SECTION 02080

HAZARDOUS MATERIALS ABATEMENT SPECIFICATION

For
Kensington Fire Station/
Public Safety Building

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June 8, 2005

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LEAD AND ASBESTOS ABATEMENT SPECIFICATION

Kensington Fire Station/
Public Safety Building Renovation
Abatement and Demolition

1.0 GENERAL

1.01 COMPLIANCE AND INTENT

- A. Coordinate all needed abatement with the Kensington Fire Station/Public Safety Building Renovation Specifications and Drawings.
- B. All hazardous materials work within a building shall be completed using negative pressure containment. If the Contractor's work practices cause a release of lead dust or asbestos containing material (ACM) from the containment to the exterior of the building, then additional negative pressure containments shall be required. The construction of additional containment(s) shall be at no additional expense to the Owner.
- C. All abatement workers shall be AHERA and DHS trained and certified.
- D. Comply with all federal, state, and local regulations pertaining to lead and asbestos storage, transportation and disposal; construction, safety and health, Contractor or other certifications, licenses, permits, and training. Also, comply fully with this specification and regulations that define the most stringent standards.
- E. By submitting a bid, the Contractor acknowledges a complete site investigation and acceptance of the conditions affecting the work. These conditions include but are not limited to: physical conditions of the site that may affect access; handling and storage of tools and materials; access to water and electricity or other utilities that may otherwise affect the performance of required activities.
- F. This specification shall form the sole basis of the Contractor's bid for completing the work. To the extent that any other information is available to the Contractor or subcontractors bidding this project, including but not limited to that developed from work done by the Environmental Consultant, other consultants or the Owner, will not relieve the Contractor from the responsibility of properly estimating the difficulty and cost of successfully performing the work as described and required by this specification. The Owner, the Owner's Consultants or the Owner's representatives are not responsible for any conclusions or interpretations made by the Contractor based upon other information made available by the Owner or its representatives or obtained from any other source.
- G. During abatement procedures, the Contractor shall protect against

contamination of soil, water, plant life, adjacent buildings and properties, and the release of hazardous materials. The Environmental Consultant will collect background/baseline air samples in and around the building(s) prior to abatement. Airborne levels of contaminants or evidence of contaminant release above background/baseline during abatement will require the implementation of additional controls. The Contractor will incur all the costs associated with the implementation of additional controls.

- H. The Contractor shall create waste streams and perform all appropriate waste stream testing as required by this specification, by the regulations and the selected landfill(s). The Contractor shall collect composite and representative samples per waste stream. Testing is considered part of the work and shall be included in the Contractor bid. Testing shall include, but is not limited to, Total Threshold Limit Concentration (TTLC), Soluble Threshold Limit Concentration (STLC), Total Toxicity Characteristic Leaching Procedure (TCLP) and, the disposal facility(s). Waste stream testing shall be completed for each identified waste stream and additionally identified waste streams that may be discovered during the work.
- I. Any salvaged and thoroughly decontaminated materials shall become the property of the Contractor unless otherwise specified in the Owner's Contract Documents. Lead or asbestos containing materials uncovered during the abatement activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the Owner, thereby limiting the Owner's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is", without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for any purpose.

1.02 SCOPE OF WORK

Prior to renovation, it is the intent of the project to remove all: regulated asbestos containing materials and stratified lead paint or potentially stratifable paint impacted by the planned work. The cleanup of any incidental ACM and lead in areas undergoing abatement shall be included in the execution of the work

- A. No drawings are provided with this specification.
- B. Decontaminate and pre-clean all areas prior to beginning abatement work.

Lead Abatement

1. All exterior painted surfaces of the building are coated with lead containing paint. Prior to demolition or water blasting abate all paint that is stratified, peeling and blistered, that can be removed by hand scraping, or that may become separated from the building materials during the demolition or dismantling process. Remove these

materials to the underlying substrate.

2. All exterior lead abatement work shall be conducted using appropriate measures applicable to the abatement method.

C. Asbestos Abatement

1. Asbestos containing materials are shown below. Reference the demolition drawings for the quantities of materials requiring abatement. It is the Contractor's responsibility through a site visit to confirm the quantities and extent of work required to complete the project.

Homogenous Material	Material Locations	Asbestos Content
Mastic under carpet and leveling compounds	1 st floor - All mastic under carpet 2 nd floor - Mastic under carpet in lobby	3% CH
12"x12" beige floor tile and mastic and leveling compounds	2 nd floor	Tile = 2% CH Mastic = ND
Sheetrock (drywall) with joint compound/Mud walls and ceilings	All drywall (sheetrock) walls and ceilings with mud/joint compound	Mud/joint compound <1% Drywall = ND
Transite wall panels and associated glues	1 st floor apparatus room 2 nd floor – detained room and janitor closet	Assumed ACM

CH = Chrysotile Asbestos ND = None Detected

 It is the intent of this contract to remove all asbestos containing materials (ACM) impacted by planned work. The cleanup of any incidental ACM found in areas undergoing abatement shall be included in the execution of the work. Cleanup shall be at no additional expense to the Owner.

1.03 WASTE CATEGORIZATION

A. The Contractor shall contact the expected landfills to determine the types of tests required for disposal of each category of waste. Prior to any waste removal the Contractor shall provide written documentation of acceptance of the waste to the Owner from the selected landfill(s).

1.04 REGULATIONS

Except where more explicit or more stringent requirements are included in the Specifications, the applicable regulations and standards of the Construction Industry have the same force and effect and are made a part of the Specifications by reference as they would have if included in the Specifications or if published copies were bound herewith. The regulations should be consulted to resolve overlapping or conflicting

requirements that result from the application of several different industry standards to the same unit of work. Refer to the individual sections of this document for specialized codes and standards. The Contractor must have available for reference at the project site the following:

Δ	. CODE OF FED	DERAL REGULATIONS (CFR):
	29 CFR 1910.134	Respiratory Protection
	29 CFR 1910.141	Sanitation
	29 CFR 1910.145	Accident Prevention Signs and Tags
	29 CFR 1926.21	Safety Training and Education
	29 CFR 1926.55	Gases, Vapors, Fumes, Dust, and Mists
	29 CFR 1926.62	Lead Exposure in Construction
	29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
	29 CFR 1926.103	Respiratory Protection
	29 CFR 1926.59	Hazard Communication
	29CFR 1910.1000	Air Contaminants
	29 CFR 1926.1101	Asbestos
	40 CFR 61-SUBPART A	General Provisions
	40 CFR 61-SUBPART M	National Emission Standard for Asbestos
	49 CFR 172	Hazardous Materials Tables and Hazardous Materials Communications Regulations
	40 CFR 260	Hazardous Waste Management Systems: General
	40 CFR 261	Identification and Listing of Hazardous Waste
	40 CFR 262	Generators of Hazardous Waste
	40 CFR 263	Transporters of Hazardous Waste
	40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
	40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
	40 CFR 268	Land Disposal Restrictions
	40 CFR 745	Lead; Requirements for Lead-Based Paint Activities
	40 CFR 763	Asbestos Containing Material in Schools
	49 CFR 178	Shipping Container Specifications

B. UNDERWRITERS LABORATORIES INC. (UL)

UL 586 1990 High-Efficiency, Particulate, Air

C. CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS (CDIR) DIVISION OF OCCUPATIONAL SAFETY AND HEALTH, TITLE 8, CALIFORNIA ADMINISTRATIVE CODE

CDIR CARS	Carcinogen and Asbestos Registration Sections 340-344.53, 341.6 Amended, and 341.9 Amended Through 341.14
CDIR CSO	Construction Safety Orders, Chapter 4, Subchapter 4
CDIR ESO	Electrical Safety Orders, Chapter 4, Subchapter 5
CDIR 1529	Asbestos Construction Standard
CDIR 1532.1	Lead in Construction
CDIR 3203	Accident Prevention Program
CDIR 3204	Access to Employee Exposure and Medical Records
CDIR 3220	Emergency Action Plan
CDIR 3221	Fire Prevention Plan
CDIR 5194A	Respiratory Protection Equipment Standard
CDIR 5194B	Hazard Communication Standard
CDIR 5208	Asbestos Standard
CDIR 5209	Carcinogen Regulation
CDIR 6003	Accident Prevention Signs

D. CALIFORNIA HEALTH SERVICES (CHS) TITLES 22 AND 23, CALIFORNIA ADMINISTRATIVE CODE DISPOSAL REQUIREMENTS

CHS 25123	Section 25123
CHS 25124	Section 25124
CHS 25143	Section 25143
CHS 25163	Section 25163
CHS 66508	Section 66508
CHS 66510	Section 66510
CHS DIV 4	Division 4, Commencing with Section 66000, "Disposal"

E. CALIFORNIA HEALTH AND SAFETY CODE (CHSC)

CHSC 20 Division 20, Commencing with Section 24200

F. CALIFORNIA LABOR CODE (CLC)

CLC DIVISION 5 Part 1, commencing with 6300

G. CALIFORNIA PROPOSITIONS (CP)

CP 65 Proposition 65

CALIFORNIA STATE BOARD OF EQUALIZATION (CSBE) Η.

CSBE ETU Excise Tax Unit

I. CALIFORNIA STATE LICENSE BOARD (CSLB)

CSLB CBPC California Business and Professional Code Sections 7058.5

and 7058.7, "Certification

1.05 REFERENCED STANDARDS:

Standards referenced in the Specifications or by governing regulations take precedence over non-referenced standards recognized by the industry for applicability of work. In addition to the Federal, State and Local regulations that govern this project, the following publications are listed and become part of this specification to the extent they are referenced in this document.

Α. American National Standards Institute (ANSI):

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ANSI Z9.2	1979 (R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z88.2 1992	Respiratory Protection
ASTM C 732	1982 (R 1987) Aging Effects of Artificial Weathering on Latex Sealants
ASTM D 522	1993 (Rev. A) Mandrel Bend Test of Attached Organic Coatings
ASTM D 1331	Solutions of Surface-Active Agents
ASTM D 2794	1993 Resistance of Coatings to the Effects of Rapid Deformation (Impact)
ASTM E 84	1991 (Rev. A) Surface Burning Characteristics of Building Materials
ASTM E 96	1994 Water Vapor Transmission of Materials
ASTM E 119	1988 Fire Tests of Building Construction and Materials
ASTM E 736	1992 Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
ASTM E 1368	1990 Visual Inspection of Asbestos Abatement Projects

- B. National Institute for Occupational Safety and Health (NIOSH): "NIOSH Respirator Decision Logic1987.
- C. National Fire Protection Association (NFPA):
 - 1. 70-1984 National Electric Code
 - 2. 10-1984 Fire Extinguishers

1.06 PRE-JOB SUBMITTALS FOR HAZARDOUS MATERIALS ABATEMENT

The following items shall be submitted to, and approved by the Environmental Consultant before commencing work involving the ACM/lead abatement outlined in these Specifications.

A. Copies of Submittals

- 1. Provide three (3) copies of submittals to the Owner's representatives (the Environmental Consultant). Assemble each submittal in a three-ring binder or in a plastic spiral/comb binder, grouping items in order and identifying them with tabs for ease of review.
- B. Preliminary waste categorization:
 - 1. Submit a technical plan for representative testing of each waste stream(s). Testing shall include but is not limited to Soluble Threshold Limit Concentration (STLC), Total Toxicity Characteristic Leaching Procedure (TCLP) and all other testing required by the disposal facility(s). Representative testing shall be completed for each address (building) and for each waste stream(s).
- C. Waste hauler's identification number and vehicle certification documentation, including copies of applicable licenses and the hauler's California State Department of Health Services' registration number.
- D. Proof that all required permits and variances have been obtained.
- E. Site safety plan that includes the following, at a minimum:
 - 1. After hours lock-out;
 - 2. ACM/lead/biological hazards handling procedures;
 - 3. ACM/lead release/biological hazards from the work area;
 - 4. Control of water leakage or discharge from the work area:
 - 5. Earthquakes or fire emergency procedures; and
 - 6. 24-Hour emergency telephone numbers for Company Officer with authority to respond to emergencies.
- F. Submittal of worker documentation of employees whom Contractor will use on the job.
 - 1. All employees engaging in the work shall have had instruction on the use and fitting of respirators.
 - 2. All employees will have received appropriate medical examinations for both lead and asbestos work.
 - 3. Respirator fit testing records must be less than six months old. Testing must document testing on the type of respiratory protective equipment used for this project.

- G. Results of on-site DOP testing of all HEPA negative pressure units and vacuums to be used for this project.
- H. Written evidence that the disposal landfill is approved for lead and asbestos disposal by the USEPA and state or local regulatory agency(s). Submit uniform hazardous waste manifests prepared, signed and dated by an agent of the landfill. The signed manifests must be provided to the Environmental Consultant within three working days after delivery.
- Satisfactory proof that notification requirements of local regulatory agencies for lead and asbestos removal work have been adequately addressed.
- J. Satisfactory proof that any required notifications have been provided to Cal/OSHA for lead and asbestos abatement activities at the subject site.
- K. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA certification and permits necessary to carry out the work of this contract.
- L. Material Safety Data Sheets/Specification Sheets: The Contractor is to submit Material Safety Data and Specification Sheets for all chemicals, encapsulants, etc. to be used for this project.
- M. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor is to provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the Environmental Consultant and the Owner's representative.
- N. The Contractor is to provide a signed document confirming acceptance and understanding of the requirements outlined in the Lead and Asbestos Abatement Specification.
- O. Submit evidence that all lead and asbestos abatement workers have baseline medical screenings. Evaluate lead exposure by the whole blood lead method, utilizing Vena-Puncture technique. The blood tests will also be required at the end of each 30-day period. A worker will be removed from the job if his blood lead level is 30 μ g/dl or greater (see Cal-OSHA). The Contractor shall be responsible for medical surveillance and record keeping.

1.07 DAILY PROGRESS SUBMITTALS

- A. The Contractor shall provide laboratory analysis results to the Environmental Consultant.
 - 1. Commencing with the first shift that respirators are worn, the Contractor shall collect daily representative, full-shift, breathing-zone air samples during activities with the highest anticipated exposures.

- 2. Provide documentation of routine waste stream categorization within 72 hours of collection.
- 3. Provide laboratory analysis of asbestos, total lead water, soil and bulks with 24 hours of sample collection.
- B. Circular Charts for negative pressure recorders shall be submitted to the Environmental Consultant daily. Use the attached submittal form provided.

1.08 POST-JOB SUBMITTALS:

- A. Contractor to submit copies of the Security and Safety Logs showing names of persons entering the workspace. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident), emergency evacuations, and any other safety or health incident, waste manifests, air sample results, and pressure differential strip chart readings for each differential recording device on the site.
- B. Upon completion of on-site work, the Contractor is to provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the Owner's representative prior to acceptance of final pay request and shall include the following:
 - 1. Abatement Contractor's name and address, certification number (CSLB), registration number (DOSH), and Tax ID;
 - 2. Hazardous waste hauler (DHS, DOT);
 - 3. Name, address, and registration number of hazardous waste hauler:
 - 4. Laboratory (ies) performing analysis (NIST/NVLAP);
 - 5. Name and address of the building(s) abated;
 - 6. Location name of the facility abated;
 - 7. Contract number and name of project;
 - 8. Specific inventory and map (including exact locations) of the asbestos and lead, which were removed or handled. Using a tabular format and the site plans, provide for each TYPE of hazardous material, and approximate quantity:
 - 9. Names of employees working on the project;
 - 10. Date of commencement of on-site work;
 - 11. Date of completion of all on-site work;
 - Work method applied;
 - 13. Name, location, telephone number, and EPA registration of waste disposal site used.

1.09 ENVIRONMENTAL CONSULTANT

A. The Environmental Consultant for the asbestos and lead abatement project will advise the Owner in all matters pertaining to the work

performed in accordance with these Specifications and requirements.

- B. The Environmental Consultant will act as the Owner's liaison in technical matters involving the asbestos and lead work.
- C. The Environmental Consultant shall only review submittals for general conformance with the abatement concept and general compliance with the information provided in the Bid Documents. Any action indicated during submittal review is subject to the requirements of the Plans and Specifications. The Contractor shall be responsible for determining dimensions and quantities that shall be confirmed at the job site.
- D. The Environmental Consultant is authorized by the Owner to have free access to all work areas, to assist in interpretation of procedures, and to advise on all provisions of the Contract Documents pertaining to the control of asbestos / lead.
- E. The Environmental Consultant will advise the Owner to stop the Contractor's work if, in the course of performing monitoring duties, the site representative observes an instance of substantial non-conformance with the contract documents and/or a situation(s) presenting health hazards to workers, the building's employees, or the general public. Work shall not resume until the corrective measures have been enforced. Instances of substantial non-conformance shall include, but not be limited to, the following:
 - 1. Loss of negative pressurization;
 - 2. Activities or misconduct imperiling worker's or building occupant's safety;
 - 3. Airborne asbestos / lead concentrations above background for the exterior;
 - 4. Airborne asbestos / lead concentrations above PEL for the interior:
 - 5. Failure to submit the required documentation within the prescribed schedule;
 - 6. Evidence of improper waste disposal or categorization;
 - 7. Breaches of containment that could substantially damage building life safety systems.
- F. All asbestos / lead abatement shall be conducted using good work practices to prevent the release of fibers or dust or run-off outside the work area. If poor work practices are observed, the Owner's site representative shall direct the Contractor to make the necessary corrections. Generally, airborne concentration levels measured inside the containment area exceeding 50 mg/m³ for lead and .1 f/cc² will be viewed as an indication of poor work practices unless the concentration is a direct result of design or external circumstances anticipated in the project Specification.
- G. If appropriate conditions are not made after repeated warnings, or if

an immediate threat exists that asbestos / lead dust could be released outside the work area, all abatement work will be stopped. The decision to stop work shall be made jointly by the Environmental Consultant and the Owner.

- H. The total background lead concentration (outside the work area) shall not exceed 30 $\mu g/m^3$ lead and .01 f/cc for asbestos during any work. If total lead dust concentrations exceed the background level or 30 $\mu g/m^3$ or .01 f/cc, whichever is greater, the Owner's Environmental Consultant is authorized to act in accordance with the above provisions to stop work. The Contractor shall perform all necessary corrective actions to remedy the situation.
- I. The Environmental Consultant may perform air sampling inside and outside the asbestos / lead work area during all phases of the work. The Contractor shall cooperate fully with the Environmental Consultant and ensure the cooperation of his workers during collection of air samples and work area inspections.
- J. When visual inspections or air monitoring are specified, the Contractor shall notify the Owner and the Owner's representative in writing 24 hours in advance of the day and time when the Contractor will be ready for such inspections or monitoring. Such requests shall be initiated by the Contractor's Quality Control representative indicating that the work area has been previously inspected by the Contractor and is ready for inspection/testing.
- K. The Environmental Consultant's role in advising the Owner on environmental health matters does not relieve the Contractor's obligation to comply with all applicable health and safety regulations promulgated by the federal, state, or local governments. Air monitoring results generated by the Environmental Consultant shall not be used by the Contractor to represent compliance with regulatory agency requirements for monitoring of workers exposure to asbestos / lead, nor shall any other activity on the part of the Environmental Consultant represent the Contractor's compliance with all applicable health and safety regulations.

1.010 WORKER EXPOSURE MONITORING – CONTRACTOR'S RESPONSIBILITY

A. General:

- The Contractor will collect representative personal samples for the entire time during the shift when asbestos / lead exposure may occur, including at least one sample daily for each shift for each job classification in each work area.
- 2. Personal samples shall be representative of the monitored employee's regular, daily exposure to asbestos / lead.
- 3. If initial monitoring indicates worker exposure is above the action level, the Contractor shall collect daily personnel samples with a turnaround analysis time of 24 hours

maximum.

4. If any employee complains or exhibits symptoms which may be attributable to exposure to asbestos / lead, the Contractor shall conduct personal monitoring representative of the exposure to each employee in the affected job classifications or performing the same operation who may be exposed to asbestos / lead. Any worker complaining of such symptoms shall be examined by a physician to determine if he is suffering from asbestos / lead exposure. Affected workers shall not be allowed in the work area until the diagnosis is complete, and results are signed by a physician and submitted to the Owner and the Environmental Consultant in writing.

B. Biological Monitoring:

- 1. Prior to commencement of the work, a base line blood lead sampling and analysis for each worker will be performed. A zinc protoporphyrin (ZPP) measurement is strongly recommended on each occasion that a blood lead level measurement be made.
- 2. Blood lead sampling and analysis will be performed on each worker monthly or at the completion of the lead paint abatement, whichever is less.

1.011 DEFINITIONS

Ambient Air Quality: The quality of air (in terms of airborne fiber/dust content) that is present in a given space.

Area Monitoring: Sampling of airborne lead dust concentrations within the work area and outside the work area. Sampling shall represent airborne concentrations that may reach the breathing zone.

Authorized Visitor: Designated employees or consultants for the Owner and representatives of any federal, state and local regulatory or other agency having jurisdiction over the project.

Baseline: Refers to the background level of lead and asbestos monitored before abatement.

Certified Industrial Hygienist (CIH): A person certified by the American Board of Industrial Hygiene or his designated representative.

Contractor: The party or parties or company contracting with the Owner to perform work.

Environmental Consultant: RGA Environmental Inc. is the Environmental Consultant for the asbestos/lead/biological abatement project. Project representatives from the Environmental Consultant include Certified Industrial Hygienist (CIH), and Certified Lead Project Managers, Inspectors and Assessors, Certified Asbestos Consultants and Certified Site Surveillance Technicians.

Foreman: An individual who fulfills the duties of "competent person" as defined in 29 CFR 1926.62, CCR 1532.1 and Department of Health Services as required. The foreman must supervise on-site during all abatement work.

Lead Hazardous Waste: Stratified paint, paint chips, rags, general debris, and renovation/demolition debris are to be treated as a hazardous waste if laboratory results indicate a lead (Pb) concentration of 5 milligrams per liter (mg/l) or greater using the EPA approved Toxicity Characteristic Leaching Procedure (TCLP) test. The waste will also be classified as hazardous waste if the Total Threshold Limit Concentration (TTLC) of measured lead is greater than 1000 mg/kg or if the Soluble Threshold Limit Concentration (STLC) of measured lead is greater than or equal to 5 mg/l.

Owner: The Kensington Fire Protection District

Powered Air Purifying Respirator (PAPR): A full face piece respirator that has the breathing air powered to the wearer after it has been purified through a HEPA filter.

RGA: Refers to RGA Environmental Inc. For this project, Certified Industrial Hygienists (CIH), Certified Lead Project Managers, Assessors, Inspectors, Certified Asbestos Consultants, and Certified Site Surveillance Technicians represent RGA.

Soluble Threshold Limit Concentration (STLC): A material is considered as hazardous waste if laboratory test results indicate Soluble Threshold Limit Concentration of measured lead are greater than or equal to 5 milligrams per liter (mg/l).

Stratified: stratified refers to a material that is blistered, peeling, hanging loosely or other wise not adhered firmly to its substrate or may become separated from the building materials during the demolition or dismantling process.

Visible Emissions: Any emissions containing particulate material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Visual Inspection: A visual inspection by RGA representative of the work area under adequate lighting to ensure that the work area is free of visible asbestos/lead material, debris, and dust.

Water Filtration: Refers to water filtration to as small a particulate size as technically feasible, but not more than 5 microns.

2.0 MATERIALS AND EQUIPMENT

2.01 SIGNS AND LABELS:

- A. Provide labeling in accordance with U.S. EPA requirements. Provide the required signs, labels, warnings, or posted instructions for containers used to transport contaminated material to the landfill.
- B. Location of Caution Signs and Labels: Provide bilingual caution signs at all approaches to work area including the building lobby. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos / lead materials, scrap, waste, debris, and other products contaminated with asbestos / lead.
- C. Warning Label Format: Provide labels that comply with 29 CFR

1926.1101 of sufficient size to be clearly legible.

D. Warning Sign Format: Vertical format conforming to 29 CFR 1910.1025(m)(2)(i):

2.02 PLASTIC SHEETING:

- A. Use fire-retardant (FR) polyethylene film manufactured by PolyAmerica, Grand Prairie, Texas 75051, or equal.
 - Thickness 6-mil, minimum, NO EXCEPTIONS.
 - 2. Flame Resistance/Flame Spread Rate <25.
 - 3. Conforms to NFPA #701.
 - 4. Tested in accordance with ASTM E-84.
- B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

2.03 CIRCULAR CHART RECORDER(S):

- A. Work areas shall have a minimum differential pressure of .03 inches water gage (w.g.) at all times. Fluctuations below .025 inches w.g. are unacceptable and may require temporary cessation of work until conditions are corrected.
- B. Multiple continuous circular chart recorder(s) shall be used to document the level of pressure difference between the containment space and all other spaces as deemed necessary by the Environmental Consultant. Defective or non-operating instrumentation may require temporary cessation of work until instrumentation is repaired or replaced.
- C. The circular chart recorder will be checked a minimum of four times per day by a person familiar with the operation. Each check shall be documented on the circular chart with a time and date notation and the initials of the person performing the check. A copy of the circular chart shall be submitted daily to the Environmental Consultant. Use the attached circular chart recorder form. A sample of a circular chart recorder form is attached to the specifications.

2.04 VACUUM EQUIPMENT:

- A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type.
- B. All vacuum equipment used on site shall have on-site independent DOP testing performed to document the effectiveness of the HEPA filter seal.

2.05 LOCAL EXHAUST SYSTEM:

A. Sufficient High Efficiency Particulate Absolute (HEPA) ventilation units shall be used to maintain the negative pressure in each work

area at 0.03 inches of water column. These exhaust systems shall be in accordance with ANSI and the HEPA unit shall bear a UL 586 label. The ventilation system shall remain in operation 24 hours a day, until the first wet cleaning is complete. HEPA filtered air necessary to maintain pressure differential shall be vented to noncontaminated areas outside the buildings. Other HEPA units shall operate within the enclosure to circulate air and control dust and fiber counts. All HEPA units shall be fitted as follows:

- 1. A two-stage pre-filtering system as follows: 100 micron low efficiency filter and a second stage medium pre-filter for particle sizes down to 5 microns;
- Lapse time meter showing accumulated hours of operation;
- 3. Electrical interlock preventing the operation of the unit without a HEPA filter;
- 4. Audible alarm and automatic shutdown system in the event of filter rupture or blockage of the discharge;
- 5. Warning lights that indicate the status of the HEPA unit.
- B. Air that is exhausted to maintain negative pressure shall be exhausted from the building at locations approved by the Environmental Consultant. Exhausted air shall not be near or adjacent to other building intake vents or louvers or at entrances to buildings. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the air filtration units. A Certified Industrial Hygienist or Professional Engineer shall sign the test results. Repeat testing if the unit or the air filtration units have been repaired or replaced.

2.06 RESERVE EQUIPMENT:

- A. Provide authorized visitors, Consultants or other Contractors requiring access to the work area with suitable protective clothing, headgear, eye protection, as described in this specification, whenever the visitor must enter the work area. The Contractor shall have available and maintained at all times a minimum of three (3) suits and other suitable protective equipment for this purpose. All protective equipment shall be new and for the exclusive use of visitors. Respirators shall be PAPR.
- B. The Contractor shall document that each visitor has been trained and fit tested prior to entering an abatement area.

2.07 SCAFFOLDING:

A. Scaffolding, as required to do the specified work, shall meet all applicable safety regulations and OSHA standards. A non-skid surface shall be furnished on all scaffold surfaces subject to foot traffic.

2.08 TRANSPORTATION EQUIPMENT:

A. Transportation equipment, as required, shall be lockable and suitable for loading, temporary storage, transit and unloading of contaminated waste without exposure to persons or property. Any vehicle used to transport asbestos / lead waste shall be properly registered with all applicable controlling agencies.

2.09 ENCAPSULANT APPLICATOR:

- A. A commercial airless sprayer shall be used for the application of encapsulant or amended water. Airless sprayers shall not deliver more than .5 gallons per hour at 500 to 2500 psi.
- B. Wetting agents and surfactants shall effectively wet, and be compatible with the surfaces being wetted.

2.010 CONNECTIONS TO WATER SUPPLY:

- A. Contractor shall assure that all connections to the site's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation at the temperatures and pressures encountered. After use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water shall not damage existing finishes or equipment.
- B. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system in each work area. Provide fittings as required to allow for connection to existing wall hydrants or spouts.

2.011 HOT WATER HEATER:

A. The hot water supply must be adequate to allow for 60 minutes of continuous usage while maintaining a water temperature of 110 °F. At minimum provide UL rated 40-gallon electric hot water heater to supply hot water for the decontamination unit shower. Start from a 30-amp circuit breaker located within the decontamination unit sub panel. Provide relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Drip pans shall consist of a 24 inch x 24 inch x 6 inch deep pan, made of 19 gauge galvanized steel with handles. Drip pan shall be securely fastened to the hot water heater with bailing wire or similar material. Wiring of the hot water heater shall comply with NEMA, NEC and UL standards.

2.012 OTHER TOOLS AND EQUIPMENT:

A. The Contractor shall provide other suitable tools for the stripping, removal and disposal activities. Tools shall including hand-held scrapers, plastic/nylon brushes, sponges, rounded edge shovels, brooms, polyethylene, carts, etc. The Environmental Consultant prior to use shall inspect all tools for contamination. Equipment not

inspected by the Environmental Consultant or contaminated equipment shall be removed from the site immediately. The Contractor shall bear the cost of any clean up, laboratory costs and Environmental Consultants time associated with any clearance work resulting from contaminated equipment.

- B. The Contractor subject to the approval shall select all other materials not specifically described, but required, by the Environmental Consultant.
- C. Carts and other equipment used to transport waste shall suitable for loading, temporary storage, and unloading of contaminated waste.
- D. Prohibited Equipment: The following equipment is prohibited from use on this project unless approved in writing by the Environmental Consultant prior to its use:
 - 1. Sand blasting or other type of high pressure blasting equipment;
 - Vacuum powered removal or collection equipment located outside the asbestos / lead work area, such as a "Vacu-Loader":
 - 3. Gasoline, propane, diesel or other fuel powered equipment inside the containment/work area, in the building and in confined spaces, unless previously approved in writing by the Environmental Consultant;
 - 4. Equipment that creates excessive noise or vibration that would affect safety of the building or its neighbors, or generate complaints from the neighbors. No equipment shall exceed an A-weighted sound level of 85 dB as measured at 3 feet from the radiating source without written permission of the Environmental Consultant:
 - 5. Flammable solvents with a flash point below 141 degrees F or materials containing ethylene glycol ether, methylene chloride, ethyl chloroform (1,1,1-trichloroethane), or other hazardous substances:
 - Non-fire retardant polyethylene sheeting;
 - 7. Polyurethane spray foam for application in fire-rated assemblies, including but not limited to penetrations into stairwells, mechanical rooms, electrical closets, rated floor-to-floor assemblies, etc;
 - 8. Chlorofluoro Carbon Propellant or any other type.
- E. Temporary electrical power shall be according to OSHA and the National Electrical Code for Wet Environment.
- F. Contractor shall conform to the Owner's lockout requirements, and secure the entire job site at all times. The Contractor shall secure area entrances and exits during the abatement phase. Unauthorized visitors are strictly prohibited. Only the Contractor, Environmental

Consultant, and Owner's representatives are permitted at the job site. Contractor shall ensure that all doors, gates, windows, and potential entrances in the building and surrounding fences are secured and locked at the end of each workday.

3.0 **EXECUTION**

3.01 CONTAINMENT SET-UP PROCEDURES

- A. Contractor shall post asbestos / lead perimeter warning signs around both exterior and interior work areas. Signs shall be clearly visible.
- B. Wherever the treatment process is reasonably expected to impact any lead-containing substances:
 - 1. Post a sign 14" by 14" with the phrase, "Caution Lead Hazard. Keep Out" in bold lettering at least 2" inches high.
 - 2. Postings shall be in English and Spanish, and in any language used by any of Contractor's employees as the primary language of communication.
- C. At the start of work, the Contractor shall perform work area precleaning to the satisfaction of the Environmental Consultant. For exterior asbestos / lead abatement, the Contractor shall pre-clean all visible debris on soil, concrete, grass any other horizontal surfaces within 25 feet of the abatement areas to the satisfaction of the Environmental Consultant.
- D. Interior Abatement: Contractor is to construct airtight critical barriers using a minimum of one (1) layer of 6-mil fire retardant poly secured with duct tape.
- E. Exterior Abatement: Contractor shall place polyethylene sheeting beneath all areas where paint removal is to be conducted. The polyethylene sheeting shall extend a minimum of 15 feet from the base of the building and shall be continuously cleaned. Debris shall be placed into appropriate leak-tight, labeled containers for disposal. The appropriate warning tape shall be used to demarcate the work areas as necessary to comply with all pertinent regulations.
 - 1. Note that poor work procedures, inclement weather such as wind (>15 miles per hour) or rain may contribute to the dissemination of lead containing materials to the surrounding area. If such conditions persist it may be necessary for the Contractor to enclose the work area to prevent the dissemination. Additional controls needed to control the dissemination of materials shall be at no additional cost to the Owner.
- F. The clean/change room of the worker decontamination unit shall be of sufficient size to accommodate the work crew and their belongings. It shall include a respirator storage area and be fully equipped with reserve equipment and materials such as clean suits, towels, soap,

tape, and respirator filters.

- G. Three-chambered decontamination units shall be required for both interior and exterior abatement work. All workers must enter and exit through decontamination units. All workers must shower and decontaminate before leaving the work area.
- H. Approved fire extinguishers (Class ABC, multi-purpose, dry chemical type, rated: 4A; 60BC) shall be readily available to workers (maximum travel distance of 50 feet) inside and adjacent to work area(s). Personnel and emergency exits shall be clearly indicated on the inside of the containment area. The emergency exit plan shall be approved by the Environmental Consultant prior to the set up of any work areas.
- I. The Environmental Consultant will inspect and approve all containment setups and work areas before any abatement is undertaken. If a containment area is breached (failure of polyethylene seals, visible dust emission, dust levels above background level, loss of negative pressure, etc.), the Contractor shall take immediate action to control the breach and clean the area to the satisfaction of the Environmental Consultant. Clearance for any contaminated areas will be determined by the Environmental Consultant and may include aggressive air sampling and wipe sampling. The Contractor will be responsible for all costs associated with the clean up, testing, and business interruption resulting from such contamination.
- J. Contractor shall provide multiple and easily accessible viewing ports from the clean area into each abatement area. Viewing ports must be a minimum of 2' x 2', clear-see-through plastic with no scratches, tape or glue marks to permit the Environmental Consultant to view the majority of the work area.
- K. Pressure differential recorders with circular charts are required to monitor the pressure difference between the work area and the adjacent areas. The recorders must be calibrated prior to arriving on site and shall be periodically recalibrated throughout the project. Recalibration shall be performed by qualified technicians following the procedures outlined by the manufacturers. The circular charts shall be provided to the Environmental Consultant at the end of each workday. Contractor shall be immediately notified of any variance in pressure that may result in asbestos / lead concentrations above the baseline in adjacent areas.

3.02 PERSONNEL PROTECTION

- A. All workers shall use steel toe rubber boots and hard hats during any abatement work.
- B. All workers shall be informed of the hazards of asbestos / lead exposure. Workers shall also be instructed in the use and fitting of respirators, protective clothing, decontamination procedures, and all

other aspects associated with abatement work.

C. Personal Hygiene Practices:

- The Contractor shall enforce and follow good personal hygiene practices during the abatement of asbestos / lead. These practices will include but not be limited to the following:
- 2. No eating, drinking, smoking, or applying cosmetics in the work area. The Contractor will provide a clean space separated from the work area for these activities.
- 3. A lavatory facility must be provided and located in the work area outside the containment. The eating and drinking area, clean room, and the lavatory facilities must be maintained in a clean an orderly fashion at all times. The Contractor will provide portable lavatories when needed and disinfect them daily.

D. Respirators:

- 1. Establish a respirator program as outlined by ANSI and required by OSHA 29 CFR 1926.1001, 29 CFR 1926.62 and Cal-OSHA Title 8. Select respirators from those approved jointly by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH). The Certified Industrial Hygienist or Environmental Consultant must approve respirators selected.
- 2. Use a minimum of half face respirators fitted with a HEPA cartridge for all work.

E. Protective Clothing:

- 1. Provide personnel exposed to asbestos / lead dust with fire retardant disposable protective whole body clothing, head coverings, gloves, and foot coverings. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort, but shall not be used alone. Make sleeves secure at the wrists and make foot coverings secure at the ankles with tape. Ensure that all personnel entering and leaving the workspace follow this procedure. Suits shall be of adequate size to accommodate the largest employee. Foot covers may be part of the coveralls. Non-disposable footwear shall be left in the work area until it is disposed of at the completion of the job.
- 2. Protective clothing will be worn inside the work area after the area passes pre-abatement inspection and shall remain in use until the area passes final clearance inspection. Lightweight nylon clothes may be worn under the suit but these clothes must be changed before leaving the work area and should be laundered separately.

F. Shower Requirements:

 Contractor shall assure that all employees and visitors use protective equipment and the shower facility following each entry into the containment area after the start of the asbestos / lead abatement.

G. Authorized Visitors Protective Clothing:

1. Provide authorized visitors with suitable protective clothing, headgear, and eye protection whenever the visitor must enter the work area. The Contractor will have available a minimum of three (3) suits and other suitable protective equipment for this purpose. Respiratory protection provided to authorized visitors shall be new and stored in convenient secure lockers of sufficient size to also permit the storage of clothing and other personal belongings.

3.03 CONTAINMENT AND DECONTAMINATION AREAS/SYSTEMS

- A. Prior to each work shift and continuously throughout the project, each containment/work area and decontamination enclosure shall be inspected and repaired as needed.
- B. Ambient airborne lead levels outside the work area cannot exceed 30 $\,\mu g/m^3$ or baseline, whichever is less. If the airborne lead concentration outside the work area should exceed 30 mg/m^3 for lead and .01 f/cc for asbestos, then abatement and/or demolition must stop and operations be reviewed and modified until the airborne lead concentration can be reduced to within the acceptable limits.

3.04 LEAD-CONTAINING MATERIALS:

- A. Prior to demolition, create waste streams and categorize all of the following materials:
 - 1. All paint that is stratified, peeling, blistered, that can be removed by hand scraping, or that may become separated from the building materials during the demolition dismantling process. Remove these materials to the underlying substrate.

3.05 WORK PRACTICES

- A. The Contractor is responsible for preventing the dissemination of asbestos and lead-containing materials to surrounding areas. If the Environmental Consultant determines that asbestos / lead-containing materials are migrating to unprotected areas, work may be halted until the area(s) is/are cleaned to the satisfaction of the Environmental Consultant.
- B. The Contractor is responsible for proper separation of waste streams and statistical waste stream categorization, manifesting and disposal of asbestos / lead based paint as required by USEPA and applicable

state and local regulations. All sampling for waste stream categorization shall be conducted in the presence of the Environmental Consultant. Coordinate sampling with the Environmental Consultant at least 24 hours prior to collection. The Owner's representative at his/her option may collect duplicate waste stream samples to verify the statistical methods used by the Contractor. In the event of conflict, the Owner's results will prevail. The Contractor, at no additional expense to the Owner, will appropriately dispose of the waste.

- C. The Contractor shall use hand scrapers to remove peeling and stratified paint. The Contractor shall apply misted water throughout the duration of work to minimize the release of asbestos / lead particulate from the work area. Note: water generated from abatement procedures shall also be tested and categorized and disposed of in accordance with this Specification and all rules and regulations. The Contractor shall take all necessary precautions to assure that water coming from the abatement area is not released to surrounding areas.
- D. Paint debris on polyethylene drop cloths shall be cleaned using HEPA vacuums and wet wipe methods at the end of each shift at a minimum. Additional cleaning shall be conducted as determined by the Environmental Consultant.

3.06 DAILY CLEANING

A. Worker decontamination enclosure system including the clean room, shower, and equipment room shall be cleaned daily to maintain acceptable cleanliness. Clean room floor shall be kept dry and free of any waste. Clean room flaps/curtains shall be repaired or replaced whenever damaged or torn. Environmental Consultant will conduct periodic visual inspection and air monitoring of the clean room.

3.07 AIR MONITORING AND WIPE SAMPLING:

- A. The purpose of the air monitoring conducted by the Environmental Consultant will be to detect possible release of asbestos / lead dust emanating from the work area.
- B. The Owner's representative (Environmental Consultant) may provide area monitoring as described in this Specification. In addition to air monitoring within the work and adjacent areas, the Environmental Consultant may conduct wipe samples to determine asbestos / lead concentrations in settled dust. If sample results indicate that conditions have exceeded the baseline, as determined by the Environmental Consultant, all work shall cease. Work shall not recommence until the condition(s) causing the increase have been corrected.
- C. The Environmental Consultant shall perform all final clearance inspection and sampling.

- D. The method of analysis for pre-abatement and clearance sampling shall be visual assessment, air sampling and wipe sampling at the option of the Environmental Consultant.
- E. The Contractor shall be responsible for all personal air sampling. During the performance of any work in the contaminated work area, sufficient personnel breathing zone samples shall be taken to constitute representative sampling each workday. These samples shall be taken each shift and for each distinct crew operation, and shall be used to verify adequacy of dust and fiber control and respiratory protection.

3.08 CLEARANCE INSPECTIONS - ASBESTOS AND LEAD

- Initial Visual Inspection: Contractor shall notify the Owner's representative when the decontamination process in each containment area is complete. Evidence of asbestos or asbestos / lead dust or paint chips will require additional clean up by the Contractor. Contractor shall be responsible for re-cleaning all areas found to be deficient.
- Once the initial visual is passed, the Contractor shall remove all but the containment critical barriers.
- If the Consultant determines that the work area is sufficiently clean, the Contractor may proceed with encapsulation. If the Consultant determines that certain areas require additional cleaning, the Contractor shall reclean the work area.
- 4. Following the second visual inspection, the Contractor shall provide a coating of non-diluted encapsulant to all surfaces in the work area. The Contractor shall allow the encapsulant to dry for the period specified by the manufacturer. The Contractor is responsible for confirming compatibility of encapsulant with new paint/surfacing materials to be applied.

B. Asbestos Clearance Testing:

Following encapsulation and drying time, the Contractor shall request that the Consultant conduct air clearance sampling. Clearance air sampling shall not take place until all encapsulant is dry.

C. Lead Clearance Testing:

After removal of polyethylene sheeting, the Consultant will conduct a final visual inspection of each work area. Any asbestos/lead material found shall be cleaned by the Contractor and any repairs to existing conditions shall be made at no additional cost to the Owner or the Consultant. The Monitoring technician has the option to collect wipe samples and/or air and soil samples for lead content analyses. If lead samples indicate lead concentrations are below the baseline/clearance sample results, the Monitoring technician shall provide the Contractor with a written notice of acceptance.

A. Asbestos

- 1. After removal of remaining barriers, the Consultant may conduct a final inspection of each work area. Any material found shall be cleaned by the Contractor and any repairs to existing conditions shall be made at no additional cost to the Consultant. When the area is clean, the Consultant shall provide the Contractor with a written notice of acceptance.
- 2. The clearance level for each containment shall be < 70 structures per square millimeter via transmission electron microscopy (TEM) or .01 f/cc via PCM. Sampling and clearance will follow AHERA protocol.
- 3. If air samples do not pass the required clearance criteria, the area shall be re-cleaned and new samples shall be collected by the Consultant. The Contractor shall be responsible for all costs associated with re-sampling and re-analyses. This amount will be deducted by the Owner from the Contractor's final payment.
- 4. The Consultant shall collect samples at random in the work area and use forced air equipment to agitate area before beginning sampling. Fans shall be kept in operation throughout sample collection time.
- The Consultant shall notify the Contractor in writing of acceptable asbestos fiber concentrations. The Contractor shall then remove all the remaining barriers in the work area.

B. Lead:

- 1. At the option of the Environmental Consultant, several lead dust wipe samples may be collected following the abatement work. If one (1) sample (per square foot) exceeds the clearance criteria of floors <100 μ g/ft², window sills <500 μ g/ft², window troughs <800 μ g/ft² then the entire area fails and the Contractor must re-clean the area.
- 2. The Contractor shall be responsible for all costs associated with re-cleaning and re-sampling of failed work areas including all costs associated with the Environmental Consultant.
- 3. At the option of the Environmental Consultant, clearance air samples for lead will also be collected in each work area. Clearance criteria will be less than 30 micrograms of lead per cubic meter of air (30 μ g/m³).

3.010 HAZARDOUS MATERIALS DISPOSAL

A. Coordinate all waste stream categorization with the Environmental

Consultant. The Environmental Consultant shall approve and observe all waste stream sampling.

- B. The following requirements are in addition to the other requirements specified in this or other sections of the specification. Where there is conflict the more stringent shall apply.
- C. Asbestos and Lead Disposal Procedures:
 - 1. It is the responsibility of the Contractor to determine current waste handling, labeling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these regulations, local, state, and federal regulations and provide documentation of the same.
 - Filter all wastewater to the technically feasible limit, but not more than five (5) microns before disposal. Comply with all current local, state and federal codes relating to waste water release.
 - 3. Asbestos-containing waste that is properly labeled and double-bagged, may be temporarily stored in unoccupied areas approved by the Environmental Consultant. Rooms must be made secure before storing the waste. Waste is not to remain in temporary storage area(s) for longer than four (4) days before final load-out of materials.
 - 4. All asbestos waste shall be double-wrapped prior to transport from the work area.
 - 5. All vehicles used to transport waste must be registered with the Department of Toxic Substance Control and display the proper registration and expiration stickers.
 - 6. Truck storage compartments shall be fully lined with a minimum of one (1) layer of 6-mil polyethylene on the walls and two (2) layers on the floor.
 - 7. Contractor shall not throw bags into the truck.
 - 8. Contractor shall provide at minimum one (1) day advance notification to the Environmental Consultant when signatures are required on manifest/manifests. The Contractor shall ensure that the Hazardous Waste Manifest is correctly filled out. The Contractor shall give the appropriate copies to the Owner and shall also instruct the Owner in writing that they must send the appropriate copy to the Department of Health Services.
 - 9. Contractor is responsible for all coordination with the waste disposal site and with the waste hauling company.
 - 10. Debris box for hazardous waste shall be fully lined with a double layer of polyethylene sheeting.
 - 11. Debris box shall be constructed with minimum 20-gauge steel with no windows or openings other than the door.

 The door of the container shall have a secure cover on the

locking device with access to the lock only at the keyhole. Once the debris box is filled and the manifest is signed, Contractor must transport the debris box off the job site.

12. Disposal shall be in a landfill that meets EPA requirements. Do not throw bags into landfills in a way that may cause the bags to burst open. If bags cannot be taken out of the drums undamaged, then include the disposal of the drums with the bags. Ensure that bags remain intact during this process.

D. Load-Out Procedures:

- 1. Ensure that polyethylene bags are sealed airtight. All bags shall be wet cleaned prior to removing them from the equipment decontamination unit.
- Ensure all disposal containers are properly labeled according to 8 CCR 1529, 5194 (HAZCOM), 49 CFR 171-179 (USDOT), 40 CFR 61 Subpart M (NESHAP), and any local regulations, state regulations and federal as required by this specification.
