Attachment G

Limited Hazardous Materials Assessment Report

Sunset Residence Hall Roof Replacement Project

1 Harpst Street, Arcata, California

Humboldt State University

January 17, 2022

→ **The Power of Commitment**

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Executive Summary

On November 12, 2021, GHD Inc. (GHD) conducted a limited asbestos material assessment survey on behalf of Humboldt State University (HSU) at the specific locations where work is planned to occur at the Sunset Residence Hall (herein “project site”) on the HSU campus located at 1 Harpst Street in Arcata, California.

The limited hazardous materials assessment included two components, collectively defined as “the survey”, including:

1. Bulk sampling of suspect Asbestos Containing Material (ACM)
2. Bulk sampling of representative suspect Lead Based Paint (LBP) common throughout the project site.

This report is subject to, and must be read in conjunction with, the limitations set out in section 2.1 and the assumptions and qualifications contained throughout the report.

The survey was performed in association with the HSU The Hill – Sunset Residence Hall Roof Replacement Project (“the project”) under contract with HSU. The survey included assessment of suspect ACM and LBP distributed throughout the project site, specifically suspect ACM and LBP representative of the materials impacted by the project scope as defined by HSU. This report is subject to, and must be read in conjunction with, the limitations set out in Section 2 and the assumptions and qualifications contained throughout the report. The project site and location of bulk samples collected for the survey are depicted on the Project Site Sample Location Maps (Figure 1) located in Appendix A. Photographs of the project site, as well as select hazardous materials identified therein, are located in Appendix B.

As discussed in Section 3 and listed in Table 3.1, 12 of the 55 were reported by the analyzing laboratory to contain asbestos. The 12 samples reported to contain asbestos via PLM represent seven (7) discrete homogeneous areas of asbestos material. Suspect asbestos samples were analyzed via polarized light microscopy (PLM) analytical methodology. A tabulated summary of all PLM laboratory data associated with the survey is located in Table C1.1 (Appendix C). The PLM laboratory analytical reports associated with this survey are located in Appendix D. A summary of governmental regulations applicable to asbestos material is provided in Appendix F.

As listed in Table 4.1 located in Section 4, four (4) of the seven (7) sampled surface coatings were reported to contain detectable concentrations of lead via Atomic Absorption Spectrometry (AAS) analysis, or were associated with a detection limit above the Lead Containing Paint (LCP) threshold. Based on the survey data, two (2) of the analyzed surface coatings meet the LBP regulatory definition and the remaining two (2) lead materials exceed the LCP regulatory limit. Given the data collected at the project site, unsampled surface coatings at the project site shall be presumed to contain lead. The AAS laboratory analytical reports resultant from the survey are located in Appendix E. Materials reported or presumed to contain lead are subject to applicable governmental regulations as summarized in Appendix G.

Contents

Table Index

Appendices

1. Introduction

GHD Inc. (GHD) is pleased to provide Humboldt State University (HSU) with the following Limited Hazardous Materials Assessment Report (herein “the report”) detailing the findings of the limited asbestos and lead assessment survey conducted by GHD on November 12, 2021 (herein “the survey”) at the HSU campus located at 1 Harpst Street in Arcata, California. The survey included The Hill – Sunset Residence Hall (Sunset Hall) roof and select portions of the third-floor interior (herein “project site”). Sunset Hall is located in the Hill complex on the HSU campus. The survey was completed in association with the HSU The Hill – Sunset Residence Hall Roof Replacement Project (herein “the project”) and was performed at the request of, and on behalf of HSU.

GHD performed the survey to evaluate specific areas and building materials within the project site for the presence of asbestos and lead. The purpose of the report is to transmit to HSU the findings and conclusions resultant from the survey.

The services undertaken by GHD in connection with preparing the report were limited as defined herein and are subject to the assumptions set out in the report and associated contracting documents. The following subsections provide pertinent contextual information regarding the survey, the project, and the project site.

1.1 Client

The survey was conducted by GHD under contract with HSU, the owner of the project site. HSU shall herein be defined as the client for this report. The project-specific client information is as follows:

Humboldt State University
Facilities Management
1 Harpst Street
Arcata, California 95521
Client Representative: Bruce Ryan, Project Manager

1.2 Project Site

The scope of this survey was limited to the specific HSU buildings and locations where demolition or renovation work is planned to occur during the project. The project site is located at the following street address:

Humboldt State University
The Hill – Sunset Residence Hall
1 Harpst Street
Arcata, California 95521

For this survey, samples were collected from Sunset Hall at the exterior roofs, including associated piping and solar hot water panels, and select portions of the third floor interior north and west perimeter walls at locations of roof drain installation. The location of project work as described herein shall collectively define the project site as shown on Figure 1 (Appendix A). The project site is located at north-central portion of the HSU campus at the above street address. The individual structures which comprise the project site, as well as the corresponding building identification number, are listed in the following table (Table 1.1):

Table 1.1 Project Site Building List

Building #	Building Name	Building #	Building Name
061	Sunset Hall – Third level (main) exterior roof	061	Sunset Hall – Interior Rooms
061	Sunset Hall – First level (L1) exterior roof	NA	Northeast addition roof

1.2.1 Project Site Existing Conditions

Sunset Hall is a three-story concrete student dormitory constructed in 1959 consisting of two main building wings forming a right angle: the south wing generally oriented north-south and the east wing generally oriented east-west. The roof of Sunset Hall consists of three separate areas: 1) third level (main) roof (~13,000 square feet), 2) first level (L1) roof (~4,000 square feet), and 3) first level northeast addition roof (~300 square feet). The main roof consists of four to six inches of foam insulation over a rolled roofing system installed over a concrete deck. There is a single-story building extension at the northwest corner of the building. The first level (L1) roof consists of a rolled roofing system installed over two to four inches of cellulose insulation. Additionally, there is an addition located immediately east of the L1 roof (northeast addition roof) consisting of a single layer of rolled roofing installed over a wooden roof deck. The interior of Sunset Hall generally consists of concrete and/or concrete masonry unit (CMU) walls and ceilings. Interior corridors generally consist of fibrous lay-in acoustical ceiling tiles. Flooring generally consists of carpet installed on concrete subfloor (note: interior floors excluded from the scope of this survey).

This report includes the following information about the specific structure(s) and building features inspected in association with this survey, which shall further define the project site:

1. A plan-view diagram, Figure 1, generally depicting the project site and the approximate location bulk samples collected during the survey is located in Appendix A. The extent and distribution of sample points shown on Figure 1 shall define the survey boundary.
2. Photographs depicting the project site and specific sample points are located in Appendix B.
3. Descriptions of the specific building materials included in the survey are listed in Sections 3 and 4, the asbestos data summary table (Appendix C), and the laboratory analytical reports (Appendix D and Appendix E).

1.3 Project Understanding

The project site is to be impacted during planned renovations associated with The Hill – Sunset Residence Hall Roof Replacement Project to be completed by HSU and their subcontractors. HSU requested that GHD collect samples of suspect Asbestos Containing Material (ACM) and suspect Lead Based Paint (LBP) associated with the various components that may be impacted during project work as defined by HSU.

2. Survey Description

The survey was conducted to support HSU in their compliance with United States Environmental Protection Agency (USEPA) and California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) regulations governing asbestos and lead paint, as applicable to the project and project site. The lead portion of the survey was limited and conducted for the purpose of generally characterizing the project site with respect to the presence of lead-containing paint. A general summary of the regulatory context governing the survey is provided in Section 2.3.

For this survey, the following number of bulk samples were collected from the project site and submitted under chain of custody to EMSL Analytical Inc. (EMSL) for analysis via the referenced methodology:

1. A total of 55 bulk material samples (numbers 12567158-1 through 55) were analyzed for asbestos content via polarized light microscopy (PLM) methodology following USEPA method 600/R-93-116.
    a. Two (2) bulk samples (sample numbers: 12567158-43 and 12567158-47), reported to contain two percent (2%) asbestos via PLM methodology, were subsequently quantified via Point Count 400 (PC400) procedure following USEPA 600/R-93-116 Method to precisely define the asbestos content of the materials.
2. A total of seven (7) bulk paint and surface coating samples (12567158-Pb 1 through Pb 7) were analyzed for lead content via flame atomic absorption spectrometry (AAS) methodology following USEPA method 3050B/7420.

See Figure 1 located in Appendix A for the approximate sample locations. Photographs of the project site generally depicting the homogeneous areas of asbestos material identified during this survey are located in Appendix B. A tabulated summary of all PLM analytical data is provided in Appendix C. The survey laboratory analytical reports and chain of custody documentation describe all of the materials sampled at the project site and are located in Appendix D and Appendix E.

2.1 Survey Scope and Limitations

The survey scope of work associated with this report was limited to the project site areas shown on Figure 1 (Appendix A) and the suspect hazardous materials described herein. The survey included the safely accessible areas of the project site listed in Section 1.2 and shown on Figure 1 (Appendix A). The lead paint portion of this survey does not, nor is it intended to comply with United States Housing and Urban Development sampling guidelines.

Some areas and components associated with the project site were not sampled for the survey, as such areas/materials are not to be impacted by the project scope. Areas not surveyed by GHD (areas not in scope and/or not specifically defined in this report) are excluded from the definition of the project site. The areas and materials excluded from the scope of the survey included the following (areas and/or components not surveyed):

1. Exterior walls (other than the west perimeter wall), interior areas (other than the rooms west of the third floor north-south corridor), parking areas, sidewalks, and other ancillary site features
2. Materials not to be disturbed during the project, located outside the project scope, or associated with modular components that may be moved intact, such as furniture, doors, and equipment
3. Suspect materials located within permit-required confined spaces, or otherwise inaccessible including material located within sealed interstitial spaces, crawlspaces, or buried underground
4. Pressurized and/or energized systems, including: plumbing, wiring, interior of mechanical units and machinery
5. Suspect materials that could not be sampled without significantly damaging the functional integrity of the building element, including materials encased in concrete
6. Exterior areas not specifically defined herein and shown on Figure 1, including: foundations, yards, walkways, porticos, parking areas, soil and/or naturally occurring aggregate
7. Any other areas and/or components not specifically defined herein or listed on the laboratory analytical reports

2.2 Survey and Reporting Assumptions

The content of the report is based on assumptions made by GHD as described in this report and associated contracting documents. This report is an instrument of service of GHD. It is GHD's understanding that the report is to be used by HSU specifically in connection with the project and project site, and this stated purpose was a significant factor in determining the survey scope and level of service provided for in the contracting documents. Should the project or the report purpose change, this report immediately ceases to be valid and use of it by HSU, or any other party without GHD's prior review and written authorization, shall be at the user's sole risk.

GHD has endeavored to conduct the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions as this project. No other representation, express or implied, is included or intended in this document. The scope of service GHD implemented was based, in part, on rules and regulations that GHD understood to be current or expected at the time GHD developed its proposal. Changes in regulations, interpretations, and/or enforcement policies may occur at any time and such changes could affect the extent of remediation required.

The report's findings are based on conditions that existed on the date(s) of GHD's site visit(s) and should not be relied upon to precisely represent conditions at any other time. Conclusions about site conditions under no circumstances comprise a warranty that conditions in all areas within the site are of the same quality as those sampled. Recognize, too, that hazardous materials and/or contamination might exist in forms not indicated by the limited assessment described herein.

Samples of soil or naturally occurring rock were not collected for this survey. Based on California Department of Conservation Division of Mines and Geology data[1], rock and/or soils associated with Naturally Occurring Asbestos (NOA) are known to be present in the project site region. Regulations governing NOA, including those enforced by the California Air Resources Board (CARB), may apply to the project subject to the site-specific occurrence and/or disturbance of NOA. The site-specific existence of NOA must be defined by a Professional Geologist using sampling and analysis methods compliant with the Test Method 435 (CARB 435) methodology per 17 CCR 94147.

2.3 Survey Regulatory Setting

This section provides a regulatory context for the survey and generally summarizes the asbestos regulatory setting applicable to the project site. Further information is provided in Appendix F (Asbestos Regulatory Summary) and Appendix G (Lead Regulatory Summary).

The USEPA enforces asbestos regulations authorized under the Clean Air Act and specify work practices to be followed at facilities to mitigate asbestos air pollution. To mitigate airborne asbestos fiber release, a survey must be conducted at facilities prior to renovation and/or demolition work to identify and sample suspect asbestos materials[2] in compliance with the USEPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations, per Title 40 Code of Federal Regulations (CFR) Section 61, Subparts A and M. Materials reported to contain greater than one percent (1%) asbestos by weight are regulated by the USEPA as either Asbestos Containing Material (ACM) or Regulated Asbestos Containing Material (RACM) based on each material's distinctive physical characteristics, specifically a material's friability. Materials containing less than 1% asbestos as determined using an approved analytical method are not subject to USEPA asbestos regulations.

Asbestos is a known human carcinogen, thus worker exposure to asbestos is regulated by Cal/OSHA. Employee protection protocols per Title 8 California Code of Regulations (CCR) Sections 1529 (8CCR1529) apply to disturbance of material containing asbestos in any detectable concentration. Per Cal/OSHA, material containing greater than 1% asbestos is defined as Asbestos Containing Material (ACM), while Asbestos Containing Construction Material (ACCM) refers to material containing greater than 0.1% asbestos. Cal/OSHA requires that specific types of suspect asbestos materials located in buildings constructed no later than 1980 must be presumed to contain asbestos, unless sampled and proven to be otherwise. Presumed Asbestos Containing Material (PACM) includes thermal system insulation[3] (TSI) and surfacing materials[4]. Work conducted by an employee impacting ACM, ACCM, or PACM is regulated by

[1] State of California Department of Conservation Division of Mines and Geology, *A General Location guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (August 2000), accessed on October 12, 2021 via: https://ww3.arb.ca.gov/toxics/asbestos/ofr_2000-019.pdf

[2] Suspect asbestos material includes, but is not limited to, the following materials: mastics, caulking, base cove, Thermal System Insulation applied to pipes, boilers, or other components to prevent heat loss or gain; Surfacing Materials, including spray or troweled-on surface coatings and acoustic/decorative textures; cementitious products, including cement paneling/piping; roofing products, including associated mastics, felts, or coatings; resilient flooring; gaskets and lagging; drywall; joint compound; plasters; vibration cloths, or expansion joints.

[3] Thermal system insulation (TSI) is defined by 8 CCR 1529 as ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

[4] Surfacing material is defined by 8 CCR 1529 as material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Cal/OSHA according to the specific material(s) to be disturbed and the size of the job. Materials reported to be nondetect via laboratory analysis are not subject to regulation by Cal/OSHA as ACM, ACCM, or PACM.

The USEPA and Cal/OSHA regulate exposure to materials containing lead. Paint, glazing and other coating materials containing lead in a concentration above 90 parts per million (ppm) are defined by the United States Consumer Product Safety Commission (CPSC) as Lead Containing Paint (LCP). Coatings reported to contain lead above 5,000 ppm, or 1.0 milligram per square centimeter (mg/cm^2), are defined as Lead Based Paint (LBP). Work impacting LCP, LBP and/or presumed lead material triggers compliance with applicable regulations, including 8CCR1532.1. Additionally, work at the project site impacting LBP must comply with USEPA and California Department of Public Health (CDPH) lead regulations and the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. Section 6901 et seq.), 40 CFR Part 745, Subpart E; and 17 CCR Division 1, Chapter 8.

2.4 Survey Methodology

The following protocol generally describes the sampling methodology for the survey. Copies of the professional certifications for key GHD personnel, including survey field staff, are included in Appendix H. The following list summarizes the sampling procedures utilized:

1. Suspect asbestos and lead materials were visually identified at the project site.
    a. Suspect ACM was categorized into homogeneous materials/areas. Note: for the purpose of this report, “homogeneous” defines visually similar materials that are uniform in texture, color, and date of installation/application.
2. A sampling scheme was developed based on the location and quantity of surface coatings and identified homogeneous materials/areas.
    a. Representative suspect ACM was identified and selected for sampling in general accordance with NESHAP sampling guidelines.
    b. Suspect lead coatings were sampled based on the magnitude of occurrence and location of the material.
    c. Only the most common surface coatings observed to be generally representative of the project site were sampled and analyzed for this survey.
    d. This lead paint portion of this survey does not, nor is it intended to comply with United States Housing and Urban Development sampling guidelines.
3. Bulk samples were collected using appropriate sampling tools. Samples were placed in leak-tight containers and labeled with a unique numerical identifier (sample number).
4. Decontamination of sampling tools was employed to prevent the spread of secondary contamination to subsequent bulk samples.
5. Friability, defined as the susceptibility of a dry material to be crumbled, pulverized or reduced to a powder using hand pressure, was determined for each sampled suspect ACM.
6. Multiple samples were taken of some homogeneous suspect ACM distributed throughout the project site, in general accordance with regulatory and industry standards.
7. The general location of each bulk sample was noted on a project site plan-view diagram.
8. The sample number, collection location and a description of the physical attributes of each bulk sample were recorded on a chain of custody form.
    a. The custody forms accompanied the sample set(s) to the analyzing laboratory.
9. Bulk samples were submitted under chain of custody via overnight shipment to EMSL Analytical, Inc. laboratories (EMSL), located in San Leandro, California, for analysis of asbestos content via PLM analysis following USEPA method 600/R-93-116 and/or analysis of lead content via Atomic Absorption Spectrometry (AAS) via USEPA Method 3050B/7000B.
    a. Copies of the EMSL accreditations and certifications are located in Appendix I.

3. Findings for Asbestos

Of the bulk suspect ACM samples collected for this survey, 12 of the 55 samples were reported by the laboratory to contain asbestos via PLM analysis. The 12 samples that contain asbestos represent seven (7) discrete asbestos materials. The asbestos materials identified during the survey are described in Table 3.1 (Asbestos Laboratory Data and Quantification Summary) which begins on page 7. Table 3.1 lists the physical description, approximate location, and reported asbestos content for the identified asbestos materials. In addition, the applicable Cal/OSHA asbestos work class, the Cal/OSHA or USEPA asbestos material category, and the anticipated waste designation for each material type are listed in Table 3.1.

Materials that are homogeneous to (i.e., alike and may be represented by) those listed in Table 3.1 shall be presumed to contain asbestos. As applicable, suspect ACM not sampled is classified in Table 3.1 as Presumed Asbestos Containing Material (PACM) in accordance with Cal/OSHA protocols. Materials that do not contain asbestos fibers above the laboratory detection limit are noted on the laboratory analytical reports (Appendix D) as nondetect (ND), or no asbestos detected (NAD). Materials reported to be ND or NAD are not listed in Table 3.1.

Quantity estimates for the asbestos material identified at the project site are provided in Table 3.1. The quantities include the total presumed distribution of the asbestos material, cumulatively estimated for the project site, and do not define any partial quantities potentially disturbed during project work impacting only discrete location(s) or limited amount(s) of material. The actual quantity of asbestos to be impacted in association with the project is undefined, as the amount of asbestos disturbance is dependent on developing project needs, abatement scoping, and contractor means/methods. Quantities shall be confirmed with bidding contractor(s) prior to bid submittal.

A summary table, Table C1.1, listing all PLM data collected by GHD for the survey, including the ND/NAD data, is provided in Appendix C. The laboratory analytical reports associated with the asbestos survey are located in Appendix D.

Table 3.1 Asbestos Laboratory Data and Quantification Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Estimated Quantity	Asbestos Material Category[1]	Cal/OSHA Work Class[2]	Projected Waste Designation[3]
12567158- 2, 4, 5, 9	Roof Mastic (Black) *associated foam coating reported as nondetect*	Main Roof – Throughout roof at penetrations, solar hot water footings, remnant curbs	3-8% CH	3,000 SF	Category I Nonfriable ACM	Class II	Non-hazardous Asbestos Waste
12567158-15	Caulk (Grey)	Main Roof – Conduit sealant at penetrations throughout, sampled at south wing center-west antenna array	4-8% CH	50 SF	Category I Nonfriable ACM	Class II	Non-hazardous Asbestos Waste
12567158-22, 23	Transite Vent Caps (Grey), 19" and 38" diameter	Main Roof – HVAC vent cap at NW corner of roof	16-18% CH and 9-10% Crocidolite	10 SF	Category II Nonfriable ACM	Class II	Non-hazardous Asbestos Waste
12567158-33, 35a, 39	Roofing Mastic (Black)	First Floor (L1) Roof – Throughout at vent penetrations and wall/roof junction	3-8% CH	1,500 SF	Category I Nonfriable ACM	Class II	Non-hazardous Asbestos Waste
12567158-35b	Caulk (White)	L1 Roof – At vent penetrations and wall/roof junction	3% CH	50 SF	Category I Nonfriable ACM	Class II	Non-hazardous Asbestos Waste
12567158-43	Paint (White)	Main Roof – Exterior west wall, sampled base of wall at piping	2% CH via PLM, <0.25% CH via PC400	7,000 SF	ACCM	Unclassified (Recommend Class II)	Non-hazardous Asbestos Waste
12567158-47	Joint Compound (White) *associated Paint (Cream) reported as nondetect*	Third Floor – Interior – Room 3109 north wall at NE corner	2% CH via PLM, <0.25% CH via PC400	100 SF	ACCM	Unclassified (Recommend Class II)	Non-hazardous Asbestos Waste

Table 3.1 Asbestos Laboratory Data and Quantification Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Estimated Quantity	Asbestos Material Category[1]	Cal/OSHA Work Class[2]	Projected Waste Designation[3]

Acronyms:

- ACM = Asbestos Containing Material (>1% asbestos)
- ACCM = Asbestos Containing Construction Material (>0.1% asbestos)
- Cal/OSHA = California Department of Industrial Relations, Division of Occupational Safety and Health
- CH = Chrysotile (serpentine form of asbestos)
- ND = Nondetect, or No Asbestos Detected
- PC400 = Point Count 400 analysis method
- PACM = Presumed Asbestos Containing Material
- RACM = Regulated Asbestos Containing Material
- RCRA = Resource Conservation and Recovery Act
- SF = Square Feet
- USEPA = United States Environmental Protection Agency
- < = Symbol meaning “less than”
- > = Symbol meaning “greater than”

Annotations:

- [1] = USEPA regulates material containing >1% asbestos, classified into two broad categories: friable (RACM and Category I and II that may become friable) and nonfriable (Category I and II ACM).
- [2] = Cal/OSHA regulates material containing ANY quantity of asbestos. Cal/OSHA regulates material containing >0.1% asbestos as ACCM and >1% asbestos as ACM. Cal/OSHA differentiates asbestos removal operations into five classes (Class I to IV, plus unclassified work). Class I through IV operations include tasks impacting material containing >1% asbestos (ACM). Unclassified work includes tasks impacting material containing <1% asbestos. Work impacting asbestos in any quantity is subject to Cal/OSHA requirements.
  - It is recommended that unclassified work be conducted per Class II work protocols.
  - It is recommended that interior work, regardless of work classification, be conducted within sealed negative pressure containments.
- [3] = RACM is a California hazardous waste (non-RCRA hazardous waste). USEPA Category I and II nonfriable ACM that remains nonfriable during removal is characterized as non-hazardous asbestos-containing waste. The non-hazardous waste designation presumes that nonfriable material will not become friable due to contractor removal practices. If nonfriable ACM is rendered friable (e.g., via the use of mechanical removal means, fire damage, etc.), then such material shall be reclassified as RACM and disposed of as a California hazardous waste.

Notes:

- Work impacting material homogeneous (alike) to that noted in this table shall be understood to impact asbestos, regardless of location.
- See Appendix F for further information on the asbestos regulatory environment, including USEPA material categories and Cal/OSHA work classes.

4. Findings for Lead

Of the seven (7) suspect lead containing surface coatings collected for this survey, four (4) samples were reported to contain lead above the laboratory detection limit or were reported to have a detection limit above the Lead Containing Paint (LCP) threshold (90 ppm or 0.009 % by weight). The samples analyzed via AAS for lead are described in Table 4.1 Lead Laboratory Data beginning on page 10. Table 4.1 provides the physical description, the approximate location, material substrate, reported lead content (if any), and regulatory definition (as applicable) for each of the sampled coatings.

Based on the survey data, two (2) of the analyzed surface coatings contain lead in excess of the Lead Based Paint (LBP) regulatory definition (≥5,000 ppm, 1.0 mg/cm^2, or 0.5% by weight). Of the remaining lead containing materials identified by the survey, two (2) samples exceed the LCP regulatory limit. As applicable, any samples having a detection limit above the LCP limit are presumed herein to be LCP.

For the purpose of the project, unsampled paint shall be presumed to contain lead, unless appropriately sampled, analyzed, and determined not to contain lead. The lead regulations governing the project, including specific work practices and administrative requirements, are summarized in Table 4.1.

Table 4.1 Lead Laboratory Data

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number	Sample Description	Substrate	Color	Sample Location	Lead Content	Triggers Cal/OSHA Compliance (1532.1)	Lead Classification
12567158-Pb 1	Paint	Concrete	Cream	Exterior - West wall at piping	0.14 % wt	1532.1 Applies	LCP
12567158-Pb 2	Paint	Concrete	Off-white	Interior - Room 3129/3130 west wall at SW corner	<0.0080 % wt	NA	ND
12567158-Pb 3	Paint	Metal	Grey	Exterior - Main roof south HVAC exhaust hood at SW	<0.0080 % wt	NA	ND
12567158-Pb 4	Paint	Concrete	Off-white	Interior - Room 3109 north wall at NE corner	0.67 % wt	1532.1 Applies	LBP
12567158-Pb 5	Paint	Concrete	Cream	Exterior - North lower roof wall at center south at window	0.037 % wt	1532.1 Applies	LCP
12567158-Pb 6	Paint	Metal	Black	Exterior - Main roof angle iron at metal solar HW support at NW corner	<0.0080 % wt	NA	ND
12567158-Pb 7	Flashing	Metal	Silver	Exterior - Main roof lead vent at flashing center-NW at HVAC exhaust	1.2 % wt	1532.1 Applies	LBP

Table 4.1 Lead Laboratory Data

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number	Sample Description	Substrate	Color	Sample Location	Lead Content	Triggers Cal/OSHA Compliance (1532.1)	Lead Classification

Acronyms:

- Cal/OSHA = California Department of Industrial Relations, Division of Occupational Safety and Health
- CDPH = California Department of Public Health
- LBP = Lead Based Paint = Paint containing lead in a concentration of greater than or equal to 5,000 ppm, 1.0 mg/cm^2, or 0.5 percent by weight
- LCP = Lead Containing Paint = Paint containing lead in a concentration of greater than 90 ppm, or 0.009% by weight
- mg/cm^2 = milligrams per square centimeter (laboratory units of measurement reporting weight of lead per area)
- NA = Not applicable
- ND = Nondetect or none detected (no lead identified above the laboratory detection limit)
- ppm = Parts per million (laboratory units of measurement reporting lead concentration)
- USEPA = United States Environmental Protection Agency
- wt% = Percent by weight (laboratory units of measurement reporting lead concentration)

Notes:

- Notation “1532.1 Applies” signifies that the amount of lead in the sample triggers compliance with applicable regulations, including 8CCR1532.1.
- Notation “Not LBP or LCP” signifies that lead was reported in a concentration below 90 ppm, or 0.009 percent by weight
- Parts per million (ppm) is equivalent to milligrams per kilogram (mg/kg), one (1) ppm is equivalent to 0.0001% by weight)
- See Appendix G for further information on the lead regulatory environment.

5. Regulatory Jurisdiction and Notification

The survey was conducted by GHD to assist HSU in their compliance with the USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos requirements in association with the project. The USEPA local authority with responsibility for implementing the NESHAP regulations throughout the project site region is the North Coast Unified Air Quality Management District (NCUAQMD). Contact information for the NCUAQMD is provided below:

North Coast Unified Air Quality Management District
707 L Street
Eureka, CA 95501
Phone: (707) 443-3093
Website: http://www.ncuaqmd.org

Work meeting the NESHAP definition of a demolition and/or work impacting RACM in quantities above specific size thresholds necessitates the submittal of a Renovation/Demolition Notification form and associated fee to the NCUAQMD (address above). NCUAQMD requires a notification for the disturbance of any amount of suspect ACM, however, the RACM quantity thresholds necessitating notification and associated fee to NCUAQMD are greater than, or equal to the following:

1. 160 square feet, 260 linear feet (for pipe insulation), or 35 cubic feet (for debris or waste)

The NESHAP regulations stipulate that the project owner shall notify the NCUAQMD at least 10 business days prior to the commencement of a renovation or demolition project or work that impacts RACM in excess of the above-noted quantities. A NESHAP notification is required by the NCUAQMD if a project includes one or more of the following:

1. The impaction of RACM in excess of the NCUAQMD notification thresholds
2. Work that meets the NESHAP definition of a “demolition,” which is defined as the unweighting or removal of any structural members
    a. Note: a NESHAP notification is required for all demolition projects and is not dependent on the presence or absence of asbestos (ACM or RACM)

In addition to the NESHAP regulations enforced by the NCUAQMD, work at the project site shall be conducted in accordance with applicable employee protection regulations enforced by Cal/OSHA, including 8CCR1529, 5203 341.6-341.26 and the California Health and Safety Code.

As required by 8CCR1529(r) and 5203, written notification must be made to the nearest Cal/OSHA District Enforcement Office with jurisdiction over the project site for Asbestos-Related Work. Cal/OSHA notification shall be made at least 24 hours prior to the start of hazardous material-related work and is required if the planned project scope includes the one or both of the following elements:

1. The impaction of ACM, ACCM and/or LBP in excess of 100 square feet

The following table, Table 5.1 Pre-Work Regulatory Notifications, summarizes the Cal/OSHA and NESHAP notifications anticipated in association with the project.

Table 5.1 Pre-Work Regulatory Notifications

Agency	Notification Type	Anticipated Notification Requirement		Submittal Timeline
NCUAQMD	NESHAP Notification	Notification:	☐ Required	>10 Business Days Prior to Work Start
			☒ Not anticipated [1]	
Cal/OSHA	Temporary Worksite Notification	Notification:	☒ Required [2]	≥24 Hours Prior to Work Start
			☐ Not anticipated	

Notes:

- Cal/OSHA = California Department of Industrial Relations, Division of Occupational Safety and Health
- NESHAP = National Emissions Standards for Hazardous Air Pollutants
- NCUAQMD = USEPA-delegated authority with jurisdiction over the project site
- USEPA = United States Environmental Protection Agency
- [1] = Assumption: Removal/unweighting of structural members (demolition work) and/or disturbance of RACM in excess of NCUAQMD notification thresholds is not expected to occur during this project
- [2] = Assumption: asbestos and/or lead work in excess of 100 square feet is expected to occur
- ≥ = Signifying “greater than, or equal to”

Further discussion of USEPA and Cal/OSHA regulations is provided in Appendix F and Appendix G.

6. Conclusion

The findings in this report are based on information obtained from the specific sample points noted on Figure 1 (Appendix A) and described by the laboratory analytical reports. Site conditions at other parts of the project site may be different from the conditions found at the specific sample points. This report should not be used to evaluate the potential disturbance of suspect hazardous materials in association with area(s), site feature(s), and/or projects beyond the scope of the survey.

GHD recommends that necessary asbestos material removal, if any, be conducted by a licensed abatement contractor prior to the commencement of other project work at the project site that may impact the hazardous materials described herein. While removal of all lead surface coatings is not required prior to work, impaction of material containing lead shall be conducted by appropriately licensed and trained personnel, as outlined herein.

As applicable to the project scope of work, agency notifications, as summarized in Table 5.1 in Section 5, notifications must be submitted by the contractor or HSU prior to the commencement of work at the project site. It is recommended that this report be provided to contractors and/or personnel who conduct work at the project site. It is recommended that HSU maintain copies of this report for as long as the known hazardous materials remain at the project site, plus an additional period of 30 years.

6.1 Key Personnel

The survey was completed at the project site by Scott Harris, a GHD Certified Asbestos Consultant (#11-4713). This report was produced for HSU by GHD and was authored by Alex Crowe, a GHD Certified Site Surveillance Technician (#10-6761). This report was reviewed by Mr. Harris and Misha Schwarz, a GHD Senior Scientist. Copies of the certifications for key GHD staff performing survey and reporting work are included in Appendix H.

6.2 Conclusions and Recommendations for Asbestos

As discussed in Section 3 and listed in Table 3.1, 12 bulk samples collected for this survey were reported to contain asbestos. The 12 samples reported to contain asbestos via PLM represent seven (7) discrete materials. A tabulated summary of all bulk samples analyzed via PLM for this project, including asbestos containing and nondetect samples, is provided in Appendix C.

The findings in this report are based on information obtained from information provided by HSU and data associated with the specific sample points noted on Figure 1 (Appendix A) and described by the laboratory analytical reports (Appendix D). This report should not be used to evaluate the potential disturbance of suspect hazardous materials in association with area(s), site feature(s), and/or projects beyond the scope of the survey.

If additional suspect ACM is discovered at the project site, beyond those materials listed in Table 3.1 and Table C1.1 (Appendix C), then such suspect material shall be presumed to contain greater than 1% asbestos, unless appropriately sampled, analyzed, and determined not to contain asbestos. If supplemental suspect asbestos material is exposed during site work, then work in that area shall stop, the material wetted, and access to the area restricted until an appropriate asbestos characterization can be made. In general, demolition or renovation work must not commence until all asbestos materials within a given area to be impacted by the project scope have been removed by a licensed abatement contractor, a post-abatement inspection conducted, post-abatement samples collected, and associated data meeting the established clearance criteria have been received.

6.3 Conclusions and Recommendations for Lead

As described in Section 4 and listed in Table 4.1, four (4) of the seven (7) sampled surface coatings were reported to contain lead. Project work is understood to meet the Cal/OSHA definition of construction work (8CCR1532.1 [a]) and includes impaction of known and presumed lead material, thus project demolition and construction work is subject to 8CCR1532.1. Suspect lead material (e.g., paint, glazing, varnishes, flashing, metal vents and piping, etc.) not identified in this report should be presumed to contain lead, unless appropriately sampled, analyzed and determined not to contain lead. Material reported or presumed to contain lead is subject to governmental regulations, including those summarized in Appendix G.

The specific regulatory requirements governing lead work are dependent on the amount of lead reported in a given material. Lead content in paint above 0.009% by weight, or 90 parts per million (ppm), meets the CPSC definition of LCP. Paint reported to contain lead above 0.5% by weight, 5,000 ppm, or 1.0 milligram per square centimeter (mg/cm^2), meets the CDPH and Cal/OSHA definition of LBP. Work impacting known or presumed lead material, including those noted in Table 4.1, triggers compliance with applicable Cal/OSHA regulations, including 8CCR1532.1. It is recommended that loose, peeling and/or flaking surface coatings be stabilized prior to commencing other project construction work that may impact damaged LCP or LBP.

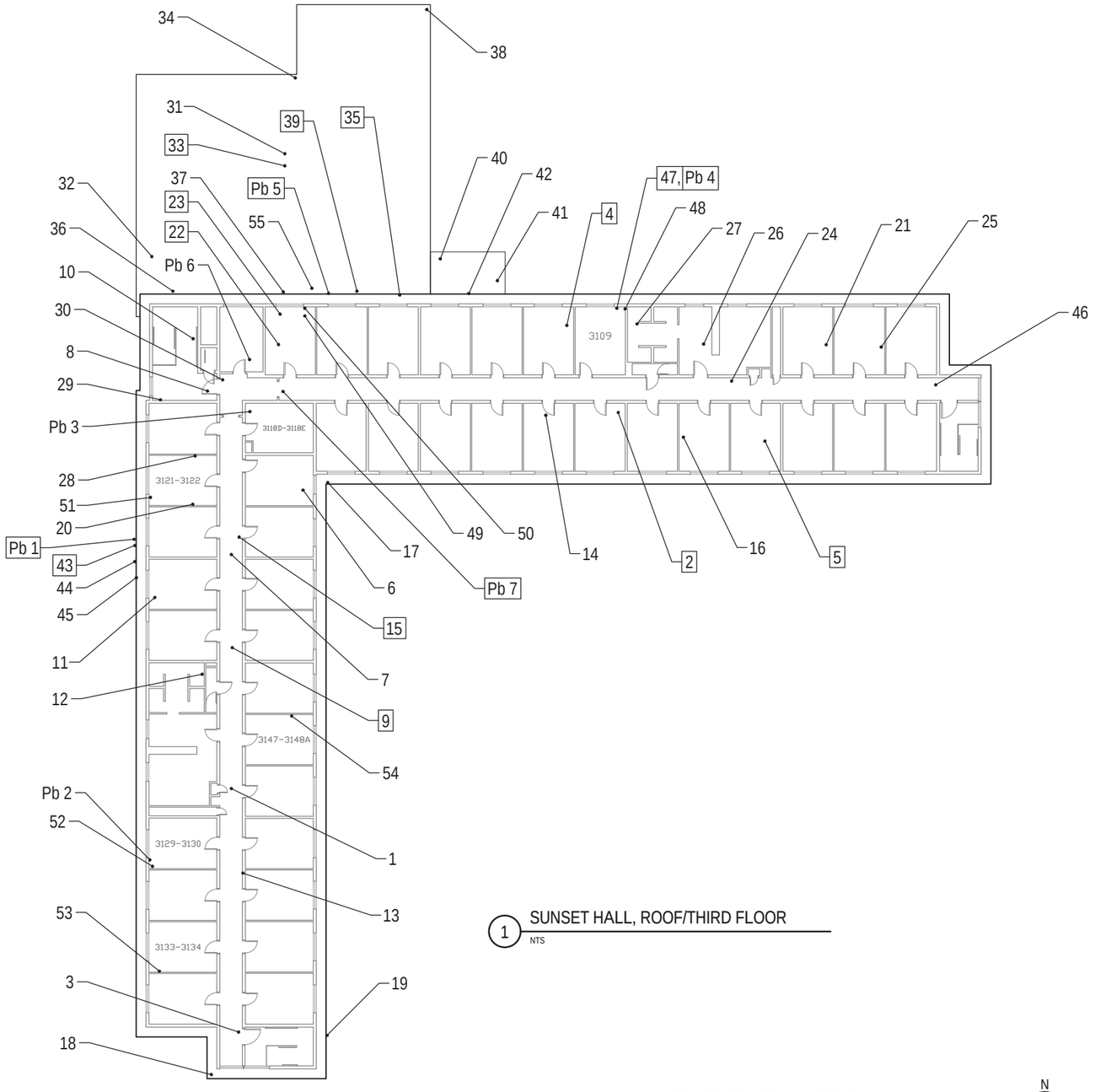
Title 17, Division 1, Chapter 8, § 35001–36100 enforced by CDPH requires that contractors working on structures built before January 1, 1978 and/or structures known to contain lead paint use lead-safe work practices, including containment and post-work cleaning. Training is required by Cal/OSHA and CDPH for employees impacting lead, including CDPH certification for individuals expected to be exposed above the lead Permissible Exposure Limit (PEL) in a public building. In addition to Cal/OSHA and CDPH protocols, work at the project site impacting known or presumed lead material is governed by applicable USEPA regulations, including: 40 CFR Part 745, Subpart E.

Appendices

Appendix A

Figures

Figure(s) Depicting Survey Sample Locations at the Project Site



1 SUNSET HALL, ROOF/THIRD FLOOR
NTS

HUMBOLDT STATE UNIVERSITY
1 HARPST STREET, ARCATA, CALIFORNIA
NTS

N
PROJECT NORTH

SHEET GENERAL NOTES

1. DRAWING IS NOT TO SCALE.
2. ALL LOCATIONS ARE APPROXIMATE.
3. THIS SHEET TRANSMITS GHD SAMPLE LOCATIONS ONLY. NOT TO BE USED FOR CONSTRUCTION WORK.

LEGEND

- # — LOCATION OF BULK SAMPLE COLLECTED FOR ASBESTOS (PLM) ANALYSIS
- # — SAMPLE REPORTED TO CONTAIN ASBESTOS
- Pb # — LOCATION OF BULK SAMPLE COLLECTED FOR LEAD (AAS) ANALYSIS
- Pb # — SAMPLE REPORTED TO CONTAIN LEAD

FIGURE 1

No.	Issue	Checked	Approved	Date

GHD Inc.
718 Third Street
Eureka California 95501 USA
T 1 707 443 8326 W www.ghd.com
www.ghd.com

Client HUMBOLDT STATE UNIVERSITY
Project HSU SUNSET ROOF PROJECT

PROJECT SITE SAMPLE LOCATION MAP

Project No.	Date	Scale
12567158.01	2021-11-23	NTS

Size ANSI D
Sheet No.

Plot Date: 22 November 2021 - 4:48 PM
Plotted By: Alex Crowe
Path and Filename: C:\Users\acrowe\Documents_Alex's Files_Projects_(NEW) HazMat Stuffs\HSU - 2020 & 21 Work\Sunset Hall - Roof +\acACAD\Figures\12567158 - SLM - HSU Sunset.dwg

Appendix B

Photographs

Photographs Generally Depicting the Project Site and Select Sample Locations

Site Photographs

The photographs presented in the following section generally depict the project site, including some of the materials sampled for the survey.

Photo 1 ***Main Roof – North and East wing roofs with solar hot water panels***

Photo 2 ***Main roof – Roofing mastic at penetrations (typical indicated by arrow), vents, and equipment footers reported to contain asbestos***

Photo 3 ***Main roof – Penetration caulk (white/grey) at penetrations (typical indicated by arrow) reported to contain asbestos***

Photo 4 ***Main Roof –Roof mastic (black), indicated by arrow, reported to contain asbestos (foam coating [grey/cream] is nondetect for asbestos)***

Photo 5 *Main roof – Roofing mastic (not shown, location typical) at remanent footers reported to contain asbestos*

Photo 6 *Main roof – Roofing mastic at former footers (typical indicated by arrow) reported to contain asbestos*

Photo 7 *Main roof – HVAC vents at NE corner – Vent caps (indicated by arrows) reported to contain asbestos*

Photo 8 *Northeast Addition Roof (NE Roof) – Rolled roofing system reported to be nondetect for asbestos*

Photo 9 *Lower Roof (L1) – Roof mastic (black) associated building exterior wall and roof penetrations (typical location indicated by arrows) reported to contain asbestos*

Photo 10 *Lower Roof (L1) – Roof mastic (black) (typical) associated with building exterior walls reported to contain asbestos*

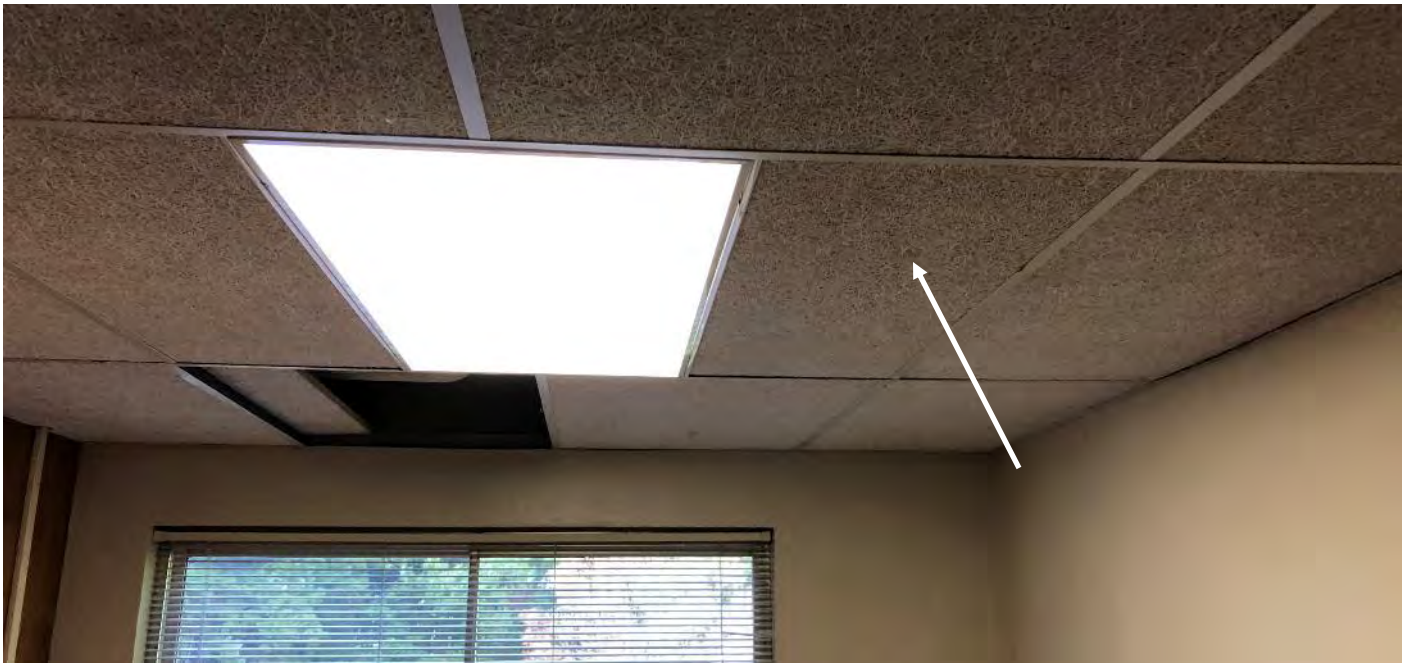


Photo 11 ***Sunset Hall – Third Floor – Interior – Acoustical ceiling tiles reported to be nondetect for asbestos***

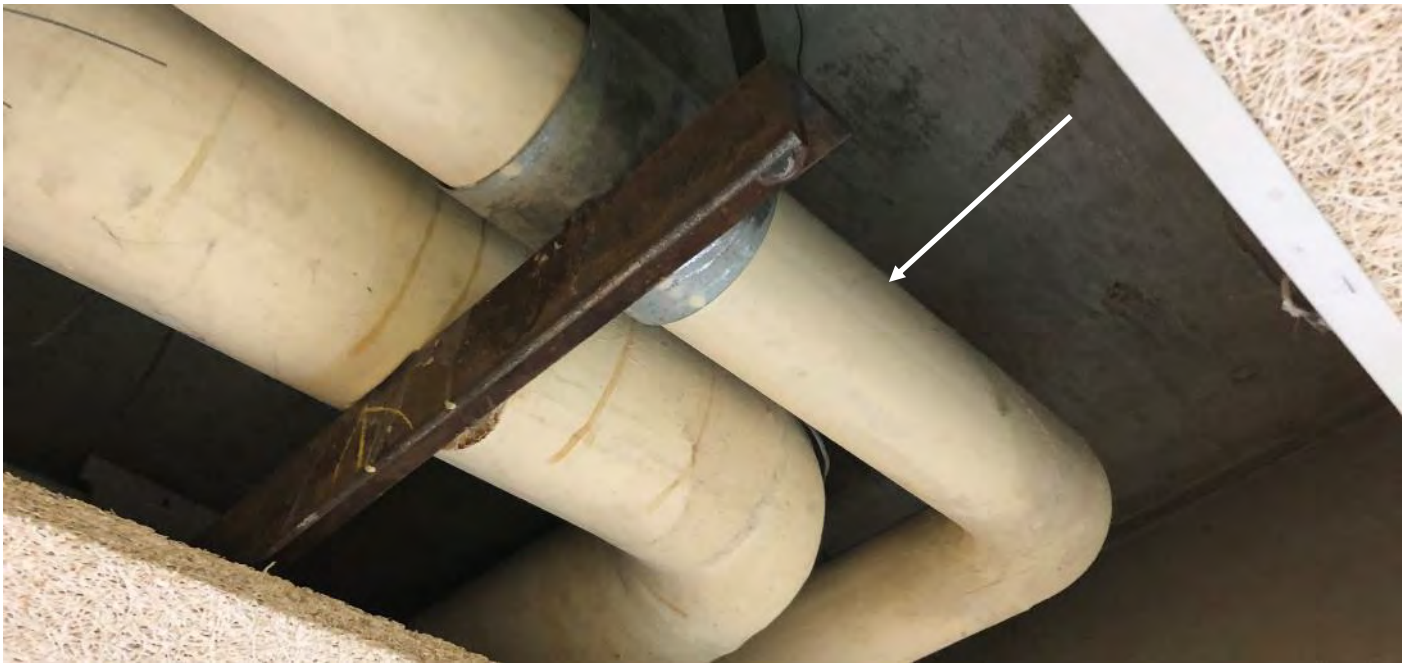


Photo 12 ***Sunset Hall – Third Floor – Interior – Thermal System Insulation (TSI) located above drop ceiling not in survey scope, but TSI is presumed to contain asbestos***

Appendix C

Asbestos Data Summary Table

Table Summarizing All Asbestos Laboratory Analytical Data

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-1	Foam (Cream) + Composite Rolled Roofing (Black)	Main Roof - Roof plane south wing at center	ND	NA	NA	Not Asbestos Waste
12567158-2	Foam (Cream) + **Roof Mastic (Black)**	**Main Roof - East end at remnant support footer**	**8% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-3	Foam (Cream) + Composite Rolled Roofing (Black)	Main Roof - Roof plane south end at center	ND	NA	NA	Not Asbestos Waste
12567158-4	Foam (Cream) + **Roof Mastic (Black)**	**Main Roof - East wing at solar hot water footer at center-west**	**3% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-5	**Foam (Cream) + Roof Mastic (Black)**	**Main Roof - East wing at remnant footer at center-east**	**4% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-6	Foam (Cream) + Coating (Granular, Grey)	Main Roof - Inside corner of roof wings	ND	NA	NA	Not Asbestos Waste
12567158-7	Foam (Cream) + Coating (Granular, Grey) + Roof Mastic (Black)	Main Roof - South wing at electrical penetration at center-west	ND	NA	NA	Not Asbestos Waste
12567158-8	Foam (Cream) + Coating (Granular, Grey) + Roof Mastic (Black)	Main Roof - Center-NW at HVAC exhaust vent	ND	NA	NA	Not Asbestos Waste
12567158-9	**Foam (Cream) + Coating (Granular, Grey) + Roof Mastic (Black)**	**Main Roof - North center at guide wire anchor penetration**	**3% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-10	Foam (Cream)* + Composite Rolled Roofing (Black)	Main Roof - Main plane at NW corner	ND	NA	NA	Not Asbestos Waste
12567158-11	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at center south wing west edge	ND	NA	NA	Not Asbestos Waste

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-12	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at south wing NW center	ND	NA	NA	Not Asbestos Waste
12567158-13	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at south wing remnant footer at SE	ND	NA	NA	Not Asbestos Waste
12567158-14	Roof Mastic (Patch) (Black) + Caulk (Off-white)	Main Roof - Patch at east wing center-SW	ND	NA	NA	Not Asbestos Waste
12567158-15	**Caulk (Grey)**	**Main Roof - Conduit sealant at south wing center-west antenna array**	**8% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-16	Caulk (Grey)	Main Roof - Patch at east wing center-south	ND	NA	NA	Not Asbestos Waste
12567158-17	Flashing Caulk (Grey)	Main Roof - Inside corner of roof wings at flashing	ND	NA	NA	Not Asbestos Waste
12567158-18	Flashing Caulk (Grey)	Main Roof - South wing at flashing south-center	ND	NA	NA	Not Asbestos Waste
12567158-19	Penetration Caulk (Grey)	Main Roof - South end at flashing penetration	ND	NA	NA	Not Asbestos Waste
12567158-20	Seam Caulk (Grey)	Main Roof - Center-NW at west pipe runs on TSI cladding seams	ND	NA	NA	Not Asbestos Waste
12567158-21	Pipe Thread Compound (Blue/White)	Main Roof - East end at 2" OD horizontal E/W line pipe	ND	NA	NA	Not Asbestos Waste
12567158-22	**Transite Vent Cap (Grey)**	**Main Roof - 19" diameter HVAC vent cap at NW corner**	**18% CH 10% Crocidolite**	**Category II Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-23	**Transite Vent Cap (Grey)**	**Main Roof - 38" diameter HVAC vent cap at NW corner**	**16% CH 9% Crocidolite**	**Category II Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-24	TSI Batt (Yellow/White)	Main Roof - East-center inside solar hot water unit	ND	NA	NA	Not Asbestos Waste
12567158-25	TSI Run (Yellow) + Sealant Compound (Tan)	Main Roof - East end 5" OD horizontal run at junction	ND	NA	NA	Not Asbestos Waste
12567158-26	TSI Elbow (Yellow)	Main Roof - East-center elbow of solar hot water 3" OD vertical run with plastic cladding	ND	NA	NA	Not Asbestos Waste
12567158-27	TSI Run (Yellow) + Jacket (White)	Main Roof - East-center solar hot water 4" OD horizontal run at hanger	ND	NA	NA	Not Asbestos Waste
12567158-28	TSI Run (Yellow) + Jacket (Silver)	Main Roof - Center-NW elbow of west horizontal 5" OD run with metal cladding	ND	NA	NA	Not Asbestos Waste
12567158-29	TSI Batt (Yellow) + Jacket (Silver)	Main Roof - 4" OD horizontal run at NW corner solar hot water	ND	NA	NA	Not Asbestos Waste
12567158-30	TSI Batt (Yellow) + Jacket (Silver)	Main Roof - 5" OD horizontal run with metal cladding at NW corner hot water piping	ND	NA	NA	Not Asbestos Waste
12567158-31	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	North Level 1 (L1) Roof - Roof plane at roof center	ND	NA	NA	Not Asbestos Waste
12567158-32	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	L1 Roof - Roof plane at center-SW	ND	NA	NA	Not Asbestos Waste
12567158-33	**Penetration Mastic (Black)**	**L1 Roof - Vent penetration at center**	**4% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-34	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	L1 Roof - Roof at north flashing at center-west	ND	NA	NA	Not Asbestos Waste
12567158-35a	**Mastic (Black)** Associated Concrete + Surface Coat (Tan) was nondetect	**L1 Roof - South wall at SE window**	**3% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-35b	**Caulk (White)** Associated Concrete + Surface Coat (Tan) was nondetect	**L1 Roof - South wall at SE window**	**3% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-36	Roof Mastic (Black)	L1 Roof - SW corner on south wall at wall/roof junction	ND	NA	NA	Not Asbestos Waste
12567158-37	Roof Mastic (Black)	L1 Roof - South wall center window at wall/roof junction	ND	NA	NA	Not Asbestos Waste
12567158-38	Tar (Black)	L1 Roof - NE corner at flashing	ND	NA	NA	Not Asbestos Waste
12567158-39	**Roof Mastic (Black)**	**L1 Roof - SE corner at wall/roof junction**	**8% CH**	**Category I Nonfriable ACM**	**Class II**	**Non-hazardous Asbestos Waste**
12567158-40	Rolled Roof (Black/Grey)	NE Addition Roof - Roof plane at NW corner	ND	NA	NA	Not Asbestos Waste
12567158-41	Rolled Roof (Black/Grey)	NE Addition Roof - Roof plane at SE corner	ND	NA	NA	Not Asbestos Waste
12567158-42	Flashing Caulk (White)	NE Addition Roof - Center-south at wall flashing	ND	NA	NA	Not Asbestos Waste

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-43	**Paint (White)**	**Main Roof - Exterior west wall paint on concrete at piping**	**2% CH via PLM, <0.25% CH via PC400**	**ACCM**	**Class II Recommended**	**Non-hazardous Asbestos Waste**
12567158-44	Concrete (Grey)	Main Roof - Exterior west wall lower wall at exterior piping	ND	NA	NA	Not Asbestos Waste
12567158-45	TSI Run (Yellow) + Jacket (White)	Main Roof - Exterior west wall vent at 4" OD run with metal cladding	ND	NA	NA	Not Asbestos Waste
12567158-46	2'x4' ACT (Tan/White)	Interior - Third Floor - East corridor ceiling at east wall	ND	NA	NA	Not Asbestos Waste
12567158-47	**Joint Compound (White)** associated Paint (Cream) was nondetect	**Interior - Third Floor - Room 3109 north wall pat at NE corner**	**2% CH via PLM, <0.25% CH via PC400**	**ACCM**	**Class II Recommended**	**Non-hazardous Asbestos Waste**
12567158-48	Expansion Joint (White)	Interior - Third Floor - Room 3109 wall at NE corner	ND	NA	NA	Not Asbestos Waste
12567158-49	2'x4' ACT (Tan/White)	Interior - Third Floor - Corridor outside room 3118 ceiling at center-north	ND	NA	NA	Not Asbestos Waste
12567158-50	Concrete (Grey)	Interior - Third Floor - Corridor outside room 3118 ceiling at center-north above drop ceiling	ND	NA	NA	Not Asbestos Waste
12567158-51	CMU (Red) + Mortar (Grey)	Interior - Third Floor - Room 3121/3122 south wall at SW corner	ND	NA	NA	Not Asbestos Waste
12567158-52	CMU (Red) + Mortar (Grey)	Interior - Third Floor - Room 3129/3130 south wall at SW corner	ND	NA	NA	Not Asbestos Waste
12567158-53	Concrete (Grey)	Interior - Third Floor - Room 3133/3134 west wall	ND	NA	NA	Not Asbestos Waste

Table C1.1 PLM Laboratory Data Summary

The Hill – Sunset Residence Hall Roof Replacement Project

Sample Number(s)	Material Description	Material Location	Asbestos %/Type	Asbestos Material Category[2]	Cal/OSHA Work Class[3]	Projected Waste Designation[4]
12567158-54	CMU (Red) + Mortar (Grey)	Interior - Third Floor - Room 3147/3148 north wall at NE corner	ND	NA	NA	Not Asbestos Waste
12567158-55	Surface Coat (Tan)	L1 Roof - South wall center at window	ND	NA	NA	Not Asbestos Waste

Acronyms:

- ACM = Asbestos Containing Material (>1% asbestos)
- ACCM = Asbestos Containing Construction Material (>0.1% asbestos)
- ACT = Acoustic Ceiling Tile
- Cal/OSHA = California Department of Industrial Relations, Division of Occupational Safety and Health
- LF = Linear feet
- NA = Not applicable
- ND = Nondetect, or No Asbestos Detected
- RACM = Regulated Asbestos Containing Material
- RCRA = Resource Conservation and Recovery Act
- SF = Square feet
- TSI = Thermal System Insulation
- USEPA = United States Environmental Protection Agency
- < = Symbol meaning “less than”
- > = Symbol meaning “greater than”

Annotations:

- [1] = Any quantities listed above are estimates of the total (cumulative) amount of each homogeneous asbestos material observed at the project site. The above quantities are estimates only. The actual amount of material to be removed should be verified by the contractor prior to bid.
- [2] = Cal/OSHA regulates material containing ANY quantity of asbestos. Cal/OSHA regulates material containing >0.1% asbestos as ACCM and >1% asbestos as ACM. USEPA regulates material containing >1% asbestos, differentiated into two broad ACM categories: friable (RACM) and nonfriable (Category I and II ACM).
- [3] = Cal/OSHA differentiates asbestos removal operations into five classes (Class I to IV, plus unclassified work). Class I through IV operations include tasks impacting material containing >1% asbestos (ACM). Unclassified work includes tasks impacting material containing <1% asbestos. Work impacting asbestos in any quantity is subject to Cal/OSHA requirements.
  - It is recommended that unclassified work be conducted per Class II work protocols.
  - It is recommended that interior work, regardless of work classification, be conducted within sealed negative pressure containments.
- [4] = RACM is a California hazardous waste (non-RCRA hazardous waste). USEPA Category I and II nonfriable ACM that remains nonfriable during removal is characterized as non-hazardous asbestos-containing waste. The non-hazardous waste designation presumes that nonfriable material will not become friable due to contractor removal practices. If nonfriable ACM is rendered friable (e.g., via the use of mechanical removal means, fire damage, etc.), then such material shall be reclassified as RACM and disposed of as a California hazardous waste.
- **Bold** text indicates a sample reported to contain asbestos.

Notes:

- See Appendix F for further information on the asbestos regulatory environment, including USEPA material categories and Cal/OSHA work classes.

Appendix D

Asbestos Analytical Data

PLM Laboratory Analytical Reports and Associated Chain of Custody Documentation

EMSL Analytical, Inc
464 McCormick Street, San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com sanleandrolab@emsl.com

EMSL Order:	092118146
CustomerID:	WKC50
CustomerPO:	38005320
ProjectID:	PO 38005320

Attn: **Scott Harris**
GHD
718 Third Street

Eureka, CA 95501

Phone:	(707) 443-8326
Fax:	(707) 444-8330
Received:	11/16/2021 09:00 AM
Analysis Date:	12/3/2021
Collected:	11/12/2021

Project: **12567158.01 - HSU SUNSET HALL ROOF - ARCATA, CALIFORNIA - 38005320**

Test Report: Polarized Light Microscopy (PLM) - Point Count Performed by EPA 600/R-93/116 Method with Gravimetric Reduction and 400 Point Count

SAMPLE ID	DESCRIPTION	APPEARANCE	(%) Matrix Organic	(%) Matrix Acid	NON- ASBESTOS % Fibrous	NON- ASBESTOS % NON-FIBROUS	ASBESTOS % TYPES
12567158-43 *092118146-0043*	PAINT (WHITE) - MAIN ROOF - EXTERIOR WEST WALL PAINT ON CONCRETE AT PIPING	Gray/White Fibrous Homogeneous	41.5	23.6		34.9 Non-fibrous (other)	<0.25 Chrysotile

Analyst(s)
Jose Madrid (1)

Cecilia Yu, Laboratory Manager
or other approved signatory

Initial report from 12/03/2021 12:25:21

THIS IS THE LAST PAGE OF THE REPORT.

EMSL Analytical, Inc.
464 McCormick Street San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order: 092118146
Customer ID: WKC50
Customer PO: 38005320
Project ID: PO 38005320

Attention: Scott Harris
GHD
718 Third Street
Eureka, CA 95501

Phone: (707) 599-6974
Fax: (707) 444-8330
Received: 11/16/2021 9:00 AM
Analysis Date: 12/03/2021
Collected: 11/12/2021

Project: 12567158.01 - HSU SUNSET HALL ROOF - ARCATA, CALIFORNIA - 38005320 (PO 38005320)

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-47-Compound *092118146-0047A*	PAINT (CREAM) - INTERIOR - 3RD FLOOR - ROOM 3109 NORTH WALL PAT AT NE CORNER	Tan Non-Fibrous Homogeneous		100.0% Non-fibrous (Other)	**<0.25% Chrysotile**

Analyst(s)

Jose Madrid (1)

Cecilia Yu, Laboratory Manager
or other approved signatory

Initial report from: 12/03/2021 12:25:21

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EMSL Order: 092118146
Customer ID: WKC50
Customer PO: 38005320
Project ID: PO 38005320

Attention: Scott Harris
GHD
718 Third Street
Eureka, CA 95501

Phone: (707) 599-6974
Fax: (707) 444-8330
Received Date: 11/16/2021 9:00 AM
Analysis Date: 11/18/2021 - 11/19/2021
Collected Date: 11/12/2021

Project: 12567158.01 - HSU SUNSET HALL ROOF - ARCATA, CALIFORNIA - 38005320 (PO 38005320)

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-1-Foam *092118146-0001*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH WING AT CENTER	Yellow/Beige Non-Fibrous Homogeneous		95% Matrix 5% Non-fibrous (Other)	None Detected
12567158-1-Rolled Roofing *092118146-0001A*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH WING AT CENTER	Black Fibrous Homogeneous	15% Cellulose	60% Matrix 25% Non-fibrous (Other)	None Detected
12567158-1-Insulation *092118146-0001B*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH WING AT CENTER	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
12567158-2 *092118146-0002*	FOAM (CREAM) & ROOF MASTIC (BLACK) - MAIN ROOF - EAST END AT THE REMNANT SUPPORT FOOTER	Black Fibrous Homogeneous		70% Matrix 22% Non-fibrous (Other)	8% Chrysotile
12567158-3-Foam *092118146-0003*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH END AT CENTER	Yellow Non-Fibrous Homogeneous		95% Matrix 5% Non-fibrous (Other)	None Detected
12567158-3-Rolled Roofing *092118146-0003A*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH END AT CENTER	Black Fibrous Homogeneous	10% Cellulose	70% Matrix 20% Non-fibrous (Other)	None Detected
12567158-3-Coating *092118146-0003B*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - ROOF PLANE SOUTH END AT CENTER	Gray Non-Fibrous Homogeneous		20% Quartz 60% Matrix 20% Non-fibrous (Other)	None Detected

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EMSL Order:	092118146
Customer ID:	WKC50
Customer PO:	38005320
Project ID:	PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-4-Mastic *092118146-0004*	FOAM (CREAM) & ROOF MASTIC (BLACK) - MAIN ROOF - EAST WING AT SOLAR HOT WATER FOOTER AT CENTER-WEST	Black Non-Fibrous Homogeneous		80% Matrix 17% Non-fibrous (Other)	3% Chrysotile
12567158-4-Coating *092118146-0004A*	FOAM (CREAM) & ROOF MASTIC (BLACK) - MAIN ROOF - EAST WING AT SOLAR HOT WATER FOOTER AT CENTER-WEST	Gray Non-Fibrous Homogeneous		20% Quartz 60% Matrix 20% Non-fibrous (Other)	None Detected
12567158-5-Mastic *092118146-0005*	FOAM (CREAM) & ROOF MASTIC (BLACK) - MAIN ROOF - EAST WING AT REMNANT FOOTER AT CENTER-EAST	Black Non-Fibrous Homogeneous		80% Matrix 16% Non-fibrous (Other)	4% Chrysotile
12567158-5-Coating *092118146-0005A*	FOAM (CREAM) & ROOF MASTIC (BLACK) - MAIN ROOF - EAST WING AT REMNANT FOOTER AT CENTER-EAST	Gray Non-Fibrous Homogeneous		20% Quartz 60% Matrix 20% Non-fibrous (Other)	None Detected
12567158-6-Foam *092118146-0006*	FOAM (CREAM) & COATING (GRANULAR, GREY) - MAIN ROOF - INSIDE CORNER OF ROOF WING	Beige Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
12567158-6-Coating *092118146-0006A*	FOAM (CREAM) & COATING (GRANULAR, GREY) - MAIN ROOF - INSIDE CORNER OF ROOF WING	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-7-Coating *092118146-0007*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - SOUTH WING AT ELECTRICAL PENETRATION AT CENTER-WEST	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-7-Mastic *092118146-0007A*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - SOUTH WING AT ELECTRICAL PENETRATION AT CENTER-WEST	Black Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected

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Customer ID: WKC50
Customer PO: 38005320
Project ID: PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-8-Coating *092118146-0008*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - CENTER-NW AT HVAC EXHAUST VENT				Layer Not Present
12567158-8-Mastic *092118146-0008A*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - CENTER-NW AT HVAC EXHAUST VENT	Black Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
12567158-9-Coating *092118146-0009*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - NORTH CENTER AT GUIDE WIRE ANCHOR PENETRATION	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-9-Mastic *092118146-0009A*	FOAM (CREAM) & COATING (GRANULAR, GREY) & ROOF MASTIC (BLACK) - MAIN ROOF - NORTH CENTER AT GUIDE WIRE ANCHOR PENETRATION	Black Non-Fibrous Homogeneous		80% Matrix 17% Non-fibrous (Other)	3% Chrysotile
12567158-10-Coating *092118146-0010*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - MAIN PLANE AT NW CORNER	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-10-Rolled Roofing *092118146-0010A*	FOAM (CREAM) & COMPOSITE ROLLED ROOFING (BLACK) - MAIN ROOF - MAIN PLANE AT NW CORNER	Black Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
12567158-11 *092118146-0011*	ROOF MASTIC (PATCH) (BLACK, WOVEN MATERIAL) - MAIN ROOF - PATCH AT CENTER SOUTH WING WEST EDGE	Black Fibrous Homogeneous	10% Cellulose	75% Matrix 15% Non-fibrous (Other)	None Detected
12567158-12 *092118146-0012*	ROOF MASTIC (PATCH) (BLACK, WOVEN MATERIAL) - MAIN ROOF - PATCH AT SOUTH WING NW CENTER	Gray/Black Fibrous Homogeneous	10% Cellulose	75% Matrix 15% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-13 *092118146-0013*	ROOF MASTIC (PATCH) (BLACK, WOVEN MATERIAL) - MAIN ROOF - PATCH AT SOUTH WING REMNANT FOOTER AT SE	Black Fibrous Homogeneous	10% Cellulose	75% Matrix 15% Non-fibrous (Other)	None Detected
12567158-14-Mastic *092118146-0014*	ROOF MASTIC (PATCH) (BLACK) & CAULK (OFF-WHITE) - MAIN ROOF - PATCH AT EAST WING CENTER-SW	Black Fibrous Homogeneous	10% Cellulose	75% Matrix 15% Non-fibrous (Other)	None Detected
12567158-14-Caulk *092118146-0014A*	ROOF MASTIC (PATCH) (BLACK) & CAULK (OFF-WHITE) - MAIN ROOF - PATCH AT EAST WING CENTER-SW	Gray Non-Fibrous Homogeneous		10% Ca Carbonate 70% Matrix 20% Non-fibrous (Other)	None Detected
12567158-15 *092118146-0015*	CAULK (GREY) - MAIN ROOF - CONDUIT SEALANT AT SOUTH WING CENTER-WEST ANTENNA ARRAY	Gray Non-Fibrous Homogeneous		70% Matrix 22% Non-fibrous (Other)	8% Chrysotile
12567158-16 *092118146-0016*	CAULK (GREY) - MAIN ROOF - PATCH AT EAST WING CENTER-SOUTH	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-17 *092118146-0017*	FLASHING CAULK (GREY) - MAIN ROOF - INSIDE CORNER OF ROOF WINGS AT FLASHING	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-18 *092118146-0018*	FLASHING CAULK (GREY) - MAIN ROOF - SOUTH WING AT FLASHING SOUTH-CENTER	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-19 *092118146-0019*	PENETRATION CAULK (GREY) - MAIN ROOF - SOUTH END AT FLASHING PENETRATION	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-20 *092118146-0020*	SEAM CAULK (GREY) - MAIN ROOF - CENTER-NW AT WEST PIPE RUNS ON TSI CLADDING SEAMS	Gray Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
12567158-21 *092118146-0021*	PIPE THREAD COMPOUND (BLUE/WHITE) - MAIN ROOF - EAST END AT 2" OD HORIZONTAL E/W LINE PIPE	White/Blue Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected

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Project ID: PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-22 *092118146-0022*	TRANSITE VENT CAP (GREY) - MAIN ROOF - 19" DIAMETER HVAC VENT CAP AT NW CORNER	Tan Fibrous Homogeneous		72% Non-fibrous (Other)	18% Chrysotile 10% Crocidolite
12567158-23 *092118146-0023*	TRANSITE VENT CAP (GREY) - MAIN ROOF - 38" DIAMETER HVAC VENT CAP AT NW CORNER	Gray Fibrous Homogeneous		75% Non-fibrous (Other)	16% Chrysotile 9% Crocidolite
12567158-24 *092118146-0024*	TSI BATT (YELLOW/WHITE) - MAIN ROOF - EAST-CENTER INSIDE SOLAR HOT WATER UNIT	Black Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
12567158-25-TSI *092118146-0025*	TSI RUN (YELLOW) & SEALANT COMPOUND (TAN) - MAIN ROOF - EAST END 5" OD HORIZONTAL RUN AT JUNCTION	Yellow Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
12567158-25-Sealant *092118146-0025A*	TSI RUN (YELLOW) & SEALANT COMPOUND (TAN) - MAIN ROOF - EAST END 5" OD HORIZONTAL RUN AT JUNCTION	White Non-Fibrous Homogeneous	10% Glass	70% Matrix 20% Non-fibrous (Other)	None Detected
12567158-26 *092118146-0026*	TSI ELBOW (YELLOW) - MAIN ROOF - EAST-CENTER ELBOW OF SOLAR HOT WATER 3" OD VERTICAL RUN WITH PLASTIC CLADDING	Yellow Fibrous Homogeneous	5% Cellulose 70% Glass	10% Matrix 15% Non-fibrous (Other)	None Detected
12567158-27-TSI *092118146-0027*	TSI RUN (YELLOW) & JACKET (WHITE) - MAIN ROOF - EAST-CENTER SOLAR HOT WATER 4" OD HORIZONTAL RUN AT HANGER	Yellow Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
12567158-27-Jacket *092118146-0027A*	TSI RUN (YELLOW) & JACKET (WHITE) - MAIN ROOF - EAST-CENTER SOLAR HOT WATER 4" OD HORIZONTAL RUN AT HANGER	White Fibrous Homogeneous	70% Cellulose 10% Glass	20% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-28-TSI *092118146-0028*	TSI RUN (YELLOW) & JACKET (SILVER) - MAIN ROOF - MAIN ROOF - CENTER-NW ELBOW OF WEST HORIZONTAL 5" OD RUN WITH METAL CLADDING	Yellow Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
12567158-28-Wrap *092118146-0028A*	TSI RUN (YELLOW) & JACKET (SILVER) - MAIN ROOF - MAIN ROOF - CENTER-NW ELBOW OF WEST HORIZONTAL 5" OD RUN WITH METAL CLADDING				Insufficient Material
12567158-29-TSI *092118146-0029*	TSI BATT (YELLOW) & JACKET (SILVER) - MAIN ROOF - MAIN ROOF - 4" OD HORIZONTAL RUN AT NW CORNER SOLAR HOT WATER	White/Yellow Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
12567158-29-Jacket *092118146-0029A*	TSI BATT (YELLOW) & JACKET (SILVER) - MAIN ROOF - MAIN ROOF - 4" OD HORIZONTAL RUN AT NW CORNER SOLAR HOT WATER	White/Silver Fibrous Homogeneous	70% Cellulose 15% Glass	15% Non-fibrous (Other)	None Detected
12567158-30-TSI *092118146-0030*	TSI BATT (YELLOW) & JACKET (SILVER) - MAIN ROOF - 5" OD HORIZONTAL RUN WITH METAL CLADDING AT NW CORNER HOT WATER PIPING	Yellow Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
12567158-30-Jacket *092118146-0030A*	TSI BATT (YELLOW) & JACKET (SILVER) - MAIN ROOF - 5" OD HORIZONTAL RUN WITH METAL CLADDING AT NW CORNER HOT WATER PIPING	White/Silver Fibrous Homogeneous	20% Glass	80% Non-fibrous (Other)	None Detected
12567158-31-Rolled Roofing 1 *092118146-0031*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - NORTH LEVEL 1 (L1) ROOF - ROOF PLANE AT ROOF CENTER	Black Fibrous Heterogeneous	10% Glass	5% Quartz 50% Matrix 35% Non-fibrous (Other)	None Detected

Result includes a small amount of inseparable attached material

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-31-Rolled Roofing 2 *092118146-0031A*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - NORTH LEVEL 1 (L1) ROOF - ROOF PLANE AT ROOF CENTER	Black Fibrous Heterogeneous	10% Glass	5% Quartz 50% Matrix 35% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-31-Tar *092118146-0031B*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - NORTH LEVEL 1 (L1) ROOF - ROOF PLANE AT ROOF CENTER	Black Non-Fibrous Homogeneous		90% Matrix 10% Non-fibrous (Other)	None Detected
12567158-31-Shingle *092118146-0031C*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - NORTH LEVEL 1 (L1) ROOF - ROOF PLANE AT ROOF CENTER	Red/Black Non-Fibrous Homogeneous	10% Glass	20% Quartz 50% Matrix 20% Non-fibrous (Other)	None Detected
12567158-31-Insulation *092118146-0031D*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - NORTH LEVEL 1 (L1) ROOF - ROOF PLANE AT ROOF CENTER	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
12567158-32-Rolled Roofing 1 *092118146-0032*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF PLANE AT CENTER-SW	Black Fibrous Heterogeneous	10% Glass	5% Quartz 50% Matrix 35% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-32-Rolled Roofing 2 *092118146-0032A*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF PLANE AT CENTER-SW	Black Fibrous Heterogeneous	10% Glass	5% Quartz 50% Matrix 35% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-32-Rolled Roofing 3 *092118146-0032B*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF PLANE AT CENTER-SW	Black Fibrous Heterogeneous	10% Glass	5% Quartz 50% Matrix 35% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-32-Tar *092118146-0032C*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF PLANE AT CENTER-SW	Black Non-Fibrous Homogeneous		90% Matrix 10% Non-fibrous (Other)	None Detected
12567158-32-Insulation *092118146-0032D*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF PLANE AT CENTER-SW	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
12567158-33-Mastic *092118146-0033*	PENETRATION MASTIC (BLACK) - L1 ROOF - VENT PENETRATION AT CENTER	Black Non-Fibrous Homogeneous	6% Cellulose	80% Matrix 10% Non-fibrous (Other)	4% Chrysotile
12567158-33-Tar *092118146-0033A*	PENETRATION MASTIC (BLACK) - L1 ROOF - VENT PENETRATION AT CENTER	Brown/Black Fibrous Homogeneous		90% Matrix 10% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-34-Roofing *092118146-0034*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF AT NORTH FLASHING AT CENTER-WEST	Black Non-Fibrous Homogeneous	4% Glass	5% Ca Carbonate 80% Matrix 11% Non-fibrous (Other)	None Detected
12567158-34-Pad *092118146-0034A*	ROLLED ROOFING (BLACK) & CELLULOSE INSULATION PAD (FIBRIOUS, BROWN) - L1 ROOF - ROOF AT NORTH FLASHING AT CENTER-WEST				Layer Not Present
12567158-35-Concrete *092118146-0035*	CONCRETE (GREY) & SURFACE COAT (TAN) - L1 ROOF - SOUTH WALL AT SE WINDOW	Gray Non-Fibrous Homogeneous		30% Quartz 50% Ca Carbonate 20% Non-fibrous (Other)	None Detected

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			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-35-Surface Coat *092118146-0035A*	CONCRETE (GREY) & SURFACE COAT (TAN) - L1 ROOF - SOUTH WALL AT SE WINDOW	Tan/Green Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
12567158-35-Mastic *092118146-0035B*	CONCRETE (GREY) & SURFACE COAT (TAN) - L1 ROOF - SOUTH WALL AT SE WINDOW	Black Non-Fibrous Homogeneous	3% Cellulose	80% Matrix 14% Non-fibrous (Other)	3% Chrysotile
Result includes a small amount of inseparable attached material					
12567158-35-Caulk *092118146-0035C*	CONCRETE (GREY) & SURFACE COAT (TAN) - L1 ROOF - SOUTH WALL AT SE WINDOW	White Non-Fibrous Homogeneous		60% Matrix 37% Non-fibrous (Other)	3% Chrysotile
12567158-36 *092118146-0036*	ROOF MASTIC (BLACK) - L1 ROOF - SW CORNER ON SOUTH WALL AT WALL/ROOF JUNCTION	Black Non-Fibrous Homogeneous	6% Cellulose	80% Matrix 14% Non-fibrous (Other)	None Detected
12567158-37 *092118146-0037*	ROOF MASTIC (BLACK) - L1 ROOF - SOUTH WALL CENTER WINDOW AT WALL/ROOF JUNCTION	Black Non-Fibrous Homogeneous	6% Cellulose	80% Matrix 14% Non-fibrous (Other)	None Detected
12567158-38-Tar 1 *092118146-0038*	TAR (BLACK) - L1 ROOF - NE CORNER AT FLASHING	Black Non-Fibrous Homogeneous	4% Fibrous (Other)	90% Matrix 6% Non-fibrous (Other)	None Detected
Fibers were found with refractive indices outside of the acceptable range for regulated asbestos. These fibers are possibly altered asbestos fibers and were not included in the final asbestos concentration					
12567158-38-Tar 2 *092118146-0038A*	TAR (BLACK) - L1 ROOF - NE CORNER AT FLASHING	Black Non-Fibrous Homogeneous		90% Matrix 10% Non-fibrous (Other)	None Detected
12567158-39-Mastic *092118146-0039*	ROOF MASTIC (BLACK) - L1 ROOF - SE CORNER AT WALL/ROOF JUNCTION	Gray/Black Non-Fibrous Homogeneous	4% Cellulose	80% Matrix 8% Non-fibrous (Other)	8% Chrysotile
Result includes a small amount of inseparable attached material					
12567158-39-Roofing *092118146-0039A*	ROOF MASTIC (BLACK) - L1 ROOF - SE CORNER AT WALL/ROOF JUNCTION	Red/Black Non-Fibrous Homogeneous	8% Cellulose	20% Quartz 50% Matrix 22% Non-fibrous (Other)	None Detected
12567158-39-Tar Felt *092118146-0039B*	ROOF MASTIC (BLACK) - L1 ROOF - SE CORNER AT WALL/ROOF JUNCTION	Black Fibrous Homogeneous	20% Glass	60% Matrix 20% Non-fibrous (Other)	None Detected
12567158-40-Shingle *092118146-0040*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT NW CORNER	Gray/Black Fibrous Homogeneous	15% Synthetic	15% Quartz 50% Matrix 20% Non-fibrous (Other)	None Detected

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EMSL Analytical, Inc.
464 McCormick Street San Leandro, CA 94577
Tel/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order: 092118146
Customer ID: WKC50
Customer PO: 38005320
Project ID: PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-40-Rolled Roofing *092118146-0040A*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT NW CORNER	Black Fibrous Heterogeneous	10% Synthetic	5% Quartz 65% Matrix 20% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-40-Felt *092118146-0040B*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT NW CORNER	Black Fibrous Homogeneous	20% Glass	10% Quartz 60% Matrix 10% Non-fibrous (Other)	None Detected
12567158-41-Shingle *092118146-0041*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT SE CORNER	Gray/Black Fibrous Homogeneous	15% Synthetic	15% Quartz 50% Matrix 20% Non-fibrous (Other)	None Detected
12567158-41-Rolled Roofing *092118146-0041A*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT SE CORNER	Black Fibrous Heterogeneous	10% Synthetic	5% Quartz 65% Matrix 20% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-41-Felt *092118146-0041B*	ROLLED ROOF (BLACK/GREY) - NE ADDITION ROOF - ROOF AT SE CORNER	Black Fibrous Homogeneous	20% Glass	10% Quartz 60% Matrix 10% Non-fibrous (Other)	None Detected
12567158-42 *092118146-0042*	FLASHING CAULK (WHITE) - NE ADDITION ROOF - CENTER-SOUTH AT WALL FLASHING	White Non-Fibrous Homogeneous		60% Matrix 40% Non-fibrous (Other)	None Detected
12567158-43 *092118146-0043*	PAINT (WHITE) - MAIN ROOF - EXTERIOR WEST WALL PAINT ON CONCRETE AT PIPING	Gray/White Non-Fibrous Homogeneous		80% Matrix 18% Non-fibrous (Other)	2% Chrysotile
12567158-44 *092118146-0044*	CONCRETE (GREY) - MAIN ROOF - EXTERIOR WEST WALL LOWER WALL AT EXTERIOR PIPING	Gray Non-Fibrous Homogeneous		40% Quartz 30% Ca Carbonate 30% Non-fibrous (Other)	None Detected
12567158-45-TSI *092118146-0045*	TSI RUN (YELLOW) & JACKET (WHITE) - MAIN ROOF - EXTERIOR WEST WALL VENT AT 4" OD RUN WITH METAL CLADDING	Tan Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
12567158-45-Wrap *092118146-0045A*	TSI RUN (YELLOW) & JACKET (WHITE) - MAIN ROOF - EXTERIOR WEST WALL VENT AT 4" OD RUN WITH METAL CLADDING	White/Silver Fibrous Homogeneous	20% Glass	80% Non-fibrous (Other)	None Detected

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EMSL Order: 092118146
Customer ID: WKC50
Customer PO: 38005320
Project ID: PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-46 *092118146-0046*	2' X 4' ACT (TAN/WHITE) - INTERIOR - 3RD FLOOR - EAST CORRIDOR CEILING AT EAST WALL	Tan/White Fibrous Homogeneous	60% Cellulose	20% Ca Carbonate 20% Non-fibrous (Other)	None Detected
12567158-47-Paint *092118146-0047*	PAINT (CREAM) - INTERIOR - 3RD FLOOR - ROOM 3109 NORTH WALL PAT AT NE CORNER	Beige Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
12567158-47-Compound *092118146-0047A*	PAINT (CREAM) - INTERIOR - 3RD FLOOR - ROOM 3109 NORTH WALL PAT AT NE CORNER	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
12567158-48 *092118146-0048*	EXPANSION JOINT (WHITE) - INTERIOR - 3RD FLOOR - ROOM 3109 WALL AT NE CORNER	White Non-Fibrous Homogeneous		10% Ca Carbonate 70% Matrix 20% Non-fibrous (Other)	None Detected
12567158-49 *092118146-0049*	2' X 4' ACT (TAN/WHITE) - INTERIOR - 3RD FLOOR - CORRIDOR OUTSIDE ROOM 3118 CEILING AT CENTER-NORTH	Tan/White Fibrous Homogeneous	60% Cellulose	25% Ca Carbonate 15% Non-fibrous (Other)	None Detected
12567158-50 *092118146-0050*	CONCRETE (GREY) - INTERIOR - 3RD FLOOR - CORRIDOR OUTSIDE ROOM 3118 CEILING AT CNETER-NORTH ABOVE DROP CEILING	Gray Non-Fibrous Homogeneous		40% Quartz 30% Ca Carbonate 30% Non-fibrous (Other)	None Detected
12567158-51-CMU *092118146-0051*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3121/3122 SOUTH WALL AT SW CORNER	Red Non-Fibrous Homogeneous		40% Quartz 60% Non-fibrous (Other)	None Detected
12567158-51-Mortar *092118146-0051A*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3121/3122 SOUTH WALL AT SW CORNER	Gray Non-Fibrous Homogeneous		40% Quartz 30% Ca Carbonate 30% Non-fibrous (Other)	None Detected
12567158-52-CMU *092118146-0052*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3129/3130 SOUTH WALL AT SW CORNER	Red Non-Fibrous Homogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected

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http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order:	092118146
Customer ID:	WKC50
Customer PO:	38005320
Project ID:	PO 38005320

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
12567158-52-Mortar *092118146-0052A*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3129/3130 SOUTH WALL AT SW CORNER	Gray Non-Fibrous Homogeneous		40% Quartz 30% Ca Carbonate 30% Non-fibrous (Other)	None Detected
12567158-53-Concrete *092118146-0053*	CONCRETE (GREY) - INTERIOR - 3RD FLOOR - ROOM 3133/3134 WEST WALL	Gray Non-Fibrous Homogeneous		30% Quartz 50% Ca Carbonate 20% Non-fibrous (Other)	None Detected
12567158-53-Mastic *092118146-0053A*	CONCRETE (GREY) - INTERIOR - 3RD FLOOR - ROOM 3133/3134 WEST WALL	Beige/Clear Non-Fibrous Homogeneous		5% Ca Carbonate 80% Matrix 15% Non-fibrous (Other)	None Detected
Result includes a small amount of inseparable attached material					
12567158-54-CMU *092118146-0054*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3147/3148 NORTH WALL AT NE CORNER	Red Non-Fibrous Homogeneous		50% Quartz 20% Ca Carbonate 30% Non-fibrous (Other)	None Detected
12567158-54-Mortar *092118146-0054A*	CMU (RED) & MORTAR (GREY) - INTERIOR - 3RD FLOOR - ROOM 3147/3148 NORTH WALL AT NE CORNER	Gray Non-Fibrous Homogeneous		30% Quartz 50% Ca Carbonate 20% Non-fibrous (Other)	None Detected
12567158-55 *092118146-0055*	SURFACE COAT (TAN) - L1 ROOF - SOUTH WALL CENTER AT WINDOW	Tan Non-Fibrous Homogeneous		90% Matrix 10% Non-fibrous (Other)	None Detected

Analyst(s)

Gavin Lee (36)
Jon Abdon (30)
Jose Madrid (17)
Kevin Lares (12)

Cecilia Yu, Laboratory Manager
or Other Approved Signatory

Initial report from: 11/19/2021 10:20:59

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Contact Name(s):	Scott Harris, Alex Crowe	Sample Date(s):	11/12/2021
Contact Email(s):	scott.harris@ghd.com, alexander.crowe@ghd.com	Client:	HSU
Site Name:	HSU Sunset Hall Roof - Arcata, California	Analysis Method:	PLM (Asbestos)
Project Number:	12567158.01 PO Number: 38005320	Turnaround Time:	72-Hour

BULK SAMPLE COLLECTION CHAIN OF CUSTODY

Sample Number	Sample Description	Location	USEPA Material Type	Friability
12567158-1	Foam (Cream) + Composite Rolled Roofing (Black)	Main Roof - Roof plane south wing at center	TSI/MM	F/NF
12567158-2	Foam (Cream)* + Roof Mastic (Black) *do not analyze foam layer	Main Roof - East end at remnant support footer	TSI/MM	F/NF
12567158-3	Foam (Cream) + Composite Rolled Roofing (Black)	Main Roof - Roof plane south end at center	TSI/MM	F/NF
12567158-4	Foam (Cream)* + Roof Mastic (Black) *do not analyze foam layer	Main Roof - East wing at solar hot water footer at center-west	TSI/MM	F/NF
12567158-5	Foam (Cream)* + Roof Mastic (Black) *do not analyze foam layer	Main Roof - East wing at remnant footer at center-east	TSI/MM	F/NF
12567158-6	Foam (Cream) + Coating (Granular, Grey)	Main Roof - Inside corner of roof wings	TSI/MM	F/NF
12567158-7	Foam (Cream)* + Coating (Granular, Grey) + Roof Mastic (Black) *do not analyze foam layer	Main Roof - South wing at electrical penetration at center-west	TSI/MM	F/NF
12567158-8	Foam (Cream)* + Coating (Granular, Grey) + Roof Mastic (Black) *do not analyze foam layer	Main Roof - Center-NW at HVAC exhaust vent	TSI/MM	F/NF
12567158-9	Foam (Cream)* + Coating (Granular, Grey) + Roof Mastic (Black) *do not analyze foam layer	Main Roof - North center at guide wire anchor penetration	TSI/MM	F/NF
12567158-10	Foam (Cream)* + Composite Rolled Roofing (Black) *do not analyze foam layer	Main Roof - Main plane at NW corner	TSI/MM	F/NF
12567158-11	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at center south wing west edge	MM	NF
12567158-12	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at south wing NW center	MM	NF

Page 1 Of 5

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Date/time:

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718 3rd Street
Eureka, California
Ph: (707) 443-8326
eureka@ghd.com

Contact Name(s):	Scott Harris, Alex Crowe	Sample Date(s):	11/12/2021
Contact Email(s):	scott.harris@ghd.com, alexander.crowe@ghd.com	Client:	HSU
Site Name:	HSU Sunset Hall Roof - Arcata, California	Analysis Method:	PLM (Asbestos)
Project Number:	12567158.01 PO Number: 38005320	Turnaround Time:	72-Hour

BULK SAMPLE COLLECTION CHAIN OF CUSTODY

Sample Number	Sample Description	Location	USEPA Material Type	Friability
12567158-13	Roof Mastic (Patch) (Black, Woven Material)	Main Roof - Patch at south wing remnant footer at SE	MM	NF
12567158-14	Roof Mastic (Patch) (Black) + Caulk (Off-white)	Main Roof - Patch at east wing center-SW	MM	NF
12567158-15	Caulk (Grey)	Main Roof - Conduit sealant at south wing center-west antenna array	MM	NF
12567158-16	Caulk (Grey)	Main Roof - Patch at east wing center-south	MM	NF
12567158-17	Flashing Caulk (Grey)	Main Roof - Inside corner of roof wings at flashing	MM	NF
12567158-18	Flashing Caulk (Grey)	Main Roof - South wing at flashing south-center	MM	NF
12567158-19	Penetration Caulk (Grey)	Main Roof - South end at flashing penetration	MM	NF
12567158-20	Seam Caulk (Grey)	Main Roof - Center-NW at west pipe runs on TSI cladding seams	MM	NF
12567158-21	Pipe Thread Compound (Blue/White)	Main Roof - East end at 2" OD horizontal E/W line pipe	MM	NF
12567158-22	Transite Vent Cap (Grey)	Main Roof - 19" diameter HVAC vent cap at NW corner	MM	NF
12567158-23	Transite Vent Cap (Grey)	Main Roof - 38" diameter HVAC vent cap at NW corner	MM	NF
12567158-24	TSI Batt (Yellow/White)	Main Roof - East-center inside solar hot water unit	TSI	F

Page 2 of 5

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Date/time:

OrderID: 092118146

718 3rd Street
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Contact Name(s):	Scott Harris, Alex Crowe		Sample Date(s):	11/12/2021
Contact Email(s):	scott.harris@ghd.com, alexander.crowe@ghd.com		Client:	HSU
Site Name:	HSU Sunset Hall Roof - Arcata, California		Analysis Method:	PLM (Asbestos)
Project Number:	12567158.01	PO Number: 38005320	Turnaround Time:	72-Hour

BULK SAMPLE COLLECTION CHAIN OF CUSTODY

Sample Number	Sample Description	Location	USEPA Material Type	Friability
12567158-25	TSI Run (Yellow) + Sealant Compound (Tan)	Main Roof - East end 5" OD horizontal run at junction	TSI	F
12567158-26	TSI Elbow (Yellow)	Main Roof - East-center elbow of solar hot water 3" OD vertical run with plastic cladding	TSI	F
12567158-27	TSI Run (Yellow) + Jacket (White)	Main Roof - East-center solar hot water 4" OD horizontal run at hanger	TSI	F
12567158-28	TSI Run (Yellow) + Jacket (Silver)	Main Roof - Center-NW elbow of west horizontal 5" OD run with metal cladding	TSI	F
12567158-29	TSI Batt (Yellow) + Jacket (Silver)	Main Roof - 4" OD horizontal run at NW corner solar hot water	TSI	F
12567158-30	TSI Batt (Yellow) + Jacket (Silver)	Main Roof - 5" OD horizontal run with metal cladding at NW corner hot water piping	TSI	F
12567158-31	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	North Level 1 (L1) Roof - Roof plane at roof center	TSI/MM	F/NF
12567158-32	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	L1 Roof - Roof plane at center-SW	TSI/MM	F/NF
12567158-33	Penetration Mastic (Black)	L1 Roof - Vent penetration at center	MM	NF
12567158-34	Rolled Roofing (Black) + Cellulose Insulation Pad (Fibrous, Brown)	L1 Roof - Roof at north flashing at center-west	TSI/MM	F/NF
12567158-35	Concrete (Grey) + Surface Coat (Tan)	L1 Roof - South wall at SE window	MM	NF
12567158-36	Roof Mastic (Black)	L1 Roof - SW corner on south wall at wall/roof junction	MM	NF

Page 3 of 5

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Contact Name(s):	Scott Harris, Alex Crowe	Sample Date(s):	11/12/2021
Contact Email(s):	scott.harris@ghd.com, alexander.crowe@ghd.com	Client:	HSU
Site Name:	HSU Sunset Hall Roof - Arcata, California	Analysis Method:	PLM (Asbestos)
Project Number:	12567158.01 PO Number: 38005320	Turnaround Time:	72-Hour

BULK SAMPLE COLLECTION CHAIN OF CUSTODY

Sample Number	Sample Description	Location	USEPA Material Type	Friability
12567158-37	Roof Mastic (Black)	L1 Roof - South wall center window at wall/roof junction	MM	NF
12567158-38	Tar (Black)	L1 Roof - NE corner at flashing	MM	NF
12567158-39	Roof Mastic (Black)	L1 Roof - SE corner at wall/roof junction	MM	NF
12567158-40	Rolled Roof (Black/Grey)	NE Addition Roof - Roof plane at NW corner	MM	NF
12567158-41	Rolled Roof (Black/Grey)	NE Addition Roof - Roof plane at SE corner	MM	NF
12567158-42	Flashing Caulk (White)	NE Addition Roof - Center-south at wall flashing	MM	NF
12567158-43	Paint (White)	Main Roof - Exterior west wall paint on concrete at piping	MM	NF
12567158-44	Concrete (Grey)	Main Roof - Exterior west wall lower wall at exterior piping	MM	NF
12567158-45	TSI Run (Yellow) + Jacket (White)	Main Roof - Exterior west wall vent at 4" OD run with metal cladding	TSI	F
12567158-46	2'x4' ACT (Tan/White)	Interior - 3rd Floor - East corridor ceiling at east wall	MM	F
12567158-47	Paint (Cream)	Interior - 3rd Floor - Room 3109 north wall pat at NE corner	MM	NF
12567158-48	Expansion Joint (White)	Interior - 3rd Floor - Room 3109 wall at NE corner	MM	NF

Page 4 Of 5

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Date/time:

OrderID: 092118146

#092118146

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Ph: (707) 443-8326
eureka@ghd.com

Contact Name(s):	Scott Harris, Alex Crowe	Sample Date(s):	11/12/2021
Contact Email(s):	scott.harris@ghd.com, alexander.crowe@ghd.com	Client:	HSU
Site Name:	HSU Sunset Hall Roof - Arcata, California	Analysis Method:	PLM (Asbestos)
Project Number:	12567158.01 PO Number: 38005320	Turnaround Time:	72-Hour

BULK SAMPLE COLLECTION CHAIN OF CUSTODY

Sample Number	Sample Description	Location	USEPA Material Type	Friability
12567158-49	2'x4' ACT (Tan/White)	Interior - 3rd Floor - Corridor outside room 3118 ceiling at center-north	MM	F
12567158-50	Concrete (Grey)	Interior - 3rd Floor - Corridor outside room 3118 ceiling at center-north above drop ceiling	MM	NF
12567158-51	CMU (Red) + Mortar (Grey)	Interior - 3rd Floor - Room 3121/3122 south wall at SW corner	MM	NF
12567158-52	CMU (Red) + Mortar (Grey)	Interior - 3rd Floor - Room 3129/3130 south wall at SW corner	MM	NF
12567158-53	Concrete (Grey)	Interior - 3rd Floor - Room 3133/3134 west wall	MM	NF
12567158-54	CMU (Red) + Mortar (Grey)	Interior - 3rd Floor - Room 3147/3148 north wall at NE corner	MM	NF
12567158-55	Surface Coat (Tan)	L1 Roof - South wall center at window	MM	NF

Notes:

- Do not analyze plastic, metal, or wood layers if included in sample

ACT	Acoustic Ceiling Tile
MM	Misc. Material
NW, SE	Northwest, southeast, etc.
OD	Outside Diameter
SM	Surfacing Material
TSI	Thermal System Insulation
Friability	F = Friable; NF = Nonfriable (Friable material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure)

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Appendix E

Lead Analytical Data

AAS Laboratory Analytical Reports and Associated Chain of Custody Documentation

EMSL Analytical, Inc
464 McCormick Street, San Leandro, CA 94577
Phone/Fax: (510) 895-3675 / (510) 895-3680
http://www.EMSL.com sanleandrolab@emsl.com

EMSL Order:	092118120
CustomerID:	WKC50
CustomerPO:	38005320
ProjectID:	PO 38005320

Attn: **Scott Harris**
GHD
718 Third Street

Eureka, CA 95501

Phone:	(707) 443-8326
Fax:	(707) 444-8330
Received:	11/16/2021 09:00 AM
Collected:	11/12/2021

Project: **12567158.01; HSU SUNSET HALL ROOF ARCATA, CA**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Weight*	*Lead Concentration*
12567158-PB1	*092118120-0001*	11/12/2021	11/17/2021	0.2611 g	0.14 % wt
	Site: EXTERIOR WEST WALL AT PIPING				
12567158-PB2	*092118120-0002*	11/12/2021	11/17/2021	0.2757 g	<0.0080 % wt
	Site: INTERIOR ROOM 3129/3130 WEST WALL AT SW CORNER				
12567158-PB3	*092118120-0003*	11/12/2021	11/17/2021	0.2629 g	<0.0080 % wt
	Site: EXTERIOR MAIN ROOF SOUTH HVAC EXHAUST HOOD AT SW				
12567158-PB4	*092118120-0004*	11/12/2021	11/17/2021	0.2571 g	0.67 % wt
	Site: INTERIOR ROOM 3109 NORTH WALL AT NE CORNER				
12567158-PB5	*092118120-0005*	11/12/2021	11/17/2021	0.2926 g	0.037 % wt
	Site: EXTERIOR NORTH LOWER ROOF WALL AT CENTER SOUTH AT WINDOW				
12567158-PB6	*092118120-0006*	11/12/2021	11/17/2021	0.2883 g	<0.0080 % wt
	Site: EXTERIOR MAIN ROOF ANGLE IRON AT METAL SOLAR HW SUPPORT AT NW CORNER				
12567158-PB7	*092118120-0007*	11/12/2021	11/17/2021	0.2891 g	1.2 % wt
	Site: EXTERIOR MAIN ROOF LEAD VENT AT FLASHING CENTER NW AT HVAC EXHAUST				

Julian Neagu, Lead Laboratory Manager
or other approved signatory

Initial report from 11/18/2021 10:16:12

092118120

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Eureka, California 95501
Tel: 707.443.8326
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CONTACT NAME(S): Scott Harris, Alex Crowe	PO NUMBER: 38005320	SURVEY DATE: 11/12/2021
CONTACT EMAIL: scott.harris@ghd.com; alexander.crowe@ghd.com		
JOB NUMBER: 12567158.01	SITE: HSU Sunset Hall Roof - Arcata, California	
ANALYSIS METHOD(S): Lead via AAS	TURNAROUND TIME: 72-Hour	

SURFACE COATING SAMPLE CHAIN OF CUSTODY

SAMPLE NUMBER	SAMPLE LOCATION (Room Equivalent, Building Component)	MATERIAL	SUBSTRATE	COLOR
12567158-Pb 1	Exterior - West wall at piping	Paint	Concrete	Cream
12567158-Pb 2	Interior - Room 3129/3130 west wall at SW corner	Paint	Concrete	Off-white
12567158-Pb 3	Exterior - Main roof south HVAC exhaust hood at SW	Paint	Metal	Grey
12567158-Pb 4	Interior - Room 3109 north wall at NE corner	Paint	Concrete	Off-white
12567158-Pb 5	Exterior - North lower roof wall at center south at window	Paint	Concrete	Cream
12567158-Pb 6	Exterior - Main roof angle iron at metal solar HW support at NW corner	Paint	Metal	Black
12567158-Pb 7	Exterior - Main roof lead vent at flashing center-NW at HVAC exhaust	Flashing	Metal	Silver

NOTES: Substrates: Brick, Concrete, Drywall, Metal, Plaster, Wood

TO FEDEX 1540

Relinquished By: [signature] Date/Time: 11/15/2021	Received By: FX Date/Time: 11-16-21 9:00am
Relinquished By: Date/Time:	Received By: Date/Time:

Appendix F

Asbestos Regulatory Summary

General Informational Summary of Governmental Rules and Regulations Concerning Asbestos

Appendix F Asbestos Regulations

This appendix section provides a summary of governmental regulations applicable to asbestos in construction work and is applicable to the impaction of the asbestos building materials present at the project site.

F1.1 California Code of Regulations

The following is a summary list of United States governmental regulations concerning asbestos:

1. 29 Code of Federal Regulations (CFR) 1926.1101, Asbestos (including all mandatory appendices)
2. 40 CFR 61, Subpart A and Subpart M USEPA National Emissions Standards for Hazardous Air Pollutants (NESHAP)
3. 40 CFR Parts 261, 265, and 268, Hazardous Waste Management
4. 40 CFR Part 763, Asbestos Emergency Hazard Emergency Response Act (AHERA)
5. 49 CFR Parts 172, 173, 178, 179, Hazardous Material Transportation

F1.2 California Code of Regulations

The following is a summary list of State of California governmental regulations concerning asbestos:

1. 8 CCR Division 1, Chapter 4, Construction Safety Orders
2. 8 CCR Article 2.5, Registration of Asbestos Work, Sections 341.6–341.14
3. 8 CCR Section 1529, Asbestos
4. 8 CCR Section 5144, Respiratory Protection
5. 22 CCR Division 4.5, Environmental Health Standards for Management of Hazardous Waste
6. California Environmental Protection Agency (Cal/EPA), California Air Resource Board (CARB), Final Regulation Order, Section 93105, Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations

F1.3 Definitions

For the purpose of this report, the following definitions will apply to the discussion of hazardous materials contained herein.

1. Abatement – Hazardous materials related construction undertaken for the purpose of eliminating or reducing existing recognized hazardous materials related hazards as adapted from 29 CFR Part 1903 Inspections, Citation and Proposed Penalties, Standard 1903.19 Abatement Verification (29 CFR 1903.19), Subsection (b)(1).
2. Asbestos Containing Material (ACM) – A material determined to contain greater than one percent (1%) asbestos by weight as defined by the Title 8 California Code of Regulations (CCR), Subchapter 4, Construction Safety Orders, Article 4. Dusts, Fumes, Mists, Vapors, and Gases, Section 1529 (8CCR1529), Subsection (b).
3. Asbestos Containing Construction Material (ACCM) – A construction material determined to contain detectable levels of asbestos fibers in concentrations of greater than 0.1 percent asbestos by weight as defined by Chapter 3.2 of the California Occupational Safety and Health Regulations, Subchapter 2, Regulations of the Division of Occupational Safety and Health, Article 2.5. Registration--Asbestos-Related Work, Section 341.6(c).

4. Containment – Protective physical barriers and associated means and methods used to contain airborne contaminant dust within the abatement work area and prevent contamination of surfaces and grounds below and adjacent to areas where a hazardous material is being disturbed.
5. Hazardous Material – Substance with properties that can cause injury or illness to humans or adversely impact living organisms in the environment under certain conditions. Hazardous materials include both organic and inorganic chemicals and chemical compounds. Includes any substance on the list of hazardous substances prepared by the Director, California Department of Industrial Relations, pursuant to Labor Code Section 6382 and also known as the Director's List. For the project, hazardous materials include, but are not limited to: asbestos, lead and universal waste.
6. Hazardous Waste – Waste material that is listed or meets the criteria for hazardous waste as set forth in CCR, Title 22, Division 4.5 and Article 9. at minimum, with regard to asbestos, the following shall be considered to be hazardous wastes with respect to this section:
    a. Nonfriable Asbestos Containing Material (Category I and II) rendered friable during renovation or renovation
    b. Regulated Asbestos Containing Material

F1.3.1 Nonfriable Asbestos Containing Material

Friability is a qualitative measure of a material's affinity for producing airborne asbestos fibers (dust). A material that, when dry, can be crumbled, pulverized or reduced to powder using hand pressure is classified as friable according to USEPA regulations. Nonfriable materials are those that do not meet the above definition of friable.

Nonfriable materials are classified by the USEPA into the following categories:

1. Category I Nonfriable – Any asbestos containing gasket, packing, resilient floor covering, or asphalt roofing product that contains greater than 1% asbestos as determined by PLM, that, when dry cannot be crumbled, pulverized, or reduced to a powder using hand pressure.
2. Category II Nonfriable – Any material, excluding Category I nonfriable ACM, that contains greater than 1% asbestos as determined by PLM, that, when dry cannot be crumbled, pulverized, or reduced to a powder using hand pressure.

Category I Nonfriable ACM may be left in place during renovation work. Certain Category II Nonfriable ACM may be left in place during renovation or renovation; however, Category II ACM that may become friable (e.g., damaged, brittle and/or cementitious materials) must be removed prior to renovation or renovation. Category I ACM and some Category II ACM may be left in situ during renovation; however, Cal/OSHA will regulate such renovation activities as Class II work, as defined herein.

Note: Cal/OSHA employee protection protocols, including those summarized herein, apply to any disturbance of asbestos material, regardless of the USEPA material category (Category I, Category II, RACM), concentration of asbestos, or quantity of material. As such worker protection protocols per 8CCR1529 apply to work disturbing any asbestos.

If a nonfriable material is impacted with mechanical means (power tools, abrasive mechanical means, etc.) such material shall no longer be classified as nonfriable and shall instead be classified as RACM. A nonfriable material that has been significantly damaged may also be classified as friable, if the damaged material can be reduced to powder or crumbled using hand pressure.

F1.3.2 Regulated Asbestos Containing Material

A material is regulated by the USEPA as RACM if it conforms to one or more of the following:

1. It is a friable ACM
2. It is a Category I or II ACM that has become friable

3. It is a Category I ACM that will be subject to mechanical impaction
4. It is a Category II ACM that has a high probability of becoming friable during the course of renovation or demolition activities that are expected to impact the material

While the USEPA does not regulate material determined by PLM laboratory analysis using point count 400 methodology to contain less than 1% asbestos, some Cal/OSHA regulations apply to material determined to contain any detectable amount of asbestos.

Pursuant to NESHAP regulations, nonfriable materials are not classified as RACM if removed essentially intact using hand methods and not made “friable” during removal. The use of mechanical means to remove or impact nonfriable ACM will render that material friable, thus mechanically impacted materials shall be considered RACM and subject to handling and disposal requirements governing RACM.

Asbestos containing material that meets the USEPA definition of RACM, if present in quantities greater than the NCUAQMD quantity thresholds noted in Section 5, must be removed from the Project Site prior to renovation. Additionally, Category I and Category II ACM that is associated with a fire-damaged structure must be classified as RACM, per USEPA regulation. Materials identified in this report as USEPA RACM will require disposal as a non-Resource Conservation and Recovery Act (RCRA) California hazardous asbestos waste, if disposed of in California.

Abatement of RACM that is Thermal System Insulation (TSI) or surfacing material requires Class I abatement methods as defined by the Occupational Safety and Health Administration (OSHA) and Cal/OSHA. RACM that is not TSI or surfacing material requires Class II abatement methods as defined by OSHA and Cal/OSHA. Class I and Class II abatement methods are described below.

F1.4 Cal/OSHA Work Classes

Cal/OSHA regulates material containing asbestos at any detectable level, thus worker protection, material handling, material labelling, and material disposal protocols per California Code of Regulations (CCR), Title 8, Section 1529 (8CCR1529) apply to impaction of any material determined to contain asbestos above the laboratory detection limit. Impaction of material determined to contain asbestos in concentrations of less than 1% by weight (ACCM and <0.1%) is categorized by Cal/OSHA as unclassified work.

Cal/OSHA regulates worker exposure to airborne asbestos by instituting work practice, notification, training, and personal protective equipment requirements for employers and employees. In an effort to mitigate worker exposure to airborne asbestos fibers, Cal/OSHA mandates specific material containerization and work practices when workers impact materials containing asbestos at any detectable level. Cal/OSHA categorizes asbestos related work into four work classes as described below and defined in 8CCR1529.

F1.4.1 Class I Work

Class I asbestos work consists of activities involving the removal of asbestos-containing TSI, asbestos-containing surfacing material, or PACM. TSI includes pipe, pipe fitting, duct, boiler, and flue asbestos-containing insulation. Surfacing material includes sprayed-on or troweled-on asbestos-containing fire proofing, acoustical plaster or decorative plaster. PACM is TSI or surfacing material installed prior to 1981. PACM is presumed to contain asbestos and must be handled according to Class I work protocols unless sampled and determined by PLM analysis to contain no detectable asbestos fibers. Class I abatement work is subject to OSHA and Cal/OSHA regulations. Class I work must be conducted within a regulated negative-pressure containment equipped with a three-stage decontamination chamber that includes an operable shower. Class I work must be performed by properly trained and protected workers using appropriate means and methods as described by 8CCR1529.

F1.4.2 Class II Work

Class II asbestos work means activities involving the impaction and removal of ACM, which is not TSI or surfacing material, and results in more than one bag of waste materials. This includes but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics. Class II

work must be conducted within a regulated area containment and must be performed by properly trained and protected workers using appropriate means and methods as described by 8CCR1529.

F1.4.3 Class III Work

Class III asbestos work means activities involving the repair and maintenance operations, where ACM, including TSI, surfacing ACM and/or PACM, is likely to be disturbed. Class III asbestos removal operations are limited to work that generates no more waste than that which can fit into one 60 inch by 60-inch (60” x 60”) waste bag. Class III work must be conducted within a regulated area containment by properly trained and protected workers using appropriate means and methods described by 8CCR1529.

F1.3.4 Class IV Work

Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities. Class IV work must be conducted by properly trained and protected workers using appropriate means and methods described by 8CCR1529.

F1.5 Asbestos Containing Construction Material

Materials reported by laboratory analysis to contain detectable concentrations of asbestos fibers of less than 1% by weight are not regulated by the USEPA as ACM or RACM and are not governed by NESHAP regulations. While not regulated by the USEPA, materials containing less than 1% asbestos by weight are regulated by Cal/OSHA as ACCM and are subject to Cal/OSHA employee protection, waste labeling, and handling protocols. Employees impacting materials containing detectable levels of asbestos fibers, but in concentrations less than 1% asbestos by weight, must adhere to work practices and methods of compliance as mandated by Cal/OSHA and described in 8CCR1529.

F1.6 Exposure Limits for Asbestos

Employers must monitor the air their workers are breathing to determine the airborne concentration of asbestos fibers present in the work environment during the various shifts and while performing various tasks. Phase contract microscopy (PCM) sampling cassettes and low-volume air pumps are worn by employees during their work shift, typically for a period of eight hours. The PCM cassettes are analyzed by a laboratory and an exposure is determined, measured in asbestos fibers per cubic centimeter of air (fibers/cc), extrapolated across the eight-hour work shift. The eight-hour exposure is known as a time-weighted average (TWA).

The Contractor should conduct representative breathing zone personal air monitoring of its employees, including a minimum of 25 percent of the crew, once each shift and repeated daily or until a negative exposure assessment (NEA), as derived in accordance with 8CCR1529 (f)(2)(C), can be established. A NEA is documented proof that a given activity will not expose employees to asbestos in concentrations above the PELs noted in the following table. A NEA may be established by maintaining initial air monitoring from the beginning of a project that is representative of work employees will be performing during the entire project showing exposure below the PEL or Short-Term Exposure Limit (STEL).

The exposure limits noted in Table F1.6 Cal/OSHA Airborne Exposure Limits for Asbestos (Table F1.6) must be adhered to for employee protection to establish appropriate protective measures and controls when impacting material containing asbestos.

Table F1.6. Cal/OSHA Airborne Exposure Limits for Asbestos

Air Contaminant	Excursion Limit (Short Term Exposure Limit)	Permissible Exposure Limit (PEL) (8-hour TWA)
Asbestos	1.0 fibers/cc over 30 minutes	0.1 fibers/cc over an 8-hour TWA

Notes:

- Permissible Exposure Limit (PEL): Employer must ensure no employee is exposed above this level based on an 8-hour TWA. When employee expose levels meet or exceed the PEL, administrative, engineering and work practice controls must be implemented. Respiratory protection and other protective measures are required pending feasible engineering controls. Additional training, monitoring, and medical surveillance requirements apply to respirator usage and for exposure levels exceeding PEL.
- Short Term Exposure Limit (STEL): Short term exposure is measured over 30 minutes during periods of maximum expected exposure operations and is also known as the Excursion Limit

Workers should wear personal air sampling devices for the full duration of their shift (eight hours). At least one sample should be collected representing each position/job classification in each work area of the Project Site. If exposures are determined to be above the PEL or STEL, appropriate worker protections should be instituted per 8CCR1529. Exposure monitoring should document the source of asbestos emissions.

Until an employee exposure assessment is completed, and it has been determined and documented that the employee is not exposed above the PEL, the Contractor should treat the employee as if the employee were exposed above the PEL and should implement employee protective measures per 8CCR1529. Monitoring should be conducted by an individual experienced and knowledgeable about the methods of air monitoring in compliance with applicable regulatory standards.

F2 Requirements for Asbestos Work

F2.1 Asbestos Administrative Controls

Employers must establish a written hazard communication (HAZCOM) training program and train their employees to the hazards to which they are exposed. A HAZCOM program should be implemented for employees who will impact asbestos. If exposure monitoring shows worker airborne exposure to asbestos above the PEL, or above the excursion limit, then additional training and worker certification is necessary.

Supervisors who oversee asbestos work shall have completed 40 hours of USEPA Asbestos Hazard Emergency Response Act (AHERA)-accredited supervisor training. Employees interacting with asbestos must have a level of training appropriate for the class of asbestos work, ranging from two hours (HAZCOM) to 32 hours (AHERA-accredited Worker). At no time should suspected or known asbestos material be drilled, cut, sanded, scraped, or otherwise disturbed by untrained personnel.

Asbestos disturbance and/or removal operations must be conducted by a Cal/OSHA-registered and State-licensed asbestos removal contractor. Contractor registration with Cal/OSHA is required if greater than 100 square feet of ACM, RACM, or ACCM are disturbed by a contractor within a one-year period of time. Employers whose employees disturb asbestos must file a written Report of Use of Regulated Carcinogens (Report of Use) form with Cal/OSHA. A Report of Use form must be filed with Cal/OSHA by employers whose workers disturb material containing greater than 0.1 percent asbestos. Disturbance of asbestos and/or abatement operations should be supervised by a Competent Person, as defined by 8CCR1529, who is trained, knowledgeable and qualified in the techniques of asbestos abatement.

One or more of the following specialty certifications for asbestos is/are required by the California Contractors' State License Board (CSLB) for contractors who disturb greater than 100 square feet of asbestos in a year (some exceptions for specific materials apply):

1. C-22 – Asbestos abatement

F2.2 Work Practice Controls

Asbestos abatement should be performed by persons trained, qualified, licensed, and equipped to perform asbestos abatement. Employees must never be exposed to airborne asbestos above the PEL, thus specific administrative controls, work practice controls and personal protective equipment (PPE) protocols must be implemented by the employer. Whole-body coverings (including hood and foot-coverings), gloves, and HEPA cartridge-equipped respirators are the standard PPE utilized for asbestos work in most circumstances. The remainder of this section consists of a brief summary of selected work practices required when impacting materials containing asbestos.

A regulated area is required to be established using signage and/or barrier tape around a work area where asbestos is to be impacted if there is a “reasonable possibility” that airborne concentrations of asbestos will exceed the PEL (8CCR1529). A regulated area is also required for all Class I, II and III work. Regulated areas shall be demarcated “in a manner that minimized the number of persons within the area and protects persons outside the area from exposure to airborne asbestos” (8CCR1529). Access to regulated areas shall be limited to properly trained and protected workers.

The use of wet methods (water) to mitigate emissions of airborne dust is required whenever material containing asbestos is disturbed. The goal of using wet methods is to achieve no visible emissions of asbestos-related dust.

Vacuum cleaners equipped with High Efficiency Particulate Filters (HEPA) must be used by employees impacting material containing asbestos in detectable quantities and must also be used to address associated dust and debris. Material containing asbestos in detectable quantities may not be impacted by non-HEPA-equipped sanders, grinders, saws, or other abrasive power tools. Material containing asbestos (including associated dust and debris) may not be addressed using compressed air, dry sweeping, or dry shoveling.

Material containing asbestos in detectable quantities must be “promptly” containerized in leak tight containers. Prompt clean-up generally is understood to mean that material should not be left un-containerized (unpackaged or outside of a sealable disposal container or waste bin) after any work stoppage such as scheduled breaks and the end of any work shift. Waste containers containing ACM or RACM must be labeled in accordance with Cal/OSHA labeling requirements. Waste containers of RACM must be additionally labeled in accordance with USEPA labeling requirements.

F2.3 Asbestos Work Notifications

Notifications are required by regulatory agencies prior to conducting certain types of work which may impact hazardous materials. Pre-work notifications are required for the project by the local USEPA NESHAP delegated authority and Cal/OSHA office with jurisdiction over the Project Site as noted in Table 5.1 located in Section 5.

F2.3.1 Cal/OSHA Temporary Worksite Notification

For Project activities which will involve asbestos-related work in excess of 100 square or linear feet, written notification must be made to Cal/OSHA. Such written notification to Cal/OSHA must be submitted to the nearest Cal/OSHA office exercising regulatory authority over the project at least 24 hours prior to the start of asbestos-related work. In addition, certain unexpected events related to asbestos work, such as employees exposed over the PEL without a respirator, must be reported to Cal/OSHA within 15 days of the incident.

F2.3.2 NESHAP Renovation or Renovation Notification

The USEPA NESHAP regulations are authorized by Section 112 of the Clean Air Act (published in 40 Code of Federal Regulations Parts 61 and 63) and specify work practices for asbestos to be followed during renovations and renovations of all structures meeting the NESHAP definition of a facility. The NESHAP regulations require the owner of the facility, or the facility operator, to notify a USEPA delegated authority at least 10 business days prior to the planned commencement of abatement, renovation, and/or renovation work triggering notification.

A Renovation/Demolition Notification must be supplied to the NCUAQMD 10 business days before any work meeting one or more of the following criteria:

1. Impaction or removal of RACM in quantities greater than the notification thresholds noted in Section 5
2. Facility renovation, including unweighting or removal of any load-bearing structure
3. Intentional burning for fire training purposes

F2.4 Asbestos Disposal Requirements

Category I and Category II nonfriable ACM should be disposed of as asbestos-containing waste in California. Friable ACM (RACM), including nonfriable material that has become or will be rendered friable, should be disposed of in California as non-Resource Conservation and Recovery Act (non-RCRA) hazardous waste. Impacting nonfriable ACM with mechanical means will render such material friable and reclassify the material as RACM.

If point count laboratory analysis (Point Count 400) shows that a given material contains less than 1% asbestos, then such material is not considered a hazardous waste by USEPA, or the California Department of Toxic Substances Control (DTSC). Asbestos material containing less than 1% asbestos is not subject to Cal/OSHA asbestos waste labeling requirements. Waste materials containing less than 1% asbestos may generally be disposed of as construction debris in many California landfills and at many municipal transfer stations; however, the acceptance criteria of each facility may differ. The waste acceptor should be contacted, and their individual acceptance-criteria abided by, prior to waste transport and disposal.

Appendix G

Lead Regulatory Summary

General Informational Summary of Governmental Lead (Pb) Rules and Regulations

Appendix G Regulatory Overview for Lead

Work at the project site is understood to meet the Cal/OSHA definition of construction work (8CCR1532.1[a]) and includes the planned impaction of known lead containing surface coatings, thus, is subject to regulation by governmental agencies and standards, including those noted in this section.

G1.1 Lead Regulations

G1.1.1 Code of Federal Regulations (CFR)

1. 29 CFR 1926, Construction Standards
2. 40 CFR Parts 261, 265, and 268, Hazardous Waste Management
3. 40 CFR Part 745, Lead: Identification of Dangerous Levels of Lead
4. 40 CFR Part 745, Subpart E Lead Renovation, Repair and Painting Program
5. 49 CFR Parts 172, 173, 178, 179, Hazardous Material Transportation

G1.1.2 California Code of Regulations (CCR)

1. 8 CCR Division 1, Chapter 4, Construction Safety Orders
2. 8CCR1532.1, Lead in Construction
3. 8 CCR 1537, Welding, Cutting, and Heating of Coated Metals
4. 8 CCR 1531, Respiratory Protection
5. 17 CCR Division 1, Chapter 8, Accreditation/Certification, and Work Practices in Lead–Related Construction
6. 22 CCR Division 4.5, Environmental Health Standards for Management of Hazardous Waste

G1.2 Lead Based Paint

The USEPA, CDPH and Cal/OSHA define Lead Based Paint (LBP) as a surface coating containing lead in a concentration of equal to or greater than 0.5 percent by weight, 5,000 milligrams per kilogram (mg/kg), 5,000 ppm, or 1.0 milligram per square centimeter (mg/cm^2). In addition, Cal/OSHA regulates worker impaction of paint containing any detectable quantity of lead, thus such work triggers compliance with applicable regulations, including 8CCR1532.1.

The United States Consumer Product Safety Commission defines lead containing paint (LCP) as a surface coating containing lead in a concentration of equal to or greater than 0.009 percent by weight or 90 ppm (90 mg/kg).

G1.3 Trigger Tasks and Lead Impaction Activities

Specific construction tasks, known as Trigger Tasks, when performed on material(s) known to contain detectable quantities of lead, should be understood to expose employees above the lead PEL and thus necessitate specific employee protection measures per 8CCR1532.1. A Trigger Task or Activity is defined herein as a construction operation, process or task specifically identified by the Cal/OSHA lead standard (8CCR1532.1) as a potential lead exposure hazard requiring certain protective measures to be implemented prior to obtaining the results of an initial exposure assessment.

Performing a Trigger Task should be understood to expose employees above the Permissible Exposure Limit (PEL) and should thus necessitate employee protection measures, including the following: wearing of respirators and protective clothing, action level training (at a minimum) and initial employee biological medical monitoring (blood tests), until personal air sampling proves otherwise. Untrained and/or unprotected workers should not perform trigger tasks. Specific trigger tasks and their expected resultant airborne exposure levels are described below.

G1.3.1 Trigger Task I

The following trigger task I activities are expected to create airborne lead concentrations of 50 to 500 micrograms per cubic meter of air (µg/m^3):

1. Manual renovation
2. Paint preparation (scraping and sanding)
3. Using heat guns
4. Using HEPA-filtered equipment
5. Debris clean-up

G1.3.2 Trigger Task II

The following trigger task II activities are expected to create airborne lead concentrations of 500 to 2,500 µg/m^3:

1. Lead mortar work
2. Lead burning
3. Rivet busting
4. Use of non-HEPA-filtered equipment
5. Dry abrasive blast debris clean-up or containment movement

G1.3.3 Trigger Task III

The following trigger task II activities are expected to create airborne lead concentrations of greater than 2,500 µg/m^3

G1.4 Competent Person Designation

The Contractor shall designate, in writing, one or more individuals as Competent Persons(s) when tasking individuals to perform work at the project site that may impact lead containing surface coatings. Written designation shall certify that each designated Competent Person has the appropriate training and knowledge required of a Competent Person under Article 6 of the construction Safety Orders, Title 8, California Code of Regulations.

G1.5 Personal Air Monitoring

The Contractor should conduct worker breathing zone exposure monitoring (also known as personal air monitoring) to determine the airborne concentration of lead present within the work environment as required by Cal/OSHA per 8CCR1532.1. Air monitoring of Contractor personnel performing lead impaction work is required by Cal/OSHA and is the obligation of the Contractor. The Contractor is responsible for providing daily Cal/OSHA compliance monitoring as per 8CCR1532.1 (Lead). The Contractor shall monitor workers for lead exposure.

Air monitoring should continue for each task for the duration of the project, unless a negative exposure assessment is achieved. The exposure limits noted in G1.5 Cal/OSHA Exposure Limits for Lead (Table G1.5) must be adhered to for employee protection to establish appropriate protective measures and controls when impacting material containing lead.

Table G1.5 Cal/OSHA Airborne Exposure Limits for Lead

Air Contaminant	Action Level (AL) (8-hour TWA)	Permissible Exposure Limit (PEL) (8-hour TWA)
Lead	30 µg/m^3	50 µg/m^3

Notes:

- µg/m^3 = Micrograms per cubic meter of air
- 8-hour TWA = Eight-hour time-weighted average
- Action Limit (AL): When employee exposure levels exceed the AL, specific administrative, engineering and work practice controls must be implemented.
- Permissible Exposure Limit (PEL): Employer must ensure no employee is exposed above this level based on an 8-hour TWA. When employee exposure levels exceed the PEL, all applicable administrative, engineering and work practice controls must be implemented. Respiratory protection and other protective measures are required pending feasible engineering controls. Additional training, monitoring, and medical surveillance requirements apply to respirator usage and for exposure levels exceeding PEL.

Correspondingly to the asbestos air monitoring requirements described in section F1.8 (Appendix F), the Contractor should conduct representative (25% of crew) breathing zone personal air monitoring of its employees once each shift and repeated daily or until a NEA showing airborne lead exposure below the PEL or Action Level (AL), as derived in accordance with and 8CCR1532.1 (d) can be established. Monitoring should be conducted by an individual experienced and knowledgeable about the methods of air monitoring and in accordance with 8CCR1532.1. If exposures are determined to be above the action level, appropriate worker protections should be instituted per 8CCR1532.1. Exposure monitoring should document the source of lead emissions.

Until an employee exposure assessment is completed and it has been determined and documented that the employee is not exposed above the PEL, the Contractor should treat the employee as if the employee were exposed above the PEL and should implement employee protective measures per 8CCR1532.1, if any Trigger Tasks are to be performed.

G1.6 Personnel Training

Individuals engaged in lead-related construction work activities should attend lead hazard training appropriate to their assignments. All training for other lead–related construction activities should be in accordance with the worker training provisions in the Cal/OSHA and CDPH lead regulations.

Employees, including crew leaders, supervisors, and any other Contractor personnel or agents who may be exposed to airborne concentrations of lead must have received at a minimum: lead awareness training (HAZCOM) as required by Cal/OSHA 8CCR1532.1. If air monitoring demonstrates an exposure above the AL or PEL for lead, the Contractor should maintain documentation that employees receiving this exposure level have received Action Level training if exposed above Action Level. The Contractor should maintain documentation affirming that employees have appropriate CDPH lead worker certification if exposed above PEL while working at a public building.

G1.6.1 Hazard Communication Training

All workers should receive lead hazard communication (HAZCOM) training prior to the commencement of work that may disturb painted surfaces known or presumed to contain lead at the project site. Such training should be documented and such documentation retained onsite for review. Training should include, but may not be limited to, the locations and presence of lead containing material at the project site, the potential hazards of lead exposure, the purpose and meaning of warning signage, the isolation (using signage and barrier tape) of identified lead debris, the required procedures and training necessary to impact lead containing material and prohibited practices regarding lead containing material at the project site, the content of 8CCR1532.1, the specific nature of operations which could expose employees to lead above the action level, the proper use of respirators, the purpose and a description of the medical surveillance program, the content of the Contractor Lead Compliance Plan, and the proper use/restrictions on chelating agents.

G1.6.2 Action Level Training

The Action Level (AL) is an established airborne contaminate level that when met or exceeded, certain protective health and safety measures are triggered per 8CCR1532.1 (l) (2). For lead, the AL is an exposure of 30 micrograms per cubic meter of air (µg/m^3) of airborne lead as an 8-hour TWA. The Contractor should provide training for all workers who may be exposed to lead in excess of the AL or PEL in accordance with Title 8CCR1532.1, Subsection (l), Parts (1) and (2) Awareness Training. Contractor should maintain documentation that employees receiving this exposure level have received Action Level training if exposed above Action Level.

The Contractor should itself establish, or have site personnel attend, an Action Level Training program. Such a training program should assure that each employee is trained in the following:

1. The content of 8CCR1532.1 and its appendices.
2. The specific nature of the operations which could result in exposure to lead above the action levels.
3. The purpose, proper selection, fitting, use, and limitations of respirators.
4. The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).
5. The engineering controls and work practices associated with the employee's job assignment including training of employees.
6. The contents of any compliance plan and the location of regulated areas in effect.
7. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used except under the direction of a licensed physician.
8. The employee's right of access to records under CCR Section 3204.

G1.7 Medical Surveillance Compliance

Use only workers trained and medically qualified for the assigned lead work and respirator usage for trigger tasks or other work known or reasonably expected to generate airborne exposures to lead in excess of the Action Level (AL) or PEL.

Contractor employees shown to be exposed above the AL, PEL, and/or engaged in Trigger Tasks in the absence of a NEA, must be medically qualified to do so and have the appropriate medical examinations as specified in 8CCR1532.1. Medically qualified should mean that the worker who performs trigger tasks, or other lead-related construction tasks likely to exceed the AL or PEL, has received, at minimum, lead biological monitoring and medical evaluation for use of respiratory protection in accordance with 8CCR1532.1(j).

Medical requirement for lead-related construction work compliance should include:

1. Documentation of medical surveillance examination by a licensed medical physician prior to commencement of onsite Lead–Related Construction “trigger task” work. Documentation should include baseline blood lead levels. The baseline blood lead should have been within 30 days in advance of starting work.
2. Documentation from physician that all employees or agents who may be exposed to airborne lead in excess of background levels have received medical examination to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects in accordance with 8 CCR 153. Medical exams should have been performed not more than 12 months prior to the completion of Contractor work at the project site. Biological monitoring records documenting employee blood lead level

test results should be kept for 30 years. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g., high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities.

3. Documentation that each employee required to wear respirators has passed a respirator fit test within the past 12 months and has been assigned an individual respirator based on the fit test.

4. Methods, procedures and plan for monitoring employee airborne lead exposure as required by Cal/OSHA during lead component removal, clean-up and surface preparation activities. Methods and procedures, at a minimum, should comply with requirements outlined in 8CCR1532.1 Lead. Include Name, address and certification information for laboratory to be used for air sample analysis.

G1.8 Requirements for Lead Impaction

Surface coatings (paint) applied to interior and exterior surfaces at the project site have been reported and/or are assumed to contain lead. Employers whose employees perform impaction of surface coatings at the project site should monitor their employees for airborne lead exposure and institute necessary employee protection precautions per the Cal/OSHA lead standard (8CCR1532.1) when conducting work at the project site.

As required by 8CCR1532.1, employees performing work at the project site, including foreman, supervisor, and any other company personnel or agents who may be exposed to any airborne concentrations of lead, should receive training which includes, at a minimum, Lead Awareness training, also known as lead HAZCOM training.

If air monitoring demonstrates an employee exposure to lead above 30 micrograms per cubic meter of air (µg/m^3), a threshold known as the Cal/OSHA Action Level, or 50 µg/m^3, a threshold known as the PEL, the employer must maintain documentation that employees receiving such exposure(s) have received Action Level training (if exposed above the Action Level or PEL) and have appropriate CDPH certification. It should be noted that CDPH certification is applicable if employees are exposed above the PEL in a building generally accessible to the public as defined by 17 CCR, Division 1, Chapter 8, Article 1.

Employee protection measures are mandated by Cal/OSHA when workers impact lead and the scope and magnitude of these measures are generally dependent on the amount of lead present in the air. At a minimum, work impacting lead must include the following protocols:

1. Establishment of a regulated work area (posting of warning signage)
2. Establishment of hygiene controls (hand washing facilities)
3. Use of wet methods (water) to mitigate airborne dust generation
4. Use of HEPA filter-equipped vacuums and tools
5. Use of PPE, including respirators, as appropriate

G2.1 Lead Waste Disposal

G2.1.2 Waste Segregation and Characterization

The Resource Conservation and Recovery Act (RCRA) gave the USEPA authority to regulate the waste status of demolition and renovation debris, including lead-containing materials. Specific notification and testing requirements are required to be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leaching Procedure (TCLP) results exceed five milligrams per liter (mg/l). The USEPA exempts from most RCRA requirements those generators whose combined hazardous waste generation is less than 100 kilograms per month. Site owner or contractor should provide for secure onsite temporary storage for known or suspect hazardous LBP paint chip, dust/debris, and cleanup related waste.

Suspect hazardous waste streams and waste categories listed below should be considered lead hazardous waste until proven otherwise through testing. Suspect hazardous waste should be segregated by the Client or site owner based on potential for exhibiting hazardous waste characteristics. Lead related wastes, at a minimum, are to be segregated into the below listed categories:

1. Category I: Paint removed by chemical stripping, mechanical removal or abrasive media, paint chips, vacuum bags, used cleaning materials. These materials are typically hazardous wastes and should be assumed hazardous unless proven nonhazardous via approved laboratory analysis.
2. Category II: Plastic sheeting and tape, disposable clothing, and equipment. These materials should be non-hazardous if properly cleaned and decontaminated. However, these items are to be considered hazardous wastes subject to testing.
3. Category III: Work dust and debris from lead painted finishes and structures undergoing work are to be considered hazardous waste subject to testing.
4. Composite representative samples should be taken of each waste stream category generated. Samples from a given waste stream category may be composited into one sample for analysis. The site owner and contractor should ensure a sufficient number of representative samples are taken from each category of segregated waste. Waste streams should be tested using the lead testing analytical thresholds for determination of hazardous waste characterization as shown on the following tables, Table G2.1 and Table G2.2.

Table G2.1 Cal/EPA Testing Protocol for Lead

Lead Content Analytical Method	Hazardous Waste Threshold	Waste Characterization
Total Threshold Limit Concentration (TTLC)	≤50 ppm	Non-Hazardous Waste
Total Threshold Limit Concentration (TTLC)	>50 ppm - ≤1,000 ppm	Run STLC
Total Threshold Limit Concentration (TTLC)	>1,000 ppm	California Hazardous Waste, Run TCLP
Soluble Threshold Limit Concentration (STLC)	≤5 mg/L	Non-Hazardous Waste
Soluble Threshold Limit Concentration (STLC)	>5 mg/L	California Hazardous Waste, Run TCLP

Notes:
- > = greater than
- ≤ = less than or equal to
- mg/L = milligrams per liter, laboratory unit of measurement for soluble analytes
- ppm = parts per million, laboratory unit of measurement

Any waste greater than or equal to 1,000 ppm lead using the TTLC analysis method should be considered a lead hazardous waste. If the TTLC result for a waste stream is less than 50 ppm lead, then the waste stream is non-hazardous, and no further testing is required for the sampled waste stream unless the waste changes in character or composition.

Table G2.2 USEPA Testing Protocol for Lead

Lead Content Analytical Method	Hazardous Waste Threshold	Waste Characterization
Toxicity Characteristic Leaching Procedure (TCLP)	>5 mg/L	RCRA Hazardous Waste
Toxicity Characteristic Leaching Procedure (TCLP)	≤5 mg/L	Non-RCRA Hazardous Waste

Notes:

- > = greater than
- ≤ = less than or equal to
- mg/L = milligrams per liter, laboratory unit of measurement for soluble analytes
- RCRA = Resource Conservation and Recovery Act

Based on the above testing protocols, any representative waste stream having a soluble lead concentration greater than or equal to five (5) ppm lead as determined by STLC or TCLP analyses or any waste greater than or equal to 1,000 ppm lead using the TTLC analysis method should be considered a lead hazardous waste.

Each category of suspect hazardous waste should be tested and characterized according to requirements of the selected permitted waste disposal site. If other hazardous constituents are known or suspected to be present, the testing should also include those substances or conditions.

The waste should be packaged, stored, handled, transported and disposed of for each category of waste generated based on the testing results and regulatory protocol. All testing should be performed by a laboratory that complies with and is certified under the Environmental Laboratory Accreditation Program (ELAP) established by the CDPH.

Appendix H

Personnel Certifications

Accreditations and Certifications for Key Project Personnel

Key Project Personnel Asbestos Certifications


State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Scott S Harris
Name

Certification No. **11-4713**

Expires on **02/16/22**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.


State of California
Division of Occupational Safety and Health
Certified Site Surveillance Technician

Alexander R Crowe
Name

Certification No. **10-6761**

Expires on **03/17/22**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

Appendix I

Laboratory Certifications

Accreditations and Certifications for Laboratories Providing Analytical Data for the project

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-3

EMSL Analytical, Inc.

San Leandro, CA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2021-07-01 through 2022-06-30

Effective Dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Voluntary Laboratory Accreditation Program

NVLAP® National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
464 McCormick St.
San Leandro, CA 94577
Cecilia Yu
Phone: 510-895-3675
Email: cyu@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 101048-3

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

CERTIFICATE OF ENVIRONMENTAL LABORATORY ACCREDITATION

Is hereby granted to

EMSL Analytical Inc.

San Leandro, CA

464 McCormick Street

San Leandro, CA 94577

Scope of the certificate is limited to the
"Fields of Accreditation"
which accompany this Certificate.

Continued accredited status depends on compliance with applicable laws and regulations, proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1620**

Effective Date: **7/1/2020**

Expiration Date: **6/30/2022**

Sacramento, California
subject to forfeiture or revocation

Christine Sotelo, Chief
Environmental Laboratory Accreditation Program

CALIFORNIA STATE
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM
Fields of Accreditation

EMSL Analytical Inc.
San Leandro, CA
464 McCormick Street
San Leandro, CA 94577
Phone: 5108953675

Certificate Number: **1620**
Expiration Date: **6/30/2022**

Field of Accreditation: 103 - Toxic Chemical Elements of Drinking Water			
103.300	001	Asbestos	EPA 100.1
103.301	001	Asbestos	EPA 100.2
Field of Accreditation: 114 - Inorganic Constituents in Hazardous Waste			
114.130	001	Lead	EPA 7420
Field of Accreditation: 121 - Bulk Asbestos Analysis of Hazardous Waste			
121.010	001	Bulk Asbestos	EPA 600/M4-82-020

As of 6/23/2021 , this list supersedes all previous lists for this certificate number.
Customers: Please verify the current accreditation standing with the State.

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

464 McCormick Street, San Leandro, CA 94577

Laboratory ID: LAP-101748

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

☑	**INDUSTRIAL HYGIENE**	Accreditation Expires: February 01, 2022
☑	**ENVIRONMENTAL LEAD**	Accreditation Expires: February 01, 2022
☑	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: February 01, 2022
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Beth Bair

Elizabeth Bair
Chairperson, Analytical Accreditation Board

Cheryl O. Morton

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision19.1: 07/28/2021

Date Issued: 07/28/2021

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

EMSL Analytical, Inc
464 McCormick Street, San Leandro, CA 94577

Laboratory ID: LAP-101748
Issue Date: 01/31/2020

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

The EPA recognizes the AIHA-LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air and composited wipes analyses are not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)

Initial Accreditation Date: 02/01/2020

Component, parameter or characteristic tested	Technology sub-type/Detector	Method	Method Description *(for internal methods only)*
Airborne Dust	AA	NIOSH 7082	
Paint	AA	EPA SW 846 7000B	
		EPA SW-846 3050B	
Settled Dust by Wipe	AA	EPA SW 846 7000B	
		EPA SW-846 3050B	
Soil	AA	EPA SW 846 7000B	
		EPA SW-846 3050B	

A complete listing of currently accredited ELLAP laboratories is available on the AIHA-LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

ghd.com

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