ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

LEE GORDON HOUSE
503 EAST FRONT STREET MISSOULA, MONTANA

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Olympus Technical Services, Inc.

765 Colleen St.
Helena, MT 69701
Phone: (406) 443-3087

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1.0 INTRODUCTION

1.1 Site Location

This document provides an Analysis of Brownfields Cleanup Alternatives (ABCA) for site redevelopment of the Lee Gordon House, 503 East Front Street, Missoula, Montana (Site). The Site is a 14,000 square foot lot that currently is occupied by a 9-unit residential structure. The North-Missoula Community Development Corporation (NMCDC) is a community advocacy organization dedicated to promoting health, vibrancy and engagement in the north- and west-side communities. The Site was gifted to NMCDC, who plans to redevelop the property to provide low to moderate income housing.

1.2 Previous Site Uses

The only known use of the Site has been for residential purposes. The original structure, a log cabin, was built on-site in, or before, approximately 1882. Over time, additions and buildings were added to the property. Between 1902 and 1912, the buildings were joined together by siding. The Site has historically been operated as rental property. In early 2015, the owner received a notice from the city outlining several items that deemed the units uninhabitable. The building has been vacant since January 2015 and is proposed to be demolished.

1.3 Site Assessment Findings

The U. S. Environmental Protection Agency conducted a Phase II Environmental Site Assessment of the property in 2015. Asbestos-containing materials (ACM) were identified in the building in the form of drywall compound, flooring, heat shields, ducting tape, window glazing, and vermiculite (EPA Phase II, Dec 2015). Lead-based paint (LBP) was detected on numerous interior and exterior surfaces.

ACM in the building represents a potential threat to public health during the removal of the structure. Exposure to airborne asbestos has been linked to illnesses including asbestosis (a debilitating lung disease), lung cancer, and mesothelioma (a rare cancer of the lung or stomach cavity lining). For all activity that may disturb ACM, Federal and State regulations require air monitoring and controls to limit and contain the generation of dust.

LBP was detected in 63% of the samples collected from exterior surface and 17% of samples collected from interior surfaces. Overall, the Site had intermittent positive results for LBP on a variety of surfaces, including: walls, window frames, window sills, doors, door frames, and door jambs. Due to the intermittent detections and multiple layers of paint on most surfaces, all the surfaces should be considered LBP positive.

Four surface soil samples collected from the perimeter of the Site contained lead concentrations that exceed the EPA Risk Screening Level for residential soil. The source of the lead is assumed to be LBP on exterior building surfaces and is assumed to be limited to shallow depths.

1.4 Project Goal

The redevelopment of this property will provide more affordable housing to households earning less than 80 percent of the area median income. In addition, any new structure will provide a positive impact to the surrounding neighborhood. The goal of the project is to remove the hazardous building materials prior to building demolition to preclude these materials from becoming airborne and creating an environmental risk.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

2.1 Asbestos

Asbestos abatement is regulated by the Montana Department of Environmental Quality (DEQ). DEQ defines ACM as material containing more than 1% asbestos based on laboratory analysis of the material. Three categories of ACM have been defined in the National Emissions Standards for Hazardous Air Pollutants (NESHAP) standard, which is established in Title 40 Section 61.141 of the Code of Federal Regulations (40 CFR 61.141) and adopted by DEQ in Title 17, Chapter 74, Subchapter 3 of the Administrative Rules of Montana (ARM 17.74.351). The NESHAP category definitions are as follows:

- **Category I Non-friable ACM** - asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.
- **Category II Non-friable ACM** – any material, excluding Category I Non-friable ACM, containing more than 1% asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- **Regulated ACM (RACM)** -includes a) friable asbestos material; b) Category I Non-friable ACM that has become friable; c) Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; or d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

The definition of RACM includes all ACM associated with a structure or space that will be impacted by renovation and/or demolition activities. An “asbestos project”, as defined by Montana Code Annotated (MCA) 75-2-502, means the encapsulation, enclosure, removal, repair, renovation, placement in new construction, demolition of asbestos in a building or other structure, or the transportation or disposal of asbestos-containing waste. A NESHAP permit application must be completed by a Montana-accredited Asbestos Project Designer and submitted to the DEQ at least 10 days prior to the scheduled project. The project must be conducted by personnel holding current Montana accreditation as Asbestos Workers and/or Asbestos Contractor/Supervisors.

RACM abatement is not considered complete until the project area has passed final visual and air clearance monitoring. Clearance air monitoring must be completed for all abatement projects except where demolition will commence immediately following completion of abatement and successfully passed final visual clearance.

2.2 Lead

The purpose of a lead assessment is to identify lead-containing surface coatings and to characterize the overall concentration of leachable lead in an anticipated renovation or demolition waste stream. Identification of lead-containing coatings and/or LBP is necessary to determine whether renovation/demolition workers may potentially be exposed to airborne lead concentrations exceeding Permissible Exposure Limits (PELs) established by the Occupational Safety and Health Administration (OSHA). Characterization of leachable lead in the overall potential waste stream is necessary to select proper handling and disposal of renovation waste materials as required by the Resource Conservation and Recovery Act (RCRA).

EPA's Lead-Based Paint Renovation, Repair, and Painting (RRP) Rule (40 CFR 745 Subpart E) regulates renovation, repair, and painting activities associated with LBP. These regulations are applicable should the Site structures be renovated for occupancy. However, the proposed cleanup plan is for total structure demolition and these rules would not be applicable.

When disturbing LBP, an employer must assume workers may be exposed to lead concentrations above the PEL of 50 micrograms/cubic meter ($\mu g/m^3$) and worker protection, such as air monitoring and respiratory protection, must be provided in accordance with 29 CFR 1926.62.

Lead in soil can pose a threat to human health and the environment. The DEQ uses EPA Risk Screening Levels (RSLs) as part of their evaluation to determine if a site may present an imminent and substantial endangerment and thus be eligible for inclusion on the Comprehensive Environmental Cleanup Responsibility Act (CECRA) priority list (ARM 17.55.105). RSLs are also accepted by DEQ as site cleanup levels. The RSL for lead in soil based on a residential exposure scenario and a modeled10 microgram/deciliter (µg/dL) blood level is 400 milligrams/kilogram (md/kg). However, the Centers for Disease Control has recently indicated that adverse health effects are documented at blood lead levels of 5 µg/dL and DEQ is requiring blood lead modeling using the EPA Integrated Exposure Uptake Biokinetic Model for Lead in Children and Adults Lead Models with 5 µg/L as the predicted blood level. The lead in soil cleanup level using that approach is 153 mg/kg and this value will be used at the Site.

Waste that contains lead may be considered a hazardous waste, depending on the leachability of the lead. Lead that is leachable above a concentration of 5 milligrams/liter (mg/L) as determined using the Toxicity Characteristic Leach Procedure (TCLP) analysis is subject to RCRA hazardous waste handling and disposal requirements (40 CFR 261, Subpart C). Composite samples representative of the overall anticipated lead-containing waste streams (LBP demolition debris and lead-contaminated soil) for the project must be collected and analyzed for TCLP lead to assess whether these regulations are applicable.

3.0 EVALUATION OF CLEANUP ALTERNATIVES

The objective of cleanup is to remove all materials of concern from the existing structure at 503 East Front Street prior to Site redevelopment. This includes the removal of ACBM, lead surfaces, and lead contaminated soil. Cleanup is complicated by the historic nature of the building. Due to the historical significance of the building, the City of Missoula Historic Preservation Officer has requested that demolition be conducted in a manner to allow documentation of the log structure that comprises a portion of the structures interior. This will require demolition to occur in a step-wise manner in which sheathing and wall surfaces are

removed such that the structural frame of the building is revealed in a non-damaged state. Three cleanup alternatives were considered for the Site, including:

Alternative 1: No Action – Included for comparison purposes
Alternative 2: ACM and LBP encapsulation followed by structure renovation and removal of lead contaminated soil. It is assumed that the wastes will be characterized as non-hazardous and will be disposed at a municipal waste landfill that is licensed to accept ACM.
Alternative 3: ACM and LBP removal and disposal followed by structural deconstruction and removal of lead contaminated soil.

3.1 Alternative Analysis

Criteria	Alternative 1: No Action	Alternative 2: Encapsulate ACM and LBP surfaces. Removal of Lead-Contaminated Soil	Alternative 3: ACM, LBP, and Lead-Contaminated Soil Removal.
Effectiveness	Not effective	Effective	Effective
Implementability	None	Difficult to implement due to the poor condition of the structure	Readily Implementable
Cost	None	>$100,000	$110,000

Effectiveness

- Alternative 1: No Action is not effective in controlling or preventing the exposure of receptors to contamination at the Site.
- Alternative 2: Encapsulation of ACM and LBP and Removal of Lead-Contaminated Soil are effective methods for preventing receptors from coming into direct contact with contamination at the Site.
- Alternative 3: ACM, LBP, and Lead-Contaminated Soil Removal is an effective methods for preventing receptors from coming into direct contact with contamination at the Site.

Implementability

- Alternative 1: No Action is easy to implement since no actions will be conducted.
- Alternative 2: Encapsulation of ACM and LBP is difficult to implement due to the poor condition of the existing structure, which would require substantial modification to render it structurally sound. Long term maintenance of the encapsulated ACM and LBP materials would also be required. Removal of lead-contaminated soil is easily implementable.
- Alternative 3: ACM, LBP, and Lead-Contaminated Soil Removal is relatively easy to implement and would not require long-term maintenance.

Cost

- Alternative 1: No Action would have no associated costs.
- Alternative 2: Encapsulation of ACM and LBP and Removal of Lead-Contaminated Soil is estimated to be greater than $100,000. Additional costs for structural modifications to make the building habitable would also be required.
- Alternative 3: ACM, LBP, and Lead-Contaminated Soil Removal is estimated to cost $110,000.

3.2 Recommended Cleanup Alternative

The recommended cleanup alternative is Alternative #3: ACM, LBP, and Lead-Contaminated Soil Removal. Alternative #1: No Action cannot be recommended since it does not address Site risks. Alternative #2: Encapsulation of ACM and LBP and Removal of Lead-Contaminated Soil is more difficult to implement considering the substantial structural modifications needed to render the building suitable for occupancy, which would also render it more costly.

Under the recommended cleanup alternative, the abatement contractor would be required to obtain a permit from DEQ, mobilize to the Site, remove ACM, and properly encapsulate and dispose of ACM.

All personnel hired to remove the ACM must be accredited in accordance with Federal (40 CFR 763.90) and State (MCA 75-2-511) regulations. This includes use of a 40-hour trained Asbestos Contractor Supervisor to oversee removal of asbestos. This individual would oversee the abatement to ensure that ACM is properly segregated from other demolition wastes and transported to an appropriate disposal facility.

In accordance with U.S. Occupational Safety and Health Administration (OSHA) requirements, site workers would use personal air monitoring equipment during abatement of friable asbestos in the boiler room. After abatement, an asbestos inspector would perform visual clearance inspection and sampling of the work areas to confirm each area is free from miscellaneous debris. Clearance sampling of the boiler room would also be completed in accordance with 40 CFR 763.90 to ensure asbestos concentrations in air post-abatement are not above regulatory thresholds.

Following abatement and clearance sampling, a final report would be issued by a 40-hour accredited third party asbestos Contractor Supervisor (separate from the abatement contractor) transmitting clearance sample results, and also documenting that the targeted materials were no longer present and no debris or dust remained.

Sampling of LBP surfaces and lead-contaminated soil for TCLP analysis will be required to characterize these wastes for disposal purposes. Sampling and analysis must be completed under a Quality Assurance Project Plan and Sampling and Analytical Plan.

Removal of LBP surfaces must be conducted in accordance with the OSHA Lead rule (29 CFR 1926.26). The contractor will be responsible for providing monitoring and appropriate personal protection.