JANUARY 31, 2025

GRANITE PEAK
ENVIRONMENTAL

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ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES
MEAT HOUSE AND LOCKERS
802 YELLOWSTONE AVENUE
BILLINGS, MONTANA 59101

Big Sky Economic Development
Brownfields Program
201 North Broadway
Billings, MT 59101
406.869.8407

Analysis of Brownfield Cleanup Alternatives

Meat House and Lockers

802 Yellowstone Avenue

Billings, MT 59101

Prepared For:
Big Sky Economic Development
201 North Broadway
Billings, MT 59101

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January 31, 2025

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1.0 Introduction

Granite Peak Environmental, LLC (Granite Peak) prepared this Analysis of Brownfields Cleanup Alternatives (ABCA) in anticipation of environmental cleanup at the Meat House and Lockers Property (site) in Billings, Montana (**Figure 1**). Big Sky Economic Development (BSED) was awarded a U.S. Environmental Protection Agency (EPA) Brownfields Revolving Loan Fund (RLF) Grant to assist landowners in the remediation of Brownfields sites within Yellowstone County. A Pre-Demolition Survey completed by Northern Industrial Hygiene (NIH) in 2024 revealed asbestos-containing materials (ACMs) at the site. A subsequent Phase II Environmental Site Assessment (ESA) completed by Granite Peak in 2025 revealed lead-based paint (LBP) and universal and biological wastes at the site. This ABCA identifies abatement options for the cleanup of the hazardous building materials at the site to allow for future site redevelopment.

2.0 Site Background

The site is a 0.118-acre lot located at 802 Yellowstone Avenue in Billings, Montana (**Figure 1**). It is situated west of downtown Billings at the southwestern corner of North 8th Street and Yellowstone Avenue and contains a single commercial building totaling approximately 4,500 square feet (**Figure 2**). The rectangular building is a single-story structure that was originally built in 1948 and has had several additions throughout the years. Recent site conditions documented during the 2025 Phase II ESA (Granite Peak, 2025) are included in the photograph log provided as **Appendix A**.

The site was originally constructed and used as a meat processing, packaging, and storage facility. The business has been inoperable for many decades. The building was used by the previous owner as a woodworking space and for personal storage for several years before it was acquired by the City of Billings (City) in December of 2024. The City would like to remove all hazards, demolish the building, and develop the condemned property into a beneficial space for the surrounding community.

2.1 Known Contamination

A Pre-Demolition Asbestos Survey of the building was completed by NIH in May 2024. The purpose of this survey was to identify any asbestos-containing materials in the interior and exterior portions of the on-site structure, including the roof. NIH identified 37 homogenous building materials that were suspected of containing asbestos (NIH, 2024). Of these 37 materials, laboratory analysis confirmed 11 materials contained asbestos at a concentration of greater than one percent (>1%) and three materials contained asbestos at a concentration of less than one percent (<1%). The locations of the 11 confirmed ACMs (>1% asbestos) are shown in **Figures 3** and **4**. Descriptions of the ACMs and the materials containing <1% asbestos that were identified by NIH during the pre-demolition survey are shown in the table below.

Identified Asbestos Containing Materials, Meat House Facility

Sample ID	Material Description	Location	Approximate Quantity	Asbestos Type	Asbestos Content	Regulatory Category
F1.1	Vinyl Sheet Flooring – Tan Small Pebble Pattern w/ Inseparable Mastic/Leveler	North-to-South Hallway	36 ft²	Chrysotile	Vinyl – 20% Mastic/Leveler – 4%	RACM
F1.2	Vinyl Sheet Flooring – Beige Large Pebble Pattern	East-to-West Hallway	190 ft²	Chrysotile	20%	RACM
F1.3	Vinyl Sheet Flooring – Red-brick Design w/ Brown/Tan Mastic/Underlayment (Mastic/Underlayment does not contain asbestos)	Westernmost Bathroom	40 ft²	Chrysotile	Vinyl – 20% Mastic/Underlayment - ND	RACM
F2.1	12"x12" Vinyl Floor Tile – Stone Pattern w/ Inseparable Mastic	Hallway Closet	32 ft²	Chrysotile	3%	Category I
F3.1	9"x9" Vinyl Floor Tile – Tan w/ Brown/Black Mastic (Mastic does not contain asbestos)	Entry Hallway	351 ft²	Chrysotile	Tile – 3% Mastic – ND	Category I
M1.2	Built-up Roofing	Center of Building	2,312 ft²	Chrysotile	Roofing 1/Silver Paint – 1% Roofing 2 – ND Roofing 3 – 2% Roofing 4 – 4% Roofing 5/Tar – 15% Insulation - ND	Category I
M8.4	Black Window Caulk	Windows	7 Window Systems	Chrysotile	20%	Category II
M8.5	Door Frame Caulk	Doors	4 Door Systems	Chrysotile	4%	Category II
M8.6	Exterior Window Caulk	Windows	7 Window Systems	Chrysotile	16%	Category II
M8.8	Roof Sealant (Black)	Roof (Flashing and Roof Penetrations on all Roof Types)	Entire Roof System	Chrysotile	10%	Category I
M20.6	Silver Paint on Metal Debris	Center of Building; Room w/ wood floors & Western end of building beneath covering	Small Quantities of Removable Items	Chrysotile	3%	Category II
F5.1	Residual Black Mastic	Entry Hallway	240 ft²	Chrysotile	<1%	OSHA
M3.1	Gypsum Board System	Easternmost Bathroom, East-to-West Hallway, & Entry Hallway	312 ft²	Chrysotile	0.75% - 1.25%	RACM
M8.3	Window Glazing Compound	Windows	7 Window Systems	Chrysotile	<1%	OSHA

ND = Non-detect
NESHAP Category Descriptions:
Category I: Non-friable ACM
Category II: Non-friable ACM, excluding Category I materials
OSHA: Building materials not currently regulated by EPA or DEQ, but are regulated under 29 CFR 1926.1101

Granite Peak subsequently completed a Phase I ESA in September 2024 at the facility. The assessment concluded that while hazardous building materials such as asbestos and LBP are not considered recognized environmental conditions (RECs), such materials may be present in the on-site structure due to its age. Granite Peak recommended a supplemental building materials investigation (BMI) to (1) confirm that all ACMs had been identified by NIH, (2) quantify the

materials, and (3) identify other hazardous materials associated with the building such as LBP, polychlorinated biphenyl (PCB)-containing light ballasts, and/or mercury-containing thermostats and fluorescent light tubes (Granite Peak, 2024).

The supplemental BMI was completed by Granite Peak in January 2025. This investigation quantified each ACM identified in NIH's 2024 survey and determined that no other materials suspected of containing asbestos were present in the building. The investigation also included an exterior LBP survey that revealed two areas with building materials coated with LBP (**Figure 5**). Laboratory analysis showed lead concentrations in soil beneath identified LBP areas were below DEQ direct contact and leaching to groundwater thresholds. A visual survey for universal wastes identified several fluorescent light fixtures, which are assumed to have PCB-containing light ballasts and mercury-containing light tubes. The investigation also noted potential biological hazards associated with the site including human waste and nuisance dust associated with the dilapidated interior conditions of the building (Granite Peak, 2025).

3.0 Cleanup Standards

When left intact and undisturbed, ACMs do not pose a health risk to people working or living in buildings or homes. However, if ACMs are disturbed by fire, renovation, or demolition activities, they may become friable and capable of releasing asbestos fibers into the air resulting in potentially significant health concerns for the community by inhalation of asbestos fibers. Inhaled fibers can become entrapped in the lungs and cause diseases such as asbestosis, lung cancer, and mesothelioma. Potential human exposure pathways for LBP and lead in soil include inhalation of lead in dust or ingestion of lead in dust, soil, or groundwater.

The cleanup requirements for asbestos on a commercial structure in Montana are found in 40 Code of Federal Regulations (CFR) 61.140-157, also known as the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP), and Chapter 74 of the Administrative Rules of Montana (ARM).

Lead exposure can cause reproductive problems in men and women, high blood pressure, kidney disease, digestive problems, nerve disorders, memory and concentration problems, and muscle and joint pain. There is also evidence that lead exposure can result in cancer in adults.

LBP must be remediated in accordance with the Resource Conservation and Recovery Act (RCRA). In general, substrates having lead concentrations of 0.5% by weight or 5,000 milligrams per kilogram (not risk based) identifies the substrate as a LBP. Waste materials generated during lead abatement containing leachable lead above the RCRA TCLP limit of 5.0 mg/L may also be a hazardous waste, requiring special waste handling. However, if a building is demolished in its entirety, the Montana Department of Environmental Quality (DEQ) Solid Waste Division and EPA allow the waste generated to be disposed of in a Class II landfill even while containing LBP components. DEQ has determined that components coated with LBP for a whole building demolition are less likely to be hazardous due to the ratio of LBP to the total mass of the waste stream. DEQ guidance concerning this issue is included in **Appendix B**.

3.1 Applicable Laws

This section summarizes the laws and regulations that are applicable to the proposed cleanup.

3.1.1 Asbestos

Applicable codes, regulations, and laws that govern asbestos remediation/cleanup work and transport/disposal of asbestos-contaminated wastes include the following:

- CFR Publications:
  - OSHA 29 CFR 1926.1101 Construction Industry Standard (1994)
  - OSHA 29 CFR 1926.500 Guardrails, Handrails, and Covers
  - OSHA 29 CFR 1910.134 Respiratory Protection
  - OSHA 29 CFR 1910.145 Specifications for Accident Prevention Signs and Tags
  - EPA 40 CFR 61 Subpart A, General Provisions
  - EPA 40 CFR 61 Subpart M, National Emission Standard for Hazardous Air Pollutants
  - EPA 40 CFR 763.120, 121 Asbestos Abatement Projects
  - EPA 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act Asbestos-Containing Materials in Schools
- ANSI Publications:
  - Z9.2-1979 Fundamentals Governing the Design and Operations of Local Exhaust Systems
  - Z88.2-1980 Practices for Respiratory Protection NIOSH Revised Recommended Asbestos Standard
- EPA:
  - 560/5-85-024 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings
- State Requirements:
  - Chapter 74 Administrative Rules of Montana
  - Applicable sections of the Asbestos Work Practices and Procedures Manual, (2005)

3.1.2 Lead

Applicable codes, regulations, and laws that govern lead remediation/cleanup work and transport/disposal of lead-contaminated wastes include the following:

- CFR Publications
  - Occupational Safety and Health Administration (OSHA 29 CFR 1926.62 Construction Industry Standard (1994)
  - OSHA 29 CFR 1926.500 Guardrails, Handrails, and Covers
  - OSHA 29 CFR 1910.134 Respiratory Protection
  - OSHA 29 CFR 1910.145 Specifications for Accident Prevention Signs and Tags
  - OSHA 29 CFR 1917.152 Hot Work
- American National Standard Institute (ANSI) Publications:
  - Z88.2-1980 Practices for Respiratory Protection National Institute for Occupational Safety and Health (NIOSH)
- Montana Department of Environmental Quality – Solid Waste Program
  - Lead-Based Paint Disposal Guidance (**Appendix B**)

4.0 Cleanup Alternatives

Granite Peak identified three cleanup alternatives for the site, as follows:

Alternative 1 – No action. Under this alternative, no actions would be taken to abate the hazards associated with the on-site structure. All ACMs, LBP, universal waste, and biological hazards would remain in place.

Alternative 2 – Abate ACMs and LBP with the building remaining. Under this alternative, the building would remain, and hazardous building materials would be addressed as follows:

- *Asbestos-Containing Materials* – All identified ACMs would be abated by a certified abatement contractor with the building in-tact. All abated materials would be removed from the building, properly packaged to prevent the release of asbestos, and hauled to the Billings Regional Landfill for disposal as asbestos-containing waste and RACM, as appropriate.
- *Lead-Based Paint* – All LBP would be stripped and removed from the building by a certified lead-abatement contractor. The LBP waste would be containerized during abatement, sealed, and scheduled for proper transport and disposal as LBP hazardous waste.
- *Universal Wastes* – The fluorescent light tubes and presumed PCB-containing light ballasts would be removed and disposed of in accordance with solid waste regulations.
- *Biological Hazards* – Biological hazards would not be addressed under this alternative.

Alternative 3 – Abate all hazards prior to or during demolition. Under this alternative, the building would be demolished, and hazardous building materials would be addressed as follows:

- *Asbestos-Containing Materials* – Prior to building demolition, RACM and Category II ACMs would be abated by a certified abatement contractor. RACM and Category II ACMs would be properly wrapped ("burrito" wrapped in 6-mil plastic) to prevent the release of asbestos during transportation to the Billings Regional Landfill. During demolition, inert materials (concrete, wood, metal, and glass) would be sorted from the demolition waste stream and disposed of as construction and demolition (C&D) waste at the Billings Regional Landfill. The remaining demolition debris, including Category I ACMs, would be disposed of as asbestos-containing waste at the Billings Regional Landfill. Demolition and abatement would be overseen by a third-party certified abatement supervisor. After demolition, backfilling would occur to bring the site back to grade, as needed.
- *Lead-Based Paint* – Per DEQ guidance (**Appendix B**), LBP would not require abatement under this alternative since it would be included in the waste stream of a whole-building demolition. Contractors performing the demolition would need to be aware of the presence of LBP and LCP and follow lead-safe demolition practices. The demolition would be overseen by a certified lead-risk assessor.
- *Universal Wastes* – The fluorescent light tubes and presumed PCB-containing light ballasts would be removed and disposed of in accordance with solid waste regulations.
- *Biological Hazards* – All biological hazards would be removed from the site during building demolition.

5.0 Evaluation of Alternatives

Each of the alternatives identified for the site are evaluated in this section using three criteria: long-term human health risk reduction, implementability, and costs relative to human health risk reduction. **Table 1**, below, summarizes the evaluation and cost estimates for the three action alternatives. Cost estimates are included in **Appendix C**.

Table 1 – Alternative Comparison

Alternative	Criteria		
	Risk Reduction	Implementability	Cost
Alternative 1 – No Action	None	Implementable	$0
Alternative 2 – Abate ACMs and LBP with the building remaining	Removes most environmental risks, but some remain on-site; slight risks during cleanup; future health and safety risks remain	Implementable	$65,236
Alternative 3 – Abate all hazards prior to or during demolition	Removes all future human health and environmental risks; slight risks during cleanup	Implementable	$58,147

Alternative 1 – No Action. Under this alternative, hazardous building materials would remain in-place, and the unusable, blighted building would continue to pose a public safety risk. Although this option is both cost-effective and implementable, the property could not be redeveloped and the risk of exposure of hazardous materials to the surrounding community would persist.

Alternative 2 – Abate ACMs and LBP with the building remaining. This alternative is implementable and poses limited safety risks to workers abating materials in the building. However, the extent of interior LBP has not been evaluated. Therefore, to implement this alternative, a supplemental LBP survey would be required to properly identify all LBP associated with the interior of the building. Once identified, all LBP would be abated (removed and disposed of as a hazardous waste) or encapsulated and left in place. Disposal costs of the abated LBP would be significantly higher compared to abatement via whole-building demolition (Alternative 3) because the stripped LBP would have to be disposed of as a hazardous waste. OSHA-regulated LCP would not be addressed through this alternative, and any contractors working near LCP during future building renovations would be required to have an awareness for potential lead exposure. OSHA-safe work practices would apply for all future contractors.

This alternative would leave the building in-tact, but in an even worse condition. The roof system would be removed during the ACM-abatement process and would need to be replaced at the owner's expense outside of this abatement project. The building would remain vacant and in poor condition for an unknown period until additional funding was secured to renovate or demolish the building. The vacant building would continue to pose a threat to public safety for the surrounding neighborhood. Biological hazards (human feces) would also remain in place and would likely accumulate until the building was renovated or demolished.

This alternative is less cost-effective than Alternative 3 and would leave biological and lead hazards in place, and the building would remain on the property in a degraded condition. Ultimately, this alternative poses a health and safety risk to the community by leaving the building vacant, with unaddressed hazards and in poor condition, for an undetermined amount of time.

Alternative 3 – Abate all hazards prior to or during demolition. This alternative is implementable, cost effective, and removes all hazardous materials from the site. ACMs would be abated from the building either prior to demolition or at the time of demolition, and LBP would be abated during demolition. By demolishing the building, LBP would be disposed of as C&D waste, saving future supplemental survey and renovation costs, and all biological hazards would be effectively removed from the site. Additionally, this option would remove the public safety risk the currently vacant building poses to the community and would fully prepare the site for future redevelopment for the lowest cost.

6.0 Preferred Alternative

The preferred action is Alternative 3. All hazardous materials including asbestos, LBP, universal waste, and biological hazards would be abated and wastes generated would be disposed of properly in accordance with DEQ and EPA regulations under this alternative. The vacant building would be removed from the site and would no longer pose a potential public safety risk. This alternative is the most cost-effective option and offers the most comprehensive cleanup while minimizing risks to workers and future site occupants. Alternative 3 results in the greatest protection of human health and the environment for the lowest price and best prepares the site for future redevelopment.

Should the landowner proceed with cleanup of the site through the RLF program, BSED would obtain cost estimates from abatement contractors capable of completing Alternative 3. A copy of the final abatement and demolition report describing all abatement completed on the project would be transmitted to BSED and EPA.

7.0 Climate Change and Severe Weather Events

The EPA requires a discussion of whether climate change could be impacted by the preferred alternative. According to the Montana Climate Assessment, climate changes predicted for Montana include:

- Increased mean annual air temperatures with winter and spring temperatures increasing the most
- Increased precipitation in winter, spring, and fall, with decreasing precipitation in summer
- Decreased snowpack with peak runoff occurring earlier
- Increased frequency of flooding
- Increased time of drought
- Increased frequency and longer wildfire seasons
- Decreased carbon capturing forests

The proposed cleanup would not significantly impact the climatic changes described above, except for potentially increasing mean annual temperature through the burning of fossil fuels. The site is not in a floodplain and the preferred alternative would not increase the potential for flooding. It is recommended that equipment used for abatement be turned off when not in use.

8.0 Public Review and Comments

The ABCA would be presented at a public meeting to be held in Billings, Montana, and the public would be notified that the ABCA is available for review. A copy of this document would be available to the public on BSED's website at www.bigskyeconomicdevelopment.org or by request. BSED would document all public comments in writing, provide a response to each comment, and

incorporate relevant comments into the final cleanup design and approach. All comments would be submitted to:

Thom MacLean
Senior Project Manager
Big Sky Economic Development
thom@bigskyeda.org

9.0 References

Northern Industrial Hygiene, Inc. (NIH), 2024. Pre-Demolition Asbestos Survey, Letter Report. Former Meat House Lockers, 802 Yellowstone Avenue, Billings, MT. Northern Project Number 101-169. May 29.

Granite Peak Environmental, LLC (Granite Peak), 2024. Phase I ESA, Meat House and Lockers, 802 Yellowstone Avenue, Billings, Montana 59101. Prepared for Big Sky Economic Development. September 20.

_____, **2025.** Report of Findings, Building Materials Investigation, Meat House and Lockers, 802 Yellowstone Avenue, Billings, Montana 59101. Prepared for Big Sky Economic Development. January 24.

FIGURES

Figure 1 – Area Map
Meat House Property
802 Yellowstone Avenue
Billings, MT 59101

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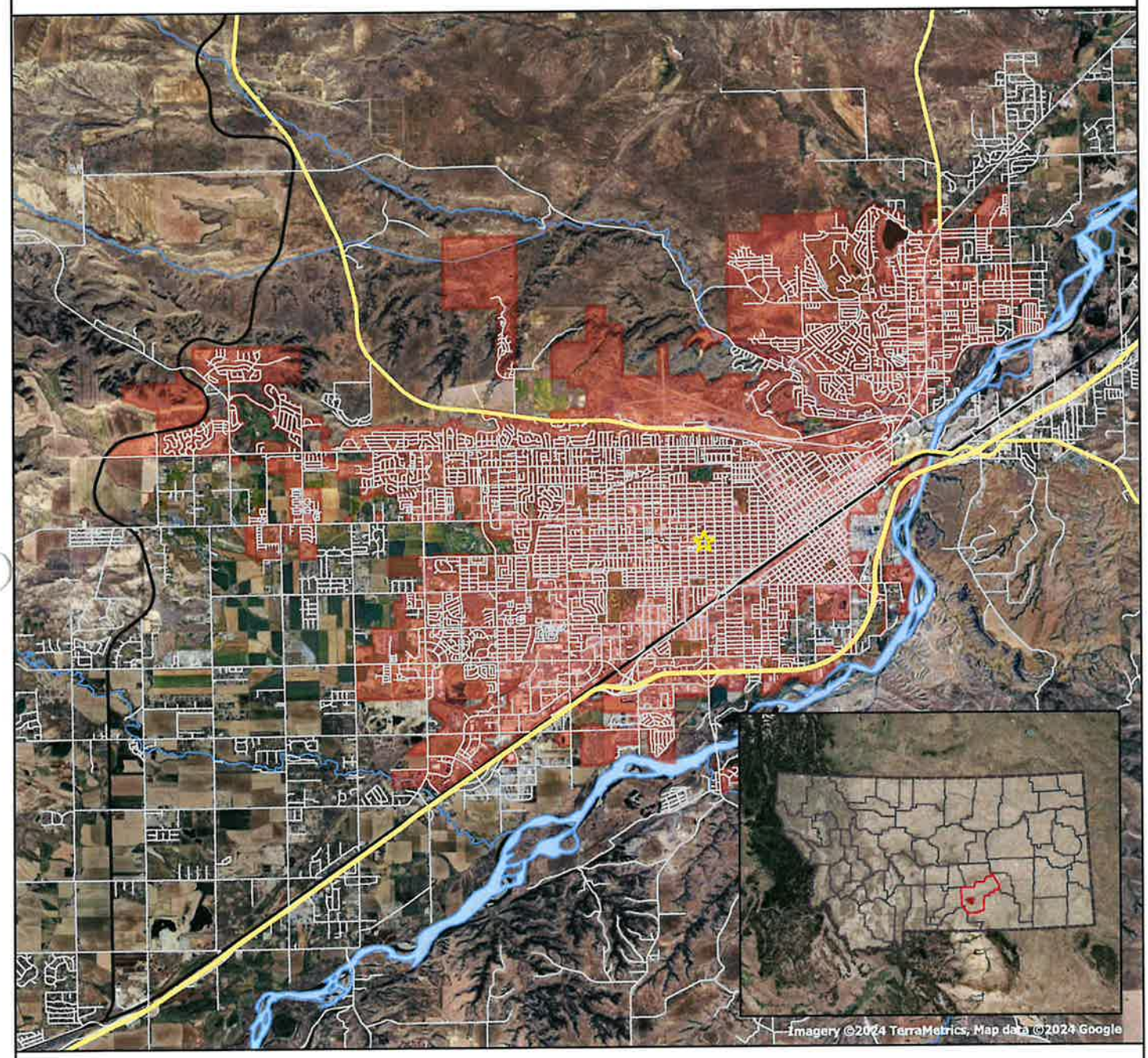

0 1 2 mi

Roads
Major Highways
Railroad
Site
Billings City Limits
Yellowstone County

N

Figure 2 – Site Map
Meat House Property
802 Yellowstone Avenue
Billings, MT 59101

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0 50 100 ft

Subject Property Boundary

N

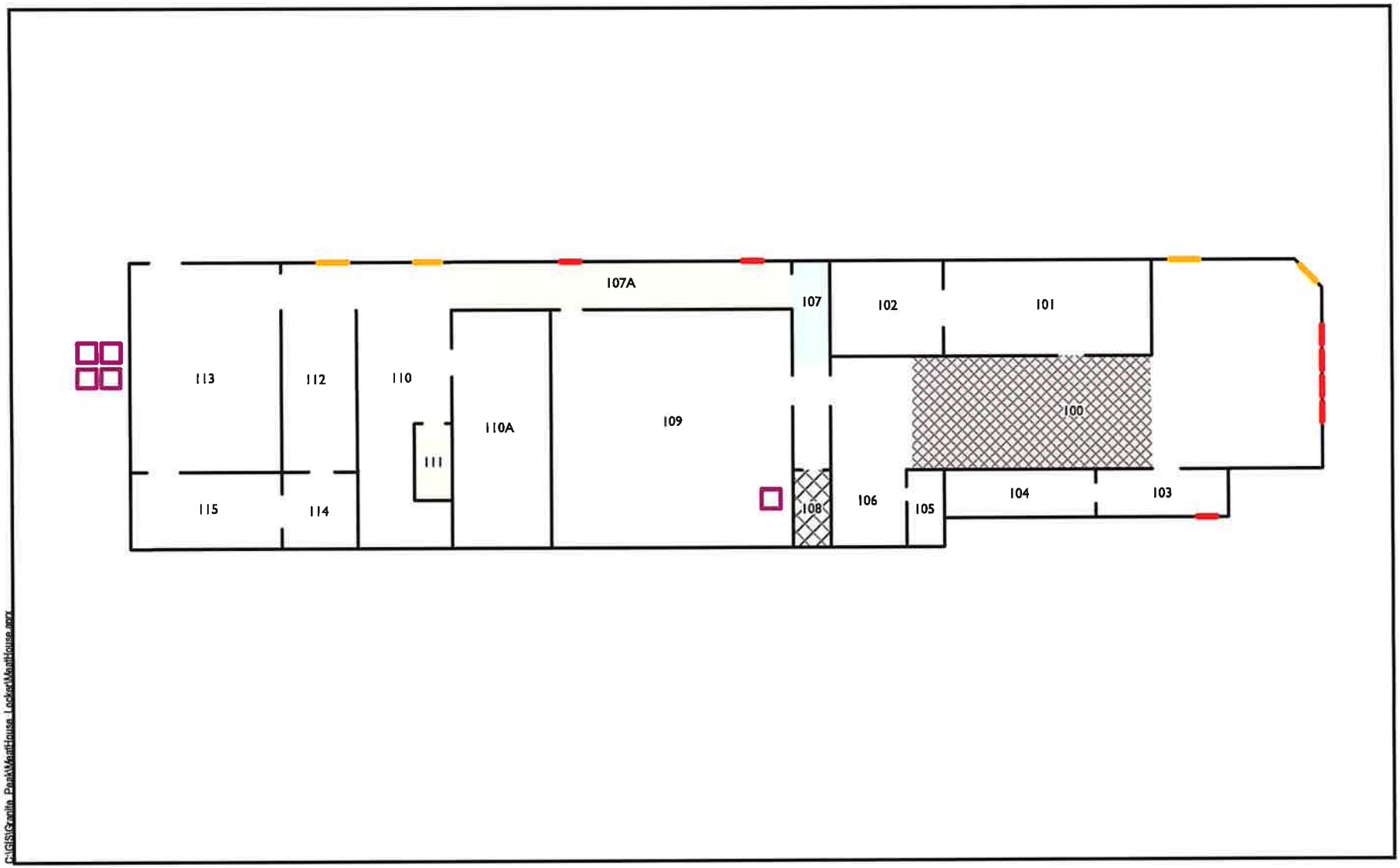
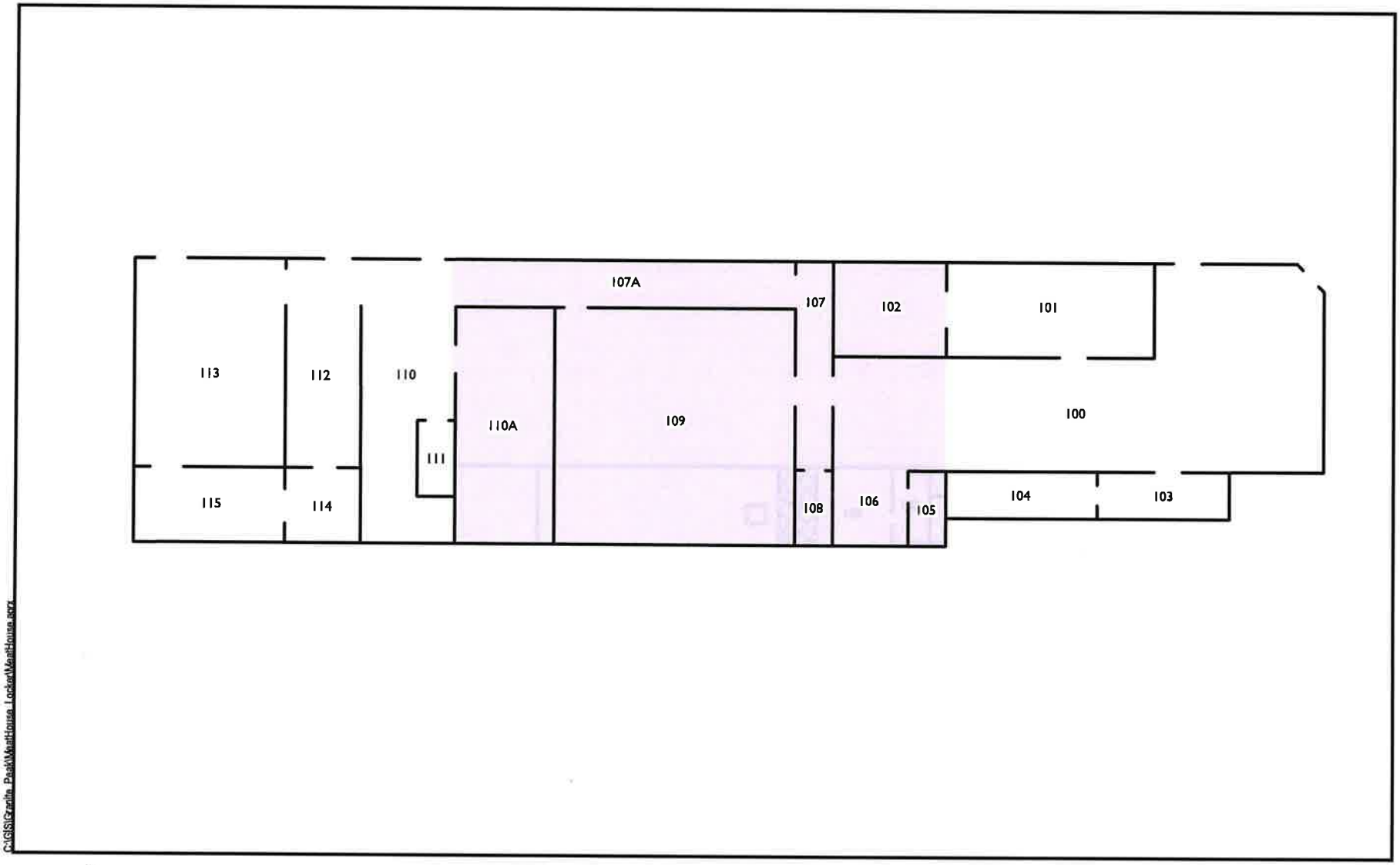


Figure 3 – Positive Asbestos Results
Meat House Property
802 Yellowstone Avenue
Billings, MT 59101



N

0 Feet 15

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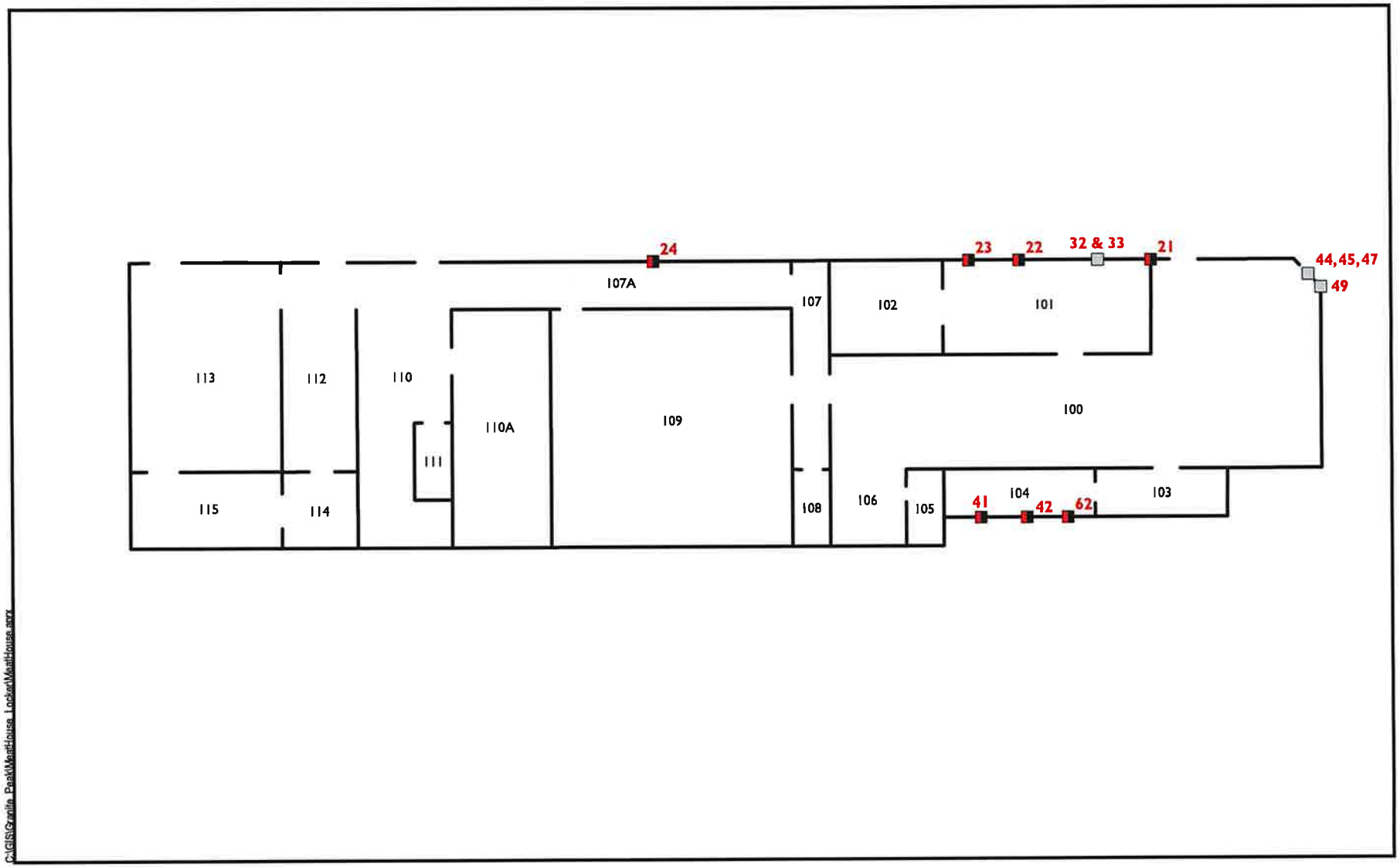
ACM Built-up Roof

Figure 4 – Asbestos in Roofing Materials
Meat House Property
802 Yellowstone Avenue
Billings, MT 59101



C:\GIS\Granite Peak\MeatHouse_Locker\MeatHouse.aprx

N

0 Feet 15

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Sample location positive for Lead-Based Paint

Sample location positive for Lead-Containing Paint

Figure 5 – Lead-based Paint Results
Meat House Property
802 Yellowstone Avenue
Billings, MT 59101

APPENDIX A
PHOTOGRAPH LOG

INSPECTION PHOTOGRAPH LOG

1) Meat House and Lockers building looking southwest. Select areas of white paint on CMU tested positive for lead.

3) Meat House and Lockers building looking southeast. All substrates tested negative for lead.

2) Meat House and Lockers building looking northwest. Red paint of the Pepsi logo tested positive for lead. One 5-point composite soil sample was collected underneath the logo. Window glazing positive for asbestos on the east facing windows.

4) Meat House and Lockers building looking northeast. White peeling paint on CMU tested negative for lead.

INSPECTION PHOTOGRAPH LOG

5) Meat House and Lockers building looking north at the west end of the building. White paint on CMU tested negative for lead.

7) Close-up of the southwest exterior corner of the Meat House and Lockers building looking east. White paint on CMU, and blue and red paint on wood tested negative for lead.

6) Close-up of the southwest exterior corner of the Meat House and Lockers building looking west. White paint on CMU tested negative for lead.

8) Photograph of the east end of the building. Exterior corrugated sheet metal siding is negative for lead.

9) Water damaged sheetrock ceiling confirmed in the south storage area. Green paint on CMU tested negative for lead.

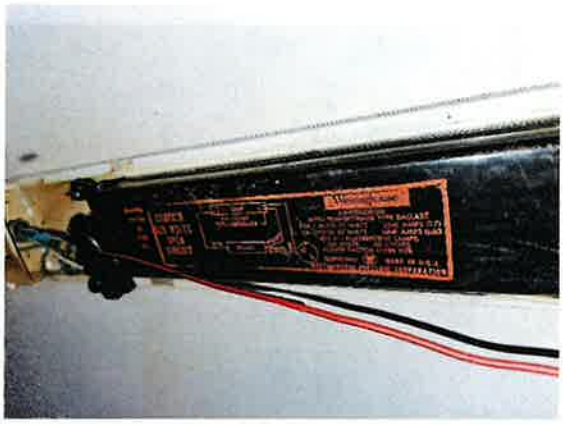
11) Close-up of collapsed roof looking west from the south storage area.

10) Close-up of damaged CMU wall looking west from the south storage area.

12) Photograph taken inside the east end of the building, looking east. Sheetrock ceiling contains <1% asbestos.

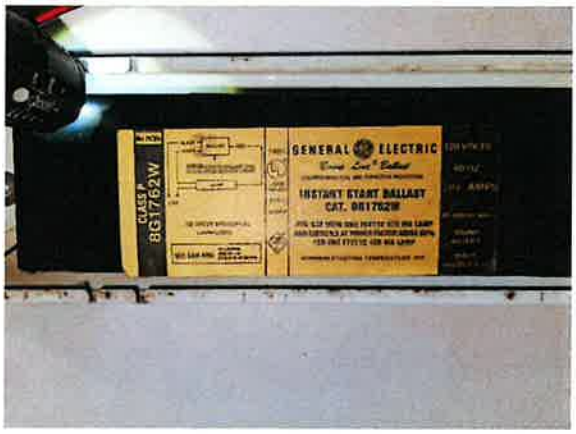
INSPECTION PHOTOGRAPH LOG

13) Photograph taken inside the north storage area of the east end of the building, looking east.



15) Photo of one type of light ballast presumed positive for PCB's.

14) Photograph showing the poor conditions within the building that may include biological hazards.

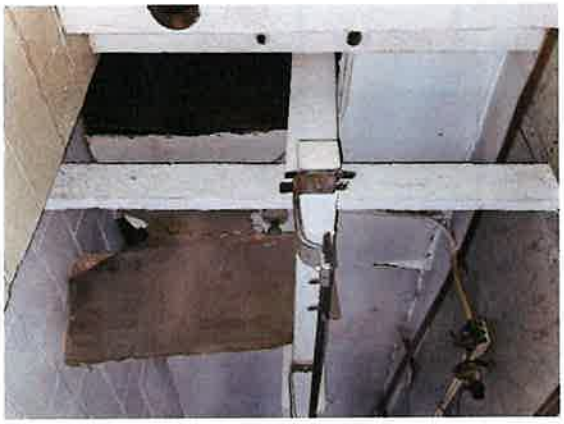


16) Photo of one type of light ballast presumed positive for PCB's.

17) Photo of one type of light ballast presumed positive for PCB's.

19) Photograph of the eastmost bathroom. Sheetrock materials contain <1% asbestos.

18) North side of the building underneath the areas that tested positive for lead. Confirmed the LBP is above the concrete sidewalk.



20) Photograph within the east to west hallway. Sheetrock materials contain <1% asbestos.

APPENDIX B
MONTANA LBP DISPOSAL FACT SHEET

RENOVATION & ABATEMENT

- Small-scale debris that is generated during renovation, maintenance, or abatement activities such as paint chips, vacuum debris and dust, waste wash water and sludge from chemical paint stripping is more likely to exceed the TCLP.

- Sampling may be appropriate for intermediate-volume renovation wastes such as window moldings, doors, etc.

- Core or sectional samples can be taken of representative waste items to determine whether each waste is hazardous.

    - Fewer samples could be taken by taking one or more core samples, compiling ratios of waste material surface area to mass for each type, and then comparing these to the surface area/mass ratio of the sample.
    -Sampling protocol should be used for each site.

- Individual waste materials should either:
    - Be sampled and analyzed by TCLP and then handled/disposed of accordingly; or
    - Be segregated from other large-scale debris and then managed as hazardous waste.

- Records of sampling procedures and analytical results must be kept for at least 3 years.

Montana Department of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

DEQ
Montana Department of Environmental Quality

Solid Waste Program

Lead-Based Paint

Solid Waste Section
www.deq.mt.gov/Land/solidwaste
406-444-5300

Solid Waste Program (SWP)
deqswprogram@mt.gov
406-444-3463

LEAD-BASED PAINT (LBP)

Where do we find it?

- Prior to the 1950s, paints used for residential use contained up to 50% lead.
- Lead-based paint was used on buildings until 1978, when it was banned on residential structures by the consumer Products Safety Commission.
- Renovation, remodeling, demolition, and surface preparation for painting have the potential to produce hazardous wastes if LBP was involved.

How do we know it is there?

- Test the paint for lead to be certain of the presence of lead.
- Hazardous waste criterion for lead waste is established under the federal Resource Conservation and Recovery Act (RCRA), Subtitle C, as 5.0 mg/L measured with the Toxicity Characteristic Leaching Procedure (TCLP).

STRUCTURE DEMOLITION

Residential Structures

Household Hazardous Waste Exemption

- On June 18, 2003, the Environmental Protection Agency (EPA) published a rule under solid waste regulations to streamline LBP debris disposal.
- LBP debris from households generated by homeowners or contractors may be disposed of at a municipal solid waste landfill or and construction and demolition waste landfill.

Non-residential Structures

Waste Determination and Management

- LBP debris that comes from commercial or industrial sources, ***not households***, may be subject to state and federal hazardous waste rules.
- The generator of the waste must determine whether the debris fails the TCLP for lead.
- Two scenarios outlined for making the waste determination and then managing the LBP debris are:
  - Whole-Building Demolition
  - Re vation and Abatement

WHOLE-BUILDING DEMOLITION

- Whole-building demolitions debris is considered a non-hazardous waste with regard to lead.
  - EPA stated that solid architectural components coated with LBP are less likely to be hazardous because of the small ratio of lead paint to total waste mass.
  - The US Army conducted a study that concluded that whole-building demolition debris is not likely to exceed the toxicity characteristic standard for lead if it is handled as a single, whole waste stream and disposed of all together.

- No sampling or analysis of painted components for lead is required for disposal as a non-hazardous waste.

NOTE: Constituents other than LBP, including PCBs from light ballasts or asbestos containing materials, may require special handling and should be removed before demolition.

APPENDIX C
COST ESTIMATES

Cost Estimate
Alternative 2 - Abate ACMs & LBP with the Building Remaining
Meat House & Lockers
802 Yellowstone Avenue, Billings, MT 59101

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Material Description	Quantity	Unit	Unit Rate	Total
Task 1: Mobilization, Site Preparation, and Permit				
Mobilization/Site Preparation (Asbestos Abatement Contractor)[1]	1	ls	$5,000	$5,000
Pre-clean Building	1	ls	$8,000	$8,000
			Task 1 Subtotal	**$13,000**
Task 2: Asbestos Abatement of All ACMs[2]				
VSF - North-to-South Hallway	36	sf	$15	$540
VSF - East-to-West Hallway	190	sf	$15	$2,850
VSF - Westernmost Bathroom	40	sf	$15	$600
12"x12" VFT - Hallway Closet	32	sf	$5	$160
9"x9" VFT - Entry Hallway	351	sf	$5	$1,755
Built-up Roofing	2,312	lf	$5	$11,560
Black Window Caulk	7	window systems	$250	$1,750
Door Frame Caulk	4	door systems	$500	$2,000
Exterior Window Caulk	7	window systems	$250	$1,750
Roof Sealant (Black)	1	ls	$1,500	$1,500
Silver Paint on Metal Debris	1	ls	$1,000	$1,000
Residual Black Mastic	240	sf	$2	$480
Gypsum Board System	312	sf	$5	$1,560
Window Glazing Compound	7	window systems	$250	$1,750
			Task 2 Subtotal	**$29,255**
Task 3: Lead-Based Paint Survey & Abatement[3]				
Interior LBP Survey	1	ls	$3,500	$3,500
LBP Abatement (three workers for three days)	72	hours	$125	$9,000
Abatement Supplies	1	ls	$800	$800
LBP Disposal as a hazardous waste	1	ls	$2,500	$2,500
			Task 3 Subtotal	**$15,800**
Task 4: Universal Waste Removal[4]				
Fluorescent light tubes disposal	1	ls	$250	$250
PCB Light Ballasts	1	ls	$1,000	$1,000
			Task 4 Subtotal	**$1,250**
			Total (All Tasks)	$59,305
			Contingency (10%)	$5,931
			Total Estimated Cost	**$65,236**

Notes/Assumptions:

[1] Abatement contractor mobilization includes travel to and from site, lodging, site preparation, project permitting and bonding, site security, traffic control, dust control, Project-Specific Health and Safety Plan preparation, and incidentals (e.g., equipment, tools, plastic sheeting, fuel, etc.,) to complete the Project).

[2] Per unit cost includes disposal of asbestos containing materials at the Billings Landfill.

[3] All exterior lead-based paint (LBP) will be abated by the abatement contractor and disposed of as a hazardous waste. To leave building in place, an interior LBP survey would need to be completed, and LBP identified would need to be removed or encapsulated. Costs may vary depending on results of LBP survey.

[4] Universal waste includes all fluorescent light fixture ballasts which are assumed to contain PCBs and all fluorescent light tubes.

Cost for oversight firm, including bid specifications, air clearance sampling, project oversight, and project reporting is not included in this estimate.

Cost Estimate
Alternative 3 - Abate All Hazards Prior To or During Demolition
Meat House & Lockers
802 Yellowstone Avenue, Billings, MT 59101

GRANITE PEAK ENVIRONMENTAL

Material Description	Quantity	Unit	Unit Rate	Total
Task 1: Mobilization, Site Preparation, and Permit				
Mobilization/Site Preparation (Asbestos Abatement & Demo Contractor)[1]	1	ls	$7,500	$7,500
Pre-clean Building	1	ls	$4,000	$4,000
			Task 1 Subtotal	**$11,500**
Task 2: Asbestos Abatement of RACM & Category II ACMs[2]				
VSF - North-to-South Hallway	36	sf	$15	$540
VSF - East-to-West Hallway	190	sf	$15	$2,850
VSF - Westernmost Bathroom	40	sf	$15	$600
Black Window Caulk	7	window systems	$250	$1,750
Door Frame Caulk	4	door systems	$500	$2,000
Exterior Window Caulk	7	window systems	$250	$1,750
Silver Paint on Metal Debris	1	ls	$1,000	$1,000
Gypsum Board System	312	sf	$5	$1,560
			Task 2 Subtotal	**$12,050**
Task 3: Universal Waste Removal[3]				
Fluorescent light tubes disposal	1	ls	$250	$250
PCB Light Ballasts	1	ls	$1,000	$1,000
			Task 3 Subtotal	**$1,250**
Task 4: Building Demolition				
Segregate inert materials (concrete, wood, and metal). Remove all building debris, including Category I ACMs	278	cy	$50	$13,900
Hauling (inert materials)	170	tons	$30	$5,100
Disposal (inert materials)	170	tons	$27.80	$4,726
Hauling (asbestos materials)	11	tons	$60	$660
Disposal (asbestos materials)	11	tons	$102.30	$1,125
Backfill Excavation to grade (includes material, hauling, and placement)[4]	85	cy	$30	$2,550
			Task 4 Subtotal	**$28,061**
			Total (All Tasks)	$52,861
			Contingency (10%)	$5,286
			Total Estimated Cost	**$58,147**

Notes/Assumptions:

[1] Abatement and demolition contractor mobilization includes travel to and from site, lodging, site preparation, project permitting and bonding, site security, traffic control, dust control, Project-Specific Health and Safety Plan preparation, and incidentals (e.g., equipment, tools, plastic sheeting, fuel, etc., to complete the Project).

[2] Per unit cost includes disposal of asbestos containing materials at the Billings Landfill.

[3] Universal waste includes all fluorescent light fixture ballasts which are assumed to contain PCBs and all fluorescent light tubes.

[4] Cost includes sourcing clean material, hauling material to site, and placement. Project does not need compaction specs.

Cost for oversight firm, including bid specifications, air clearance sampling, project oversight, and project reporting is not included in this estimate.