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COMPREHENSIVE HAZARDOUS MATERIALS SURVEY



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VETERANS ADMINISTRATION SAN DIEGO MEDICAL CENTER - BUILDING 1

3350 La Jolla Village Drive
San Diego, California 92161

Prepared for:



U.S. DEPARTMENT OF VETERAN AFFAIRS

4811 Airport Plaza Drive, Suite 600
Long Beach, California 90815

Prepared by:



16700 Valley View Ave.
Suite 100
La Mirada, CA 90638
Ph: 714.523.9811
Fx: 714.523.9810
www.encorp.net
Hewlett-Packard Company

HAZARDOUS MATERIALS INSPECITON REPORT

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SECTION I - INTRODUCTION

I. INTRODUCTION

1.1 OVERVIEW

The following document contains the Hazardous Materials Inspection report for the Veterans Administration San Diego Medical Center Facility located at 3350 La Jolla Village Drive, San Diego California 92161. The Veterans Administration San Diego Healthcare System (VASDHS), contracted with ENCORP Environmental Management to conduct a comprehensive asbestos building inspection in conjunction with a modified Asbestos Hazard Emergency Response Act (AHERA) Assessment and Lead-based paint inspection.

The preparation of these inspections and reports are performed to ensure the safety and health of all patient, staff, contractors, and persons who may work in the vicinity, those who perform maintenance and custodial activities or who may remove asbestos-containing materials (ACM) and/or work with lead-based paint as part of their job duties.

Health effects related to asbestos and lead exposure have been well documented and researched. Asbestos related diseases are caused by inhalation or ingestion of asbestos fibers. Asbestos is a known carcinogen that can cause cancer in the lungs, larynx, trachea and the gastrointestinal system of the body. It can also cause other diseases and conditions as well as lung scarring referred to asbestosis.

The primary objective of this plan is to protect building occupants and workers by ensuring that ACM will be handled in compliance with all applicable federal, state and local regulations. In order to accomplish these goals VASDHS maintenance personnel and contractors are expected to use this document as a supplemental tool to applicable individual asbestos and lead training.

The Inspection program included in this report includes, but is not limited to, the inspection and identification of asbestos-containing materials (ACM) in the form an AHERA (Asbestos Hazard Emergency Response Act) inspection, physical assessment of ACM's, hazard communication procedures and documentation, Lead-Based Paint, training procedures & requirements, maintenance and repair or removal of ACM, response actions, recommended Operating Procedures, and guidelines for re-inspections and periodic surveillance of ACM's.

1.2 FIELD ASSESSMENT SCOPE OF WORK

The inspections were performed by ENCORP's Certified Asbestos Consultants, Site Surveillance Technician in compliance with the State of California Division of Occupational Safety and Health, and EPA Certified Asbestos Building Inspector, following EPA Regulation 40 CFR 763, as guidelines for assessments. The Inspections were performed by EPA Certified Asbestos Building Inspectors and California Department of Public Health lead certified professional. The following buildings were inspected and conditions & assessments of asbestos containing materials (ACM) and Presumed Asbestos Containing Materials (PACM) were performed:

Building 1:	Basement, 1 st floor, 2 nd floor, 3 rd floor, 4 th floor 5 th floor, 6 th floor, 7 Penthouse, 8 th floor Interstitial floors basement-6 th floor, and Roof
Building 2:	1st floor, 2 nd Floor, and roof

The VASDHS active Asbestos Management Plan should be utilized to provide scope for repairs and stabilization of all observed asbestos containing materials found within the facility buildings at the site. Asbestos containing materials are still present within these facilities and an active Management Plan should remain in place until all asbestos containing materials have been removed. ENCORP has provided an Executive Summary of ACM and PACM materials within the facility building. While ENCORP performed filed assessment at these facility the field observations, measurements, and research reported herein as provided in this report are reasonable, the assessment is necessarily limited to the conditions observed and to the information available at the time of the work. Furthermore the subject data provided is not considered sufficient in detail to include cavities, crawlspaces, or otherwise areas inaccessible at the time of the inspection.

1.3 ASBESTOS CONTAINING MATERIAL

Asbestos is a general term applied to a group of naturally occurring minerals which separate into fibers. This fibrous material (e.g., Amosite, Chrysotile, Crocidolite, Tremolite, Anthophyllite and Actinolite) is composed of silicates of aluminum, magnesium and other metals which are incombustible and very difficult to destroy or degrade. Asbestos has a tendency to break into a dust of tiny fibers which can float in the air and be inhaled or swallowed. Asbestos inhalation exposure has been shown to increase the risk of developing lung cancer, mesothelioma (cancer of the lining of the lung and/or abdomen.) and asbestosis (chronic lung disease). Exposure occurs by breathing asbestos fibers produced as a fine dust when asbestos is handled during fabrication, installation or removal. By definition ACM is any material or product which contains more than 1 percent (1%) asbestos. CAL/OSHA Further regulates the content of asbestos in materials or products that contain more than 1 tenth of a percent (0.1%) for the purpose of worker and occupant protection.

ASBESTOS CONTAINING BUILDING MATERIAL (ACBM) CATEGORIES

The EPA has identified that Asbestos Containing Materials (ACM) are found in buildings in the following three category forms:

1.3.1. Sprayed or trowled on materials: (surfacing material)

1.3.2. Mechanical insulation around hot or cold pipes, ducts, boilers, and tanks: (Thermal System Insulation/TSI)

1.3.3. Variety of other products such as ceiling tile, floor tiles, sealants, and cement products (miscellaneous materials).

The first two types of asbestos pose the greatest risk of exposure if the asbestos becomes friable. Friable materials can be crumbled, pulverized, or reduced to powder by hand pressure. All of the materials mentioned above have the potential to become friable during renovation, installation, and maintenance activities.

Prudence dictates that whenever building materials which may contain asbestos are to be disturbed in a manner which is likely to produce dust, the materials should be checked to confirm the absence of asbestos. In no case should demolition or renovation projects be undertaken without first verifying that the materials involved do not contain asbestos

1.4 NON-FRIABLE VS. FRIABLE ACM

The U.S. Environmental Protection Agency (EPA) distinguishes between friable and non-friable forms of ACM. By definition ACM is any material or product which contains more than 1 percent (1%) asbestos (AHERA, OSHA definition), a Friable Asbestos Containing Material is any materials that contains more than 1% asbestos and can be crumbled, pulverized, or reduced to powder by hand pressure when dry. It is generally understood, that Friable ACM is thought to release fibers into the air more readily, however, many types of non-friable ACM can also release fibers if disturbed.

1.5 ASBESTOS CONTAINING CONSTRUCTION MATERIALS (ACCM)

Materials that are found to contain less than one (1) percent asbestos are considered asbestos containing construction materials (ACCM) by CAL/OSHA. These materials are regulated through CAL/OSHA and should be removed by a California trained and licensed abatement contractor in accordance with all governing regulations.

1.6 HAZARDOUS MATERIALS & UNIVERSAL WASTE

PCB'S – POLYCHLORINATED BIPHENYL'S

According to EPA, PCB-containing light ballast that are currently in use have exceeded their designed life span. Sudden rupture of PCB-containing light ballast may pose health hazards to the occupants. EPA recommends removing PCB-containing ballasts from buildings as soon as possible to prevent potential inhalation or dermal exposure.

The manufacturing of PCBs in the United States was banned 1976 because of their toxic effects. In July of 1979, EPA phased out the processing or use of PCBs, except in totally enclosed equipment. While the use of small capacitors in ballast was authorized by EPA in 1982, if these capacitors are found to be leaking, then the spill area must be cleaned up as quickly as possible or within 24 hours (40 CFR section 761.125(c)(1)) and the leaking ballast must be properly disposed of pursuant to 40 CFR section 761.62. EPA regulations also require that all ballast built between July 1, 1978 and July 1, 1998 that do not contain PCBs must be labeled "No PCBs."

Visual confirmations of marked light ballast with No PCBs or PCB containing labels should be performed prior to removal and replacement of light ballast throughout the facility. Ballast not marked nor labeled should be considered PCB containing. PCB containing ballast should be properly handled, stored, containerized, transported, disposed off and other wise recycled by an approve facility in accordance with Title 22 CCR 67426.1. Currently, PCB ballast within the VASDHS should be considered as PCB containing based on EPA recommendations:

- Fluorescent Light Ballasts manufactured before July 1, 1979 may contain PCBs.
- Fluorescent Light Ballasts manufactured between July 1, 1978 and July 1, 1998 that do not contain PCBs must be labeled "No PCBs".
- If a Fluorescent Light Ballasts is not labeled "No PCBs", it is best to assume it contains PCBs unless it is known to be manufactured after 1979.
- Fluorescent Light Ballasts manufactured after 1998 are not required to be labeled.

FLUORESCENT LIGHT FIXTURES

All fluorescent light fixtures should be disposed of by disassembling the fixture in a non-destructive manner. All fluorescent light tubes shall be removed intact, packaged, and disposed of in accordance with Title 22 of the California Code of Regulations, Sections 66243, et seq., and Sections 25157.8, et al, of the California Health and Safety Code.

All fluorescent lamps and tubes are considered hazardous waste in California when they are discarded because they contain mercury. (Title 22, division 4.5, chapter 11, section 66261.50). All fluorescent lamps and tubes must be recycled, or taken to a hazardous waste disposal facility, a universal waste handler, or an authorized recycling facility. (Title 22, division 4.5, chapter 23, section 66273.8) (The law requiring that fluorescent lamps be recycled or taken to a household hazardous waste disposal facility, a universal waste handler, or an authorized recycling facility has been in effect since February 9, 2006.)

CHLOROFLUOROCARBONS (CFCS) REFRIGERANTS ON HVAC SYSTEMS

Prior to demolition/renovation activities and anticipating impact of identified refrigerants, substance shall be collected, requiring removal/capture for recycling and/or disposal in accordance with federal and California Air Resources Boards. The facility currently has multiple rooftop HVAC units located on the Roof top and throughout Interstitial space between the basement and 6th floor.

EMERGENCY EXITS/SPENT BATTERY DEVICES

Prior to demolition/renovation activities and anticipating impact to these materials will require collecting, proper handling, transportation, disposal and other wise recycling by an approve facility in accordance with Title 22 CCR 66273 all devices containing batteries including nickel-cadmium, lead-acid, and other power sources as designed by the manufacturer.

HAZARDOUS MATERIALS INSPECTION REPORT

MISCELLANEOUS HAZARDOUS MATERIALS		
COMPONENT	LOCATION	Recommendations
PCB light ballast	Penthouse, 7 th floor, Floor spaces Basement to 6 th Floor, Interstitial spaces Basement to 6 th floor	<p>The following criteria are provided by EPA to help identify Fluorescent light ballast (FLBs) that may contain PCBs:</p> <ul style="list-style-type: none"> • FLBs manufactured before July 1, 1979 may contain PCBs. • FLBs manufactured between July 1, 1978 and July 1, 1998 that do not contain PCBs must be labeled "No PCBs". • If an FLB is not labeled "No PCBs", it is best to assume it contains PCBs unless it is known to be manufactured after 1979. • FLBs manufactured after 1998 are not required to be labeled. <p>The removal and handling of PCB light ballast and suspected PCB light ballast should be performed by individuals with HAZWOPER training, as outlined in 29 CFR 1910.120 and 8 CCR 5192, when handling all other hazardous materials</p>
Fluorescent light bulbs	Penthouse, 7 th floor, Floor spaces Basement to 6 th Floor, Interstitial spaces Basement to 6 th floor	<p>According to EPA Spent fluorescent lamps slated for removal and replacement should be carefully stored in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages must remain closed and must lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions.</p> <p>The removal and handling of fluorescent lamps tubes should be performed by individuals with HAZWOPER training, as outlined in 29 CFR 1910.120 and 8 CCR 5192, when handling all other hazardous materials.</p>
Chlorofluorocarbons (CFCs) refrigerants	Roof top units, Interstitial units basement to 6 th floor	<p>Approximately 46 Units with varying capacities: Prior to removal of units . Provide capturing of refrigerants for recycling and/or disposal. Individual performing removal and capturing operations should be trained in compliance with EPA's Technician Certification Program.</p> <p>evacuate air-conditioning and refrigeration equipment to established vacuum levels when opening the equipment for maintenance, service, repair, or disposal</p>

HAZARDOUS MATERIALS INSPECTION REPORT

MISCELLANEOUS HAZARDOUS MATERIALS		
COMPONENT	LOCATION	Recommendations
Emergency Exits/Lighting /SPENT battery Devices	Penthouse, 7 th floor, Floor spaces Basement to 6 th Floor	<p>Universal waste batteries associated with Emergency Exit signs, emergency lighting and spent battery devices is regulated under the 40 CFR 273.13(a). Battery sources in this units should be confirmed prior to disposal and replacement requiring special handling as hazardous waste.</p> <p>Contain any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container. The container must be closed, structurally sound, compatible with the contents of the battery, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.</p> <p>The removal and handling of Emergency Exits/spend batteries should be performed by individuals with HAZWOPER training, as outlined in 29 CFR 1910.120 and 8 CCR 5192, when handling all other hazardous materials.</p>

This section applies to the removal of all Universal Waste Rule items, such as fluorescent light fixture ballasts, non-incandescent lamps (fluorescent light tubes), mercury switches, as well as other commonly encountered items, such as refrigerants.

All fluorescent light fixtures to be disposed of shall be disassembled in a non-destructive manner. All fluorescent light tubes shall be removed intact, packaged, and disposed of in accordance with Title 22 of the California Code of Regulations, Sections 66243, et seq., and Sections 25157.8, et al, of the California Health and Safety Code.

Once fluorescent light tubes have been removed from light fixtures to be disposed of, ballasts shall be visually inspected. All ballasts which are not clearly marked "No PCBs" or "PCB Free" shall be assumed to contain PCBs, and shall be removed intact, packaged, and disposed of in accordance with Title 22 of the California Code of Regulations, Sections 66243, et seq., and Sections 25157.8, et al, of the California Health and Safety Code. Any ballasts which are observed to be leaking shall be containerized, and shall be disposed via incineration as per 40 CFR 761. All other ballasts may be incinerated or recycled, in accordance with 40 CFR 761. In spite of the small capacitor variance, land disposal of PCB-containing ballasts shall not be considered an acceptable disposal method, under any circumstances.

Mercury switches identified in thermostat controls and/or any other electrical switching equipment to be demolished shall be removed intact, packaged, and disposed of in accordance with Title 22 of the California Code of Regulations, Sections 66243, et seq., and Sections 25157.8, et al, of the California Health and Safety Code. The Owner's preferred method of disposal shall be recycling.

All identified refrigerants shall be collected and disposed of in accordance with all applicable federal EPA guidelines and local Air Pollution Controlled District. The Owner's preferred method of disposal shall be recycling.

All other Universal Waste Rule wastes shall be removed intact, where feasible, and shall be packaged and disposed of in accordance with Title 22 of the California Code of Regulations, Sections 66243, et seq., and Sections 25157.8, et al, of the California Health and Safety Code.

SECTION II – ASBESTOS INSPECTION

II. ASBESTOS INSPECTION - AHERA INSPECTION

2.1 ACM CONDITION ASSESSMENT CRITERIA

The asbestos-containing materials in the VASDHS buildings are subject to deterioration with aging, the effects of building occupancy, and accidental damage. To monitor the condition of these asbestos-containing materials in the building, a program of re-inspections and periodic inspection has been adopted. This program includes 6-month surveillance inspection by in-house personnel and a recommended 3-year re-inspection to be performed by a licensed Certified Asbestos Consultant.

This section applies to all ACM that has been scheduled for removal, repair or encapsulation and ACM that has been identified but as yet unscheduled for removal, repair or encapsulation. The VASDHS - Asbestos Designated Person will conduct periodic visual inspections of identified ACM and maintains vigilance for the possibility of locating new ACM. A written record of periodic inspections should be kept by the Asbestos Designate Person which includes the following information:

1. Date of inspection
2. Inspector
3. Locations inspected, such as floor level, room names or numbers, etc.
4. Nature of ACM (pipe wrap, transite board, etc.) and friability
5. Whether adequate labeling is still intact
6. Changes of status since last inspection (e.g. new damage, water damage, etc.)
7. Recommended action

The survey lists each type of asbestos containing material found in each room of the building. The condition of each material is listed as good, damaged or significantly damaged using the criteria listed below. If any damage is observed on the listed materials, the material shall be assessed and rank using the Hazard Ranking Criteria provided.

Damaged ACM: Material which has deteriorated, delaminated, water damage, lacks cohesion, is crumbling, gouged, marred heavily, abraded, or in any way has lost its structural integrity over more than 1% but less than 10% if the surface area If the damage is evenly distribute, or less than 25%, if the damage is localized in one area of the homogeneous area.

Significantly Damage: Material which has deteriorated, delaminated, water damage, lacks cohesion, is crumbling, gouged, marred heavily, abraded, or in any way has lost its structural integrity over 10% of the surface if evenly distributed on the surface or over 25% damage localized in one area of the homogeneous area.

Good Condition ACM: ACM with no visible damage or deterioration in less than 1% percent of the material and/or covering.

ACBM with the potential for Damage or Significant Damage: Circumstances in which:

1. Friable ACBM is in an area regularly used by building occupants, including maintenance workers, currently in intact (good) condition.
2. There is a reasonable likelihood that the material or its covering will become damage, deteriorated or delaminated due to factors such as changes in building use, changes in O & M practices, and changes in occupancy, or re-occurring activity.
3. Significant Damage - The material is subject to major or continuing disturbance, due to factors, but not limited to accessibility or under circumstances, vibrations, or air erosion.

HAZARDOUS MATERIALS INSPECITON REPORT

2.2 HAZARD RANKING CRITERIA:

ENCORP's PRIORITY RANKING CRITERIA

Priority Color	Risk Ranking	Response Measure
HIGH RISK	<ol style="list-style-type: none"> 1. Friable or significantly damaged asbestos-containing material (ACM), accessible to staff, patients and Visitors: 2. Friable or severely damaged ACM in an air plenum: 	Immediate: Perform repairs and/or removal as soon as possible
MODERATE RISK	<ol style="list-style-type: none"> 3. Damaged but Non-Friable ACM, accessible to staff or patients: 4. Damaged Non-friable ACM in an air plenum: footage of area exposed to plenum. 5. Damaged ACM: With limited access to maintenance custodial personnel during maintenance activities: Boilers, Mechanical rooms 6. Friable ACM: accessible to maintenance or custodial personnel during normal activities: Presumed ceiling tiles, panels, and interstitial contamination during ceiling access. 	Caution: Perform repairs and response action when feasible Continue periodic surveillance to re-assess conditions
LOW RISK	<ol style="list-style-type: none"> 7. Non-friable, non-damaged ACM: <u>easily</u> accessible to staff and patients: potential of a major or continuing disturbance: 8. Non-friable, non-damaged ACM: accessible to staff and patients: potential of a major or continuing disturbance: 9. Friable or severely damaged, or damaged ACM in an area not normally entered and/or restricted access to staff (attics and crawl space): 10. Non-friable, non-damaged ACM: accessible to maintenance and custodial personnel during normal activities: 11. Non-friable, non-damaged ACM in an area none normally entered (attics and crawl space). 	Continue periodic surveillance to re-assess conditions Apply O&M Procedures should plan disturbance occur

High Risk Areas: Areas where friable ACM or severely damage ACM materials are observed damaged and where areas pose an exposure risk to staff and visitors within the facility. Common response action will include immediate repair or removal by abatement procedures.

Moderate Risk Areas: Area where Non-friable ACM in damage conditions are observed. The material identified is damaged, but not in a friable state. Conditions may include cracking, loose, and/or missing floor/ceiling tiles. The condition may also include damage ACM that is or may become friable, but is not located in a regularly occupied area like a mechanical/boiler room, or attic/ceiling space. Common response actions may include continued periodic surveillance to review conditions of the material, followed by repairs and/or removal upon accessibility and/or repairs when it determined feasible by VASDHS staff.

Low risk: Areas where ACMs are found in good condition, and/or material in damaged conditions are located in inaccessible areas to staff. These areas pose a low risk of exposure but will require continued periodic surveillance to re-access conditions. Any planned disturbance of these materials will require safe work practices under Operations & Maintenance (O&M) procedures.

2.3 RECOMMENDATIONS AND RESPONSE ACTIONS:

Should damaged materials be identified, damaged materials in the facility buildings should be removed or repaired in order to insure the facility are in compliance with the OSHA regulations. Damaged ACMs should be repaired or removed by a licensed abatement company and final clearance air testing performed in accordance with the OSHA/EPA regulations. It is VASDHS's Policy that all asbestos related abatement work be performed by a licensed asbestos abatement contractor. VASDHS personnel shall not remove or impact any asbestos containing materials without prior training, PPE, and approval from VASDHS.

Each material listed as ACM with Potential for Damage should be monitored for any changes in condition during the six-month periodic surveillance. These materials are those materials which are intact at the time of surveillance, but are have a potential for disturbance caused by occupational contact, air or vibrations, and/or other forces that may damage the material. Response actions chosen for other than small scale/short duration repairs (less than 3 square or linear feet), must be designed and conducted by persons accredited to design and conduct response actions.

Response Actions:

- 2.3.1 Operations and Maintenance (O&M) Program** -- This is a program of work practices designed to maintain ACM in good condition and ensure clean-up of asbestos fibers previously released. An effective O & M program can prevent further release by minimizing and controlling ACM disturbance or damage.
- 2.3.2 Repair** -- This involves returning damaged ACM to an undamaged condition or to an intact state by replacing limited sections or patching damaged areas.
- 2.3.3 Encapsulation** -- This involves the treatment of ACM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers. The encapsulant either creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant). Both types of encapsulants are applied to the material surface using airless spray equipment at low pressure to reduce release of fibers during the application.
- 2.3.4 Enclosure** -- This involves creating an airtight, impermeable, permanent barrier around ACM to prevent the release of asbestos fibers into the air. The barrier is typically attached physically or sprayed on. For example, materials such as PVC or corrugated metal may be fastened around insulated piping, or a barrier may be constructed around asbestos fireproofing on structural members by spraying material that cures into a hard shell.
- 2.3.5 Removal** -- This involves the taking out or the stripping of ACM from a damaged area, a functional space, or a homogeneous area in a building. Only accredited personnel can design the activity and conduct the removal, and only accredited laboratories can be used to perform final clearance air sample analyses to assure that the area is safe for building occupants.

The Designated Person (DP) shall select the appropriate actions to deal with the existing asbestos-containing building materials. The DP must see to it that these actions are carried out in a timely manner and in compliance with Federal, State, and local requirements. Response actions and operations performed by licensed asbestos abatement contractors shall be in compliance with all local, state, and federal regulations.

2.4 ASSESSMENT SCOPE:

The inspections were performed by ENCORP's Certified Asbestos Consultants, Site Surveillance Technician in compliance with the State of California Division of Occupational Safety and Health, and EPA Certified Asbestos Building Inspector, following EPA Regulation 40 CFR 763, as guidelines for assessments. The Inspections were performed by EPA Certified Asbestos Building Inspectors. The following buildings were inspected and conditions & assessments of asbestos containing materials (ACM) and Presumed Asbestos Containing Materials (PACM) were performed:

Building 1:	Basement, 1 st floor, 2 nd floor, 3 rd floor, 4 th floor 5 th floor, 6 th floor, 7 Penthouse, 8 th floor Interstitial floors basement-6 th floor, and Roof
Building 2:	1st floor, 2 nd Floor, and Roof

Roofs of Building 1 were excluded from this assessment and materials reported by VASDHS as newly installed.

2.5 AHERA INSPECTION: SUMMARY OF ACM AND LOCATIONS:

ENCORP's Certified Asbestos Consultant and Site Surveillance Technician completed the site inspections. ENCORP's representatives conducted a visual investigation of the property to identify and quantify identified asbestos containing materials.

During ENCORP assessment material location confirmations and materials assessments where performed. Sample data was confirmed to have unique sample identification number, map locations, sample chain of custodies where complete and confirmed that all sample analysis where performed by an accredited NIST/NVLAP for analysis of asbestos fibers in bulk. This method is designed as an inexpensive screening method to examine bulk samples; it is not an absolute method.

ENCORP used a modified random sampling protocol to collect the samples of the suspect ACM's. Each of the suspect samples collected for this report were given a unique sample identification number and sealed inside leak proof containers for shipment to the laboratory for analysis.

All of the asbestos bulk samples collected during this inspection were analyzed by ENCORP's Environmental Laboratory, La Mirada, California. ENCORP's Environmental Laboratory is accredited by NIST/NVLAP for analysis of asbestos fibers in bulk. A copy of the certification is included in the certification section of this report. These samples were analyzed by Polarized Light Microscopy/Dispersion Staining (EPA/600/R-93/116). This method is designed as an inexpensive screening method to examine bulk samples; it is not an absolute method. Any visible light method (including PLM) is limited by the resolution possible with visible light. Because fibers with a diameter less than one micron will not be seen using PLM, a possibility exists that the asbestos content of materials with low asbestos percentages (such as floor tiles and soils) could actually be higher when analyzed by TEM, SEM, or X-ray diffraction.