

A hazardous building materials assessment of the building located at 4106 Mendenhall Drive was conducted on October 15, 2018. During field activities, ***NORTECH*** collected a total of 31 bulk asbestos samples for laboratory analysis and 44 lead-based paint field screening samples. Samples were taken from both building exteriors and interior rooms within the house. Roof samples were also collected. The locations of asbestos and lead based paint samples can be found in Appendix 1, Figures 3 and 4.

NORTECH collected a total of 31 bulk asbestos samples, some with multiple layers, for analysis by PLM at EHS Laboratories. Asbestos laboratory results can be found in Appendix 4. A handheld XRF was used to analyze 44 various paint locations for lead throughout the building's interior and exterior (lead paint methodology is described in Appendix 3). An inventory of other hazardous materials which require removal and proper disposal prior to demolition can be found in Section 4.3.

4.1 Asbestos Containing Materials (ACM)

Building materials identified as suspected of being ACM included wall and floor coverings, associated mastics, join compound as part of the gypsum wallboard system, interior wall and ceiling texturing, various roofing materials, chimney piping, and roofing sealants. Asbestos sample results are discussed and analyzed below by category. Laboratory analysis of samples were completed by EHS Laboratories, a laboratory certified through the National Voluntary

Laboratory Accreditation Program (NVLAP) to perform asbestos analysis by PLM. A total of 31 suspect ACM samples were collected for analysis. Sample locations are presented in Appendix 1, Figures 3 and 4. The full laboratory report can be found in Appendix 4.

ACM is typically categorized into three categories: Friable, Category I Non-friable, and Category II Non-friable. These categories are based on the potential of the material to release fibers into the air and create a potential exposure risk. Friable material can be reduced to powder or dust with hand pressure, while non-friable material cannot be crushed with hand pressure. Non-friable material may also become friable under some conditions. Each of the ACMs identified through testing or assumed to be present are discussed below.

Non-friable Category 1 and 2 ACM may be removed by certified workers using Class 2 work methods. Non-Friable, Category 2 materials that are anticipated to become friable during demolition activities must be abated prior to demolition. If Non-Friable Category 1 or Category 2 ACM is to remain in the building during demolition, then all debris must be disposed of as ACM. All ACM requires proper disposal at a landfill permitted to accept the waste.

4.1.1 Friable ACM

Friable ACM are considered materials that can be reduced to powder or dust with hand pressure. None of the samples are considered Friable ACM.

4.1.2 Non-Friable ACM (Category I)

Non-Friable Category I ACM materials are limited to gaskets, resilient floor coverings, and asphalt roofing products. No Category 1 ACM was identified at the Site.

4.1.3 Non-Friable ACM (Category II)

Non-Friable Category II ACM are all other materials containing asbestos that are not in the other two categories. Both chimney pipes had plaques identifying them as asbestos containing pipes and are considered Non-Friable Category II ACM (Photo 4, Appendix 2). ***NORTECH*** did not collect a sample of the chimney pipe segments as both chimneys contain labels indicating they contain asbestos (Photo 5, Appendix 2). The asbestos within these pipes is contained within two layers of metals and is not exposed to the environment.

Sample BA3-1, which consisted of the dark brown vinyl flooring and associated backing located under the carpet in Bedroom 3 (Figure 3, Appendix 1), is also considered Non- Friable ACM (Category 2) and contains 3% Chrysotile asbestos. Should similar vinyl flooring be uncovered in other areas of the residence during demolition, it should be assumed to be ACM and handled accordingly (Photo 7, Appendix 2).

Sample MBR-1, which consisted of light brown vinyl flooring and associated backing located under the carpet in the Master Bedroom (Figure 3, Appendix 1), is also considered Non- Friable ACM (Category 2) and contains 4% Chrysotile asbestos. Should similar vinyl flooring be uncovered in other areas of the residence during demolition, it should be assumed to be ACM and handled accordingly (Photo 6, Appendix 2).

No other ACM was identified during the survey.

4.2 Lead Based Paint Samples

NORTECH field-tested painted surfaces throughout the building with a NITON XRF lead paint analyzer that provides real time analysis of lead in paint. ***NORTECH*** analyzed a total of 44 painted surfaces, shown in Figure 4, for lead content. A total of three of the field-tested surfaces had lead paint concentrations greater than the 1.0 mg/cm^2 HUD standard. An additional six samples had detectable concentrations of lead under the HUD standard. Table 1 lists lead based paint samples with detectable concentrations of lead.

Table 1
Detectable Lead Based Paint Results

Sample	Lead Concentration (ppm)	Description
HUD Standard	**1.0**	**N/A**
LP-4	0.1	Wall of the Master Bedroom
LP-5	0.09	Master Bedroom Window Frame (interior)
LP-17	0.68	Bathroom 1 Shower Enclosure
LP-18	0.12	Interior Painted Surface of the Bathroom 1 Vanity
LP-20	0.08	Paint on the Living Room Baseboard Heater
LP-31	3.9	Yellow Exterior Paint (Main Color)
LP-32	2.9	White Exterior Paint (Trim on windows and underneath roof)
LP-45	1.6	Brown/Purple Paint at Bottom of Exterior Wall by the Sliding Glass Door

Paint or glaze with lead concentrations above the HUD standard were documented in three exterior paint colors: yellow (main exterior color), white (exterior trim color), and a purplish-brown patch that appeared to be prior exterior color and was only visible on the lower portion of the exterior wall next to the sliding glass door leading to the backyard (Photos 1-3, Appendix 2).

In absence of a TCLP sample, a visual inspection for Resource Conservation and Recovery Act (RCRA) 8 metals and suspect RCRA 8 conditions was conducted and found no items of concern. Calculation of lead concentration in the debris stream indicates non-hazardous for lead.

4.3 Miscellaneous Hazardous Materials

Fluorescent light bulbs, both straight and compact styles, contain mercury and must be disposed of properly. ***NORTECH*** noted fluorescent bulbs in most rooms of the building. While the fluorescent light ballasts inspected by ***NORTECH*** do not contain PCBs, ***NORTECH*** did not inspect every light ballast. Fluorescent light ballasts should be inspected prior to removal to ensure they do not contain PCBs. Fluorescent light ballasts cannot be disposed of in the Juneau landfill. Fire extinguishers were also observed within the house and cannot be disposed of at the Juneau landfill. Fire extinguishers in good condition can be removed and used elsewhere or disposed of at Southeast Extinguisher. ***NORTECH*** also noted the presence of paint cans. Paint, along with any other household chemicals, can be disposed of at the CBJ Household Hazardous Waste Facility.

NORTECH noted an underground storage tank (UST) was present on the eastern side of the residence (Photo 8, Appendix 2). Mr. Michael Schular (ADOT&PF) indicated the UST contained fuel at the time of the survey, but the remaining fuel would be pumped from the tank as soon as possible. ***NORTECH*** did not observe evidence that the tank or associated piping was leaking, and no signs of previous leaks within the boiler room were observed. Indications that a slight overfill of the tank had occurred in the past (elevated field screening readings on surface soils near the fill tank that diminished with depth), but an assessment of the UST was not within the scope of the project and therefore was not conducted.

Mr. Schular also indicated the UST would be removed prior to planned ADOT&PF road construction activities. ***NORTECH*** recommends looking for signs of previous or ongoing leaks from the UST during tank excavation activities (stained soils, soils that smell of diesel, visible holes in the UST).

Table 2 contains the locations of hazardous materials observed at the residence.

Table 2
Hazardous Material Locations

Room	Fluorescent Light Ballasts (#)	Fluorescent Light Bulbs (#)	Other
Garage	3	10	1 can of paint & 1 fire extinguisher
Kitchen	1	3	N
Dining	N	1	N
Hallway	N	2	N
Bedroom 1	N	2	N
Bedroom 2	N	2	N
Bedroom 3	N	2	N
Master Bedroom	N	2	N
Exterior	N	N	UST

N – not observed UST – Underground Storage Tank

All hazardous materials previously identified, identified during this survey, or discovered during demolition activities, must be handled carefully using appropriate work practices and disposed of properly in accordance with applicable federal and state regulatory guidelines. All information about hazardous materials associated with the building should be made available to potential employees having access to the structure, demolition contractors and/or the abatement/demolition workers associated with the demolition of the building. Project demolition specifications should note these findings, address concerns identified and, where appropriate, require the contractor to submit a work-plan for approval.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on field observations, field testing results, and laboratory results, ***NORTECH*** identified the following hazardous materials at the Site:

Asbestos

- The following asbestos containing materials were identified:

- No Friable ACM was identified at the Site
- No Non-Friable Category 1 ACM was identified at the Site
- Non-Friable (Category 2)
  - Chimney pipe (good condition)
    - The chimney pipe was not sampled as plaques stating the pipe contains asbestos was present on the pipe segments on the roof
  - Sample BA3-1 (good condition)
    - The dark brown vinyl flooring under the carpet in Bedroom 3 contained 3% Chrysotile
  - Sample MBR-1 (good condition)
    - The light brown vinyl flooring under the carpet in the Master Bedroom contained 4% Chrysotile

Lead based paint

- The following materials contain lead in concentrations over the HUD Standard:
  - Yellow exterior paint (3.9 ppm lead)
  - White exterior trim paint on windows and underneath roof (2.9 ppm lead)
  - Purplish/brown exterior paint (1.6 ppm lead)
    - Brown paint only visible in a small area of the exterior wall by the sliding glass door

Other Hazardous Material

- Other potentially hazardous materials observed include
  - Fluorescent bulbs
  - Fluorescent bulb ballasts
  - Fire extinguisher
  - Household chemicals/paint

Underground Storage Tank

- An UST is located on the eastern side of the residence
  - The tank's condition is unknown
  - No visible signs of leaking from the tank or associated piping was observed
  - An assessment of the UST was beyond the scope of the project

Based on the above conclusions, ***NORTECH*** makes the following recommendations:

Asbestos

- The dark brown vinyl flooring under the carpet in the third bedroom should be removed prior to demolition and disposed of in accordance with applicable state and federal regulations
- The light brown vinyl flooring under the carpet in the master bedroom should be removed prior to demolition and disposed of in accordance with applicable state and federal regulations

Lead based paint and glaze

- Demolition workers should be advised of the presence of lead paint on the building's exterior
- Due to the limited nature of lead containing materials on Site, a hazardous materials contractor is not needed to remove tiles or paint containing lead above HUD Standards

Other Hazardous Material

- Fluorescent bulbs, fluorescent bulb ballasts, and any remaining household chemical or paint may be disposed of at the CBJ Household Hazardous Waste Facility
- Fire extinguishers can be disposed of at Southeast Extinguishers
    - If in working order, fire extinguishers can be moved and used in another location

Underground Storage Tank

- ADOT&PF has plans to remove the UST prior to road construction activities
    - The tank should be pumped of any remaining fuel
    - Tank piping should be drained and removed
    - Tank should be excavated
        - If evidence of a leak (fuel odor, sheen on water) is found, the leak should be reported immediately to the Alaska Department of Environmental Conservation
        - If this occurs, an environmental contractor should oversee the remaining tank excavation and remediation activities

6.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

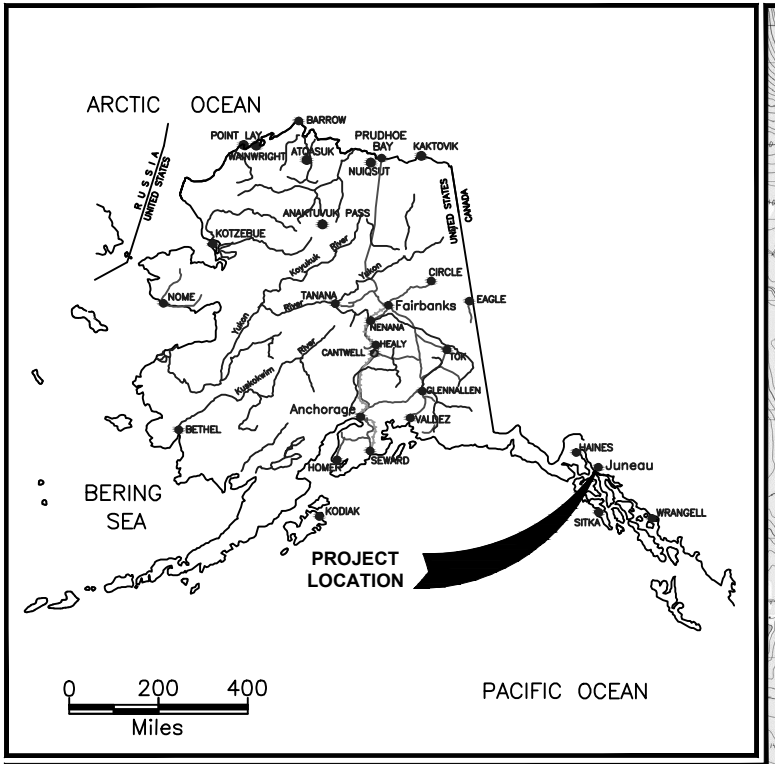
Jennifer Stoutamore
Staff Professional, EPA AHERA Asbestos Building Inspector
Certification # TBI4-1117-11384

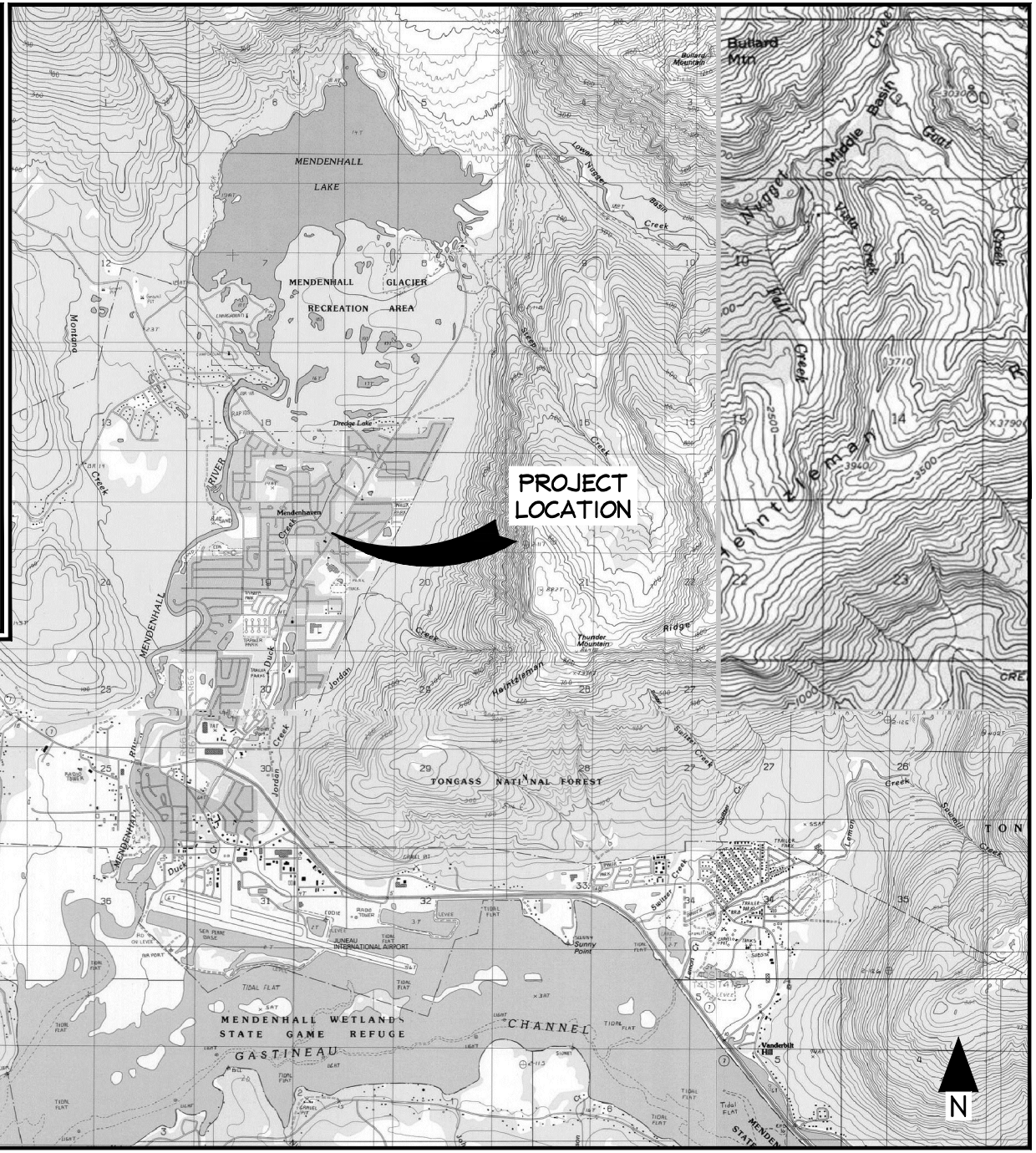
Reviewed by:

John Hargesheimer, P.E., CIH, CSBA
Principal

Jason Ginter, PMP
Principal, Juneau Technical Manager

Appendix 1
Figures





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2400 College Road, Fairbanks, AK. 99709, 907-452-5688
3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Location Map
4106 Mendenhall Blvd HazMat
Juneau, Alaska

DATE: 10/26/2018	SCALE: 1" = 1 MILE
DESIGN: HEM	PROJECT: 18-1353
DRAWN: KAO	DWG: 181353a(01)

FIGURE 1

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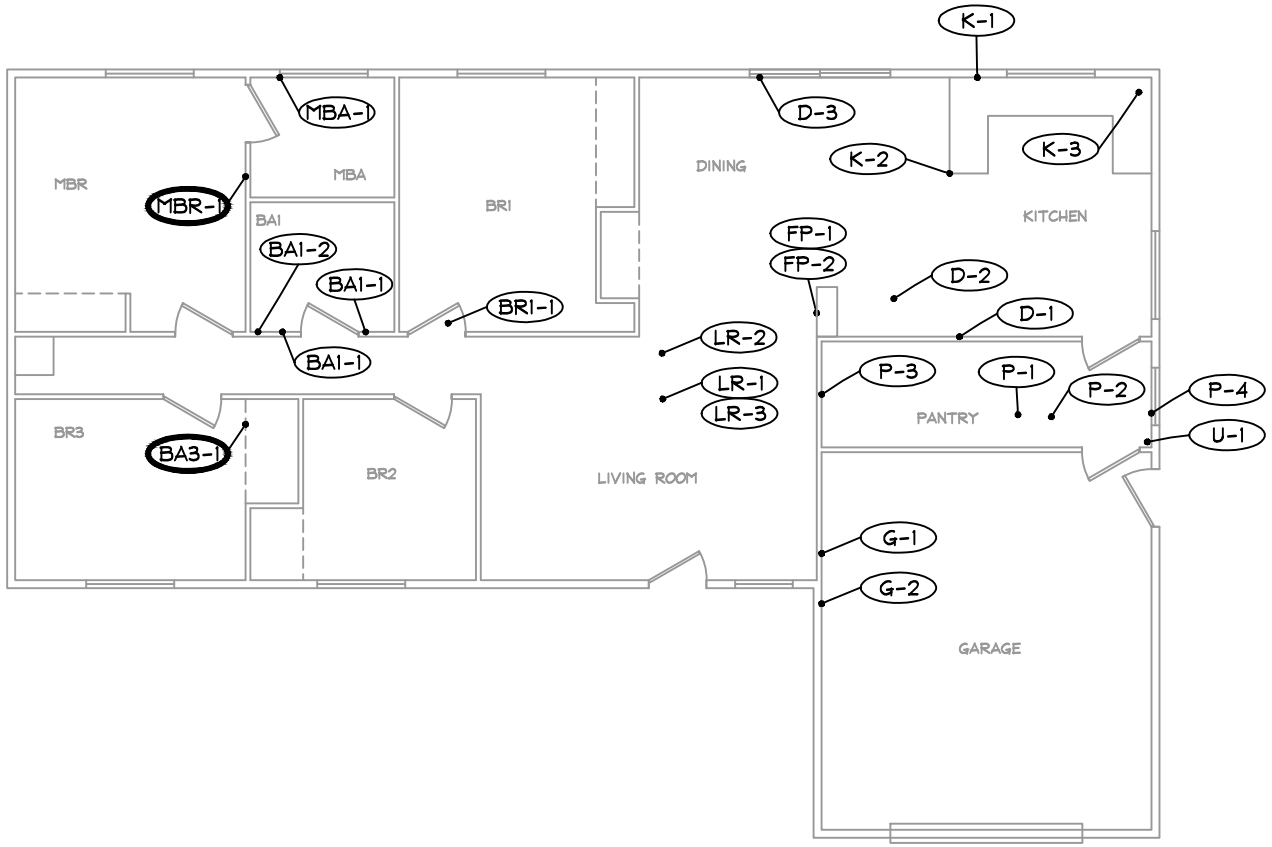
Vicinity Map
4106 Mendenhall Blvd HazMat
Juneau, Alaska

DATE: 10/26/2018	SCALE: 1" = 100'
DESIGN: HEM	PROJECT: 18-1353
DRAWN: KAO	DWG: 181353a(02)

FIGURE 2

Asbestos Results Data		
Surveyed by *Nortech* : October 2018		
Sample ID	**Substrate**	**Asbestos**
G-1	Drywall	ND
G-1	Joint Compound	ND
G-2	Plaster	ND
P-1	Tile	ND
P-1	Mastic	ND
P-2	Vinyl	ND
P-3	Drywall	ND
P-3	Joint Compound	ND
P-4	Vinyl	ND
U-1	Cove Base	ND
U-1	Mastic	ND
K-1	Joint Compound	ND
K-2	Formica	ND
K-2	Mastic	ND
K-3	Texture	ND
D-1	Mastic	ND
D-2	Vinyl	ND
D-3	Tape	ND
LR-1	Drywall	ND
LR-2	Joint Compound	ND
LR-2	Drywall	ND
LR-3	Joint Compound	ND
FP-1	Ceramic Tile	ND
FP-1	Mortar	ND
FP-1	Slate	ND
FP-2	Adhesive	ND
BA1-1	Drywall	ND
BA1-1	Joint Compound	ND
BA1-1	Texture	ND
BA1-2	Mastic	ND
BA1-3	Mastic	ND
BA1-3	Bead Board	ND
BR1-1	Carpet	ND
BR1-1	Pad	ND
BA3-1	**Tile**	**3%**
BA3-1	Mastic	ND
MBA-1	Mastic	ND
MBA-1	Bead Board	ND
MBR-1	**Tile**	**4%**
MBR-1	Mastic	ND
R-1	Black Patch	ND
R-2	Green Shingle	ND
R-3	Tar	ND
R-3	Brown Shingle	ND
R-# = Roof Sample		
ND = None Detected		



LEGEND

ASBESTOS SAMPLE NEGATIVE (<1% ASBESTOS)

ASBESTOS SAMPLE POSITIVE (≥ 1% ASBESTOS)

N

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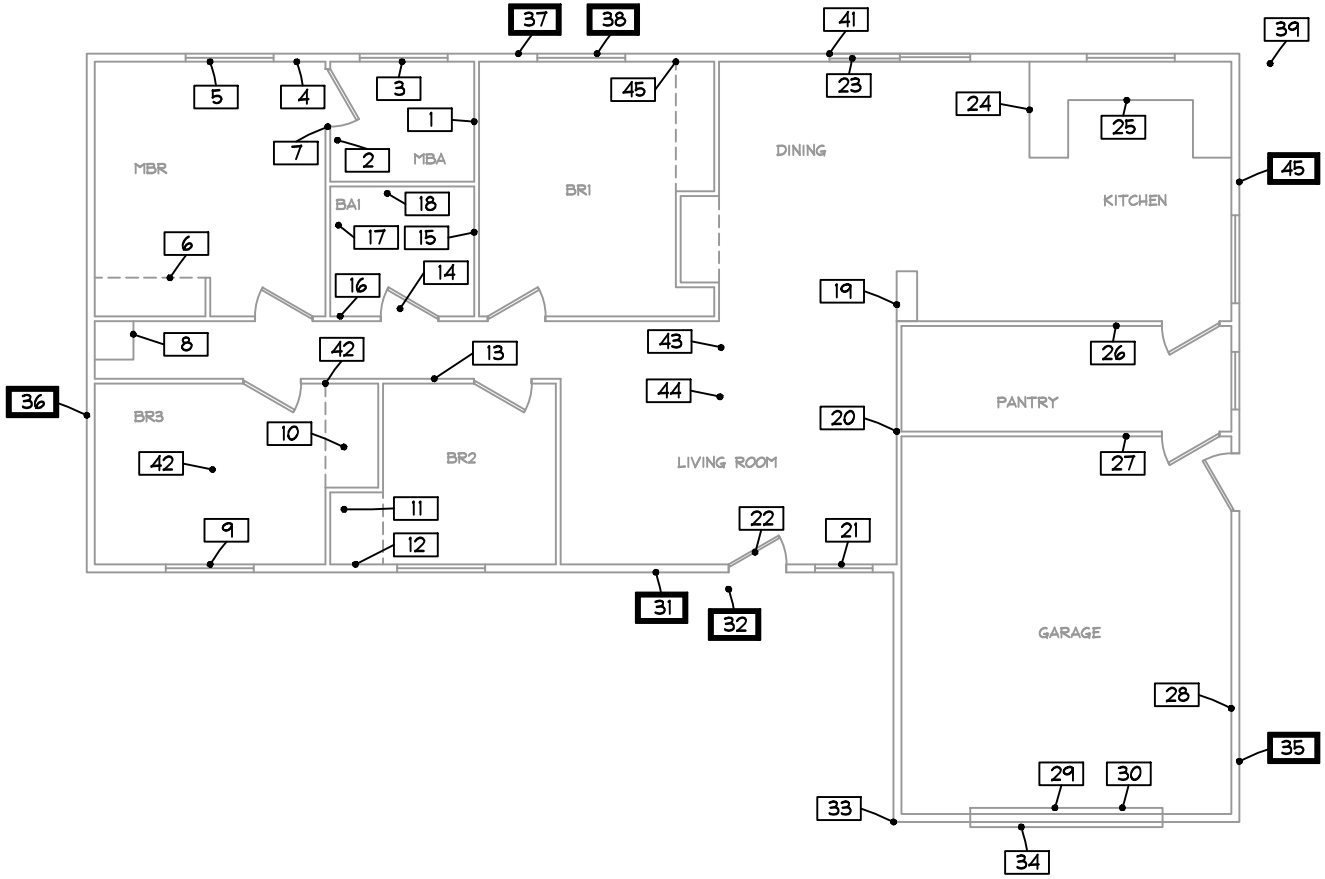
5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Asbestos Sample Locations & Results
4106 Mendenhall Blvd HazMat
Juneau, Alaska

DATE: 10/26/2018	SCALE: 1" = 10'
DESIGN: HEM	PROJECT: 18-1353
DRAWN: KAO	DWG: 181353a(03)

FIGURE 3

Lead Result Data		
Surveyed by *Nortech* : October 2018		
Sample ID	**Description**	**Lead**
1	Wall	0.0
2	Floor	0.0
3	Window Frame	0.0
4	Wall	0.1
5	Window Frame	0.9
6	Closet Door	0.0
7	Door Frame	0.0
8	Wall	0.0
9	Window Frame	0.0
10	Shelving	0.0
11	Shelving	0.0
12	Wall	0.0
13	Wall	0.0
14	Floor	0.01
15	Bead Board	0.0
16	Baseboard	0.0
17	Shower	0.68
18	Under Sink Wall	0.12
19	Tiles	0.0
20	Baseboard	0.08
21	Wall Paneling	0.0
22	Door	0.0
23	Door	0.0
24	Counter	0.0
25	Under Sink Tile	0.0
26	Cabinet	0.0
27	Wall	0.0
28	Shelving	0.0
29	Door	0.0
30	Door Joints	0.0
31	**Exterior Wall**	**3.9**
32	**Under Roof**	**2.9**
33	Exterior Trim	0.5
34	Exterior Door	0.0
35	**Exterior Wall**	**2.8**
36	**Exterior Wall**	**3.7**
37	**Exterior Wall**	**2.4**
38	**Exterior Window Trim**	**1.3**
39	Exterior Fencing	0.0
41	Exterior Door Frame	0.0
42	Ceiling	0.0
43	Ceiling	0.0
44	Ceiling	0.0
45	**Exterior Wall**	**1.6**



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5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Lead Sample Locations & Results
4106 Mendenhall Blvd HazMat
Juneau, Alaska

DATE: 10/26/2018	SCALE: 1" = 10'
DESIGN: HEM	PROJECT: 18-1353
DRAWN: KAO	DWG: 181353a(04)

FIGURE 4

Appendix 2
Site Photographs

Photo 1: *Lead-based paint was identified on the exterior of the house in the main exterior color (yellow), the white-trim, and a section of purple-brown paint.*

Photo 2: *The yellow exterior paint had a lead concentration of 3.9 ppm, and the white trim had a lead concentration of 2.9.*

Photo 3: *The area of purple-brown paint with a lead concentration of 1.6 is located near the sliding back door.*

Photo 4: *Both chimney pipes had plaques identifying them as asbestos-containing pipes and are considered Non-Friable Category II ACM.*

Photo 5: NORTECH *did not collect a sample of the chimney pipe segments as both chimneys contain labels indicating they contain asbestos.*

Photo 6: *The light brown vinyl flooring under the carpet in the Master Bedroom contained 4% Chrysotile asbestos.*

Photo 7: *The dark brown vinyl flooring under the carpet in Bedroom 3 contained 3% Chrysotile asbestos.*

Photo 8: NORTECH *noted a UST was present on the eastern side of the residence.*

Appendix 3
NORTECH Standard Methodologies

HAZARDOUS MATERIALS
STANDARDIZED METHODOLOGY
Version 17
October 2018

Objective and Management

NORTECH hazardous materials assessment methodologies are developed to comply with currently applicable regulations utilizing standard industrial hygiene practices designed for the anticipation, recognition, evaluation, and control of those factors or stressors arising in or from the workplace that may cause sickness, impaired health and well-being, or significant discomfort among workers or citizens of the community. Qualified personnel with current certifications and experience conduct field assessment inspection and sampling efforts. All work completed is managed, reviewed, and signed off on by a board Certified Industrial Hygienist (CIH) or Professional Engineer.

Scope of Work

NORTECH provides a variety of hazardous material services as necessary to meet project specific needs cost effectively. In order to minimize costs, ***NORTECH*** has developed the following standardized hazardous material assessment scopes of work.

> **Limited Hazardous Material Assessment**: The assessment scope of work is limited to specifics as specified by the client in the written contract and/or project communications. Limitations may include/exclude contaminants, destructive testing, costs, and/or areas to be assessed.
>
> **Pre Renovation Hazardous Material Assessment**: The assessment is limited to a specific project renovation scope.
>
> **Pre-Demolition Hazardous Material Assessment**: The assessment is in preparation for an entire building demolition.

Hazardous materials included in this standard are:

- Asbestos Containing Materials (ACM)
  - Building Materials
  - Naturally Occurring Asbestos (NOA)
- Lead Based Paint (LBP)
- Universal Wastes
- Poly Chlorinated Byphenyls (PCB)
- RCRA Eight Heavy Metals
- Other Wastes Requiring Special Handling

Definition of Hazardous Materials

Hazardous materials are defined as any material requiring special handling or disposal during demolition or renovation. Of particular interest are asbestos containing building materials (ACBM), lead based paint (LBP), RCRA eight heavy metals and other hazardous materials including polychlorinated biphenyls (PCBs), radioactive materials in smoke detectors & self-illuminating exit signs, lead-acid batteries, wastewater, water intrusion fungal amplification, petroleum oils and lubricants (POLs) mercury containing equipment (switches, bulbs etc.) and other chemical and biological contaminants.

Universal Waste
EPA's universal waste regulations set forth in 40 CFR part 273 streamline hazardous waste management standards for federally designated "universal wastes," which include:

- Batteries
- Paints & pressurized containers
- Chemicals & pesticides
- Mercury in switches and fluorescent light tubes

The regulations govern the collection and management of these widely generated wastes. These regulations are designed to improve hazardous material handling and disposal of universal wastes by easing the regulatory burden on generators and facilitating disposal program development.

Regulatory
The hazardous material surveys are conducted to comply with the asbestos survey requirements of the Occupational Safety and Health Administration (OSHA) found in 29 CFR 1926. These regulations state that before authorizing or allowing any construction, demolition, renovation, or remodeling, the owner, owner's agent, or employer, must notify contractors or other persons of the location and quantities of ACM within the work area.

U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAP) requires a thorough inspection for friable and non-friable ACM by an accredited Asbestos Hazard Emergency Response Act (AHERA) inspector prior to any renovation or demolition activity (40 CFR 61.145). NESHAP also requires notification for removal or abatement of regulated quantities of ACM (>260 square feet, >160 linear feet, or >35 cubic feet of regulated asbestos containing material (RACM)).

Asbestos Containing Materials
The asbestos sampling collection technique used during the survey generally follows the AHERA method as defined in 40 CFR 763. Laboratory analysis of samples are completed by a laboratory certified through the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis by polarized light microscopy (PLM) according to EPA method 600/R-93/116 to determine the percent concentration by weight as required by the current OSHA standard. Building material containing 1% or greater asbestos content is considered asbestos containing material.

Asbestos containing building materials with sample results less than 5% asbestos are analyzed by 400-point count EPA 600/R-93/116 method. Analysis by 400-point count has a detection limit of 0.25% and can provide greater accuracy, especially for sample results on the margin of 1%.

It is a common practice to measure asbestos concentration in air if you suspect that asbestos fibers may be present. Sampling is performed if asbestos was discovered in a particular area, if you accidentally disturbed an asbestos-containing material, or when asbestos was removed and abatement team needs to verify that no residual asbestos is left in the air.Asbestos concentration in air is strictly regulated. asbestos concentration in the air of a working zone cannot exceed 0.1 fiber per centimeter cube (f/cc). For asbestos abatement clearance test, this level is: 0.01 f/cc. The most common method for asbestos testing in air is a method developed by National Institute of Occupational Safety and Health (USA): NIOSH

Asbestos in Dusts
Protocol for determining asbestos containing material (ACM) in dust collection requires analysis by TEM (Transmission Electron Microscopy) by a laboratory certified through the National Voluntary Laboratory Accreditation Program (NVLAP) to perform TEM analysis. Dust collection for lab testing may either involve dust wipe collection using a laboratory supplied "Ghostwipe"™ and sized template, or by utilizing a laboratory supplied 37 mm TEM air cassette inline with a pump and plastic tubing and vacuuming a known amount of surface area coated in dust.

With regard to lab analysis of samples collected, there are no standards for asbestos in settled dust against which one can compare results. However, the literature (Millett and Hays) has provided some general conclusions regarding interpretation of sampling data on the level of asbestos in settled dust and is based on extensive field data, observation, and experience. They report that a level of less than 1,000 asbestos structures/cm^2 is low, while levels above 10,000 s/cm^2 are considered generally above background. Levels greater than 100,000 s/ cm^2 are indicative of elevated concentrations of asbestos fibers with significant risk of exceeding the OSHA permissible exposure level (PEL) for most work tasks.

Sillica in Dusts
Surface sampling for silica by Crystalline Analysis of Bulk Material using X-Ray Diffraction by NIOSH Method 7500 with modification for analysis of wipe samples. Method sensitivity for Quartz and Cristobalite on alcholol wipes is 10 ug/sample or 0.5% by weight of mineral dust. Workers' exposures would be limited to a new PEL of 50 micrograms of respirable crystalline silica per cubic meter of air (µg/m3), averaged over an 8-hour day. The new PEL is the same in all industries covered by the rule. There is currently no standard to compare silica dust concentrations against. The presence of silica contamination in dust is a worker exposure issue if the dust becomes airborne and is inhaled. OSHA regulations for crystalline silica containing dust is set to protect worker inhalation exposure, and are not correlated to surface dust concentrations.

Lead Based Paint (LBP)
Quantification of lead-based paint is performed according to NIOSH 7702, using a Thermo Fisher NITON XLp-303A (XRF), x-ray fluorescent spectrum analyzer, providing EPA accepted real-time, on-site sample results. A Performance Characteristics Sheet (PCS), that routinely accompanies the NITON analyzer, provides supplemental information to be used in conjunction with Chapter 7 of the HUD guidelines. The PCS indicates that substrate corrections are not required for this instrument when operated in accordance with the manufacturer's instructions and HUD guidelines. Environmental Protection Agency/Department of Housing and Urban Development (EPA/HUD) protocol for the inspection of LBP in residential structures is generally followed.

Lead analysis of paint may also be determined by scrape sample and lab analysis. Representative paint scrape samples of the building's construction materials are collected from each representative paint type and color. Paint scrapes are collected within a 10 cm^2 area and sent to lab for analysis by percentage of lead per weight of paint collected.

All paint contains a measurable amount of lead, however, EPA and HUD consider paint containing 1.0 mg/cm^2 (XRF analysis) or 0.5 percent (5,000 ppm) by weight (lab analysis) and higher to be LBP. These guidelines may not be directly applicable to this project, but are a good reference for evaluating the investigation's sample results. Paint with lower concentrations of lead than these thresholds may still pose an OSHA health hazard if mishandled. The LBP assessment is completed by qualified personnel with current EPA lead inspector certification.

EPA guidance lists documented methodologies that are appropriate for the work practice standards, including U.S. Housing and Urban Development (HUD) guidelines and certain EPA methodologies, and states that "other equivalent methods" are acceptable.

Lead in Soil

EPA defines lead hazards in soils depending on the land use (40 CFR 745.65 (c) & Section 403 of Title X of the Toxic Substance Control Act (TSCA)). Bare soils meeting or exceeding the following limits are considered hazardous:

- Residential and children's high contact play areas 400 mg/Kg
- Commercial – non-residential, 800 mg/Kg
- Bare soil in industrial settings, 1200 mg/Kg

EPA regulates bare soils in excess of 1,200 mg/Kg as industrial, and restricts access by children. Soils in excess of 5,000 mg/Kg fall under the TCLP rule for hazardous wastes and would require abatement or permanent encapsulation.

The ADEC published residential soil cleanup level for lead is 400mg/Kg of soil dry weight. ADEC specific cleanup criteria language for lead in soils provided in Note 11 of Table B1 in 18 AAC 75.341 states:

> Lead cleanup levels must be determined on a site-specific basis, based on land use. For residential land use, the soil cleanup level is 400 mg/kg. For commercial or industrial land use, as applied in 18 AAC 75.340(e)(3), the soil cleanup level is 1,000 mg/kg. Through an approved site-specific risk assessment, conducted according to the *Risk Assessment Procedures Manual*, adopted by reference at 18 AAC 75.340, approved exposure models may be used to evaluate exposure to a child resident or an adult worker; a responsible person may also propose an alternative cleanup level, through a site-specific risk assessment conducted according to the *Manual*, and based on a chemical speciation of the lead present at the site. For soils contaminated with lead more than 15 feet below ground surface, lead cleanup levels will be determined on a site-specific basis.

Poly Chlorinated Byphenyls (PCB)

There are currenty 4 collection methods for the Quantification of PCB. Depending on the location and materials to be sampled, one or more of the following collection methods may be used:

- Bulk solid sample
- Porous surface samples
- Non-porous samples
- Indoor air samples

Bulk solid sample collection: Bulk solid samples include such materials as caulk, soil, and sand. Bulk solid sampling typically includes removing a small portion of the potentially contaminated material directly from the suspect area for analytical testing in sufficient quantity for laboratory testing. Care shall be taken to avoid contaminating the final sample with adjacent materials such as wood or concrete that may skew the sample analysis results. Soil or sand samples are collected with consideration of whether the PCBs are on the soil surface or suspect of being located deeper in the soil – including soil disturbances that may have caused surface debris to become buried.

Porous surface sample collection: PCBs can readily migrate into porous surfaces such as brick, masonry, concrete or wood. Surface wipe sampling is inadequate to characterize the PCB concentration of porous surfaces. Porous surfaces will have core samples collected on a bulk basis (mg/kg) to ensure the top 0.5 to 2 cm of the porous surface is collected. Tools such as chisels, drills, and saws may be used to collect the sample with care taken to minimize dust generation. Samples are ideally collected from the top 0.5 cm to 2 cm of the surface closest to the likely source of PCB contamination.

Non-porous surface sample collection: Smooth and impervious surfaces such as unpainted metal surfaces are sampled using the wipe collection method. The standard wipe test is specified in 40 CFR 761.123, and uses a 10 cm by 10 cm (or equivalent that equals 100 cm2) template to outline the sample area and a gauze pad or glass wool that has been saturated with hexane to collect the sample. The hexane-saturated wipe is used to thoroughly swab the area inside the 100 cm2 template. Sample results will be based on the 100 cm2 sample area (µg per 100 cm2).

Indoor air sample collection: Indoor air samples are collected using EPA Methods TO-10A, TO-4A, or equivalent. Sufficient sample volumes, as referenced in the EPA Methods will be collected to prove a minimum laboratory reporting limit of less than 0.1 µg/m3. Consultation with EPA PCB Regional Coordinator may be required to determine the number of samples to be collected and which sampling method is to be used.

Consultation with the analyzing laboratory shall be done prior to collecting samples to ensure all parameters for proper collection of samples is followed to ensure proper analysis.

RCRA Eight Heavy Metals

Determination of the demolition waste toxicity for the RCRA eight heavy metals (Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver) is based on a certified lab performing the Toxicity Characteristic Leaching Procedure (TCLP) (EPA SW846, Method-1311) analysis of a representative composite sample of the structure's building materials.

During the field effort, a visual inspection is conducted to identify the presence of each of the RCRA eight heavy metals and approximate percent by weight of each expected to be in the building debris waste stream. A representative sample of the entire waste stream, including the RCRA metals present, is collected and homogenized into a composite sample of the entire project's debris/waste stream and then analyzed at a certified lab in accordance with TCLP procedure. The TCLP test measures the potential for the eight metals identified in the Resource Conservation and Recovery Act (RCRA) to leach from a representative composite sample of the debris/waste stream under simulated landfill conditions. RCRA regulations allow for calculating the TCLP result from a composite sample with total metals using the "20:1 Rule" that account for the dilution of metals concentrations during the analysis.

Another alternative method is to calculate a Theoretical TCLP based on the observed quantities of construction materials with regard to potential heavy metals. Assuming all paint associated with the structure is lead-based paint, a theoretical calculation of the ratio between paint to construction debris waste can be used in place of a representative waste stream (TCLP) sampling to determine whether the project waste stream will be hazardous for lead and heavy metals in accordance with hazardous waste standard. This method involves using project specific knowledge to calculate the concentration of lead in the entire quantity of debris as follows:

If a waste is 100% solid, as defined by the TCLP method, then the results of the total constituent analysis may be divided by twenty to convert the total results into the maximum leachable concentration. This factor is derived from the 20:1 liquid-to-solid ratio employed in the TCLP. If a waste has filterable liquid, then the concentration of the analyte in each phase (liquid and solid) must be determined.

The following equation may be used to calculate this value:

$$\frac{[A \times B] + [C \times D]}{B + [20\ (L/kg) \times D]} = E$$

Where:

A = Concentration of the analyte in liquid portion of the sample (mg/L)
B = Volume of the liquid portion of the sample (L).
C = Concentration of the analyte in solid portion of the sample (mg/kg)
D = Weight of the solid portion of the sample (kg)
E = Maximum theoretical concentration in leachate (mg/L)

The value obtained (E) can be used to show that the maximum theoretical concentration in a leachate from the waste could not exceed the concentration specified in the toxicity characteristic (TC) (40 CFR 261.24).

In addition, if the total constituent analysis results themselves are below the TC limits without dividing by 20, then the same argument holds true, i.e., the maximum theoretical concentration in the leachate could not exceed the TC limits.

The 100 milligrams per kilogram value used in the determination is based on the 20:1 rule which represents the lowest possible mass analysis concentration, which could leach out greater than 5.0 milligrams per liter in a TCLP test. This is due to the 20:1 dilution ratio of the TCLP test protocol and also assumes that 100% of the lead in the sample will leach out. In most circumstances, 100% of the lead would rarely leach out. However, this assumption must be made in the place of actual TCLP laboratory results. This "worst-case" assumption adds a "safety factor" to compensate for errors in the data or in calculating the mass of the structure. If the initial test results show that the average weight percent of lead in the lead-based paint, the average paint thickness, or the average paint density varies widely from one part of the structure to another, it may be better to do separate "mass of lead-based paint" or "mass of lead in the lead-based paint" calculations for each part of the structure with similar values. The individual results for the different parts of the structure can then be summed before dividing by the mass of the entire structure.

The presence or absence of suspect RCRA 8 hazardous metals is verified by visually inspecting the structure, testing multiple like components with a NITON XRF, or collecting paint chip samples for laboratory analysis during the investigation. If no RCRA 8 suspect materials or suspect conditions are observed, the total lead in milligrams (mg) can be calculated for the materials in which LBP concentrations are assumed to be greater than EPA/HUD’s standard of <1.0% limit for what can be considered non-lead based paint. The calculations use the highest average theoretical value (1.0 or greater) for each painted surface. Not all surfaces of the structure are painted, nor are openings & voids accounted for in the square footages calculated.

Multiplying the average value of LBP (in mg/cm^2) by the total square footage area (in cm^2) of all painted surfaces (including void spacing), a total amount of milligrams of lead in the paint is estimated. A total (minimum) expected mass of kilograms of painted demolition debris is then calculated for the waste stream. The final calculation of the theoretical TCLP then uses the total of milligrams of paint divided by the kilograms of painted demolition debris which equals the mass (mg/kg) of lead in the demolition waste stream. If the mass concentration of lead is less or more than the 20:1 rule criteria of 100 mg/kg, the debris waste stream is considered either non-hazardous or hazardous for leachable lead.

Other Hazardous Materials
Determination of other hazardous materials involves the processes described by EPA as follows:

- Is the material a solid waste? (See: 40 CFR Part 261.2)
- Is the waste specifically excluded from RCRA? (See: 40 CFR Part 261.4)
- Is the waste a listed hazardous waste? (See: 40 CFR Part 261.30)
- Does the waste exhibit a characteristic of hazardous waste? (See: 40 CFR Part 261.20)

During structure investigation other hazardous materials posing an environmental concern or health risk are watched for and where visually observed are noted in the report findings. Determinations of other hazardous materials were based on the above EPA guidelines. These other hazardous materials include:

- Mastics
- Caulks
- Lead building materials
- Stored chemicals, heating oils, hydraulic oils, automotive fuel products & lubricants
- Radioactive materials in smoke detectors & self-illuminating emergency exit signs
- Lead-acid batteries in emergency lighting and emergency exit signs
- Mercury in thermostats, fluorescent light tubes & HID mercury vapor lighting
- PCB containing power transformers & PCB containing fluorescent light ballasts
- Stored, unidentified or flammable liquids, paints or pressurized containers
- Freon gas canisters
- Fire extinguishers & HALON fire suppression systems.

Limitations
NORTECH provides a level of service that is performed within the standard of care and competence found within this practice and the engineering profession. It must be recognized that limitations in a hazardous material inspection and assessment exist. The data presented should be considered representative of only the time and observances of our inspection. In addition, changes in the condition of the materials within the facility can occur with the passing of time, due to natural processes and/or from human activities. ***NORTECH*** has performed the work, made the findings, and proposed recommendations in accordance with generally accepted environmental engineering practices using the best technology available at the time the work was performed.

NORTECH has based its conclusions and recommendations on our current understanding of regulatory policies. The regulations concerning hazardous materials are constantly changing, including the interpretations of regulating agencies. If changes in regulations or their interpretation occur, then ***NORTECH*** reserves the right to amend or revise conclusions and/or recommendations.

Appendix 4
Laboratory Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 18-10-02931

Client: Nortech
2400 College Rd.
Fairbanks, AK 99709-3754

Received Date: 10/17/2018
Analyzed Date: 10/20/2018
Reported Date: 10/22/2018

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Client Number:
02-2641

Fax Number:
907-452-5694

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-001A	G-1	Drywall	White Powder; Tan Fibrous; Inhomogeneous	NAD	15% Cellulose 85% Non-Fibrous
18-10-02931-001B	G-1	Joint Comp.	White Granular; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-002	G-2		White Granular; Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-003A	LR-3	Drywall	White Powder; Tan Fibrous; Inhomogeneous	NAD	16% Cellulose 84% Non-Fibrous
18-10-02931-003B	LR-1	Joint Comp.	White Granular; Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-004A	LR-2	Drywall	White Powder; Tan Fibrous; Inhomogeneous	NAD	16% Cellulose 84% Non-Fibrous
18-10-02931-004B	LR-2	Joint Comp.	White Granular; Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-005	K-1		White Powder; Tan Fibrous; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-006A	K-2	Formica	Brown Brittle; Homogeneous	NAD	35% Cellulose 65% Non-Fibrous
18-10-02931-006B	K-2	Mastic	Tan Adhesive; Homogeneous	NAD	3% Cellulose 97% Non-Fibrous
18-10-02931-007	K-3		White Granular; Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-008A	FP-1	Ceramic Tile	Green/Gray Cementitious; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-008B	FP-1	Mortar	Gray Granular; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-008C	FP-1	Slate	Gray Brittle; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-009	FP-2		Gray Cementitious; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-010	D-1		Black Adhesive; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
18-10-02931-011	D-2		Brown Vinyl; Beige Fibrous; Inhomogeneous	NAD	15% Cellulose 2% Fibrous Glass 83% Non-Fibrous
18-10-02931-012	D-3		Black/Gray Plastic-Like; Black Aggregate; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-013	R-1		Black Tar-Like; Homogeneous	NAD	18% Cellulose 82% Non-Fibrous
18-10-02931-014A	R-2	Shingle	Black Tar-Like; Green/Black Aggregate; Inhomogeneous	NAD	22% Fibrous Glass 78% Non-Fibrous
18-10-02931-014B	R-3	Tar	Black Tar-Like; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-015	R-3		Black Tar-Like; Brown Aggregate; Inhomogeneous	NAD	23% Fibrous Glass 77% Non-Fibrous
18-10-02931-016A	BA1-1	Drywall	White Powder; Tan Fibrous; Inhomogeneous	NAD	16% Cellulose 84% Non-Fibrous
18-10-02931-016B	BA1-1	Joint Comp.	Off-White Granular; Beige Paint-Like; Inhomogeneous	NAD	1% Cellulose 99% Non-Fibrous
18-10-02931-016C	BA1-1	Texture	White Granular; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-017	BA1-2		Beige Adhesive; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
18-10-02931-018A	BA1-3	Mastic	Brown Adhesive; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-018B	BA1-3	Other *	Beige Fibrous; White Paint-Like; Inhomogeneous	NAD	85% Cellulose 15% Non-Fibrous
* Fibrous Material					
18-10-02931-019A	P-1	Tile	Off-White/Black Vinyl; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-019B	P-1	Mastic	Clear to Tan Adhesive; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
18-10-02931-020	P-2		Off-White/Blue Vinyl; Beige Fibrous; Inhomogeneous	NAD	30% Cellulose 70% Non-Fibrous
18-10-02931-021A	P-3	Drywall	White Powder; Tan Fibrous; Inhomogeneous	NAD	16% Cellulose 84% Non-Fibrous
18-10-02931-021B	P-3	Joint Comp.	Off-White Granular; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
18-10-02931-022A	BR1-1	Carpet	Beige Fibrous; Granular; Inhomogeneous	NAD	70% Synthetic 30% Non-Fibrous
18-10-02931-022B	BR1-1	Pad	White/Green/Black Foam; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-023A	MBA-1	Mastic	Brown Adhesive; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
18-10-02931-023B	MBA-1	Other *	Beige Fibrous; White Paint-Like; Inhomogeneous	NAD	80% Cellulose 20% Non-Fibrous

* Fibrous Material

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-02931-024A	BA3-1	Tile	Brown Vinyl; Homogeneous	3% Chrysotile	97% Non-Fibrous
			Total Asbestos:	**3%**	
18-10-02931-024B	BA3-1	Mastic	Black Adhesive; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
18-10-02931-025	P-4		Light Gray Pliable; Homogeneous	NAD	16% Cellulose 84% Non-Fibrous
18-10-02931-026A	U-1	Cove Base	Beige Vinyl; Homogeneous	NAD	100% Non-Fibrous
18-10-02931-026B	U-1	Mastic	Beige Adhesive; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-02931

Project/Test Address: 4106 Mendenhall Blvd; Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 30-M22009-3

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

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

Analyst: Vickie Holmes

Reviewed By Authorized Signatory: 

Howard Varner
General Manager

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 VELAP 460172. 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

EHS Laboratories™

Environmental Hazards Services, LLC
www.leadlab.com
(800)347-4010
(804)275-4907 (fax)
7469 Whitepine Rd
Richmond, VA
23237

Asbestos Chain-of-Custody

18-10-02931

Due Date:
10/22/2018
(Monday)
ES M

VAB 26 AM

Company Name: NORTECH Address: 5438 Shaune Dr, Ste B City/State/Zip: Juneau, AK -99801

Phone: (907) 586-6813 Fax: 907 586-6819 E-mail: haley.michael@nortechengr.com Acct. Number: 02-2641

Project Name / Testing Address: 4106 Mendenhall Blvd City/State (Required): Juneau, AK

Collected by: Jennifer Stoutamore Purchase Order Number: 18-2377

Turn Around Times : *If no TAT is specified, sample(s) will be processed and charged as 3-day TAT.*

_____ 1 - Day _____ 2 - Day X 3 - Day _____ Same Day (Must Call Ahead) _____ Weekend (Must Call Ahead)

No.	Client Sample ID	Date Collected	ASBESTOS							AIR					COMMENTS
			PLM	PLM Point Count 400	PLM Point Count 1000	PLM NY Protocol	PCM	TEM Chatfield (Bulk)	TEM AHERA (Air)	Time On	Time Off	Flow Rate (L/min)	Total Time (minutes)	Volume (Total Liters)	
1	G-1	10/15/18	X												analyze all layers
2	G-2	10/15/18	X												
3	LR-1	10/15/18	X												
4	LR-2	10/15/18	X												
5	K-1	10/15/18	X												
6	K-2	10/15/18	X												
7	K-3	10/15/18	X												
8	FP-1	10/15/18	X												
9	FP-2	10/15/18	X												If between 1% and 2% Please point count
10	D-1	10/15/18	X												

Released by: Haley Michael Signature: Haley Michael Date/Time: 09:30 10/16/18

Received by: T. Mehn Signature: Date/Time: 10/17/18 1245

EHS Laboratories™

Asbestos Chain-of-Custody

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Environmental Hazards Services, LLC

www.leadlab.com
(800)347-4010
(804)275-4907 (fax)

7469 Whitepine Rd
Richmond, VA
23237

Company Name: NORTECH Address: City/State/Zip:

Phone: ( ) Fax: ( ) E-mail: Acct. Number:

Project Name / Testing Address: 4106 Mendenhall Blvd City/State (Required):

Collected by: Purchase Order Number:

Turn Around Times : *If no TAT is specified, sample(s) will be processed and charged as 3-day TAT.*

____ 1 - Day ____ 2 - Day X 3 - Day ____ Same Day (Must Call Ahead) ____ Weekend (Must Call Ahead)

No.	Client Sample ID	Date Collected	ASBESTOS							AIR					COMMENTS
			PLM	PLM Point Count 400	PLM Point Count 1000	PLM NY Protocol	PCM	TEM Chatfield (Bulk)	TEM AHERA (Air)	Time On	Time Off	Flow Rate : (L/min)	Total Time (minutes)	Volume (Total Liters)	
1	D-2	10/15/18	X												analyze all layers
2	D-3		X												
3	R-1		X												
4	R-2		X												
5	R-3		X												
6	BAI-1		X												
7	BAI-2		X												
8	BAI-3		X												
9	P-1		X												If between 1% and 2%
10	P-2		X												Please point count

Released by: Haley Michael Signature: Date/Time: 10/16/18 09:30

Received by: Signature: Date/Time: 10/17/18 12:45

EHS Laboratories

Asbestos Chain-of-Custody Form
Additional Page(s)

LAB USE ONLY: EHS Order Number _____-_____-_____

Company Name: NORTECH **Project:** 4106 Mendenhall Blvd

Lab No.	Client Sample ID	HA Area #	Collection Date	Collection Time	PLM	PLM Point Count 400	PLM Point Count 1000	PLM NY Protocol	TEM - Bulk	Comments
	P-3		10/15/18	AM / PM	X					Analyze all layers
	BRI-1			AM / PM	X					
	MBA-1			AM / PM	X					
	BA3-1			AM / PM	X					
	P-4			AM / PM	X					
	all V-1			AM / PM	X					If between 1% and 2%, please point count
				AM / PM						
				AM / PM						
				AM / PM						
				AM / PM						
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				AM / PM						

Released by:	Haley Michael	Signature:	Date/Time: 10/16/18 09:30
Received by:		Signature:	Date/Time: 10/17/18 12:45

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 18-10-04317

Client: Nortech
2400 College Rd.
Fairbanks, AK 99709-3754

Received Date: 10/24/2018
Analyzed Date: 10/26/2018
Reported Date: 10/26/2018

Project/Test Address: 4106 Mendenhall Blvd (2); Juneau, AK

Client Number:
02-2641

Fax Number:
907-452-5694

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
18-10-04317-001A	MBR-1	Tile	Tan Vinyl; Homogeneous	4% Chrysotile	96% Non-Fibrous
			Total Asbestos:	**4%**	
18-10-04317-001B	MBR-1	Mastic	Black Adhesive; Homogeneous	NAD	13% Cellulose 87% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 02-2641 **Report Number:** 18-10-04317

Project/Test Address: 4106 Mendenhall Blvd (2); Juneau, AK

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 29-M22009-2

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

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

Analyst: Christian H. Schaible

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 VELAP 460172. 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

EHS Laboratories™
Environmental Hazards Services, LLC

Asbestos Chain-of-Custody Form

SHIP TO: 7469 Whitepine Rd. Richmond, VA 23237
Phone: (800) 347-4010 FAX: (804) 275-4907
ONLINE CLIENT PORTAL AVAILABLE FOR ANALYSIS RESULTS AT:
www.leadlab.com

18-10-04317

Due Date:
10/29/2018
(Monday)
ES M

Company Name: NORTECH Account Number: 02-2641

Address: 5438 Shaune Dr, Ste B City/State/Zip: Juneau, AK 99801

Phone #: (907) 586-6813 Email: haley.michael@nortechengr.com Fax: (907) 586-6819

Project Name / Testing Address: 4106 Mendenhall Blvd (2) City/State (Required): Juneau, AK

Collected by: Jennifer Stavtamore P.O. # ~~18-2377~~ 18-1353

TURN AROUND TIMES: IF NO TAT IS SPECIFIED, SAMPLE(S) WILL BE PROCESSED AND CHARGED AS 3 - DAY TAT.

1 Day	2 Day	3 Day	* Same Day – Must Call Ahead	* Weekend – Must Call Ahead

No.	Client Sample ID	HA Area #	Collection Date	Collection Time	PLM	PLM Point Count 400	PLM Point Count 1000	PLM NY Protocol	TEM - Bulk	Comments
1	MBR-1		10/15/18	AM / PM	X					If between 1% and 2%, please point count, Analyze all layers
2				AM / PM						
3				AM / PM						
4				AM / PM						
5				AM / PM						
6				AM / PM						
7				AM / PM						
8				AM / PM						
9				AM / PM						
10				AM / PM						

Released by: ~~[illegible]~~ Haley Michael Signature: [signature] Date/Time: 10/22/18 11:15am

Received by: T. Mehgan Signature: [signature] Date/Time: 10/24/18 13

Appendix 5
Field Notes

MADE IN TACOMA
SINCE 1916
Rite in the Rain®
DEFYING MOTHER NATURE

Name ADOT & PF

Address 4106 Mendenhall Blvd

Phone Michael Schular [254-1766]

Email michael.schular@alaska.gov

Projects Pre-demo ~~HABS~~ HBMS

Office # 465-4499

MADE USA RITE GREEN Archival paper

RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

10/15/18 J. Stoutamire, Lt. Michael

- 0928 On Site. ADOT personnel Michael Schular on Site to meet us
- Tour the grounds / house with Michael
  - UST present on side of House closest to Mendenhall Loop
    - ADOT estimates
      - 500 gal capacity
      - 295 gal in tank
      - assumes tank is from original construction ~40 yrs ago
  - house has crawl space and attic space. Attic may not be big enough to access
- property is being demoed for future round-about
- 0945 Tailgate meeting
- 0950 H. Michael begins mapping house, J. Stoutamire begins at asbestos

Rite in the Rain

0955 batteries in laser measure dead. H. Michael off site to get more batteries.

1007 H. Michael back at site. Resumes mapping house

10/15/18

Hazardous materials by room

Garage

~~32~~ 35 - light ballast

~~64~~ 95 three foot flourescent bulbs + 4 extra in corner

1 - electric garage door opener

1 - breaker box

1 - oil powered boiler
- evidence of leaking from the area of the filter (on ground)
- visible petroleum stain on concrete floor

1 - fire extinguisher

1 - can of paint

Pantry

- 1 non-flourescent light fixture

Kitchen

- ~~stove~~ 1 - 3 foot light ballast
- 2 flourescent bulbs

10/15/18

~~Kitchen~~ (Continued)

1- CFL bulb

Dinning Area

1- CFL

Fire place

Thullman fireplace model L-36

- due to age chimney and interior portions of fire place (under the accessable metal) may contain asbestos. Sampling not possible.

Living room

electric thermo stat

Bedroom 1

2- CFL

Bathroom 1

4- light bulbs

10/15/18

Hallway

2- CFLs

Bedroom 2

- ~~2 fb~~ 2 CFLs

Bedroom 3

- 2 CFLs

Master bedroom

- 2 CFLs

Master bathroom

- 2 heat light bulbs
- 3 standard bulbs

- UST
  - estimated size 500-550 gal
  - ADOT estimated depth of tank: 3-4 feet bgs

10/15/18

Asbestos samples by room

Garage (~~tobit~~ no paint/white paint)

G1 - gypsum wall board (gwb) with joint compound

G2 - wall plaster/patch under electrical box

Pantry white paint

P-1 tile from floor/mastic (black) "marbel" vynal

P-2 White vynal flooring and mastic/under floor

P-3 GWB with joint compound

P-4 Vynal base board with mastic Lab sample B V-5

P-5 grey sealent around windows Lab P-4 sample

Kitchen

white paint, wall texture

K-1 GWB, joint compound, wall texture

10/15/18

Kitchen Cont

- K-2 - counter top surface
- K-3 - ceiling texture
  - large texture, different from walls
  - same "marble" tile as pantry
  - same floor board as pantry
- Stainless steel sink, no sample

Dining Room

D-1 black mastic behind painted wooden panel by fireplace

D-2 brown vynal under laminate floor

Fire place

FP-1 green tiles along fireplace and underlying cement board

FP-2 adhesive b/w cement board and bricks

Dining Room

D-3 "sure grip" tape on door frame to backyard

Bedroom 1

- Carpet (beige) is tacked down, same with carpet pad. No adhesive to sample
- wooden flooring in hallway does not appear to have anything under it
- wood panelling in ~~closet~~ closets closet nailed to painted GWB, no mastic

BR1-1 Carpet and pad

Bathroom 1

* bead board nailed to painted GWB
- same "marble" tile as pantry/kitchen

BA1-1 : GWB/patch compound
BA1-2 : mastic behind shower insert

* some panels are glued, brown mastic

Bathroom 1 (cont

BA1-3 brown mastic behind bead board

Bedroom 2

- same materials and carpet as bedroom 1. No samples

Bedroom 3

- same materials as Bedroom 1 and 2. Around crawlspace entrence (in closet) there is a hard brown flooring materid. This was samplect.

BA3-1 - brown flooring/black mastic

Master bedroom

- light brown flooring under carpet, black mastic

* MBR-1 : light brown flor, black mastic

Master bath

~~MA-1~~ MBA-1 mastic behind bead board (brown)

jb

Living Room

Ceiling texture samples. Texture appears to be two different colors; bright white and off white

LR-1 : bright white ceiling texture
LR-2 : off white ceiling texture

→ Lab report mustard: LR-1 = LR-1 & LR-3 (drywall + JC)

Notes: Bedroom 2 has some light brown flooring under carpet as Master bedroom

1350 ~~Michael~~ & Michael stops back by site. Show him what we've done so far

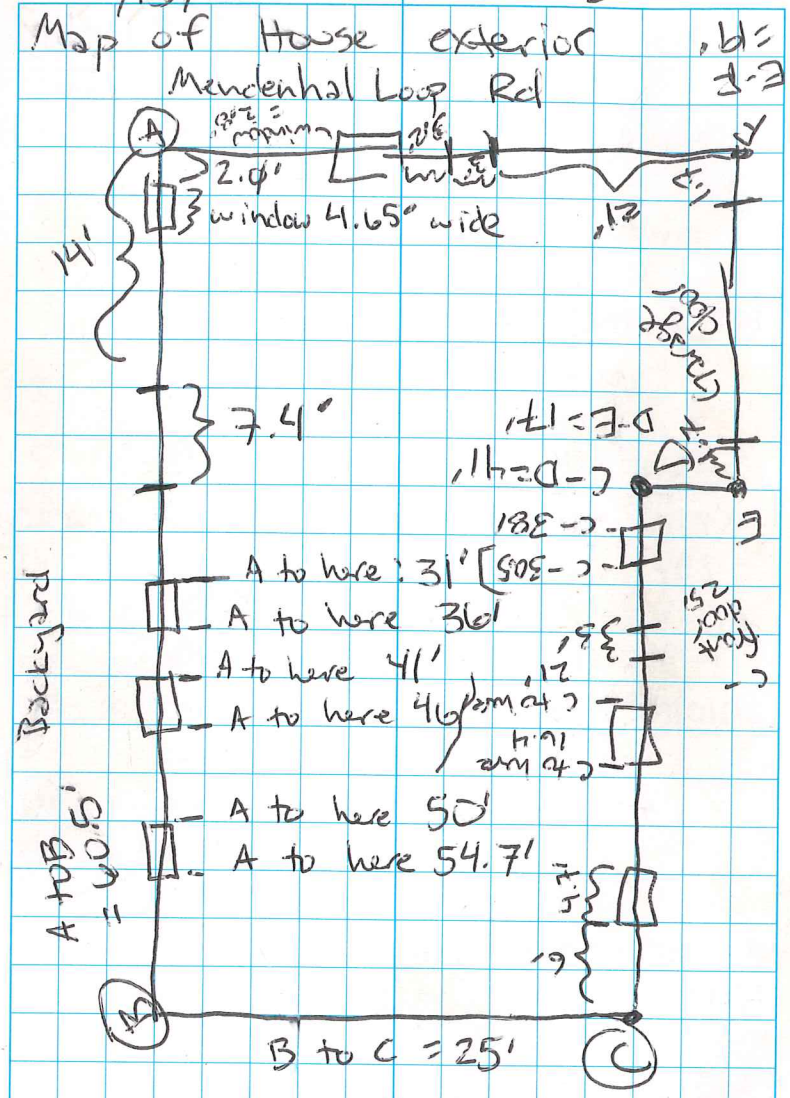
1355 Michael off site

* Exterior paint is lead-based paint (Niton reading 3.9 (yellow) – 2.9 (white)

10/15/18

Map of House exterior

Mendenhall Loop Rd



10/15/18

-1420 H. Michael begins assessment of soils by UST to attempt to determine if it is leaking. J. Stoutamore collects roof samples

1437 Roof samples and all asbestos sampling completed.

Roof Samples

R-1 ~~pts~~ black patch material around chimney

R-2 green shingle and tar/adhesive

R-3 brown shingle and tar/adhesive

* chimney pipe is labeled as metal-bestos pipe

1445 Done with UST soils, refusal at 2.0 feet. Pack pickup and clean up site

1501 Off site.

Lead Paint samples

ID	Pb	description
1	Ø	MB wall
2	Ø	MB floor
3	~~.01~~ Ø	MB window frame
4	~~.09~~ .01	MR wall
5	~~Ø~~ .09	MR window frame
6	Ø	MR closet door
7	Ø	MB door frame
8	Ø	hallway closet wall
9	Ø	BR3 window frame
10	Ø	BR3 closet shelves
11	Ø	BR2 closet shelving
12	Ø	BR2 closet wall
13	Ø	hallway wall (glossy)
14	.01	BA1 floor
15	Ø	BA1 half wall
16	Ø	BA1 baseboard
17	.68	BA1 shower
18	.12	BA1 under sink-wall (back)
19	Ø	fp tiles
20	.08	baseboard heater paint LR
21	Ø	LR wall paneling
22	Ø	LR door

23	∅	backyard door (interior)
24	∅	kitchen counter
25	∅	kitchen undersink tiles
26	∅	pantry CABINET
27	∅	G wall
28	∅	G shelving
29	∅	G door (big)
30	∅	G door joints
31	3.9	exterior wall
32	2.9	" under roof
33	0.5	" white trim
34	∅	" g door
35	2.8	" wall
36	3.7	" "
37	2.4	" "
38	1.3	" window trim
39	∅	fencing
~~40~~	~~∅~~ hm	
41	∅	exterior backyard door trim
42	∅	BR3 blue paint door frame
43	∅	LR ceiling yellow
44	∅	LR ceiling white
45	1.0	exterior wall purple
~~46~~	hm	

Paint notes:

- interior paint white
  - places of discoloration (yellowish, off white
  - places with diff. color paint underneath (blue paint in BR3
  - some texturing differences, mainly glossy vs matte. MB has diff. text.
- floor tiles all similar
  - diff tiles underneath K sink
- Only Pb paint found on outside paint (all walls) + roof (underneath)