

Debris Pile Removal Design

Former Markwardt Brothers Garage
West Chocktoot Street & North 1st Avenue
Chiloquin, Klamath County, Oregon

Prepared for: City of Chiloquin
EPA Cooperative Agreement #BF-02J00701
February 25, 2022



now



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1 Introduction/Background

This Environmental Abatement Design (Design) has been prepared for the Former Markwardt Brothers Garage property located at the northeast corner of West Chocktoot Street and North 1st Avenue, in Chiloquin, Klamath County, Oregon (site) to programmatically ready the site for redevelopment. This project details the removal of a construction and demolition (C&D) debris pile from the collapsed former Chiloquin Mercantile that is contaminated with asbestos-containing materials (ACM). The scope of work detailed in this Design will be initiated upon procurement of an asbestos abatement contractor (Contractor), which is expected to occur in March 2022.

This Design was prepared to procure competitive bids from asbestos abatement contractors for equivalent work to be completed. In addition, this Design provides an asbestos abatement specification in accordance with the EPA Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) and Toxic Substances and Control Act (TSCA).

1.1 Site Description

According to the Klamath County Tax Assessors office, the site consists of two tax parcels totaling approximately 0.55-acres, identified by tax parcel identification numbers 3407-034DC-00500 and 3407-034DC-00400. The parcels are situated along North 1st Avenue and West Chocktoot Street, and consist of undeveloped land (north parcel) and a single-story approximately 8,500 square-foot former automotive garage/service station, and the subject debris pile. The site layout is provided on **Figure 1**.

1.2 Building History and Property Description

According to the City of Chiloquin Public Works Department, the automotive garage operated as an auto repair/car dealership and gasoline service station from the 1930s through the 1960s; a second-hand store in the 1970s; and the Juniper Wood Products facility in the 1980s. A commercial building formerly occupied by the Chiloquin Mercantile adjoined the garage's north wall until it collapsed due to structural failure in approximately 2018. The remnants of this building are the subject C&D debris pile. The area to the north of the debris pile consists of vacant land that was once occupied by a rooming house.

The surrounding area is primarily developed with commercial buildings associated with downtown Chiloquin. Photos of the site and debris pile are provided in **Appendix A**.

1.3 Previous Environmental Assessments

The following investigations, assessments, and/or applications have been completed at the site:

- Phase I Environmental Site Assessment (ESA), Cardno, May 2021
- Asbestos and Lead-Based Paint Survey, Cardno, May 2021
- Oregon Department of Environmental Quality (ODEQ) Voluntary Cleanup Program Application, Cardno, June 2021 (ODEQ approval)
- Phase II ESA and Debris Pile Sampling, Cardno, August 2021
- Updated Phase I ESA, Cardno, November 2021

Valuable information was collected during the execution and preparation of the previous environmental assessments; however, this design focuses on the results of the Phase II ESA as presented in the Debris Pile Sampling report (Cardno, August 2021) that included the collection and analysis of asbestos and lead toxicity characteristic leachate procedure (TCLP) samples.

Asbestos:

There were 6 bulk material samples collected from 3 homogenous areas analyzed for asbestos. Sample locations are provided on **Figure 1**. The two drywall samples collected were split by the laboratory into applicable layers and found to contain 2 percent chrysotile asbestos. Due to the nature of the debris pile, the ACM cannot be completely segregated from the pile, therefore the entire pile must be treated as an asbestos-contaminated material and subject to asbestos abatement regulations. The asbestos laboratory report is provided in **Appendix B**.

Lead:

There were 2 composite samples collected from the debris pile and analyzed for lead via TCLP for waste characterization purposes. Sample locations are provided on **Figure 2**. The results were below the reporting limit for lead. The asbestos laboratory report is provided in **Appendix B**.

1.4 Davis-Bacon Act

All abatement work is expected to be partially funded by federal funds and therefore must comply with the Davis-Bacon Act (DBA) which requires payment of the prevailing wage rate for cleanup activities. The budget and schedule must take this into account. More details regarding the DBA can be found on the US Department of Labor's (DOL) website:

<https://www.dol.gov/whd/regs/compliance/whdfs66.pdf>.

Additionally, work conducted under Business Oregon contracts must also comply with State labor standards and wage rates found in Oregon Revised Statutes (ORS) Chapter 279C.

Note: The contractor's bid must affirm that the bid has been developed and the work completed upon award will comply with all conditions of the Davis-Bacon Act and ORS Chapter 279C

2 Scope of Work

The Contractor will perform the following tasks as part of the Scope of Work:

- Prepare a general Execution Plan and Site-Specific Health and Safety Plan (HASP) for review and approval. Establish decontamination stations for personnel and vehicles, traffic patterns, staging areas, and a waste management plan for review and approval.
- Prepare all regulatory agency notifications, permits, and compliance documentation required to facilitate the work.
- Remove, containerize, transport, and dispose of the asbestos-contaminated debris pile. The extent of the confirmed asbestos-contaminated debris pile is shown on **Figure 1**. The debris pile consists of all remnant building debris (brick, mortar, glass, drywall/joint compound, plaster, wood, roofing materials, and etc).
- Final cleaning of the underlying concrete slab must be completed to remove any potential residual ACM. Visually confirm that all debris and residual material has been removed from the remaining concrete slab or underlying soil where concrete slab is not present. Any depressions observed in the concrete slab or underlying soil must be backfilled with #57 stone or equivalent and appropriately compacted.
- It is assumed that that duration of this project will be short and only a final closure report will be required. A final closure report will be provided by the contractor that includes all of the waste documentation and certification that all regulated and/or specified materials have been removed from the site.

2.1 Execution Plan

The following information is required to be submitted as part of the Contractor's Execution Plan submittal:

- Within 10 business days of the Contractor's Agreement execution, a detailed Execution Plan that describes how the Contractor proposes to conduct the requested work activities must be submitted to the Owner and the Owner's Representative.
 - Owner - Teresa Foreman: Chicityhall@gmail.com
 - Owner's Representative - Keith Ziobron and Robert Hall: keith.ziobron@cardno.com and Robert.m.hall@cardno.com
- The Execution Plan must, at a minimum, include the following:
 - Identification of all personnel, equipment, and materials to be used.
 - Identification of all subcontractors (if any) to be used and their role in conducting elements of the Work. Owner's Representative must give written approval of all subcontractors prior to their entering the facility.
 - Truck traffic routes, staging areas, personnel decontamination stations, and parking areas for Site personnel.

- Proposed waste management approach (including collection, segregation, and containerization of wastes, transportation & disposal for all waste, and which disposal facility to be used)
- Proposed execution schedule showing the work days and hours within 6:00 a.m. – 6:00 p.m., Monday – Friday (unless otherwise approved by the Owner).
- Provide names and resumes of its nominated key personnel (such as, but not limited to, Project Manager, Site Supervisor, and Site Health and Safety Officer) for Owner's Representative acceptance.

2.2 Health and Safety Plan

Contractor must prepare a site-specific HASP in accordance with OSHA requirements as specified in Code of Federal Regulations (CFR) Title 40 Part 1910.120 and 29 CFR 1926, as applicable, as well as Construction Safety 29 CFR Part 1926 – OSHA General Construction Standards and 29 CFR Part 1926 Subpart T – Standards for Demolition Activities.

Contractor must provide the HASP to the Owner's Representative for review at least five days prior to Contractor's mobilization. All site-specific HASPs must be adhered to during the work and include the personal protective equipment (PPE) required to safely perform the work. PPE will at a minimum include the following: protective clothing, respirator (when required), safety toe shoes, long pants, high-visibility (reflective) vest or garment, safety glasses with side shields, and a hard hat. Other tasks may warrant additional PPE such as cut-resistant gloves, hearing protection, and respiratory protection. The HASP will detail worker protection and monitoring measures for the regulated constituents present on Site.

Prior to beginning any work, Contractor will provide a health and safety orientation to personnel working on the project. The purpose of the orientation will be to confirm that site personnel have a firm understanding of the project hazards and the administrative and/or engineered controls implemented to control these hazards.

At the start of each work day and after lunch prior to re-initiation of work, each Contractor will participate in a tailgate safety meeting. The meeting will be attended by all Contractor and subcontractor personnel working at the site as well as an Owner's representative. The health and safety meetings will be effective in reinforcing the concepts presented in the HASP, helping personnel stay focused on implementing safe work practices, and be documented by a tailgate safety form signed by all personnel in attendance.

In addition to the above requirements, personnel must abide by site-specific safety rules and procedures, such as obtaining relevant work permits, non-smoking requirements, and drug-free workplace requirements.

2.3 Training

All onsite personnel involved in handling/removal of regulated (or potentially regulated) materials must have, at a minimum, OSHA 40-hour Hazardous Waste Training (29 CFR 1910.120 and 1926.65) with the corresponding annual 8-hour refresher courses and be a DEQ-licensed asbestos abatement contractor. Copies of relevant individual training certificates are required to be on-site during abatement activities.

2.4 Permits and Notifications

Upon notice to proceed and prior to mobilization, the Contractor will prepare and secure the applicable permits, licenses, and notifications necessary for executing the asbestos abatement, cleaning, and demolition tasks. In addition to the Federal (NESHAP notification) and State of Oregon (ASN-1) requirements, the site is located within the City limits of Chiloquin and may require local permits or notifications. The Contractor is required to submit draft applications/notifications to the Owner's Representative for review and approval at least 3 days prior to submittal to any regulatory authority. A copy of the finalized documentation must be present during operations.

2.5 Mobilization and Site Preparation

Various mobilization activities must be completed prior to initiating the work. These activities aid in preparing and maintaining a safe site and are paramount to the successful completion of any project. These activities will include, but not be limited to:

- Mobilize the necessary personnel, equipment, supplies, materials, and resources to the site to perform the work;
- Conduct a pre-construction meeting at the site prior to beginning work;
- Delineate work zones, including posting necessary signs, warning tape, etc.; and
- Set up staging areas for equipment and supplies as necessary.
- Mobilize decontamination stations and sanitary facilities for workers and institute measures to prevent tracking out of any regulated material residue from the site.

2.6 Asbestos-Containing Materials

Cardno conducted a debris pile sampling event at the site in August 2020. Asbestos containing drywall and joint compound materials were identified mixed into the debris pile and is unable to be segregated from the rest of the debris. As such, the debris pile is considered to be asbestos-contaminated and must be removed. **Figure 1** provides the general location of the debris pile to be removed. The ACM summarized below are also provided in the attached **Bid Form**.

- Asbestos-contaminated C&D debris pile: 450 Cubic Yards (CY)

A detailed specification for the removal of ACM was prepared by Mr. Robert Hall of Cardno and is provided as **Section 3** of this Design. Mr. William Smithwick collected the asbestos bulk samples and a copy of his asbestos inspector certification is provided in **Appendix C**. A copy of Mr. Hall's Asbestos Project Designer Certification is also provided in **Appendix C**.

2.7 Demobilization

Following the abatement, the contractor shall visually confirm that all debris and residual materials have been removed from the concrete slab or underlying soil within the footprint of the debris pile. Any observed depressions must be backfilled with #57 stone or equivalent and appropriately compacted.

Upon completion of project activities to Owner's Representative approval, the Contractor will promptly demobilize equipment, tools, and personnel from the site. Equipment and tools will be decontaminated as necessary prior to leaving the site. Personnel and vehicle decontamination stations will be properly cleaned and decommissioned. PPE and all wastes will be properly characterized, containerized, transported and disposed, as other wastes.

3 Asbestos Abatement Specification

3.1 Part 1 – General

3.1.1 Introduction

A. Description of Work

The following ACM have been identified by Cardno. All of these materials are to be removed as part of this environmental abatement project.

| <u>HA Name</u> | <u>Quantity/Area</u> | <u>Location</u> |
|---------------------------|----------------------|-----------------------------|
| • ACM-Contaminated Debris | 450 CY | Exterior North of Structure |

B. Abatement Methods

Methods of abatement are to be specified by the Contractor in their execution plan and approved of by the Owner's Representative. It is assumed that the entire abatement will be completed using heavy equipment under outdoor project techniques and best practices.

3.1.2 References

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2 (1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z87.1 (1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection

ANSI Z88.2 (1992) Respiratory Protection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 732 (1982; R 1987) Aging Effects of Artificial Weathering on Latex Sealant

ASTM D 522 (1992) Mandrel Bend Test of Attached Organic Coatings

ASTM D 1331 (1989) Surface and Interfacial Tension of Solutions of Surface-Active Agents

ASTM D 2794 (1990) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

ASTM D 4397 (1991) Polyethylene Sheeting for Construction, Industrial, and Agricultural Application

ASTM E 84 (1991A) Surface Burning Characteristics of Building Materials

ASTM E 96 (1993) Water Vapor Transmission of Materials

ASTM E 119 (1988) Fire Tests of Building Construction and Materials

ASTM E 736 (1986; R 1991) Cohesion/Adhesion of Sprayed Fire-Resistive Materials applied to Structural Members

ASTM E 1368 (1990) Visual Inspection of Asbestos Abatement Projects

CODE OF FEDERAL REGULATIONS (CFR)

CFR 29 Part 1910.1101 Occupational Safety and Health Standards

CFR 29 Part 1926 Safety and Health Regulations for Construction

CFR 40 Part 61 National Emission Standards for Hazardous Air Pollutants

CFR 40 Part 763 Asbestos

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7(1990) Compressed Air for Human Respiration

CFA G-7.1 (1989) Commodity Specification for Air

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90-018 (1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance

EPA 340/1-90-019 (1990) Asbestos/NESHAP Adequately Wet Guidance

EPA 560/5-85-024 (1985) Guidance for Controlling Asbestos Containing Materials in Building

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10 (1990) Portable Fire Extinguishers

NFPA 70 (1993) National Electrical Code

NFPA 90A (1993) Installation of Air Conditioning and Ventilating Systems

NFPA 101 (1994) Safety to Life from Fire in Buildings and Structures

NFPA 701(1989) Methods of Fire Test for Flame-Resistance Textiles and Films

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 84-100 (9184; Supple 1985, 1987, 1988, 1990) NIOSH Manual of Analytical Methods

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

OREGON ADMINISTRATIVE RULES 340, DIVISION 248

UNDERWRITERS LABORATORIES (UL)

UL 586 (1990) High-Efficiency, Particulate, Air Filter Unit

3.1.3 Definitions

1. Abatement - Removal and proper disposal of asbestos-containing materials.
2. ACGIH - American Conference of Governmental Industrial Hygienists.
3. Adequately Wet - A term as defined in -CFR 40 Part 61-, Subpart M and -EPA 340/1-90-019-that means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from ACM, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
4. AIHA - American Industrial Hygiene Association.
5. Air lock - A system for permitting ingress and egress with minimum air movement between a contaminated area and uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least 3 feet such that one passes through doorway into the air lock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
6. Air Monitoring - The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Method 7400. For clearance air monitoring, Transmission Electron Microscopy (TEM) methods when required, by the AHERA regulations will be used.
7. Air Sampling Professional - The professional contracted or employed by the Building Owner to supervise and/or conduct air monitoring and analysis schemes. This individual may also function as the Asbestos Consultant if qualified.
8. Amended Water - Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with - ASTM 01331.
9. ANSI - American National Standards Institute.
10. Asbestos - the asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite - grunerite (amosite), anthophyllite, actinolite, and tremolite.
11. Asbestos-Containing Material (ACM) - Material composed of asbestos of any type and in an amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.
12. Asbestos-Containing Waste Material - asbestos containing material or asbestos contaminated objects requiring disposal.
13. Asbestos Consultant - An individual qualified by virtue of experience and education, designated as the Owner's representative and responsible for overseeing the asbestos abatement project.
14. Asbestos Fibers - Asbestos fibers having an aspect ratio of at least 3:1 and 5 micrometers or longer in length.
15. ASTM - American Society for Testing and Materials.
16. Authorized visitor - The Owner (and any designated representatives) and any representative of the regulatory or other agency having jurisdiction over the project.

17. Owner - The Owner or his authorized representative.
18. Category I Non-friable ACM - A term as defined in CFR Part 61 Subpart M and EPA 340/1-90-018 that means asbestos-containing packing, gasket, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in CFR 40 Part 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy.
19. Category II Non-friable ACM - A term as defined in CFR Part 61 Subpart M and EPA 340/1-90-018 that means any non-friable ACM material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the methods specified in Category I Non-friable ACM.
20. Certified Industrial Hygienist - (CIH) - An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
21. Class I Asbestos Work - (29 CFR 1926.1101) - Means activities involving the removal of TSI and Surfacing ACM and PACM.
22. Class II Asbestos Work - (29 CFR 1926.1101) - Means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles and constructions mastics.
23. Clean Room - An uncontaminated area or room which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.
24. Contractor - The individual and/or business with which the Building Owner arranges to perform the asbestos abatement. It is recommended that wherever asbestos abatement is part of a larger project, the asbestos work be contracted separately and distinctly from other contract work. When this is not possible, the Contractor is responsible for the proper completion of project activities in accordance with this contract specification even where a subcontractor has been retained to perform the actual abatement.
25. Curtained doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs are permissible.
26. Decontamination enclosure system - A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.
27. Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.
28. Encapsulant - A liquid material which can be applied to asbestos-containing material which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) components together (penetrating encapsulant).

- 29. Encapsulation - The application of an encapsulant to control the release of asbestos fibers into the air.
- 30. Enclosure - The construction of an air-tight, impermeable, permanent barrier around asbestos containing material to control the release of asbestos fibers into the air.
- 31. EPA - Environmental Protective Agency.
- 32. Equipment decontamination enclosure system - That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.
- 33. Equipment room - A contaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.
- 34. Facility - Any institutional, commercial or industrial structure, installation, or building.
- 35. Facility component - Any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility or any structural member of a facility.
- 36. Fibers - All fibers regardless of composition as counted in the NIOSH 7400 procedure.
- 37. Fixed object - A piece of equipment or furniture in the work area which cannot be removed from work area.
- 38. Friable ACM - A term as defined in CFR 40 Part 61, Subpart M and EPA 340/1-90-018 that means any material containing more than 1 percent asbestos as determined using the method specified in CFR 40 Part 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy, that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
- 39. Glovebag technique - A method with limited applications for removing small amounts of friable asbestos containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contained (plasticized) work area. The glovebag assembly is a manufactured or fabricated device consisting of a 6-mil transparent polyethylene or polyvinylchloride plastic bag with two inward projecting long-sleeves and an internal tool pouch.

The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glovebag technique must be highly trained, experienced, and skilled in this method.
- 40. HVAC – heating, ventilation, and air conditioning system.
- 41. HEPA filter - A high efficiency particulate air filter capable of removing particles as small as 0.3 microns in diameter with 99.97% efficiency.
- 42. HEPA vacuum - A vacuum system equipped with HEPA filtration.
- 43. Holding area - A chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.
- 44. Movable object - A piece of equipment or furniture in the work area which can be removed from

the work area.

45. Negative pressure ventilation system - a portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow from contaminated areas into adjacent uncontaminated areas post-filtration.
46. NESHAP - The National Emission Standard for Hazardous Air Pollutants (40 CFR Part 61).
47. NIOSH - The National Institute for Occupational Safety and Health.
48. Non-friable ACM - A term as defined in CFR Part 61 Subpart M and EPA 340/1-90-018 that means any material containing more than 1 percent asbestos as determined using the method specified in CFR 40 Part 763, Appendix A, Subpart F, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
49. OSHA - The Occupational Safety and Health Administration.
50. Outside air - The air outside buildings and structures.
51. Plasticize (polyethylene) - To cover floors and walls with plastic sheeting as herein specified.
52. Prior experience - Experience required of the contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities will be in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.
53. Removal - The stripping of any asbestos-containing materials from surfaces or components of a facility.
54. Renovation - Altering of facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.
55. Shower room - A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.
56. Staging area - Either the holding area or some area near the waste transfer air lock where containerized asbestos waste has been placed prior to removal from the work area.
57. Strip - To remove asbestos materials from any part of facility.
58. Structural member - Any load-supporting member of a facility, such as beams and load-supporting walls or any non-load-supporting member, such as ceilings and non-load supporting walls.
59. Surfactant - A chemical wetting agent added to water to improve penetration.
60. Time-Weighted Average (TWA) - The TWA is an 8-hour time weighted average of airborne concentration of fibers (longer than 5 micrometers) per cubic centimeter of air which represents the employee's 8-hour workday as determined by Appendix A of CFR 29 Part 1926.1101.
61. Visible emissions - Any emissions that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

- 62. Waste transfer air lock - A decontamination system utilized for transferring containerized waste from inside to outside of the work area.
- 63. Wet cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.
- 64. Work area - Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area which has been sealed, plasticized, and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area which has not been plasticized nor equipped with a decontamination enclosure system.
- 65. Worker decontamination enclosure - A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area air locks and contained doorways.

3.1.4 Contractor Responsibilities

A. General

The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State, and local regulations pertaining to work practices, preparation for hauling, protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulation on the part of himself, his employees, or his subcontractors.

B. Training/Licensing

The Contractor shall insure that all employees of the Contractor who will be performing asbestos removal activities have been provided with training that meets or exceeds the requirements found in the applicable OSHA standards, especially the standard for asbestos (29 CFR 1926.1101). A copy of all required business licenses, training certificates, and personal licenses must be kept on site at all times during work activities.

Additionally, all workers must comply with specific training that may be required by the general contractor.

C. Medical Requirements

The Contractor shall ensure that all employees of the Contractor who will be performing asbestos removal activities will have been provided with a medical examination that meets or exceeds the requirements found in the applicable OSHA standards, especially the standard for asbestos (29 CFR 1926.1101). Further, the Contractor shall insure that all medical records developed pursuant to the above requirements will be maintained according to the applicable OSHA standards, especially the standard for asbestos (29 CFR 1926.1101).

D. Respiratory Protection Program

The Contractor shall establish and maintain an effective respiratory protection program that meets or exceeds the requirements found in the applicable OSHA standards, especially the standard for asbestos (29 CFR 1926.1101) and the standard for Respiratory Protection (29 CFR 1910.114).

E. Regulatory Compliance

The Contractor shall comply with all applicable environmental, health and safety regulations as promulgated by appropriate Federal, State or local regulatory authority. In particular, the Contractor is required to comply with all sections of the OSHA standard for Occupational Exposure to Asbestos as found in 29 CFR 1926.1101; and the NESHAP regulations as found in 40 CFR Part 61.

F. Notice to Asbestos Consultant

The Contractor is required to provide at least 24-hour notice to the Asbestos Consultant to allow for the following:

1. Inspection of the work area prior to beginning removal of ACM.
2. Final visual inspection.

G. Notice to Regulatory Agencies

A permit application and notification must be prepared for this project and submitted by the Contractor to the Oregon Department of Environmental Quality. Remediation work will not begin until at least 10 days after the submission date.

H. Electrical Requirements

The Contractor is responsible for all electrical requirements needed to perform the work as described in the specifications. All the Contractor's electrical equipment must be connected to a ground fault protected panel.

I. Abatement Area Security

1. The work area is restricted to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner's employees and representatives, state and local inspectors and any other designated individuals. A list of authorized personnel must be established prior to job start.
2. Entry into the work area by unauthorized individuals will be reported immediately to the Asbestos Consultant by the Contractor.
3. A sign-in log must be maintained by the asbestos project supervisor. Anyone who enters the work area must record name, affiliation, time in, and time out for each entry.
4. Access to the work area will be through a single point in the demarcation area. The only exception for this rule is in the event of an emergency, such as fire or accident.
5. The Contractor shall provide work area security during abatement operations.

3.1.5 Owner Responsibilities

It is the responsibility of the Owner to provide the following:

1. Access to the work area at the scheduled work times and such other times as mutually agreed upon.

3.1.6 Job Conditions

A. Conditions of Work Area

The Owner assumes no responsibility for the actual condition of the work area.

B. Damage

Work will be completed within and adjacent to historic structures. The contractor must exercise care so as not to damage or otherwise harm the historic integrity of the Site structures.

C. Utilities

The Contractor shall make arrangements for all water, electricity, and other utilities necessary in the area of operations. The Contractor shall provide his own temporary lighting in the area of operations, if required.

D. Safety

Ensure safe passage of persons around area of abatement. Conduct operations to prevent injury or damage to facilities and persons. Local medical emergency personnel, both ambulance crews and hospital emergency room staff, must be notified as to the possibility of having to handle contaminated, injured persons and be advised on safe decontamination procedures.

E. Security

The Contractor shall secure the demarcated work area to keep unauthorized personnel from accidentally entering the area in which asbestos is being removed.

F. Containment Log

The Contractor shall maintain a log of entry to the demarcated area. The log must be signed by every person that enters the secured area. A copy of this log will be made available to the Asbestos Consultant for all on-site visits.

G. Visitor Protection

All persons entering the work area must wear PPE required for the Site and the work area. There will be no exceptions to this requirement.

H. Daily Report

The Contractor shall maintain for the benefit of the Owner, a daily report which must include, but not be limited to, hours of work, size of crew, work type and progress, special conditions encountered, and any other information appropriate to fully describe the job conditions.

I. Contractor Representative

The Contractor shall name an individual at the job site who will be in charge of the Contractor's activities on the job site. The individual named will be the principal point of contact on the job site for representatives of the Owner and the Asbestos Consultant and will be empowered to take corrective actions if activities are found to be in violation of the specification. The individual must remain at the job site as long as any aspect of the work required is in progress.

J. Storage of Equipment and Supplies

Storage of Contractor equipment must meet the approval of the Owner and the Asbestos Consultant

K. Contractor Use of Premises

1. The Contractor will limit his use of the premises to the work indicated and confine operations to

- the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed.
2. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials to the approved areas.
 3. Keep existing driveways and entrances serving the premises clean and available to the Owner at all times. Do not use these areas for parking or storage of materials.
 4. Lock automotive type vehicles, such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use.
 5. Maintain existing area in a safe condition throughout operations.

3.1.7 Personnel

A. General Superintendent:

Provide a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for environment and personnel, disposal procedures, etc. This person is the Competent Person and is the Contractor's representative, responsible for compliance with all applicable Federal, State, and local regulations, particularly those relating to asbestos-containing materials. This person must have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, have had a minimum of five years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. In addition, the Contractor shall have a Oregon accredited Supervisor present whenever abatement or waste loading operations is taking place. The superintendent may act as the supervisor.

B. Competence of Workmen

If any employee of the Contractor, in the opinion of the Owner or the Asbestos Consultant is careless in the execution of the work or is otherwise objectionable or unacceptable in his performance must be removed upon request of the Owner, Asbestos Consultant, or their representative.

C. Crews

The Contractor shall provide work crews in sufficient numbers to complete all asbestos removal operations according to the agreed upon schedule.

D. Conduct of Workmen

No alcoholic beverages or drugs will be permitted on Site grounds. All soft drink bottles, wrappers, etc., are to be removed each day. This work site will also be non-smoking, with the exception of a designated and approved smoking area. All debris and waste from smoking must be removed on a daily basis.

3.1.8 Emergency Planning

The Contractor shall adhere to the existing health and safety plan and emergency action plan at all times while on site. Emergency planning must include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and weather/temperature related injury. Written procedures and employee training in procedures must be provided.

Employees will be trained in evacuation procedures in the event of a workplace emergency.

1. For non-life-threatening situations, employees injured must decontaminate following normal procedures with assistance from fellow workers if necessary before exiting the workplace to obtain proper medical treatment.

2. For life-threatening injury or illness, worker decontamination will take least priority after measures to stabilize the injured worker, remove him from the workplace and secure proper medical treatment.

3.1.9 Authority to Stop Work

ALL PERSONNEL will have the authority to temporarily stop work because of unsafe work practices, non-adherence to the Specification, or breach of containment. Written notice will be given to the Contractor stating the reason(s) for the action taken. Work will resume when the cause of the stop work action has been eliminated. The Contractor's completion clock will continue to run despite any work stoppage.

3.1.10 Agreement to Pay Fines

The Contractor agrees to pay any fines levied by any Federal, State or local agency against the Owner and the Asbestos Consultant for any violations by the Contractor or the Contractor's personnel.

3.1.11 Hold Harmless Agreement

The Abatement Contractor shall indemnify, hold harmless, and defend the Owner, Project Designer, and Consultant, partial or wholly Owner entities, and any of their agents, employees, or officers (collectively referred to as releases) from, and against, any and all losses, claims, judgments, including legal fees and expenses of any, and every, nature and description brought or recoverable against Abatement Contractor or releases by reason of any act, intentional or otherwise, or employees, arising directly, or indirectly, from the nature of the work covered by this agreement, including but not limited to, the removal and disposal of any regulated material.

3.2 Part 2 – Procedures Prior to Starting Abatement

3.2.1 Post Warning Signs and Establish Regulated Area

Warning signs will be posted at all entrances to and exits from the work area. These signs will conform to 29 CFR 1926.1101(k)(6).

3.2.2 Decontamination Facilities

A. Work Decontamination Facility

Decontamination facilities will be constructed in such a manner as to provide workers and/or equipment within which to decontaminate themselves upon leaving the work area. The decontamination chamber will be constructed using 6-mil polyethylene sheeting and appropriate construction materials. The decontamination facility must meet the following criteria as a minimum:

The exterior of the unit must be covered in 5/8" plywood. There will be a minimum of three chambers separated by air locks; (1) an equipment room where workers remove gross contamination and discard disposable suits; (2) a "single pass-through" shower (no shower may be used which can be passed by any person entering into or exiting from the work area); and (3) a clean (change) room where workers dress and undress. The shower must be supplied with hot and cold water as well as soap. Clean, dry towels must be available at the exit from the shower. The water from the shower must be filtered in accordance with EPA requirements or disposed of as contaminated waste. Separating each chamber and air lock will be triple curtains of polyethylene.

The decontamination unit will likely be a remote unit as this is an unoccupied area.

B. Equipment Decontamination/Waste Load-out

Equipment will be decontaminated utilizing wet methods. All waste created during the decontamination process will be disposed of as asbestos-contaminated. All materials used in the construction of a decontamination pad and the water used for decontamination must be treated as asbestos-contaminated materials.

Waste will be directly loaded into properly lined containers or staged adjacent to the designated removal area on 6-mil polyethylene sheeting. Containers will be properly wrapped in accordance with USEPA and NESHAP Disposal Requirements and will be HEPA-vacuumed, if necessary, prior to transportation.

3.2.3 Segregation of Work Areas – Gross Removal Areas

A. Isolation of Work Area

The Contractor shall isolate the entire work area for the duration of the abatement using barrier tape.

B. Protection of Existing Structure

NOT APPLICABLE

3.2.4 Preparation of Work Area for Abatement

A. Equipment

Provide all equipment necessary to accomplish the work of this contract. All equipment used will comply with all applicable OSHA provisions.

B. Water

Contractor must provide their own tank, water, and water amendments for their use. If required, the contractor shall provide their own backflow protection. Valves must be temperature and pressure rated for operation at the temperatures and pressures encountered. After completion of use, connections and fittings must be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves must be piped to the nearest drain or located over the existing sink or grade where water will not damage existing finishes or equipment.

Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

C. Electrical

Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electrical service.

The Contractor must provide power to the site for their own use when required. The Contractor will provide a ground fault protected power panel that will be connected to the power source

Provide identification warning signs at power outlets which are other than 110-120-volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers must be used where required to provide voltages necessary for work operations.

Receptacle outlets equipped with ground fault circuit interrupters, reset button and pilot light, for plug-in connection of power tools and equipment.

Use only grounded extension cords: use “hard-service” cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electrical cords, if single lengths will not reach areas of work.

Provide general service lamps and bulbs of wattage indicated or required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

D. Sanitary Facilities

The Contractor must provide temporary sanitary facilities and shower facilities for all workers.

E. Fire Extinguishers, Portable

Comply with the applicable recommendations of NFPA Standard 10, “Standard for Portable Fire Extinguishers.” Locate fire extinguishers where they are most convenient and effective for their extended purpose. As a minimum, there must be one extinguisher in each work area, one in the equipment area, and one located immediately outside the work area near the Decontamination Unit.

F. Adhesives

Where tape is used, it must be a high-quality duct tape, masking tape, or vinyl plastic tape. Where spray glue (cement) is used, it must be specifically formulated for use on polyethylene.

3.2.5 Isolation and Shutdown of Building HVAC System

NOT APPLICABLE

3.2.6 Negative Pressure Establishment and Maintenance

NOT APPLICABLE

3.3 Part 3 – Procedures for Friable Asbestos Abatement

3.3.1 Entry and Exit from Work Area

A. Work Area Entry

Entry into the work area must be conducted by a pre-arranged pathway. As an outdoor project likely using a remote decontamination unit, all workers must don two layers of required protective clothing, i.e. disposable whole-body suits, head covering, respirator, and shoe covers then proceed directly to the work area.

Contractor shall provide all required items for workers’ protection to meet applicable OSHA and/or EPA standards.

B. Work Area Exit

All persons exiting from the work area must thoroughly decontaminate themselves to prevent the tracking out of ACM and contamination to non-contained areas. Therefore, as a minimum, the following procedure is to be followed:

1. Remove top layer of disposable protective clothing at the edge of the work area. Leave respirator on.
2. Remove bottom layer of disposable clothing in the equipment room. Leave respirator on.
3. Take shower, washing with soap and water.
4. Rinse hair with running water.

5. Remove respirator, wash hair.
6. Wash out respirator.
7. Exit into clean room to dry off and dress into street clothes.

It is the Contractor's responsibility to insure their personnel follow the above procedure and that ACM is not tracked outside the containment.

3.3.2 Respiratory Protection during Asbestos Removal

The Contractor will commence with the gross removal of asbestos in the work area in Type "C" supplied air respirators that are supplied with air of a Grade D quality or powered air purifying respirators (PAPR) in accordance with 29 CFR 1926.1101, UNLESS the Contractor can provide evidence to the Asbestos Consultant that airborne fiber levels can be maintained in such a manner to permit the use of lesser respiratory protection equipment. This evidence will consist of personnel air monitoring data from other projects involving the removal of similar types of materials using procedures similar to those to be used in this project. In any event, it is the responsibility of the Contractor to adequately protect his personnel in the work area and to comply with all applicable OSHA regulations.

All respiratory protection equipment to be used in the conduct of this project is to be NIOSH certified. Each worker will have a respirator personally issued and marked for his use only. The minimum type of respirator will be a half-face dual HEPA cartridge. NO RESPIRATOR OTHER THAN THIS TYPE (unless of a higher protection factor) WILL BE PERMITTED ON THE JOBSITE.

3.3.3 Work Practices

All work practices followed will be consistent with the OSHA standard on Occupational Exposure to Asbestos (29 CFR 1926.1101). In particular, the following work practices will be followed:

1. Workers shall not eat, drink, smoke, chew gum or chew tobacco in the work area, the decontamination unit, or the waste load-out area.
2. Workers shall always wear their respirators while inside the work. Failure to wear the appropriate respirator can result in worker removal from the jobsite

3.3.4 Asbestos Removal Procedures – General

1. All asbestos removal work will be performed in accordance with the requirements of the OSHA standard on Occupational Exposure to Asbestos (29 CFR 1926.1101) and OAR 340, Division 248.
2. All items interfering with abatement must be removed and decontaminated before being disposed of.
3. The Contractor will use wet methods to remove the ACM. The water used to wet the materials will be amended with a suitable wetting agent of 50% polyoxyethylene ester and 50% polyoxyethylene ether. Only airless or other low-pressure sprayers may be used to apply the amended water in a "mist." While this is a wet removal, excessive amounts of water will not be permitted to stand on the ground or within containments.
4. All removed ACM is to be promptly contained in 6-mil labeled polyethylene bags or wrapped in 6-mil polyethylene sheeting and then labeled. Removed ACM is not to remain onsite for excessive periods where it can dry out. Containers are not to be overfilled. As containers are filled and sealed, they are to be transported from the site as soon as possible.
5. All polyethylene, tape, cleaning materials, work clothing, and all other items used in the work area that cannot be completely decontaminated will be disposed of as asbestos-contaminated waste. These materials must be double-bagged in 6-mil polyethylene labeled bags and handled in the same manner as the removed ACM.

3.3.5 Asbestos Removal Procedures – Detailed

A. Asbestos-contaminated C&D Debris Pile.

1. Post warning signs.
2. Establish a Regulated Area with barrier tape.
3. The Contractor is required to submit their abatement means and methods as part of the Execution Plan for approval by the Owner or Owner's Representative. The plan must specify how the regulated materials are to be removed, what containments are proposed, or if localized containment is planned (e.g. burrito wrap roll-off containers).
4. Prepare containers utilizing methods specified in USEPA CFR 61.145 - Standard for Demolition and Renovation. Lay down 6-mil polyethylene around designated containers so that material being removed/loaded will not contact non-contaminated ground.
5. Immediately wrap debris containers as they are filled to completion; do not let material accumulate and remain un-covered. The containers will be properly sealed in accordance with USEPA CFR 61.145 - Standard for Demolition and Renovation as they are filled and then promptly removed from the site for disposal.
6. Once the abatement is complete, the Contractor shall call for a visual inspection of the work area. See section 3.3.6 B for additional details.

3.3.6 Clean Up Procedures

A. General

All work is to be done in a professional manner and to the satisfaction of the Asbestos Consultant and Owner. All non-contaminated areas are to be protected. Cleaning supplies and equipment are to be furnished by the Contractor.

B. Clean-up Procedure

1. When the gross removal of the ACM has been completed, the Contractor will then begin the process of gross clean-up. The Contractor will clean all surfaces where asbestos-contaminated soil and potential ACM residual materials remain (such as the underlying concrete slab or soil). Upon completion of gross cleaning, the Contractor will begin fine cleaning.
2. The Contractor will then clean all physical surfaces a second time. On completion of the fine cleaning, a visual inspection will be performed by the Asbestos Consultant or his designee. The work area must be completely free of any visible asbestos dust, debris, etc. If not, the area must be completely re-cleaned at the Contractors expense.

C. Equipment Decontamination

Equipment, machinery, tools, etc., used within the work area will not be removed without first being thoroughly cleaned with amended water. An equipment decontamination pad may be necessary to fully clean any heavy equipment (i.e. lifts, loaders, etc.) that might be used during abatement. Materials used to construct a decontamination pad and water used to decontaminate equipment must be treated as asbestos-contaminated materials.

3.3.7 Air Monitoring

A. General

Asbestos air monitoring will be completed along the perimeter of the work area to ensure that proper dust suppression techniques are used. Analysis of asbestos air samples will be completed by PCM by a qualified laboratory or properly trained and certified personnel. Asbestos air sampling will be conducted while all abatement work is occurring. Final clearance asbestos air samples will be

collected following final visual clearance by an asbestos inspector and approval by Owner, Owner's Representative, or the Asbestos Consultant. The air samples will be collected by a qualified asbestos air sampling technician. Analysis of air samples will be completed by a certified laboratory and/or a qualified and accredited PCM analyst.

Asbestos air monitoring reports will be provided to the Owner within 48-hours of collection with the daily report.

B. Airborne Fiber Levels

If an air sample concentration exceeds the average background fiber count as determined by the Asbestos Consultant or 0.01 f/cc, whichever is greater, then the Asbestos Consultant or his designee may stop work and require additional engineering controls used to suppress dust. The Contractor will be responsible for any additional controls required to maintain airborne fiber levels below the identified limit. TEM may be used to re-analyze an exceeded sample if the PCM analyst believes the fiber count to be elevated due to potential non-asbestos fibers.

3.3.8 **Disposal of Asbestos Waste**

A. General

1. All asbestos and asbestos-contaminated waste must be sealed in approved containers in accordance with USEPA CFR 61.145 Standard for Demolition and Renovation. The containers are to be labeled, transported and disposed of in accordance with the applicable OSHA and EPA Regulations. At the conclusion of the job, all polyethylene material will be disposed of as asbestos-contaminated waste material.
2. Only an approved and licensed asbestos waste hauler will be permitted to remove the material from the jobsite and transport it to the landfill. The Contractor will be responsible for transportation of the material to the landfill, and the submission of receipts from the landfill to the Asbestos Consultant as evidence that the material was disposed of in an approved manner. The Owner must receive the final landfill tickets.

B. Waste Disposal Site

1. The Owner will be responsible for obtaining prior approval for a disposal site for the asbestos waste in compliance with the latest ODEQ and USEPA regulations.
2. The Owner shall strictly adhere to all precautions necessary for the safety and health of the workmen in accordance with the latest version of the applicable OSHA and USEPA Regulations, especially 29 CFR 1926.1101.

C. Transportation

All asbestos materials must be carried directly to the previously approved asbestos landfill. The Contractor will contact the landfill to make arrangements regarding the time of the dump operation.

D. Alternate Methods

Alternate handling and packaging systems for the debris that maintain the integrity of the disposal systems will be considered by the Asbestos Consultant.

E. Burning

Burning of materials from the abated area will not be permitted.

F. General Debris

All trash and debris are to be removed from the property by the Contractor daily.

G. Wastewater

Wastewater may be disposed of by filtering the asbestos-contaminated water in accordance with USEPA regulations, then disposing of the filtered water in a sanitary sewer system. Wastewater that is not filtered cannot be placed into the public sewer system or disposed of in a location other than an approved disposal site.

All wastewater from the shower and/or any sinks must be disposed of in a manner similar to that of solid waste materials previously specified in this Section.

4 References

- AHERA regulations: <https://www.epa.gov/asbestos/asbestos-and-school-buildings>
- NESHAP regulations: <https://www.epa.gov/asbestos/overview-asbestos-national-emission-standards-hazardous-air-pollutants-neshap>
- OSHA asbestos regulations: <https://www.osha.gov/SLTC/asbestos/>
- DOL website: <https://www.dol.gov/whd/regs/compliance/whdfs66.pdf>.
- OAR 340, Division 248 – Asbestos Requirements

Bid Form



now



| BID FORM | | | | |
|---|----------|---------------------|-----------|-------|
| FORMER MARKWARDT BROTHERS SITE | | | | |
| 112 W CHOCKTOOT STREET, CHILOQUIN, OREGON 97624 | | | | |
| BUILDING DEBRIS PILE REMOVAL - SCOPE OF WORK | | | | |
| Company: | | | | |
| Address: | | | | |
| Authorized Representative: | | | | |
| Signature: | | | | |
| Cell Number: | | | | |
| Email: | | | | |
| LUMP SUM PRICES | | | | |
| | Quantity | Units | Cost (\$) | Notes |
| 1.) Project Submittals - Execution Plan, HASP, Traffic Plan | 1 | LS | \$ | |
| 2.) Project Management, Permits, Notifications, Completion Report | 1 | LS | \$ | |
| 3.) Project Mobilization and Demobilization | 1 | LS | \$ | |
| 4.) ACM-Contaminated Pile Removal & Disposal (up to 450 CY) | 1 | LS | \$ | |
| 5.) Site Restoration | 1 | LS | \$ | |
| LUMP SUM SUBTOTAL | | | \$ | |
| REMOVAL AND DISPOSAL DETAILS | | | | |
| | | | | |
| ASBESTOS | | | | |
| ACM-Contaminated Building Debris Pile | 450 | CY | | |
| | | | | |
| SITE RESTORATION | | | | |
| Grade Area to Match Slab, Clean Slab, Fill Depressions with #57 Stone or Equivalent (up to 2 CY of Fill Material) | <1 | Acre | | |
| | | | | |
| TIME AND MATERIAL COSTS | | | | |
| Additional ACM-Contaminated Building Debris Removal and Disposal | 1 | CY | | |
| Additional #57 Stone or Equivalent Fill Material | 1 | CY | | |
| | | | | |
| SCHEDULE: | | | | |
| 1.) Project Submittals - Execution Plan, HASP, Traffic Plan | | working days | | |
| 2.) Project Management, Permits, Notifications, Completion Report | | working days | | |
| 3.) Project Mobilization and Demobilization | | working days | | |
| 4.) ACM-Contaminated Pile Removal & Disposal | | working days | | |
| 5.) Site Restoration | | working days | | |
| Total Project Duration | | working days | | |
| | | | | |
| PROJECT ASSUMPTIONS | | | | |
| Contractor is responsible for all removal, packaging, manifesting, transportation, and disposal of all ACM-contaminated materials and any other waste referenced in the Scope of Work. | | | | |
| All permits, certifications, fees, notifications etc. required to complete the Scope of Work are to be prepared and paid by Contractor. | | | | |
| All submittals will be reviewed by the Owner and/or Owner's consultant for approval. No additional fees will be provided for corrections to submittals. | | | | |
| Contractor is responsible for the completion of referenced tasks. No additional fees will be paid for re-cleaning insufficient work. | | | | |
| Contractor is responsible for personnel air monitoring as required by Federal, State and local regulations. | | | | |
| Contractor is responsible for all equipment, materials, and PPE as necessary for the performance of the work. | | | | |
| Contractor is responsible for preparing a health and safety plan that incorporates all regulatory requirements as well as requirements of the primary contractor, when applicable. | | | | |
| Contractor is responsible for providing all safety equipment required to perform the specified work. | | | | |
| Contractor is responsible for all temporary utilities (water, electricity, personnel facilities, etc.) and associated fees required to perform the specified work. | | | | |
| It is assumed that the scope of work will be completed during one mobilization and the contractor will have unimpeded access to the work areas. Coordination may be required with the City/Town for potential full or partial road closure. | | | | |
| By virtue of the authorized signature on this bid form, the bidder affirms that he/she/they will comply with all conditions stated in the project design documents and all attachments. | | | | |

Tables



now



TABLE 1: SUMMARY OF BULK SAMPLE ANALYSIS
FACILITY NAME: FORMER MARKWARDT BROTHERS GARAGE
CHILOQUIN, KLAMATH COUNTY, OREGON

| HA ID | Date | HA Description | Material Location | Percent and Type of Asbestos Detected ¹ | Estimated Quantity | Type of ACM ² | Friability ³ | Physical Condition |
|------------------|----------------|---|----------------------------|--|--------------------|--------------------------|-------------------------|--------------------|
| RP-01-01 | 8/18/21 | Shingles | Rubble pile (east) | NAD | N/A | N/A | NF | Poor |
| RP-01-02 | 8/18/21 | Shingles | Rubble pile (north) | NAD | N/A | N/A | NF | Poor |
| RP-02-01a | 8/18/21 | Drywall (White texture w/ paint) | Rubble pile (west) | 2% CH | 450 CY | Misc. Cat 1 | F | Poor |
| RP-02-01b | 8/18/21 | Drywall (Cream tape) | Rubble pile (west) | NAD | N/A | N/A | F | Poor |
| RP-02-01c | 8/18/21 | Drywall (White joint compound) | Rubble pile (west) | 2% CH | 450 CY | Misc. Cat 1 | F | Poor |
| RP-02-01d | 8/18/21 | Drywall (White drywall w/ brown paper) | Rubble pile (west) | NAD | N/A | N/A | F | Poor |
| RP-02-02a | 8/18/21 | Drywall (Cream tape) | Rubble pile (north) | NAD | N/A | N/A | NF | Poor |
| RP-02-02b | 8/18/21 | Drywall (White joint compound) | Rubble pile (north) | 2% CH | 450 CY | Misc. Cat 1 | F | Poor |
| RP-02-02c | 8/18/21 | Drywall (White drywall w/ brown paper) | Rubble pile (north) | NAD | N/A | N/A | NF | Poor |
| RP-03-01 | 8/18/21 | Gray caulk | Rubble pile (west) | NAD | N/A | N/A | NF | Poor |
| RP-03-02 | 8/18/21 | Gray caulk | Rubble pile (east) | NAD | N/A | N/A | NF | Poor |

Notes:

(1) CH = Chrysotile; AM = Amosite; CR = Crocidolite; AN = Anthophyllite; AC = Actinolite; NAD = No Asbestos Detected

(2) Misc = Miscellaneous; TSI = Thermal System Insulation; SM= Surfacing Material

(3) F = Friable; NF - Non friable. For ACMs only: I = Non-Friable Category I; II = Non-Friable Category II

NM - not measured

LF = linear feet

PACM = Presumed Asbestos-Containing Materials

n/a - not applicable

SF = square feet CY = Cubic Yards

TABLE 2: SUMMARY OF TCLP LEAD SAMPLES
FACILITY NAME: FORMER MARKWARDT BROTHERS GARAGE
CHILOQUIN, KLAMATH COUNTY, OREGON

| Sample ID | Date | Location | Result | Estimated Quantity | Physical Condition |
|-----------|---------|--------------------|--------|--------------------|--------------------|
| RP-01 | 8/18/21 | Rubble pile (east) | BRL | N/A | Deteriorated |
| RP-02 | 8/18/21 | Rubble pile (west) | BRL | N/A | Deteriorated |

Notes:

NM - not measured

n/a - not applicable

BRL = Below Laboratory Reporting Limit

Figures



now



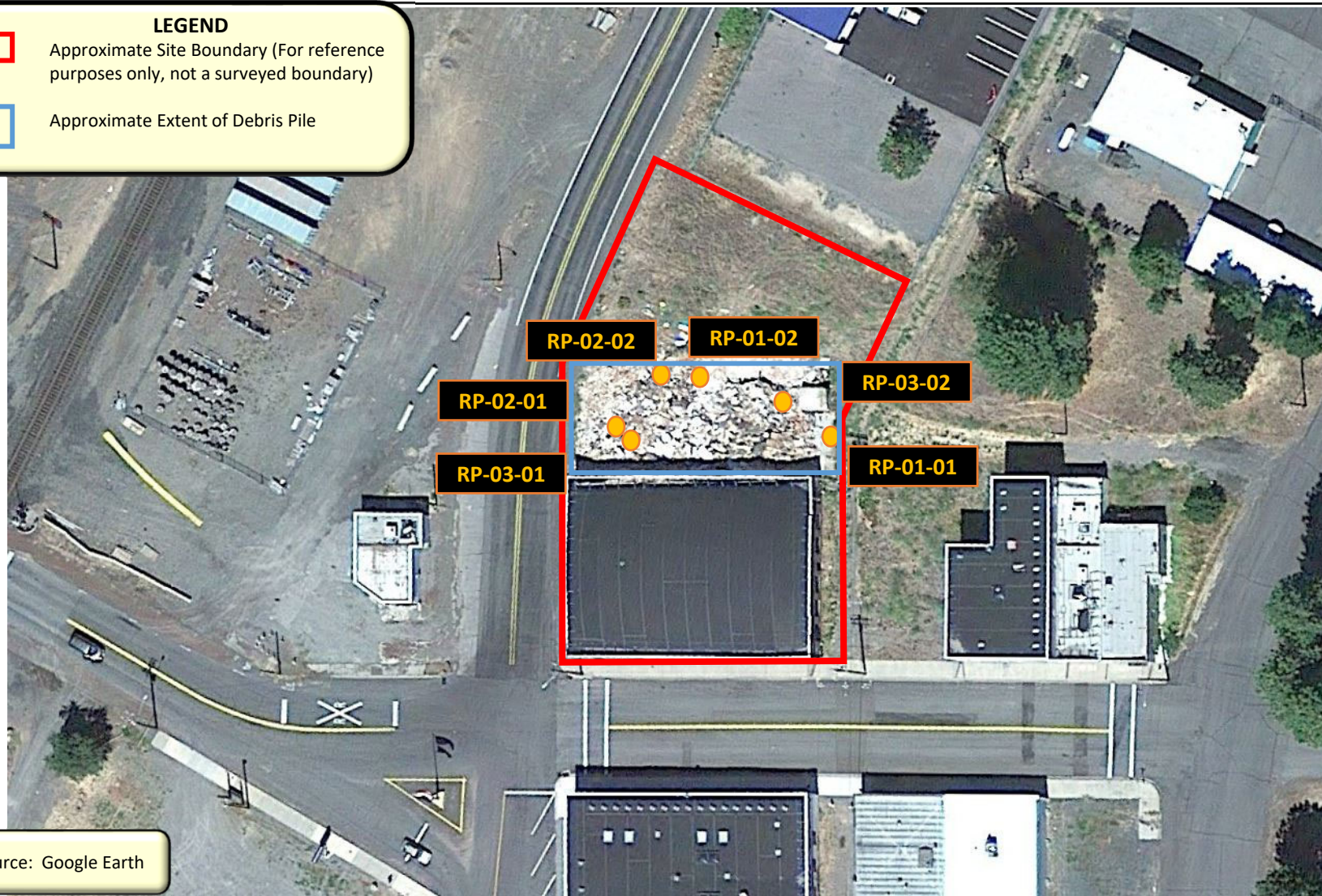
LEGEND



Approximate Site Boundary (For reference purposes only, not a surveyed boundary)



Approximate Extent of Debris Pile



Source: Google Earth



"This is not a map of survey."



30 0 30

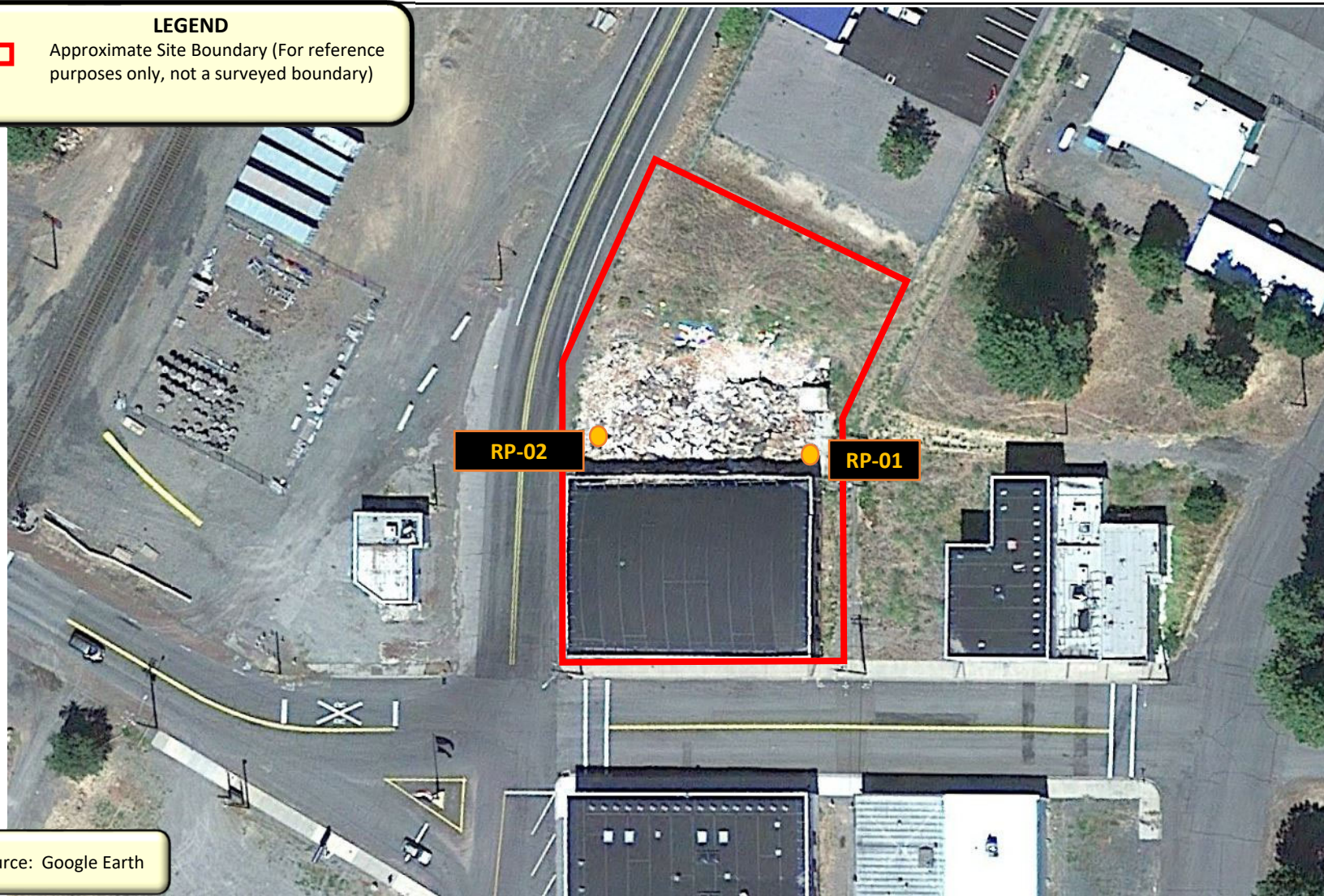
Debris Characterization
Former Markwardt Brothers Garage
Chiloquin, Klamath County, Oregon
Cardno Project # CHILOQ100

Figure 1
ACM Sample
Location Map

LEGEND



Approximate Site Boundary (For reference purposes only, not a surveyed boundary)



Source: Google Earth



"This is not a map of survey."



30 0 30

Debris Characterization
Former Markwardt Brothers Garage
Chiloquin, Klamath County, Oregon
Cardno Project # CHILOQ100

Figure 2
TCLP Sample
Location Map

Appendix A

Photographic Log



now



PHOTOGRAPHIC LOG



Client Name: City of Chiloquin, OR

Site Location: Former Markwardt
Brothers Garage, Chiloquin, Oregon

Facility #: TBD

Photo No.
1

Date:
1/28/2022

Direction Photo Taken:

West

Description:

Debris Pile



Photo No.
2

Date:
1/28/2022

Direction Photo Taken:

South

Description:

Debris Pile



PHOTOGRAPHIC LOG



| | | | |
|---|---------------------------|---|------------------------|
| Client Name: City of Chiloquin, OR | | Site Location: Former Markwardt Brothers Garage, Chiloquin, Oregon | Facility #: TBD |
| Photo No. 3 | Date: 1/28/2022 |  | |
| Direction Photo Taken: South | | | |
| Description: Debris Pile | | | |

| | | |
|---|---------------------------|--|
| Photo No. 4 | Date: 1/28/2022 |  |
| Direction Photo Taken: East | | |
| Description: Debris Pile – Detailed View of Materials | | |

PHOTOGRAPHIC LOG



Client Name: City of Chiloquin, OR

Site Location: Former Markwardt
Brothers Garage, Chiloquin, Oregon

Facility #: TBD

Photo No.
5

Date:
4/1/2021

Direction Photo Taken:

East

Description:

Debris Pile with underlying
concrete slab and vault shown.



Photo No.
6

Date:
4/1/2021

Direction Photo Taken:

South

Description:

Debris Pile – Eastern side of the
debris pile



Appendix B

Laboratory Analytical Reports



now



Report for:

W. Ashton Smithwick
Cardno
6611 Bay Circle Suite 220
Norcross, GA 30071

Regarding: Project: CH860Q100
EML ID: 2718074

Approved by:



Approved Signatory
Balu Krishnan

Dates of Analysis:
Asbestos PLM: 08-27-2021

Service SOPs: Asbestos PLM (EPA 40CFR App E to Sub E of Part 763 & EPA METHOD 600/R-93-116, SOP EM-AS-S-1267)
NVLAP Lab Code 200738-0

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

Eurofins EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: Cardno
C/O: W. Ashton Smithwick
Re: CH860Q100

Date of Receipt: 08-25-2021
Date of Report: 08-27-2021

ASBESTOS PLM REPORT

| | |
|---|---|
| Total Samples Submitted: | 6 |
| Total Samples Analyzed: | 6 |
| Total Samples with Layer Asbestos Content > 1%: | 2 |

Location: RP-01-01, Shingles

Lab ID-Version‡: 13001097-1

| Sample Layers | Asbestos Content |
|---|------------------|
| Black Roofing Shingle with Gray pebbles | ND |
| Composite Non-Asbestos Content: | 15% Glass Fibers |
| Sample Composite Homogeneity: | Good |

Location: RP-01-02, Shingles

Lab ID-Version‡: 13001098-1

| Sample Layers | Asbestos Content |
|---|------------------|
| Black Roofing Shingle with Gray pebbles | ND |
| Composite Non-Asbestos Content: | 15% Glass Fibers |
| Sample Composite Homogeneity: | Good |

Location: RP-02-01, Drywall

Lab ID-Version‡: 13001099-1

| Sample Layers | Asbestos Content |
|--|------------------|
| White Texture with Paint | 2% Chrysotile |
| Cream Tape | ND |
| White Joint Compound | 2% Chrysotile |
| White Drywall with Brown Paper | ND |
| Composite Asbestos Fibrous Content: | < 1% Asbestos |
| Composite Non-Asbestos Content: | 15% Cellulose |
| Sample Composite Homogeneity: | Moderate |

Comments: Composite asbestos content provided is only for Drywall/Joint compound. Composite content provided for this analysis has been performed by following the NESHAP guidelines.

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by any agency of the federal government. Eurofins EMLab P&K reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: Cardno
C/O: W. Ashton Smithwick
Re: CH860Q100

Date of Receipt: 08-25-2021
Date of Report: 08-27-2021

ASBESTOS PLM REPORT

Location: RP-02-02, Drywall

Lab ID-Version‡: 13001100-1

| Sample Layers | Asbestos Content |
|--|------------------|
| Cream Tape | ND |
| White Joint Compound | 2% Chrysotile |
| White Drywall with Brown Paper | ND |
| Composite Asbestos Fibrous Content: | < 1% Asbestos |
| Composite Non-Asbestos Content: | 15% Cellulose |
| Sample Composite Homogeneity: | Moderate |

Comments: Composite asbestos content provided is only for Drywall/Joint compound. Composite content provided for this analysis has been performed by following the NESHAP guidelines.

Location: RP-03-01, Gray Caulk

Lab ID-Version‡: 13001101-1

| Sample Layers | Asbestos Content |
|--------------------------------------|------------------|
| Gray Caulk with Paint | ND |
| Sample Composite Homogeneity: | Good |

Location: RP-03-02, Gray Caulk

Lab ID-Version‡: 13001102-1

| Sample Layers | Asbestos Content |
|--------------------------------------|------------------|
| Gray Caulk with Paint | ND |
| Sample Composite Homogeneity: | Good |

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Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Cardno - Peachtree Corners, GA

Sample Delivery Group: L1393214
Samples Received: 08/20/2021
Project Number: CHIL0Q120
Description: Chiloquin, OR

Report To: William Smithwick
6611 Bay Circle
Suite 220
Peachtree Corners, GA 30071

Entire Report Reviewed By:



Jeff Carr
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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| |
|-----------------|
| ¹ Cp |
| ² Tc |
| ³ Ss |
| ⁴ Cn |
| ⁵ Su |
| ⁶ Gl |
| ⁷ Al |
| ⁸ Sc |

Gl: Glossary of Terms

Al: Accreditations & Locations

Sc: Sample Chain of Custody

33

34

35

¹Cp

²Tc

³Ss

⁴Cn

⁵Su

⁶Gl

⁷Al

⁸Sc

SAMPLE SUMMARY

RP-01 L1393214-01 Waste

Collected by
A. Smithwick

Collected date/time
08/18/21 00:00

Received date/time
08/20/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|------------------------------|-----------|----------|-----------------------|--------------------|---------|----------------|
| Preparation by Method 1311 | WG1728099 | 1 | 08/24/21 15:04 | 08/24/21 15:04 | TDW | Mt. Juliet, TN |
| Metals (ICP) by Method 6010D | WG1729585 | 1 | 08/25/21 18:19 | 08/27/21 02:03 | CCE | Mt. Juliet, TN |

RP-02 L1393214-02 Waste

Collected by
A. Smithwick

Collected date/time
08/18/21 00:00

Received date/time
08/20/21 09:00

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst | Location |
|------------------------------|-----------|----------|-----------------------|--------------------|---------|----------------|
| Preparation by Method 1311 | WG1728099 | 1 | 08/24/21 15:04 | 08/24/21 15:04 | TDW | Mt. Juliet, TN |
| Metals (ICP) by Method 6010D | WG1729585 | 1 | 08/25/21 18:19 | 08/27/21 02:06 | CCE | Mt. Juliet, TN |



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jeff Carr
Project Manager



6010D Metals (ICP)

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | L1393214-01 | SDG: | L1393214 |
| Client Sample ID: | RP-01 | Collected Date/Time: | 08/18/21 00:00 |
| Lab File ID: | 20210827020335 | Received Date/Time: | 08/20/21 09:00 |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 02:03 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | ND | | 0.0330 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | L1393214-02 | SDG: | L1393214 |
| Client Sample ID: | RP-02 | Collected Date/Time: | 08/18/21 00:00 |
| Lab File ID: | 20210827020616 | Received Date/Time: | 08/20/21 09:00 |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 02:06 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | ND | | 0.0330 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.:
R3697192-1

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | R3697192-1 | SDG: | L1393214 |
| Client Sample ID: | BLANK | Collected Date/Time: | |
| Lab File ID: | 20210827012400 | Received Date/Time: | |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 01:24 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | U | | 0.0333 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.:
R3697192-2

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | R3697192-2 | SDG: | L1393214 |
| Client Sample ID: | LCS | Collected Date/Time: | |
| Lab File ID: | 20210827012625 | Received Date/Time: | |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 01:26 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | 9.77 | | 0.0333 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.:
R3697192-4

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | R3697192-4 | SDG: | L1393214 |
| Client Sample ID: | MS | Collected Date/Time: | 08/16/21 11:15 |
| Lab File ID: | 20210827013429 | Received Date/Time: | 08/20/21 08:00 |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 01:34 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | 9.83 | | 0.0333 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.:
R3697192-5

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | R3697192-5 | SDG: | L1393214 |
| Client Sample ID: | MSD | Collected Date/Time: | 08/16/21 11:15 |
| Lab File ID: | 20210827013654 | Received Date/Time: | 08/20/21 08:00 |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 01:36 |
| Dilution Factor: | 1 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | 9.86 | | 0.0333 | 0.100 |

SAMPLE RESULT SUMMARY
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.:
R3697192-3

| | | | |
|--------------------|----------------|------------------------|----------------|
| Lab Sample ID: | R3697192-3 | SDG: | L1393214 |
| Client Sample ID: | SD | Collected Date/Time: | 08/16/21 11:15 |
| Lab File ID: | 20210827013201 | Received Date/Time: | 08/20/21 08:00 |
| Instrument ID: | ICP12 | Preparation Date/Time: | 08/25/21 18:19 |
| Analytical Batch: | WG1729585 | Analysis Date/Time: | 08/27/21 01:32 |
| Dilution Factor: | 5 | Prep Method: | 3015 |
| Analytical Method: | 6010D | Sample Vol Used: | |
| Matrix: | Waste | Initial Wt/Vol: | 5 mL |
| Total Solids (%): | | Final Wt/Vol: | 50 mL |

| Analyte | CAS | Result <i>mg/l</i> | Qualifier | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|-----------------------|-----------|--------------------|--------------------|
| Lead | 7439-92-1 | ND | | 0.167 | 0.500 |

CALIBRATION VERIFICATION

| | | | |
|----------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |
| Concentration Units: | mg/l | | |

| Analyte | Sample ID: | ICV | | | | ICVLL | | | | CCV | | | |
|---------|------------|-------------------|-------|----------|--------|-------------------|-------|-----------|------|-------------------|-------|----------|------|
| | | ICP120826211623-2 | | | | ICP120826211633-2 | | | | ICP120827210111-2 | | | |
| | | True | Found | %R | %RSD | True | Found | %R | %RSD | True | Found | %R | %RSD |
| LEAD | 1 | 0.9993387 | 99.90 | 0.206000 | 0.0050 | 0.005616919 | 112 | 20.300000 | 0.50 | 0.5050739 | 101 | 0.361000 | |

CALIBRATION VERIFICATION

| | | | |
|----------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |
| Concentration Units: | mg/l | | |

| Analyte | Sample ID: | CCV | | | | CCV | | | | CCV | | | |
|---------|------------|-------------------|-----|----------|------|-------------------|-----|----------|------|-----------------|-----|----------|--|
| | | ICP120827210118-2 | | | | ICP120827210150-2 | | | | ICP120827210211 | | | |
| | True | Found | %R | %RSD | True | Found | %R | %RSD | True | Found | %R | %RSD | |
| LEAD | 0.50 | 0.5042665 | 101 | 0.314000 | 0.50 | 0.50595 | 101 | 0.671000 | 0.50 | 0.5113141 | 102 | 0.572000 | |

CALIBRATION VERIFICATION

| | | | |
|----------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |
| Concentration Units: | mg/l | | |

| CCVLL | | | | |
|------------|--------|-------------------|-------|-----------|
| Sample ID: | | ICP120827210852-2 | | |
| Analyte | True | Found | %R | %RSD |
| LEAD | 0.0050 | 0.003182933 | 63.70 | 31.600000 |

| | | | |
|--------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |

| | Sample ID: | ICB Result | ICB Qual | CCB Result | CCB Qual | CCB Result | CCB Qual | BLANK Result | BLANK Qual |
|---------|------------|------------------|----------|------------------|----------|------------------|----------|----------------|------------|
| | File ID: | 20210826162546-2 | | 20210827011358-2 | | 20210827012110-2 | | 20210827012400 | |
| Analyte | | mg/l | | mg/l | | mg/l | | mg/l | |
| LEAD | | 0.001593365 | U | 0.0009517472 | U | 0.0009832964 | U | U | |

| | | | |
|--------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |

| Analyte | Sample ID: | CCB Result | CCB Qual | Sample ID: | CCB Result | CCB Qual |
|---------|------------|------------------|----------|------------|----------------|----------|
| | File ID: | 20210827015256-2 | | File ID: | 20210827021417 | |
| | | mg/l | | | mg/l | |
| LEAD | | 0.0004943883 | U | | -0.0005048188 | U |

SDG: L1393214
Instrument ID: ICP12
Instrument Run: 082621ICP12

Analytical Method: 6010D
Date: 08/26/21 16:42

| Analyte | True | Found | | True | Found | |
|----------------------|--------------|----------------|----------------|---------------|---------------|-----------------|
| | ICSA mg/l | ICSA mg/l | ICSA % Rec. | ICSAB mg/l | ICSAB mg/l | ICSAB % Rec. |
| ALUMINUM | 500 | 502.0379 | 100 | 500 | 501.9921 | 100 |
| ANTIMONY | 0 | 0.02755975 | | 0.50 | 0.5643993 | 113 |
| ARSENIC | 0 | -0.03494365 | | 0.50 | 0.512478 | 102 |
| BARIUM | 0 | 0.002959076 | | 0.50 | 0.5423834 | 108 |
| BERYLLIUM | 0 | -0.00007358297 | | 0.50 | 0.4979079 | 99.60 |
| BORON | 0 | -0.09021902 | | 1 | 0.9626316 | 96.30 |
| CADMIUM | 0 | 0.0009786234 | | 1 | 1.087652 | 109 |
| CALCIUM | 500 | 508.4613 | 102 | 500 | 507.7226 | 102 |
| CERIUM | 0 | 0.1681203 | | 0 | 0.1955043 | |
| CHROMIUM | 0 | 0.0009804087 | | 0.50 | 0.5208367 | 104 |
| COBALT | 0 | -0.0004623029 | | 0.50 | 0.5075576 | 102 |
| COPPER | 0 | 0.005100224 | | 0.50 | 0.5784515 | 116 |
| HOT WATER SOL. BORON | 0 | -0.09021902 | | 0 | 0.9626316 | |
| IRON | 200 | 201.8789 | 101 | 200 | 203.5889 | 102 |
| LANTHANUM | 0 | -0.005494578 | | 0 | -0.009495438 | |
| LEAD | 0 | -0.03503772 | | 1 | 0.9580334 | 95.80 |
| LITHIUM | 0 | 0.001406181 | | 0 | 0.003878799 | |
| MAGNESIUM | 500 | 514.5004 | 103 | 500 | 517.2876 | 103 |
| MANGANESE | 0 | 0.004084937 | | 0.50 | 0.5137185 | 103 |
| MOLYBDENUM | 0 | 0.000217832 | | 0.50 | 0.5360155 | 107 |
| NICKEL | 0 | -0.003223017 | | 1 | 0.9933387 | 99.30 |
| PHOSPHORUS | 0 | 0.005994708 | | 0 | 0.005210479 | |
| POTASSIUM | 0 | -0.09904029 | | 0 | -0.04067108 | |
| SELENIUM | 0 | 0.02472459 | | 0.50 | 0.5785699 | 116 |
| SILICON | 0 | -0.01150722 | | 1 | 1.071702 | 107 |
| SILVER | 0 | -0.0007341132 | | 1 | 1.114799 | 111 |
| SODIUM | 0 | 0.1562164 | | 0 | 0.1747456 | |
| STRONTIUM | 0 | 0.003898679 | | 0 | 0.004028935 | |
| SULFUR | 0 | -0.07472075 | | 0 | -0.09834596 | |
| THALLIUM | 0 | -0.01106474 | | 0.50 | 0.4809626 | 96.20 |
| TIN | 0 | -0.01255101 | | 0.50 | 0.477174 | 95.40 |
| TITANIUM | 0 | 0.009308359 | | 0.50 | 0.5261634 | 105 |
| VANADIUM | 0 | -0.0007290835 | | 0.50 | 0.5038603 | 101 |
| ZINC | 0 | 0.0002950366 | | 1 | 0.9970569 | 99.70 |

ICSA Limits: 80 - 120

ICSAB Limits: 80 - 120

SDG: L1393214
Instrument ID: ICP12
Instrument Run: 082621ICP12

Analytical Method: 6010D
Date: 08/26/21 23:24

| Analyte | True | Found | | True | Found | |
|----------------------|--------------|----------------|----------------|---------------|---------------|-----------------|
| | ICSA mg/l | ICSA mg/l | ICSA % Rec. | ICSAB mg/l | ICSAB mg/l | ICSAB % Rec. |
| ALUMINUM | 500 | 551.2503 | 110 | 500 | 575.7381 | 115 |
| ANTIMONY | 0 | 0.03180174 | | 0.50 | 0.5606752 | 112 |
| ARSENIC | 0 | -0.01864892 | | 0.50 | 0.5438317 | 109 |
| BARIUM | 0 | 0.003478609 | | 0.50 | 0.5586314 | 112 |
| BERYLLIUM | 0 | -0.00004508121 | | 0.50 | 0.5439089 | 109 |
| BORON | 0 | -0.1022247 | | 1 | 1.068909 | 107 |
| CADMIUM | 0 | 0.00076298 | | 1 | 1.126211 | 113 |
| CALCIUM | 500 | 535.6206 | 107 | 500 | 544.739 | 109 |
| CERIUM | 0 | 0.2528661 | | 0 | 0.3506344 | |
| CHROMIUM | 0 | 0.0008172511 | | 0.50 | 0.5295011 | 106 |
| COBALT | 0 | -0.0003726358 | | 0.50 | 0.5287809 | 106 |
| COPPER | 0 | 0.005507577 | | 0.50 | 0.5803618 | 116 |
| HOT WATER SOL. BORON | 0 | -0.1022247 | | 0 | 1.068909 | |
| IRON | 200 | 218.5789 | 109 | 200 | 221.237 | 111 |
| LANTHANUM | 0 | -0.005088498 | | 0 | -0.007204261 | |
| LEAD | 0 | -0.03669559 | | 1 | 0.9730582 | 97.30 |
| LITHIUM | 0 | 0.001343081 | | 0 | 0.001781075 | |
| MAGNESIUM | 500 | 570.2284 | 114 | 500 | 578.9104 | 116 |
| MANGANESE | 0 | 0.004378487 | | 0.50 | 0.5503041 | 110 |
| MOLYBDENUM | 0 | 0.001395187 | | 0.50 | 0.5510551 | 110 |
| NICKEL | 0 | -0.003192652 | | 1 | 1.022575 | 102 |
| PHOSPHORUS | 0 | 0.01065495 | | 0 | 0.01082105 | |
| POTASSIUM | 0 | 0.01223173 | | 0 | 0.03494858 | |
| SELENIUM | 0 | 0.03445835 | | 0.50 | 0.5990063 | 120 |
| SILICON | 0 | 0.0003109475 | | 1 | 1.094995 | 109 |
| SILVER | 0 | -0.0008659254 | | 1 | 1.145005 | 115 |
| SODIUM | 0 | 0.2397492 | | 0 | 0.262562 | |
| STRONTIUM | 0 | 0.004272831 | | 0 | 0.004531666 | |
| SULFUR | 0 | -0.0847923 | | 0 | -0.08784118 | |
| THALLIUM | 0 | -0.01751272 | | 0.50 | 0.495921 | 99.20 |
| TIN | 0 | -0.01262536 | | 0.50 | 0.4756486 | 95.10 |
| TITANIUM | 0 | 0.01215882 | | 0.50 | 0.5784899 | 116 |
| VANADIUM | 0 | -0.002840961 | | 0.50 | 0.5473146 | 109 |
| ZINC | 0 | 0.0001905174 | | 1 | 1.094725 | 109 |

ICSA Limits: 80 - 120

ICSAB Limits: 80 - 120

| | | | |
|------------------------|-------------|---------------------------|----------------|
| SDG: | L1393214 | Analytical Method: | 6010D |
| Instrument ID: | ICP12 | Date: | 08/27/21 05:04 |
| Instrument Run: | 082621ICP12 | | |

| Analyte | True | Found | | True | Found | |
|----------------------|--------------|----------------|----------------|---------------|---------------|-----------------|
| | ICSA mg/l | ICSA mg/l | ICSA % Rec. | ICSAB mg/l | ICSAB mg/l | ICSAB % Rec. |
| ALUMINUM | 500 | 502.5224 | 101 | 500 | 503.1821 | 101 |
| ANTIMONY | 0 | 0.01808757 | | 0.50 | 0.5479234 | 110 |
| ARSENIC | 0 | -0.01754558 | | 0.50 | 0.4844012 | 96.90 |
| BARIUM | 0 | 0.002872428 | | 0.50 | 0.5287579 | 106 |
| BERYLLIUM | 0 | -0.00006848697 | | 0.50 | 0.4789366 | 95.80 |
| BORON | 0 | -0.07727791 | | 1 | 0.9152908 | 91.50 |
| CADMIUM | 0 | 0.001028797 | | 1 | 1.050905 | 105 |
| CALCIUM | 500 | 458.3567 | 91.70 | 500 | 457.1739 | 91.40 |
| CERIUM | 0 | 0.05331246 | | 0 | 0.08013209 | |
| CHROMIUM | 0 | 0.001037285 | | 0.50 | 0.4979886 | 99.60 |
| COBALT | 0 | -0.0001226026 | | 0.50 | 0.4784037 | 95.70 |
| COPPER | 0 | 0.003390379 | | 0.50 | 0.5581955 | 112 |
| HOT WATER SOL. BORON | 0 | -0.07727791 | | 0 | 0.9152908 | |
| IRON | 200 | 182.4722 | 91.20 | 200 | 183.1418 | 91.60 |
| LANTHANUM | 0 | -0.008883124 | | 0 | -0.008419473 | |
| LEAD | 0 | -0.02885473 | | 1 | 0.8757265 | 87.60 |
| LITHIUM | 0 | 0.005254951 | | 0 | 0.00377048 | |
| MAGNESIUM | 500 | 445.6935 | 89.10 | 500 | 446.0002 | 89.20 |
| MANGANESE | 0 | 0.004292363 | | 0.50 | 0.508835 | 102 |
| MOLYBDENUM | 0 | 0.001307683 | | 0.50 | 0.5198888 | 104 |
| NICKEL | 0 | -0.001906144 | | 1 | 0.9211901 | 92.10 |
| PHOSPHORUS | 0 | 0.01053435 | | 0 | 0.0091215 | |
| POTASSIUM | 0 | -0.09170468 | | 0 | -0.07259864 | |
| SELENIUM | 0 | 0.02223213 | | 0.50 | 0.5161625 | 103 |
| SILICON | 0 | 0.0202869 | | 1 | 1.094529 | 109 |
| SILVER | 0 | 0.0001814243 | | 1 | 1.161678 | 116 |
| SODIUM | 0 | 0.1001602 | | 0 | 0.08107117 | |
| STRONTIUM | 0 | 0.004067084 | | 0 | 0.004128314 | |
| SULFUR | 0 | -0.05367699 | | 0 | -0.07892034 | |
| THALLIUM | 0 | -0.01282431 | | 0.50 | 0.4551179 | 91 |
| TIN | 0 | -0.01341143 | | 0.50 | 0.430177 | 86 |
| TITANIUM | 0 | 0.006659427 | | 0.50 | 0.5121024 | 102 |
| VANADIUM | 0 | 0.001032534 | | 0.50 | 0.48235 | 96.50 |
| ZINC | 0 | 0.005763101 | | 1 | 0.833053 | 83.30 |

ICSA Limits: 80 - 120

ICSAB Limits: 80 - 120

MS Sample / File ID: R3697192-4 / 20210827013429

MSD Sample / File ID: R3697192-5 / 20210827013654

OS Sample / File ID: L1393142-01 / 20210827012909

Instrument ID: ICP12

Analytical Method: 6010D

SDG: L1393214

Analytical Batch: WG1729585

Matrix: Waste

| Analyte | Spike Amount <i>mg/l</i> | OS Result <i>mg/l</i> | MS Result <i>mg/l</i> | MSD Result <i>mg/l</i> | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | RPD % | RPD Limits % |
|---------|-----------------------------|--------------------------|--------------------------|---------------------------|--------------|---------------|----------|------------------|----------|-----------------|
| Lead | 10.0 | ND | 9.83 | 9.86 | 98.3 | 98.6 | 1 | 75.0 - 125 | 0.373 | 20 |

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

LABORATORY CONTROL SAMPLE
LABORATORY CONTROL SAMPLE DUPLICATE
RECOVERY
L1393214-01,02

SAMPLE NO.:
R3697192-2

| | | | |
|------------------------|-----------------------------|-------------------|-----------|
| LCS Sample / File ID: | R3697192-2 / 20210827012625 | SDG: | L1393214 |
| LCSD Sample / File ID: | | Analytical Batch: | WG1729585 |
| Instrument ID: | ICP12 | Dilution Factor: | 1 |
| Analytical Method: | 6010D | Matrix: | Waste |

| Analyte | Spike Amount <i>mg/l</i> | LCS Result <i>mg/l</i> | LCSD Result | LCS Rec. % | LCSD Rec. % | Rec. Limits % | RPD % | RPD Limits % |
|---------|-----------------------------|---------------------------|-------------|---------------|----------------|------------------|----------|-----------------|
| Lead | 10.0 | 9.77 | | 97.7 | | 80.0 - 120 | | |

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

ICP AND ICP/MS
SERIAL DILUTIONS
L1393214-01,02

SAMPLE NO.:
R3697192-3

| | | | |
|----------------------|------------------------------|-------------------|-----------|
| SD Sample / File ID: | R3697192-3 / 20210827013201 | SDG: | L1393214 |
| OS Sample / File ID: | L1393142-01 / 20210827012909 | Analytical Batch: | WG1729585 |
| Lab File ID: | 20210827013201 | Dilution Factor: | 5 |
| Instrument ID: | ICP12 | Matrix: | Waste |
| Analytical Method: | 6010D | | |

| Analyte | OS Result <i>mg/l</i> | SD Result <i>mg/l</i> | RPD % | RPD Limits % |
|---------|-----------------------------|-----------------------------|----------|--------------------|
| Lead | ND | ND | 0.000 | 10 |

*: Value outside the established quality control limits.
D: Surrogate recovery cannot be used for control limit evaluation due to dilution.

DETECTION LIMIT SUMMARY

| | | | |
|-----------------|----------------|--------------------|-------|
| Lab Sample IDs: | L1393214-01,02 | Analytical Method: | 6010D |
| Matrix: | Waste | Prep Method: | 3015 |

| Analyte | CAS | Wavelength | Mass | MDL <i>mg/l</i> | RDL <i>mg/l</i> |
|---------|-----------|------------|----------|--------------------|--------------------|
| Lead | 7439-92-1 | 189.0420 | 220.3530 | 0.0330 | 0.10 |

10A-IN

INTERELEMENT CORRECTION FACTORS

SDG:

L1393214

Analytical Method:

6010D

Instrument ID:

ICP12

Date:

08/24/21 13:38

| Analyte | Wavelength nm | ARSENIC 189.0420 | CALCIUM 317.9330 | CHROMIUM 267.7160 | COBALT 228.6160 | COPPER 324.7540 | IRON 259.94 | LANTHANUM 333.7490 |
|-----------|------------------|---------------------|---------------------|----------------------|--------------------|--------------------|----------------|-----------------------|
| ALUMINUM | 308.2150 | | | | | | | |
| ANTIMONY | 206.8330 | | | -0.00010364 | | | | |
| ARSENIC | 189.0420 | | | | | | | -0.00520043 |
| BARIUM | 233.5270 | | | | | | -0.00011317 | |
| BERYLLIUM | 313.0420 | | | | | | | |
| CADMIUM | 228.8020 | -0.25019590 | | | | | | |
| CHROMIUM | 267.7160 | | | | | | | |
| COBALT | 228.6160 | | | | | | | |
| IRON | 271.4410 | | | | -0.00018664 | | | |
| LEAD | 220.3530 | | | | | -0.00003085 | | -0.00013179 |
| LITHIUM | 670.7840 | | -0.00032182 | | | | | |
| SELENIUM | 196.09 | | | -0.00001854 | | | | |
| THALLIUM | 190.8560 | | | | -0.00026544 | | | |

| | | | |
|----------------|----------|--------------------|----------------|
| SDG: | L1393214 | Analytical Method: | 6010D |
| Instrument ID: | ICP12 | Date: | 08/24/21 13:38 |

| Analyte | Wavelength nm | MANGANESE 257.61 | SILICON 251.6110 | TIN 189.9890 | TITANIUM 334.9410 | VANADIUM 292.4020 |
|-----------|------------------|---------------------|---------------------|-----------------|----------------------|----------------------|
| ALUMINUM | 308.2150 | | | | | -0.00434031 |
| ANTIMONY | 206.8330 | | | -0.00419814 | | |
| ARSENIC | 189.0420 | | | | | |
| BARIUM | 233.5270 | | | | | |
| BERYLLIUM | 313.0420 | | | | | -0.02889282 |
| CADMIUM | 228.8020 | | | | | |
| CHROMIUM | 267.7160 | -0.00003148 | | | | |
| COBALT | 228.6160 | | | | -0.00101627 | |
| IRON | 271.4410 | | | | | |
| LEAD | 220.3530 | | -0.00008881 | | | |
| LITHIUM | 670.7840 | | | | | |
| SELENIUM | 196.09 | | | | | |
| THALLIUM | 190.8560 | -0.00000492 | | | | |

SDG: L1393214
Instrument ID: ICP12

Analytical Method: 6010D
Date: 06/16/21 08:38

| Analyte | LDR <i>ppm</i> |
|------------|-------------------|
| ALUMINUM | 500 |
| ANTIMONY | 10 |
| ARSENIC | 50 |
| BARIUM | 50 |
| BERYLLIUM | 10 |
| BORON | 50 |
| CADMIUM | 10 |
| CALCIUM | 1000 |
| CHROMIUM | 50 |
| COBALT | 50 |
| COPPER | 50 |
| IRON | 500 |
| LEAD | 100 |
| LITHIUM | 10 |
| MAGNESIUM | 1000 |
| MANGANESE | 20 |
| MOLYBDENUM | 20 |
| NICKEL | 50 |
| PHOSPHORUS | 200 |
| POTASSIUM | 500 |
| SELENIUM | 10 |
| SILICON | 40 |
| SILVER | 10 |
| SODIUM | 1000 |
| STRONTIUM | 20 |
| SULFUR | 200 |
| THALLIUM | 10 |
| TIN | 50 |
| TITANIUM | 50 |
| VANADIUM | 20 |
| ZINC | 20 |

| | | | |
|------------------------|-------------|--------------------------------|----------------|
| SDG: | L1393214 | Analytical Method: | 6010D |
| Instrument ID: | ICP12 | Calibration Start Date: | 08/26/21 16:03 |
| Analytical Run: | 082621ICP12 | Calibration End Date: | 08/26/21 16:20 |

| Client Sample ID | Lab Sample ID | File ID | Analysis Date Time | Dilution | Batch |
|------------------|-------------------|------------------|--------------------|----------|-----------|
| CALBLK | ICP120826211601 | 20210826160102 | 08/26/21 16:01 | | |
| CAL | STD1 | 20210826160349 | 08/26/21 16:03 | | |
| CAL | STD2 | 20210826160620 | 08/26/21 16:06 | | |
| CAL | STD3 | 20210826160846 | 08/26/21 16:08 | | |
| CAL | STD4 | 20210826161118 | 08/26/21 16:11 | | |
| CAL | STD5 | 20210826161357 | 08/26/21 16:13 | | |
| CAL | STD6 | 20210826161653 | 08/26/21 16:16 | | |
| CAL | STD7 | 20210826162006 | 08/26/21 16:20 | | |
| ICV | ICP120826211623-2 | 20210826162302-2 | 08/26/21 16:23 | | |
| ICB | ICP120826211625-2 | 20210826162546-2 | 08/26/21 16:25 | | |
| ICVLL | ICP120826211633-2 | 20210826163341-2 | 08/26/21 16:33 | | |
| ICSA | ICP120826211642-2 | 20210826164235-2 | 08/26/21 16:42 | | |
| ICSAB | ICP120826211645-2 | 20210826164528-2 | 08/26/21 16:45 | | |
| ICSA | ICP120826212324-2 | 20210826232404-2 | 08/26/21 23:24 | | |
| ICSAB | ICP120826212326-2 | 20210826232657-2 | 08/26/21 23:26 | | |
| CCV | ICP120827210111-2 | 20210827011107-2 | 08/27/21 01:11 | | |
| CCB | ICP120827210113-2 | 20210827011358-2 | 08/27/21 01:13 | | |
| CCV | ICP120827210118-2 | 20210827011817-2 | 08/27/21 01:18 | | |
| CCB | ICP120827210121-2 | 20210827012110-2 | 08/27/21 01:21 | | |
| BLANK | R3697192-1 | 20210827012400 | 08/27/21 01:24 | 1 | WG1729585 |
| LCS | R3697192-2 | 20210827012625 | 08/27/21 01:26 | 1 | WG1729585 |
| OS | L1393142-01 | 20210827012909 | 08/27/21 01:29 | | |
| L1393142-01 | L1393142-01 | 20210827012909 | 08/27/21 01:29 | 1 | WG1729585 |
| SD | R3697192-3 | 20210827013201 | 08/27/21 01:32 | 5 | WG1729585 |
| MS | R3697192-4 | 20210827013429 | 08/27/21 01:34 | 1 | WG1729585 |
| MSD | R3697192-5 | 20210827013654 | 08/27/21 01:36 | 1 | WG1729585 |
| CCV | ICP120827210150-2 | 20210827015003-2 | 08/27/21 01:50 | | |
| CCB | ICP120827210152-2 | 20210827015256-2 | 08/27/21 01:52 | | |
| RP-01 | L1393214-01 | 20210827020335 | 08/27/21 02:03 | 1 | WG1729585 |
| RP-02 | L1393214-02 | 20210827020616 | 08/27/21 02:06 | 1 | WG1729585 |
| CCV | ICP120827210211 | 20210827021127 | 08/27/21 02:11 | | |
| CCB | ICP120827210214 | 20210827021417 | 08/27/21 02:14 | | |
| ICSA | ICP120827210504-2 | 20210827050442-2 | 08/27/21 05:04 | | |
| ICSAB | ICP120827210507-2 | 20210827050738-2 | 08/27/21 05:07 | | |
| CCVLL | ICP120827210852-2 | 20210827085229-2 | 08/27/21 08:52 | | |

INITIAL CALIBRATION RECOVERY

| | | | |
|--------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |

| Analyte | Std Conc mg/l | Result mg/l | Rec. % | Std Conc mg/l | Result mg/l | Rec. % |
|----------|------------------|----------------|-----------|------------------|----------------|-----------|
| LEAD | 0.0050 | .005706251 | 114 | 0.50 | .5014866 | 100 |
| File ID: | | 20210826160349 | | | 20210826160620 | |

INITIAL CALIBRATION RECOVERY

| | | | |
|--------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |

| Analyte | Std Conc mg/l | Result mg/l | Rec. % | Std Conc mg/l | Result mg/l | Rec. % |
|----------|------------------|----------------|-----------|------------------|----------------|-----------|
| LEAD | 1 | .9953524 | 99.50 | 2 | 2.00195 | 100 |
| File ID: | | 20210826160846 | | | 20210826161118 | |

INITIAL
CALIBRATION

| | | | |
|--------------------|----------|--------------------------------|----------------|
| SDG: | L1393214 | Calibration (begin) date/time: | 08/26/21 16:03 |
| Instrument ID: | ICP12 | Calibration (end) date/time: | 08/26/21 16:20 |
| Analytical Method: | 6010D | Analytical Run: | 082621ICP12 |

| Analyte | Wavelength | Cal. Type | Weightage | Corr. | Slope | Incpt |
|---------|------------|-----------|-----------|----------|----------|----------|
| LEAD | 220.353 | 8 | 5 | 0.999995 | 814.8551 | 3.229964 |

| |
|--|
| Calibration Type |
| 8 = Linear Regression Forced through Blank |
| Weightage |
| 5 = None |

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

| | |
|------------------------------|--|
| Corr. | Correlation Coefficient. |
| Incpt | Intercept. |
| Mass | Mass of parameter. |
| MDL | Method Detection Limit. |
| RDL | Reported Detection Limit. |
| Rec. | Recovery. |
| RPD | Relative Percent Difference. |
| SDG | Sample Delivery Group. |
| Analyte | The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported. |
| Dilution | If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor. |
| Limits | These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges. |
| Qualifier | This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable. |
| Result | The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte. |
| Slope | Slope of calibration curve. |
| Uncertainty (Radiochemistry) | Confidence level of 2 sigma. |
| Wavelength | Wavelength of parameter. |
| Case Narrative (Cn) | A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report. |
| Quality Control Summary (Qc) | This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material. |
| Sample Chain of Custody (Sc) | This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis. |
| Sample Results (Sr) | This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported. |
| Sample Summary (Ss) | This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis. |

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

| | | | |
|--------------------------------|-------------|-----------------------------|------------------|
| Alabama | 40660 | Nebraska | NE-OS-15-05 |
| Alaska | 17-026 | Nevada | TN000032021-1 |
| Arizona | AZ0612 | New Hampshire | 2975 |
| Arkansas | 88-0469 | New Jersey--NELAP | TN002 |
| California | 2932 | New Mexico ¹ | TN00003 |
| Colorado | TN00003 | New York | 11742 |
| Connecticut | PH-0197 | North Carolina | Env375 |
| Florida | E87487 | North Carolina ¹ | DW21704 |
| Georgia | NELAP | North Carolina ³ | 41 |
| Georgia ¹ | 923 | North Dakota | R-140 |
| Idaho | TN00003 | Ohio--VAP | CL0069 |
| Illinois | 200008 | Oklahoma | 9915 |
| Indiana | C-TN-01 | Oregon | TN200002 |
| Iowa | 364 | Pennsylvania | 68-02979 |
| Kansas | E-10277 | Rhode Island | LA000356 |
| Kentucky ^{1 6} | KY90010 | South Carolina | 84004002 |
| Kentucky ² | 16 | South Dakota | n/a |
| Louisiana | AI30792 | Tennessee ^{1 4} | 2006 |
| Louisiana | LA018 | Texas | T104704245-20-18 |
| Maine | TN00003 | Texas ⁵ | LAB0152 |
| Maryland | 324 | Utah | TN000032021-11 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 110033 |
| Minnesota | 047-999-395 | Washington | C847 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 998093910 |
| Montana | CERT0086 | Wyoming | A2LA |
| A2LA -- ISO 17025 | 1461.01 | AIHA-LAP,LLC EMLAP | 100789 |
| A2LA -- ISO 17025 ⁵ | 1461.02 | DOD | 1461.01 |
| Canada | 1461.01 | USDA | P330-15-00234 |
| EPA--Crypto | TN00003 | | |

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Appendix C

Inspector Accreditations



now



Greenville Technical College

PO Box 5616, 738 S. Pleasantburg Drive, Greenville, South Carolina 29606-5616 (864) 250-8800

ROBERT HALL

307 Block House Rd., Greenville, SC 29615

2999

has completed the requisite training for asbestos accreditation under TSCA Title II and has met the requirements of and passed the examination for an EPA approved

Asbestos Project Designer Refresher Training Course

Greenville, SC

222 - EVT514 - 003

Certificate Number

January 12, 2022

Course Date(s)

January 12, 2022

Examination Date

Attended and Satisfactorily Completed Course
Exam with a Passing Score of 70% or Better



Mike Cashio

Mike Cashio, Principal Instructor

Joy N. Finch
Joy N. Finch, Training Manager

January 12, 2023

Expiration Date

Approved for Remote Delivery

The Environmental Institute

William Smithwick

Social Security Number - XXX-XX-1496
Cardno - 6611 Bay Circle, Suite 220, Norcross, GA 30071

*Has completed 4 hours of coursework and satisfactorily
passed an examination that meets all criteria required for
EPA/AHERA/ASHARA (TSCA Title II) Approved Reaccreditation*

Asbestos in Buildings: Inspector Refresher

November 19, 2020

Course Date

18209

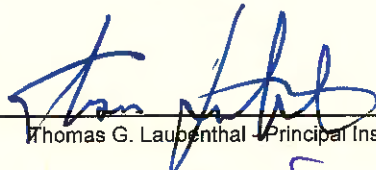
Certificate Number

November 19, 2020

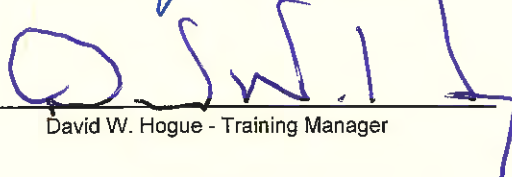
Examination Date

November 18, 2021

Expiration Date



Thomas G. Laubenthal - Principal Instructor



David W. Hogue - Training Manager



(Approved by the ABIH Certification Maintenance Committee for 1/2 CM point - Approval #11-577)

(Florida Provider Registration Number FL49-0001342 - Course #FL49-0002805)

TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124 - Marietta, GA 30067

Phone: 770-427-3600 - Website: www.tei-atl.com

The Environmental Institute

William Smithwick

Social Security Number - XXX-XX-1496

Cardno - 2010 Druid Hills Reserve Drive NE - Atlanta, Georgia 30329

Has completed 24 hours of coursework and satisfactorily passed the hands-on skills assessment and an examination that meets training criteria in accordance with requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities as regulated by Georgia DNR/EPD Chapter 391-3-24 and U. S. EPA TSCA 40 CFR Part 745 for the initial course titled

Lead Inspector: EPA
(Target Housing & Child-Occupied Facilities)

February 24-26, 2020

Course Date

5300

Certificate Number

February 26, 2020

Examination Date

August 26, 2020

EPA Interim Expiration Date

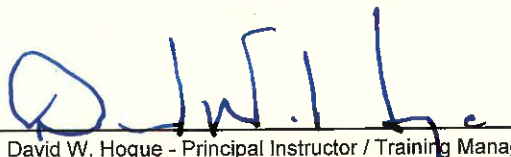
February 25, 2022

Georgia Expiration Date

February 25, 2023

EPA Expiration Date





David W. Hogue - Principal Instructor / Training Manager

(Approved by the ABIH Certification Maintenance Committee for 3 CM points - Approval #11-563)

TEI - 1395 S. Marietta Parkway SE - Building 100, Suite 124 - Marietta, GA 30067

Phone: 770-427-3600 - Website: www.tei-atl.com

(State of Georgia Accredited - Certification No. 20-0799-0061 - January 15, 1997)