

# GPI SAP/QAPP Addendum: Property Status Confirmation Study Libby Asbestos Superfund Site, Montana

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## 1 Introduction

### 1.1 Project Background

The U.S. Environmental Protection Agency (EPA) has developed action levels and cleanup criteria for Libby amphibole (LA) that are applicable to removal actions performed at residential and commercial properties at the Libby Asbestos Superfund Site (Site). Presently, decisions regarding removal are guided by the *Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum* (EPA 2003) and its amendments (EPA 2011; 2014), as well as a flowerpot-specific protocol memorandum (CDM Smith 2013). Removal decisions are implemented in accordance with the procedures specified in the *Libby Asbestos Superfund Site Response Action Work Plan* (PRI-ER 2014) using data gathered in accordance with the screening investigation (SI) and detailed investigation (DI) procedures specified in the *General Property Investigation (GPI) Quality Assurance Project Plan (QAPP)* (CDM Smith 2014).

Historically, prior to the GPI program, property inspections at the Site were conducted as part of the Phase 1 investigation, the Contaminant Screening Study (CSS), and pre-design inspections (PDIs).

The Phase 1 sampling program, initiated in early 2000, was designed as a rapid pilot-scale investigation to obtain information on airborne asbestos levels in Libby in order to judge whether a time-critical intervention was needed to protect public health, obtain data on asbestos levels in potential source materials, and identify the most appropriate analytical methods to screen and quantify asbestos in source materials. Results of the Phase 1 investigation are still currently used to determine which properties would require additional investigation and subsequent cleanup activities.

The CSS inspections, which were conducted as part of the remedial investigation activities for Operable Unit 4 (OU4), and to a limited extent for OU7, were initiated in early 2002 and employed a combination of visual inspections, verbal property owner interviews, and outdoor soil sampling to screen each property in the study area. The primary objective of the CSS was to determine the presence or absence of potential LA sources at each property within the study area where exposure is most likely to occur (i.e., high traffic areas, such as yards, gardens, and driveways). If the results of the CSS indicated the potential for LA contamination, a PDI was then implemented to capture additional information on a property for cleanup actions. Results of the CSS inspections are still currently used to determine which properties would require additional investigation and subsequent cleanup activities.

Beginning in mid-2007, the PDI process incorporated a new site-specific standard operating procedure (SOP) CDM-LIBBY-06 for the identification and quantification of visible vermiculite (VV) in areas where soil samples are being collected. The 30-point inspection process was first cited in record of modification LFO-000122 dated May 25, 2007. Subsequently, the collection of 30 aliquots for soil composite samples became the standard minimum number of aliquots used to characterize a sample area. Soil samples from prior investigations (e.g., Phase 1, CSS) were typically comprised of five aliquots and information on VV was only qualitative (when reported).

In 2010, the PDI process was replaced by the GPI program. In accordance with the GPI QAPP, SIs screen properties for LA or LA-containing source materials and DIs evaluate the extent of any required removal action at each property identified for investigation. These activities include verbal interviews, interior and exterior visual inspections, and soil and bulk material sampling.

At the Site, soil samples are analyzed for LA by polarized light microscopy using Site-specific polarized light microscopy (PLM) methods. Prior to analysis by PLM, soil samples are sieved into coarse and fine fractions, and the fine fraction is ground. The coarse fraction (if any) is analyzed by PLM using gravimetric evaluation (PLM-Grav), in accordance with standard operating procedure (SOP) SRC-LIBBY-01, and the fine ground fraction is analyzed by PLM using visual area estimation (PLM-VE), in accordance with SOP SRC-LIBBY-03. PLM-VE is a

semi-quantitative method that utilizes Site-specific LA reference materials to allow assignment of fine ground samples into one of four “bins”, as follows:

- Bin A (non-detect [ND]): LA was not observed in the sample
- Bin B1 (Trace): LA detected at levels lower than the 0.2% (by mass) LA reference material
- Bin B2 (<1%): LA detected at levels lower than the 1% (by mass) LA reference material but greater than or equal to the 0.2% LA reference material
- Bin C (≥1%): LA detected at levels greater than or equal to the 1% LA reference material; results are reported to the nearest whole percent

The PLM-Grav and PLM-VE LA results for SI and DI soil samples are utilized in combination to guide decisions on the need for further investigation or removal.

## 1.2 Document Purpose

As noted above, soil samples collected as part of the Phase 1 sampling program and the CSS inspections are currently being used to determine which properties would require additional investigation and subsequent cleanup activities. However, these samples are recognized to have limitations relative to samples collected under current GPI procedures (i.e., VV information was not recorded in accordance with current SOPs, the number of composite aliquots was less than 30 points for historical samples, samples may have only been collected from high traffic areas, PLM analyses may have been performed by different analytical laboratories than are currently being used). Because of this, the EPA has determined that a DI will be conducted in accordance with the GPI QAPP for all properties where the maximum soil condition is Bin B1, Bin B2, or Bin C (and/or the PLM-Grav results are detect for LA).

However, at this time, the EPA has not determined if additional investigation is warranted for properties where the maximum soil condition is ND for LA (i.e., PLM-VE result is Bin A and any associated PLM-Grav results are also ND). There are more than 1,500 properties in OU4 where the maximum soil condition is ND for LA. Because the level of effort to re-investigate all of these properties is substantial, an initial pilot-scale study will be conducted to determine if the historical data can be considered adequate to support removal decisions for these properties.

This document details a pilot study, hereinafter referred to as the Property Status Confirmation Study (PSCS), designed to answer questions about the adequacy of historical data for properties where the maximum soil condition (from historical investigations) is ND for LA. This document is an addendum to the GPI QAPP (CDM Smith 2014), which describes objectives and study design of the PSCS to inform decisions on the need to perform additional investigation at properties where the maximum soil condition is ND for LA. Unless specifically noted in this addendum, all of the sampling, analysis, data management, and quality assurance/quality control requirements specified in the GPI QAPP are applicable to this PSCS effort.

## 2 Study Overview

### 2.1 Study Goal

Data collected during Phase 1, CSS, and early PDI studies utilized different sampling procedures, characterization processes, and analytical laboratories compared to the current GPI process. A majority of properties inspected during early programs were classified as “no cleanup action required” based on soil results reported as ND for LA and qualitative statements about VV. This PSCS will test the conclusion that no removal is warranted for properties where the maximum soil condition is ND for LA based on historical data. Therefore, the goal of this study is to collect data that can be used to determine if removal decisions would differ had the property been investigated in accordance with the current procedures specified in the GPI QAPP.

### 2.2 Property Selection Criteria

A total of 30 geounits will be identified for re-evaluation using the current GPI SI protocols (CDM Smith 2014). (A geounit is a property or set of properties, such as an apartment building or trailer park, for which soil investigations are conducted collectively.) To the extent possible, geounits will be selected such that they are spatially representative of the entire OU4, including both properties within the city and outside of the city. The following selection criteria will be considered when identifying properties for inclusion in the PSCS:

- Property has been evaluated only under a Phase 1, CSS, or early PDI investigation (pre-2007)
- Previously collected composite soils samples consist of less than 30 sampling points
- All soil results were ND for LA, meaning that all PLM-VE results are Bin A, all PLM-Grav are ND, and all PLM Method 9002 results (if available) are ND
- Property layout and site conditions have not materially changed since the last historic investigation
- Property has not undergone an exterior removal
- Property has not had an environmental resource specialist quick response removal
- Property access status is identified as “Granted (access)”

There are three types of properties where the maximum soil condition is ND for LA: those where VV observations recorded by the field on the field sample data sheet (FSDS) indicate the presence of VV (Vis+), those where VV observations recorded on the FSDS indicated the absence of VV (Vis-), and those where no VV information is recorded on the FSDS. Currently, the lack of VV documentation on the FSDS is being assumed to mean that VV was not present. The validity of this assumption is uncertain. Therefore, it is desired that 10 of the 20 geounits

represent those with Vis+ on the FSDS, 10 of the geounits represent those with Vis- on the FSDS, and 10 of the geounits represent those that did not have VV documentation on the FSDS.

### **2.3 Study Design**

The PSCS will require soil sampling in accordance with existing procedures for conducting an SI per the *GPI QAPP*, which includes the collection of 30-point soil composites from all use areas (excluding non-use areas) and zones and the recording of VV information for all soil samples in accordance with SOP CDM-LIBBY-06. All samples generated as part of this PSCS are to be collected, documented, handled, and analyzed in accordance with the *GPI QAPP* (CDM Smith 2014). Note that, for the purposes of this pilot study, sampling procedures should be restricted to those associated with an SI (i.e., sampling should not progress to a DI until the results of the PSCS SI have been evaluated).

### **2.4 Analysis Requirements**

Although PLM-VE analysis procedures have not changed over time, it is recognized that there are differences between the PLM analytical laboratories in the ability to detect “trace” (Bin B1) levels of LA in soil during the PLM-VE analysis. Inter-laboratory studies have shown that the Environmental Services Assistance Team Region 8 (ESATR8) laboratory is more proficient in detecting trace levels of LA in soils compared to other laboratories (CB&I 2013). Because the distinction between Bin A and Bin B1 is important for removal decision-making, all soil samples generated as part of the PSCS should be analyzed by the ESATR8 laboratory.

## **3 Result Interpretation**

Once the SI is complete and analytical results are available for all collected soil samples, they will be evaluated and the property exterior removal status will be determined relative to the soil triggers presented in *Amendment B* (EPA 2014) to the *Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum* (EPA 2003).

If the exterior removal status for any property is different based on the SI results versus the historical results, this would suggest the need to perform additional investigation for the remaining properties. Depending upon the number of properties for which the removal status differs based on the SI results, additional pilot studies may be necessary in the future to guide decisions on how to identify which properties will require additional investigation. If the exterior removal status does not differ for all of the 30 properties evaluated in the PSCS, this would suggest that additional investigation of properties where the maximum soil condition is ND for LA based on historical data is not warranted and the classification that “no cleanup action is required” remains appropriate.

## 4 References

- CB&I. 2013. Quality Assurance/Quality Control Summary Report (2010-2012) for the Libby Asbestos Superfund Site. Prepared for U.S. Environmental Protection Agency, Region 8 in support of the Quality Assurance Technical Support contract.
- CDM Smith. 2013. Flowerpot Action Level Clarification Memorandum, Libby Asbestos Site. March 8.
- \_\_\_\_\_. 2014. General Property Investigation Quality Assurance Project Plan, Libby Asbestos Site, Operable Units 4 and 7, Libby, Montana, Revision 4. April.
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- \_\_\_\_\_. 2011. Amendment A to Libby Asbestos Site Residential/Commercial Cleanup Action Level and Clearance Criteria Technical Memorandum, Libby Asbestos Project. April.
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