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# **BioMax Environmental**

*Environmental Consulting and Industrial Hygiene Services*

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November 17<sup>th</sup>, 2008

Mr. Doug Button  
Deputy Director  
Real Estate Services Division  
707 Third Street - 8th Floor  
West Sacramento, CA 95605

**Post Inspection Clearance Assessment Report**  
**Department of General Services**  
**LaCroix Davis Investigative Areas – 24<sup>th</sup> Floor Containments**  
**Board of Equalization Building, 450 N. Street**  
**Sacramento, California**

Mr. Button,

BioMax Environmental, LLC (BioMax) is pleased to provide The Department of General Services (DGS) with this letter summary report detailing BioMax's findings and recommendations pertaining to our post inspection clearance assessment services performed within the 24<sup>th</sup> Floor interior wall cavity areas within the Board of Equalization (BOE) building located at 450 N Street, Sacramento, California. BioMax understands that these post inspection clearance assessment services were contracted with BioMax, at your request, in an effort to review and verify the successful completion of investigative efforts and repairs performed by LaCroix Davis (LCD) and JLS Environmental, Inc., (JLS), respectively, within the identified 24<sup>th</sup> Floor interior wall cavity areas following LCD's scheduled inspection.

Therefore, these post inspection clearance assessment services are intended to assess the current site conditions wherein investigative deconstruction, inspection, and sampling activities were performed by LCD under approved containment barrier controls. Following such activities, immediate repairs were performed and completed by the site mitigation contractor, JLS. BioMax understands that such areas were inspected and investigated by LCD in an effort to visually identify and assess the potential for moisture intrusion and resultant microbial related damages within the noted interior wall cavities and interior plenum chases. Procedural recommendations prepared by BioMax pertaining to such activities were developed, distributed, and previously approved by DGS and BOE representatives as summarized in BioMax's summary report entitled **Containment and Clearance Procedures during Wall Cavity Inspection, dated October 10<sup>th</sup>, 2008.**

Additional historical reports and assessment data may also be obtained for further background and technical reference, as necessary.

Hence, these post inspection clearance assessment services, thereby, are intended to provide a professional evaluation verifying the physical conditions wherein the successful completion of noted LCD activities, JLS repair, and clean-up measures have been performed within each of the containment areas noted in this assessment.

Following the completion of the prescribed activities, Mr. Michael A. Polkabila, CIH, REA of BioMax performed a detailed inspection and comparative air sampling assessment within each of the noted interior containment systems. BioMax's findings and conclusions pertaining to these inspection and clearance sampling assessment activities are summarized herein. On-site inspection and clearance sampling assessment activities were performed by Mr. Michael A. Polkabila, CIH, REA, of BioMax in accordance with currently recognized microbial assessment and sampling guideline procedures. Mr. Polkabila has been certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene and holds the right to the designation "Certified Industrial Hygienist" (CIH) under certification number CP 7104. Mr. Polkabila is also certified by the California Environmental Protection Agency (Cal/EPA) as a Class I Registered Environmental Assessor (REA) under Cal/EPA certification number 05011. Previously established clearance criteria developed for the building investigative activities has been formalized in BioMax's Post Mitigation Clearance Assessment Protocols dated February 15<sup>th</sup>, 2008. Such protocols have been reviewed and approved by BOE's environmental consultant, Hygientech International, Inc. (HTI) prior to implementation.

## SITE OBSERVATIONS

Site inspection and assessment sampling activities were performed within the noted containment areas on November 13<sup>th</sup>, 2008. Site access into each of these contained areas was facilitated by site contractor JLS personnel. On the noted dates, Mr. Michael A. Polkabila, CIH, REA of BioMax performed a detailed visual site inspection within the available containment system barriers wherein a detailed visual assessment and confirmatory sampling activities were performed as noted below. A summary of significant measurements and observations gathered at the time of BioMax's site inspection and clearance assessment activities within the subject LCD containment areas are compiled as follows:

1. At the time of our site inspection and clearance sampling assessment performed on November 13<sup>th</sup>, 2008 ambient outdoor conditions both prior to and following our interior assessment activities consisted of clear and mild conditions with an outdoor temperatures range between 74 and 77 degrees F and relative humidity of 29 and 28 %, respectively. Predominant winds were noted at approximately 10-15 knots from the westerly direction at the time of our assessment. Interior environmental conditions within the sampled containment areas consisted of a temperature range between 75 and 78 degrees F with relative humidity of 28 to 29 percent.
2. At the time of BioMax's assessment activities, each of the observed interior containment barrier systems, whereby destructive inspection and repair activities were performed, were

established and maintained within the noted areas as per BioMax's protocols. Specific detail as noted on the "as built" construction site floor diagram documents may be reviewed within the JLS construction offices for further reference as necessary. BioMax also performed routine inspections of records/conditions within and surrounding each of the noted containment areas during the noted investigative activities and prior to clearance assessment actions. A review of such information and physical pressure differential records has indicated a preponderance of evidence verifying that the current barrier systems have provided appropriate continued protective controls for the duration and performance of the noted investigative activities.

3. During the performance of BioMax's inspection assessment within each containment system, BioMax noted the absence of visible evidence of elevated particulate debris and/or residues remaining within each of the noted containment system barriers. BioMax also noted the re-establishment/completion of physical wall penetration and/or removal repair as evidenced by the visual presence of repair patches and recent re-sheet application of exposed wallboard materials. BioMax understands that DGS had been provided specific procedural repair requirements and wall repair procedural detail as part of the implementation of these activities. Any further detail regarding these repair procedures may be obtained through review of these referenced requirements provided to DGS by the local Sacramento Fire Marshal authority, as necessary
4. The establishment of containment system barriers encompassing each of the interior affected areas were observed and verified under appropriate posting and negative pressure differential at the time of this post mitigation assessment. Worker and equipment entry and exit chambers comprised of a series of zippered plastic access doorways were also observed attached to the noted containment barriers consistent with BioMax's previously noted mitigation protocols.
5. As verified during these assessment activities, all identified interior wallboard building materials had been removed and repaired within each of the noted interior areas of investigation at the time of BioMax's clearance assessment. Digital images and schematic records have been developed and maintained by LCD and JLS for the duration the performance of these investigative inspection and removal activities. Such records have been reviewed by BioMax as part of this clearance assessment and may be provided by LCD and JLS for additional review upon request.
6. Following the completion of visual inspections within each of these containment areas, BioMax collected a series airborne samples within and outside the noted containment systems noted below for subsequent comparative analysis. Such samples collected within and surrounding each the interior containment system were performed in an effort to identify and quantify the presence of potential airborne mold spores present within (and surrounding) the containment systems following the completion of the prescribed investigative effort. Findings associated with these verification sampling activities are noted below.

7. BioMax also collected a series of digital images during these post inspection assessment activities to document the conditions and significant site observations gathered at this time. Such images are provided as an attachment to this summary report for further reference, as necessary.

## SAMPLING PROCEDURES

On-site inspection and sampling assessment activities were conducted by Mr. Michael A. Polkaba, CIH, REA, of BioMax Environmental within the noted LCD containment areas on November 13<sup>th</sup>, 2008. All sampling equipment, supplies, calibration materials, and collection media were provided and maintained by BioMax as part of the performance of this scope of work. Sample collection procedures and methods were performed using standard industrial hygiene sampling methods following techniques prescribed by the contracted analytical laboratory.

### Spore Trap Airborne Microbial and Particulate Sampling:

The collection of multiple airborne Spore Trap microbial samples were achieved using Zefon Air-O-Cell sampling cassette collection devices placed in each of the areas identified in the tables below. Airborne Spore Trap samples were collected within and outside of the containment area locations at a height of approximately four feet above ground level using a tripod mounted Quick Take 15 air sampling pump manufactured by SKC. Samples were collected at a calibrated flow rate of 15 liters per minute for a total of five minutes per sample. Resultant total sample volumes, therefore, corresponded to 75 liters collected for each collected sample. Field calibration of the SKC air sampling pump was conducted using a field rotometer device calibrated with a Bios Drycal primary standard flow meter. All spore trap air sampling and analytical procedures were performed in accordance with prescribed manufacturer guidelines as well as applicable professional certified industrial hygiene indoor air quality microbial investigation procedures and certified industrial hygiene practices.

Additional exterior ambient samples were also similarly collected and analyzed before and after the interior sampling assessment in an effort to identify and quantify representative background microbial taxa (types), rank order, and corresponding airborne spore levels present within the ambient environment at the time of this assessment for comparative purposes. Sampling collection activities performed on November 13<sup>th</sup>, 2008 during this study included the collection of identifiable airborne microbial contaminants within the representative area locations noted in Table 1:

**Table 1. Airborne Spore Trap Sampling Locations performed on 11/07/08:**

Air Sample Number	Spore Trap Air Sampling Location
14354925	Ambient Sample Garage Rooftop

Air Sample Number	Spore Trap Air Sampling Location
14354945	24 <sup>th</sup> Floor Hallway Area near Freight Elevator
14354980	Containment LCD-C-1
14355038	Containment LCD-C-2
14354813	Containment LCD-C-3
14355008	Containment LCD-C-4
14354958	Containment LCD-C-5
14354789	Containment LCD-C-6
14354820	24 <sup>th</sup> Floor Hallway near Men's Restroom
14354964	Containment LCD-C-7
14354812	Containment LCD-C-8
14354807	Containment LCD-C-9
14354907	Ambient Sample Main Entry

At the conclusion of sampling activities, preparation and shipping of the collected samples were accomplished in accordance with standard industrial hygiene chain of custody (COC) documentation procedures and quality assurance/quality control practices. Once collected, labeled, and recorded, all samples were double sealed within airtight plastic Ziploc shipping containers and transported via Federal Express Priority Mail to Environmental Microbial Laboratories (EMLabs) in San Bruno, California for microbial analysis. EMLabs holds current applicable analytical accreditation and specializes in microbial analytical procedures. Sampling and chain of custody records are provided as an attachment to this letter report for further reference.

## ANALYTICAL FINDINGS AND CONCLUSIONS

### Airborne Spore Trap Findings:

Laboratory analytical methods for the identification and enumeration of microbial (mold) taxa and particulate contaminants were conducted in accordance with prescribed analytical procedures and quality control/assurance measures. Original laboratory results including the enumeration of recognizable microbial spore and particulate types are also attached to this letter report for further

reference and detail. A summary of airborne Spore Trap microbial (mold) and particulate findings pertaining to each of the subject areas are presented in Table 2 below:

**Table 2. Airborne Microbial and Particulate Findings – 11/13/08**

Location Desc.	Total Mold Spores (Cts/m <sup>3</sup> )	Background Debris (scale of 1-4)	Skin Cell Fragments (scale of 1-4)	Hyphal Fragments (units/m <sup>3</sup> )
24 <sup>th</sup> Floor Hallway Area near Freight Elevator	12,000	2+	1+	27
Containment LCD-C-1	210	2+	1+	<13
Containment LCD-C-2	<13	2+	1+	<13
Containment LCD-C-3	320	1+	1+	<13
Containment LCD-C-4	<13	1+	1+	<13
Containment LCD-C-5	53	2+	1+	<13
Containment LCD-C-6	13	2+	1+	<13
24 <sup>th</sup> Floor Hallway near Men's Restroom	53	2+	1+	<13
Containment LCD-C-7	480	2+	1+	<13
Containment LCD-C-8	160	2+	1+	<13
Containment LCD-C-9	<13	1+	1+	<13
Ambient Sample Main Entry	120	1+	1+	<13

The analytical findings presented in Table 2 above clearly indicate the presence of significantly lower concentrations of total microbial (mold) spores measured within each of the interior samples collected both within and surrounding the subject LCD containment barriers when compared to the levels currently measured within the samples collected from the corresponding ambient outside environment. Analytical findings also indicate similar fungal taxa distribution (mold types) and rank order (predominant taxa) of molds identified within the mitigated areas as well as the adjacent hallway areas sampled (area noted as "Hallway" outside containment) when compared to the corresponding levels found within the ambient outside environmental samples. Data also indicated the absence of elevated levels of "moisture indicator" mold taxa such as *Stachybotrys*, *Penicillium/Aspergillus*, *Chaetomium*, etc. within any of the noted LCD containment barrier areas. Analysis of fungal hyphal fragments (vegetative fungal growth structures) indicated fewer structures within the interior containment areas and adjacent interior spaces when compared to the corresponding levels found within the ambient outside environmental samples.

Although there are currently no regulatory standards or limits pertaining to allowable airborne fungal concentrations (for any mold taxa) present in indoor environments, there is a general consensus among indoor air quality experts that airborne microbial contamination found within "acceptable" occupied, living, and working spaces are generally similar in kind, absent of elevated "moisture indicator" molds, and present at levels which are below those found in the corresponding native outside environment. BioMax believes that the absence of physical debris resultant from the destructive inspection and repair activities noted and relatively fewer total airborne mold levels with typical taxa and rank order distribution following repair and clean-up activities are consistent with these generally acceptable interior working space conditions. BioMax, therefore, believes that these findings provide reasonable evidence indicating that current destructive inspection, repair, and clean-up measures have successfully contained the potential release of fugitive mold spore and particulate transmission within the above noted containment areas to normal representative levels.

Based on these findings, BioMax believes that the current physical site conditions present within each of these investigated and repaired areas may be considered acceptable in meeting both the visual and approved analytical clearance criteria established for these activities. As such, BioMax's review and interpretation of the collected analytical data associated with each of the noted containment areas has been shown to meet the previously referenced microbial clearance criteria specifically established and approved within the BOE building. Such clearance criteria has been presented in BioMax's Post Mitigation Clearance Assessment Protocols dated February 15<sup>th</sup>, 2008, and has been reviewed and approved by BOE and their contracted environmental consultant, Hygientech International (HTI). Therefore, BioMax believes that the verified achievement of such criteria supports BioMax's determination and conclusion that the noted LCD inspection containment areas may be considered acceptable for containment deactivation and finish reconstruction/painting at this time.

### **Airborne Particulate Findings:**

Analytical particulate findings also sampled and analyzed as part of this assessment identified, what BioMax believes to be, "unremarkable" levels present within the collected containment air samples. Such findings within the noted containment areas also provide reasonable evidence indicating that current particulate clean-up and mitigative control measures have successfully controlled and contained particulate debris within the identified containment areas to acceptable post mitigation clean-up levels.

### **RECOMMENDATIONS**

Based on BioMax's post mitigation assessment findings and conclusions presented in this report, BioMax believes that the current airborne microbial levels sampled and analyzed from within the noted LCD investigative containment structures provides no significant evidence of elevated debris and/or residual microbial contamination through airborne contamination/migration following the completion of the prescribed investigative, repair, and clean-up measures.

Hence, based on current site observations, field measurements, and review of all available findings at this time, BioMax believes that the investigated LCD containment areas may be considered acceptable for containment deactivation and forthcoming finish reconstruction at this time following prudent reconstruction practices. Therefore, based on our professional review and interpretation of these current referenced findings, BioMax provides the following recommendations for consideration as discussed below:

1. BioMax believes that current airborne microbial (mold) levels and mold taxa (types) identified within the LCD containment structures are currently consistent with generally acceptable conditions and industry standard parameters following the performance of investigative, repair, and clean-up activities noted. Hence, BioMax recommends that no further airborne microbial sampling activities are warranted with respect to these LCD investigative activities within these specific noted containment areas at this time, and that the containment systems may be deactivated to allow or forthcoming inspection and reconstruction.
2. Reasonable additional assessment and investigative measures may also be required upon the identification of new or previously undiscovered materials and/or information related to moisture/microbial impacts within the noted structures and/or areas, as necessary. Any occurrence and/or re-occurrence of moisture intrusion following reconstruction within these areas should also be reviewed and addressed through additional professional consultation, as necessary. BioMax is certainly prepared to provide such professional consultation pertaining to these and any follow-up investigative measures upon request.

BioMax believes that the conclusions and recommendations provided above are consistent with DGS's requested scope of work as relative with standard industry microbial investigative, assessment, and control practices. Please do not hesitate to contact me directly at (510) 724-3100 if you have any questions, comments, and/or require further assistance regarding this subject matter.

Sincerely,



Michael A. Polkabl, CIH, REA  
Vice President, Principal



#### LIMITATIONS

Please note that the professional opinions presented in this review are intended for the sole use of the California State Department of General Services (DGS) and their designated beneficiaries. No other party should rely on the information contained herein without the prior written consent of BioMax Environmental and DGS. The professional opinions provided herein are based on BioMax's review and understanding of current site information and observed site conditions present within the areas inspected at the time these services were performed. Professional recommendations provided as part of this limited scope of work are intended for client consideration only and are not intended as a professional or regulatory mandate. Implementation of any of the above measures or recommendations does not, in any way, warrant the day-to-day health and/or safety of building occupants, residents, site workers, nor regulatory or building code compliance status during normal and changing environmental conditions. As microbial contamination, by nature, may change over time due to additional moisture intrusion, favorable growth conditions, and changing environments, the findings of this report are subject to change in the event that such conditions and/or environments arise. Also, the professional opinions expressed here are subject to revision in the event that new or previously undiscovered information is obtained or uncovered.

The information contained in this and any other applicable communication is for consideration purposes only. It is not intended, nor should it be construed as providing legal advice or warranting any level of safety or regulatory compliance. The sole purpose of such information is to assist with the anticipation, identification, evaluation and control of elevated and/or unnecessary health of physical hazards. Any action taken based on this information, including but not limited to opinions, suggestions and recommendations, whether implied or expressed, is the sole responsibility of the individual taking the action. The management of acceptable health and safety is criteria dependent and situation specific in nature, therefore requiring extensive knowledge and prudent value assessments so as to be properly determined and maintained.

These services were performed by BioMax in accordance with generally accepted professional industrial hygiene principals, practices, and standards of care. Under the existing Industrial Hygiene Definition and Registration Act, all reports, opinions or official documents prepared by a Certified Industrial Hygienist (CIH) constitutes an expression of professional opinion regarding those facts or findings which are subject of a certification and does not constitute a warranty or guarantee, either expressed or implied.

**EMLab P&K**

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Report for:

**Mr. Michael Polkabila**  
**Biomax Environmental**  
775 San Pablo Ave.  
Pinole, CA 94564

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Regarding:      Project: 111308-02  
                     EML ID: 488644

Approved by:

A handwritten signature in black ink, appearing to read "Dr. Kamashwaran Ramanathan".

Lab Manager  
Dr. Kamashwaran Ramanathan

Dates of Analysis:  
Spore trap analysis: 11-14-2008

Project SOPs: Spore trap analysis (I100000)

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This coversheet is included with your report in order to comply with AIHA and ISO accreditation requirements.

For clarity, we report the number of significant digits as calculated; but, due to the nature of this type of biological data, the number of significant digits that is used for interpretation should generally be one or two. All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank corrections of results is not a standard practice. The results relate only to the items tested.

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.

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Document Number: 200091 - Revision Number: 5

## EMLab P&amp;K

1150 Bayhill Drive, Suite 100, San Bruno, CA 94066  
 (650) 829-5800 Fax (650) 829-5852 www.emlab.com

Client: Biomax Environmental  
 C/O: Mr. Michael Polkabila  
 Re: 111308-02

Date of Sampling: 11-13-2008  
 Date of Receipt: 11-14-2008  
 Date of Report: 11-14-2008

## SPORE TRAP REPORT: NON-VIABLE METHODOLOGY

Location:	14354925: Ambient garage rooftop		14354945: 24th floor at freight elevator		14354980: LCD-C-1		14355038: LCD-C-2		14354813: LCD-C-3	
Comments (see below)	None		None		None		None		None	
Lab ID-Version†:	2157112-1		2157113-1		2157114-1		2157115-1		2157116-1	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Alternaria	1	13								
Arthrinium										
Ascospores*	10	530					1	53		
Aureobasidium										
Basidiospores*	65	3,500					1	53		
Bipolaris/Drechslera group										
Botrytis										
Chaetomium										
Cladosporium	150	8,000	4	210			4	210		
Curvularia										
Epicoccum	1	13								
Fusarium										
Myrothecium										
Nigrospora	2	27								
Other brown										
Penicillium/Aspergillus types‡	7	370								
Pithomyces										
Rusts*										
Smuts*, Periconia, Myxomycetes*										
Stachybotrys										
Stemphylium										
Torula										
Ulocladium										
Zygomycetes										
Background debris (1-4+)††	2+		2+		2+		1+		1+	
Hyphal fragments/m3	27		< 13		< 13		< 13		< 13	
Pollen/m3	< 13		< 13		< 13		< 13		< 13	
Skin cells (1-4+)	< 1+		1+		1+		1+		1+	
Sample volume (liters)	75		75		75		75		75	
<b>§ TOTAL SPORE/m3</b>		<b>12,000</b>		<b>210</b>		<b>&lt; 13</b>		<b>320</b>		<b>&lt; 13</b>

## Comments:

\* Most of these spore types are not seen with culturable methods (Andersen sampling), although some may appear as non-sporulating fungi.

Most of the basidiospores are "mushroom" spores while the rusts and smuts are plant pathogens.

† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.

†† Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for sample volumes when evaluating dust levels.

The Limit of Detection is the product of a raw count of 1 and 100 divided by the percent read. The analytical sensitivity (counts/m3) is the product of the Limit of Detection and 1000 divided by the sample volume.

‡ A "Version" greater than 1 indicates amended data.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

TestAmerica Environmental Microbiology Laboratory, Inc.

## EMLab P&amp;K

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Client: Biomax Environmental  
C/O: Mr. Michael Polkabila  
Re: 111308-02

Date of Sampling: 11-13-2008  
Date of Receipt: 11-14-2008  
Date of Report: 11-14-2008

**SPORE TRAP REPORT: NON-VIABLE METHODOLOGY**

Location:	14355008: LCD-C-4		14354958: LCD-C-5		14354789: LCD-C-16		14354820: Hallway near men's restroom	
Comments (see below)	None		None		None		None	
Lab ID-Version†:	2157117-1		2157118-1		2157119-1		2157120-1	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Alternaria								
Arthrinium								
Ascospores*							1	53
Aureobasidium								
Basidiospores*							2	110
Bipolaris/Drechslera group								
Botrytis								
Chaetomium								
Cladosporium							6	320
Curvularia								
Epicoccum								
Fusarium								
Myrothecium								
Nigrospora			1	13				
Other brown								
Other colorless								
Penicillium/Aspergillus types†	1	53			1	53		
Pithomyces								
Rusts*								
Smuts*, Periconia, Myxomycetes*								
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Zygomycetes								
Background debris (1-4+)††	2+		2+		2+		2+	
Hyphal fragments/m3	< 13		< 13		< 13		< 13	
Pollen/m3	< 13		< 13		< 13		< 13	
Skin cells (1-4+)	1+		1+		1+		1+	
Sample volume (liters)	75		75		75		75	
<b>§ TOTAL SPORE/m3</b>		<b>53</b>		<b>13</b>		<b>53</b>		<b>480</b>

**Comments:**

\* Most of these spore types are not seen with culturable methods (Andersen sampling), although some may appear as non-sporulating fungi.

Most of the basidiospores are "mushroom" spores while the rusts and smuts are plant pathogens.

† The spores of *Aspergillus* and *Penicillium* (and others such as *Acremonium*, *Paecilomyces*) are small and round with very few distinguishing characteristics. They cannot be differentiated by non-viable sampling methods. Also, some species with very small spores are easily missed, and may be undercounted.

†† Background debris indicates the amount of non-biological particulate matter present on the trace (dust in the air) and the resulting visibility for the analyst. It is rated from 1+ (low) to 4+ (high). Counts from areas with 4+ background debris should be regarded as minimal counts and may be higher than reported. It is important to account for samples volumes when evaluating dust levels.

The Limit of Detection is the product of a raw count of 1 and 100 divided by the percent read. The analytical sensitivity (counts/m3) is the product of the Limit of Detection and 1000 divided by the sample volume.

‡ A "Version" greater than 1 indicates amended data.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

TestAmerica Environmental Microbiology Laboratory, Inc.

**EMLab P&K**

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C/O: Mr. Michael Polkabla  
Re: 111308-02

Date of Sampling: 11-13-2008  
Date of Receipt: 11-14-2008  
Date of Report: 11-14-2008

**SPORE TRAP REPORT: NON-VIABLE METHODOLOGY**

Location:	14354964: LCD-C-7		14354812: LCD-C-8		14354807: LCD-C-9		14354907: Ambient post at main entry	
Comments (see below)	None		None		None		None	
Lab ID-Version‡:	2157121-1		2157122-1		2157123-1		2157124-1	
	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3	raw ct.	spores/m3
Alternaria							1	13
Arthrinium								
Ascospores*							14	750
Aureobasidium								
Basidiospores*	1	53					72	3,800
Bipolaris/Drechslera group								
Botrytis								
Chaetomium								
Cladosporium	2	110			2	110	151	8,100
Curvularia								
Epicoccum								
Fusarium								
Myrothecium								
Nigrospora								
Other brown					1	13	4	53
Other colorless								
Penicillium/Aspergillus types†							16	850
Pithomyces								
Rusts*								
Smuts*, Periconia, Myxomycetes*							3	40
Stachybotrys								
Stemphylium								
Torula								
Ulocladium								
Zygomycetes								
Background debris (1-4+)††	2+		1+		1+		3+	
Hyphal fragments/m3	< 13		< 13		< 13		40	
Pollen/m3	< 13		< 13		< 13		< 13	
Skin cells (1-4+)	1+		1+		1+		< 1+	
Sample volume (liters)	75		75		75		75	
<b>§ TOTAL SPORE/m3</b>		<b>160</b>		<b>&lt; 13</b>		<b>120</b>		<b>14,000</b>

**Comments:**

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‡ A "Version" greater than 1 indicates amended data.

§ Total Spores/m3 has been rounded to two significant figures to reflect analytical precision.

TestAmerica Environmental Microbiology Laboratory, Inc.

## EMLab P&amp;K

1150 Bayhill Drive, Suite 100, San Bruno, CA 94066  
(650) 829-5800 Fax (650) 829-5852 www.emlab.com

Client: Biomax Environmental  
C/O: Mr. Michael Polkabila  
Re: 111308-02

Date of Sampling: 11-13-2008  
Date of Receipt: 11-14-2008  
Date of Report: 11-14-2008

**MoldRANGE™: Extended Outdoor Comparison****Outdoor Location: 14354925, Ambient garage rooftop**

Fungi Identified	Outdoor data	Typical Outdoor Data by Date†				Typical Outdoor Data by Location‡			
		Month: November				State: CA			
	spores/m3	low	med	high	freq %	low	med	high	freq %
<b>Generally able to grow indoors*</b>									
Alternaria	13	7	27	280	53	7	27	210	58
Bipolaris/Drechslera group	-	7	13	160	19	7	13	120	13
Chaetomium	-	7	13	210	12	7	13	120	19
Cladosporium	8,000	40	640	11,000	95	53	630	6,500	98
Curvularia	-	7	20	790	19	7	13	230	7
Epicoccum	13	7	13	220	25	7	13	160	20
Nigrospora	27	7	13	210	19	7	13	160	8
Other brown	-	7	13	110	35	7	13	80	37
Penicillium/Aspergillus types	370	27	270	3,100	85	38	210	2,400	87
Stachybotrys	-	7	13	350	4	7	13	300	5
Torula	-	7	13	130	10	7	13	150	12
<b>Seldom found growing indoors**</b>									
Ascospores	530	13	120	2,800	75	13	110	1,800	72
Basidiospores	3,500	13	400	16,000	94	13	210	6,800	94
Rusts	-	7	13	270	25	7	13	250	28
Smuts, Periconia, Myxomycetes	-	7	53	730	74	8	40	480	70
<b>TOTAL SPORES/M3</b>	<b>12,453</b>								

† The Typical Outdoor Data by Date represents the typical outdoor spore levels across North America for the month indicated. The last column represents the frequency of occurrence. The low, medium, and high values represent the 2.5, 50, and 97.5 percentile values of the spore type when it is detected. For example, if the frequency of occurrence is 63% and the low value is 53, it would mean that the given spore type is detected 63% of the time and, when detected, 2.5% of the time it is present in levels above the detection limit and below 53 spores/m<sup>3</sup>. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

‡ The Typical Outdoor Data by Location represents the typical outdoor spore levels for the region indicated for the entire year. As with the Typical Outdoor Data by Date, the four columns represent the frequency of occurrence and the typical low, medium, and high concentration values for the spore type indicated. These values are updated periodically, and if enough data is not available to make a statistically meaningful assessment, it is indicated with a dash.

\*The spores in this category are generally capable of growing on wet building materials in addition to growing outdoors. Building related growth is dependent upon the fungal type, moisture level, type of material, and other factors. *Cladosporium* is one of the predominant spore types worldwide and is frequently present in high numbers. *Penicillium/Aspergillus* species colonize both outdoor and indoor wet surfaces rapidly and are very easily dispersed. Other genera are usually present in lesser numbers.

\*\*These fungi are generally not found growing on wet building materials. For example, the rusts and smuts are obligate plant pathogens. However, in each group there are notable exceptions. For example, agents of wood decay are members of the basidiomycetes and high counts of a single morphological type of basidiospore on an inside sample should be considered significant.

Interpretation of the data contained in this report is left to the client or the persons who conducted the field work. This report is provided for informational and comparative purposes only and should not be relied upon for any other purpose. "Typical outdoor data" are based on the results of the analysis of samples delivered to and analyzed by EMLab P&K and assumptions regarding the origins of those samples. Sampling techniques, contaminants infecting samples, unrepresentative samples and other similar or dissimilar factors may affect these results. In addition, EMLab P&K may not have received and tested a representative number of samples for every region or time period. EMLab P&K hereby disclaims any liability for any and all direct, indirect, punitive, incidental, special or consequential damages arising out of the use or interpretation of the data contained in, or any actions taken or omitted in reliance upon, this report.

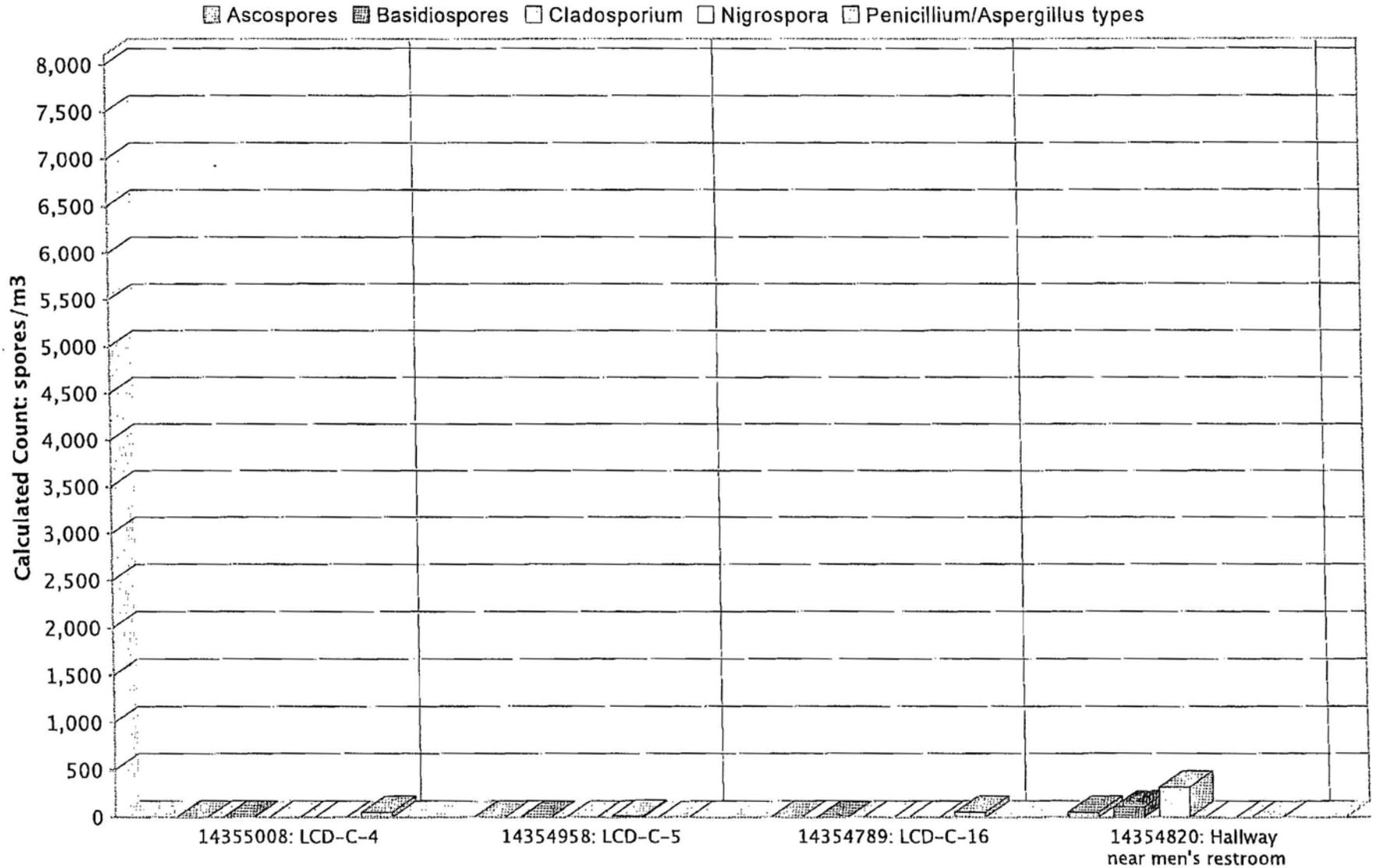
### SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments:

Note: Graphical output may understate the importance of certain "marker" genera.  
TestAmerica Environmental Microbiology Laboratory, Inc.

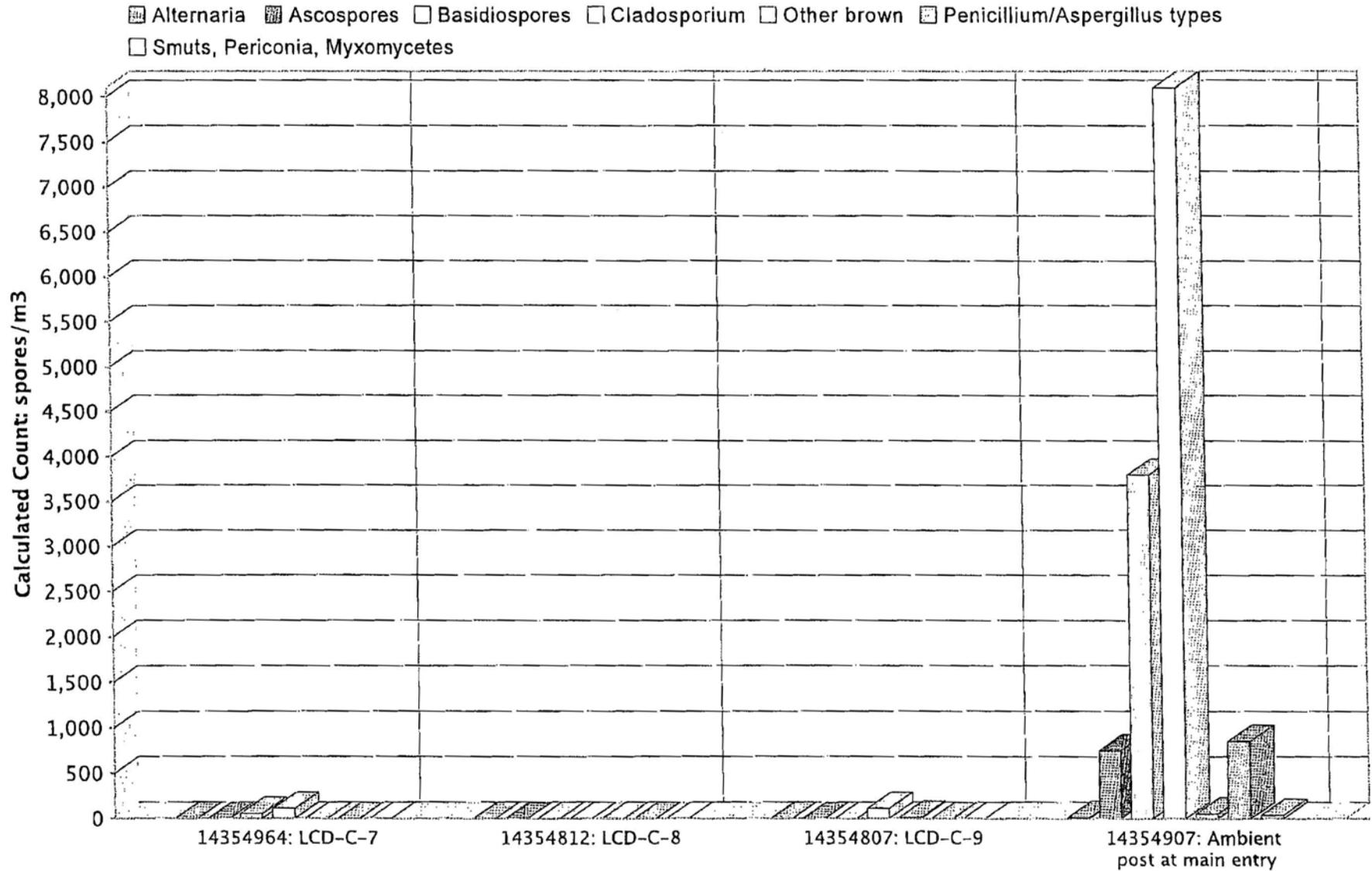
### SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



**Comments:**

Note: Graphical output may understate the importance of certain "marker" genera.  
TestAmerica Environmental Microbiology Laboratory, Inc.

### SPORE TRAP REPORT: NON-VIABLE METHODOLOGY



Comments:

Note: Graphical output may understate the importance of certain "marker" genera.  
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# MICROBIAL SPORE TRAP AIR SAMPLING RECORD



000488644

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BioMax Environmental  
775 San Pablo Ave.  
Pinole, CA 94564

[www.biomaxenvironmental.com](http://www.biomaxenvironmental.com)

Phone: (510) 724-3100  
Fax: (510) 724-3145  
[biomaxenv@aol.com](mailto:biomaxenv@aol.com)

Location:

24th Floor BOE  
LCD Containment Areas

Client: DSProject #: 111308-02Date: 11/13/08Laboratory: EmLab

Collected by:

Req. Turn Around: Same Day

Signature:

MA Pollock  
[Signature]

Analysis (circle): FungalParticulateID / Quantification

Sample Number	Time	Location/Desc.	Temp / RH	
14354925	1440	Ambient Garage Rooftop	77 / 28	
14354945	1455	24th Floor Hallway @ Freight Elevator	75 / 29	
14354980	1505	LCD-C-1	76 / 28	
14355038	1515	LCD-C-2	78 / 28	
14354983	1522	LCD-C-3	78 / 28	
14355008	1532	LCD-C-4	77 / 28	
14354958	1542	LCD-C-5	78 / 29	
14354789	1549	LCD-C-6	75 / 28	
14354820	1558	Hallway near Men's Restroom	75 / 29	
14354964	1605	LCD-C-7	75 / 29	
Total Sample Time (min): <u>5</u>	Flow Rate (l/min): <u>15</u>	Total Sample Volume (liters): <u>75</u>	Ambient Conditions: <u>Clear / Mild</u> <u>10-15 Westly</u>	Comments:

Please sign this form below acknowledging sample receipt and return executed form with laboratory reports. Fax, send, e-mail results to BioMax Environmental at (510) 724-3145 [biomaxenv@aol.com](mailto:biomaxenv@aol.com)  
Other Instructions: \_\_\_\_\_

Relinquished by: <u>[Signature]</u>	Received By: <u>Ann Morrissey</u>
Method of Transportation: <u>FedEx</u>	
Time/Date Sent: <u>5:00 11/13/08</u>	Time/Date Received: <u>11-14-08 9:30</u>

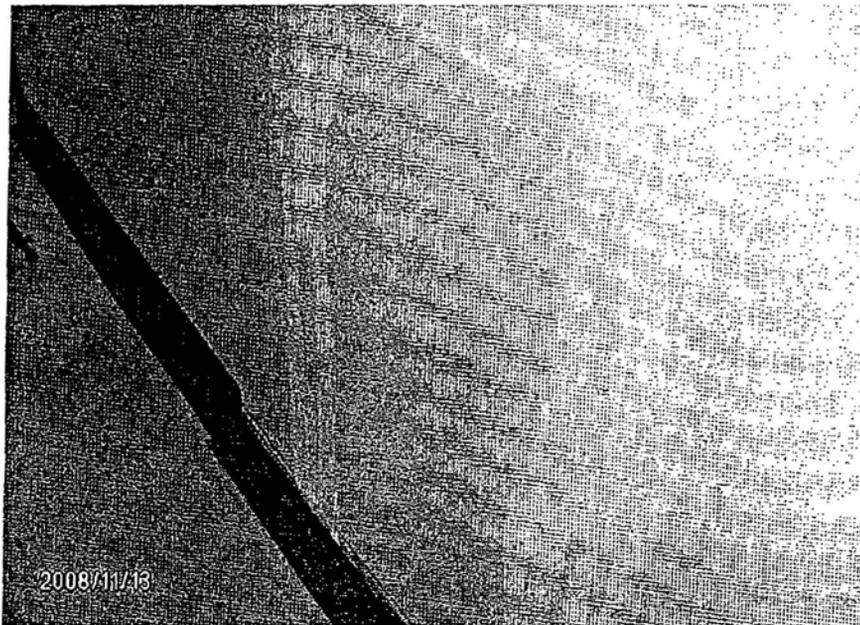


**Attachment A: Digital Images**  
BOE 24<sup>th</sup> Floor LCD Containment Clearances  
Sacramento, CA

[Click here for color photos](#)



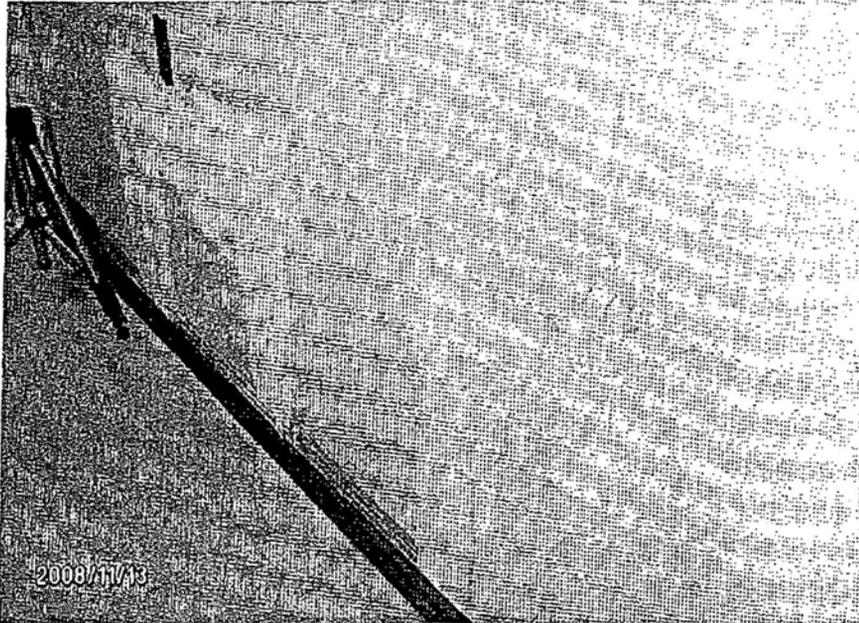
- 1) Image of hallway containment air sampling location on 24<sup>th</sup> floor of BOE building (Subject Building) located at 450 N Street, Sacramento.



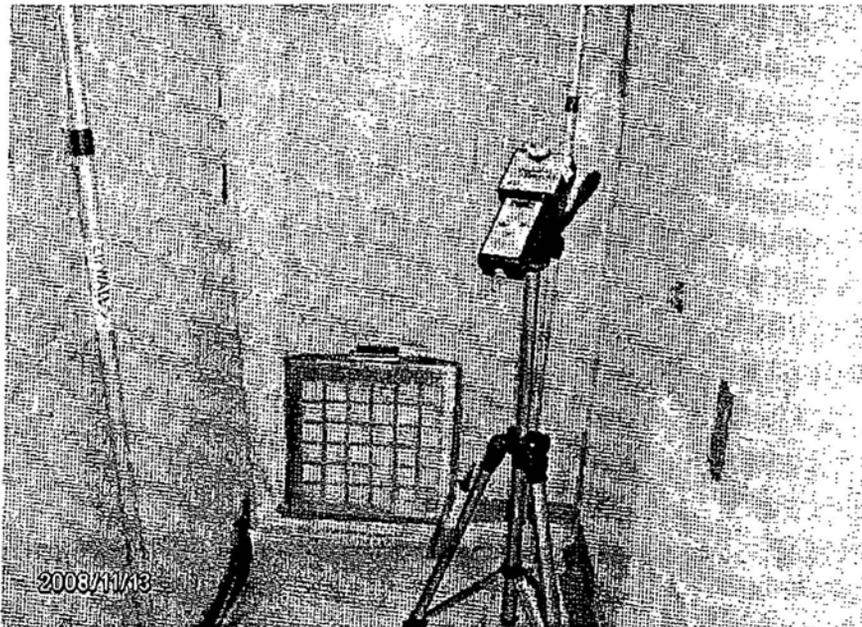
- 2) Image of wallboard repair within interior of LCD-C-1 containment area at time of assessment. Note sheetrock repair at area formerly removed for inspection.

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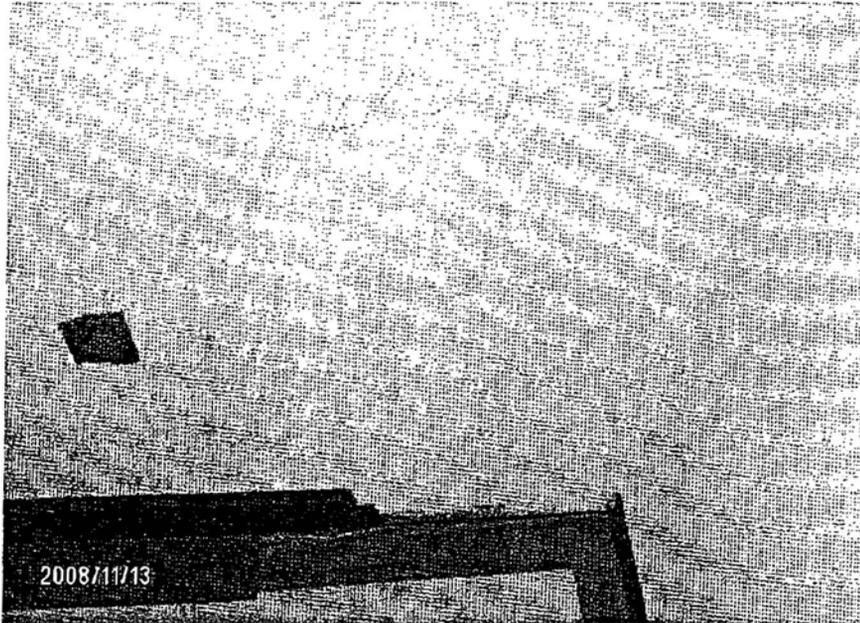
3) Image of reconstructed wall within interior of containment LCD-C-2 at time of assessment.



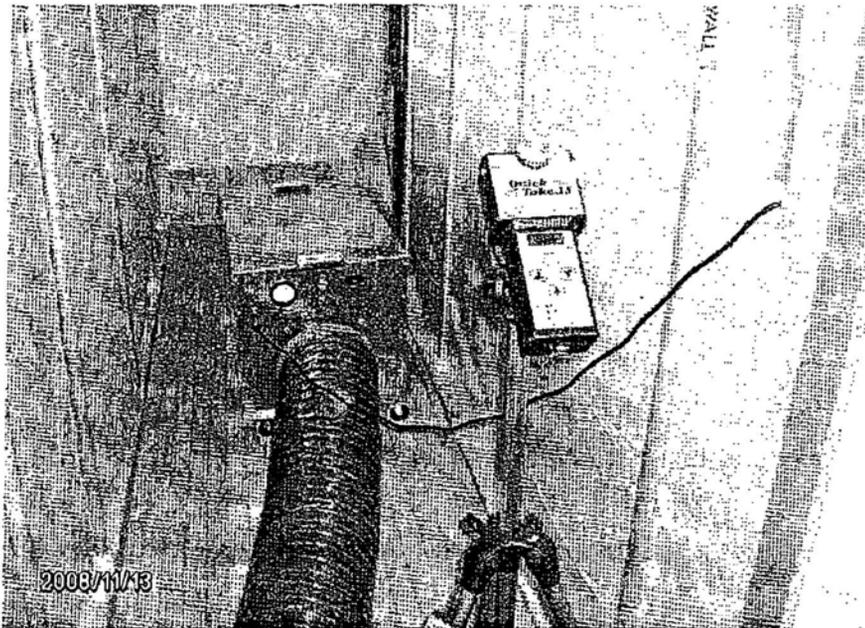
4) Image of interior entry chamber construction and air sampling activity performed within LCD-C-2 at time of assessment.

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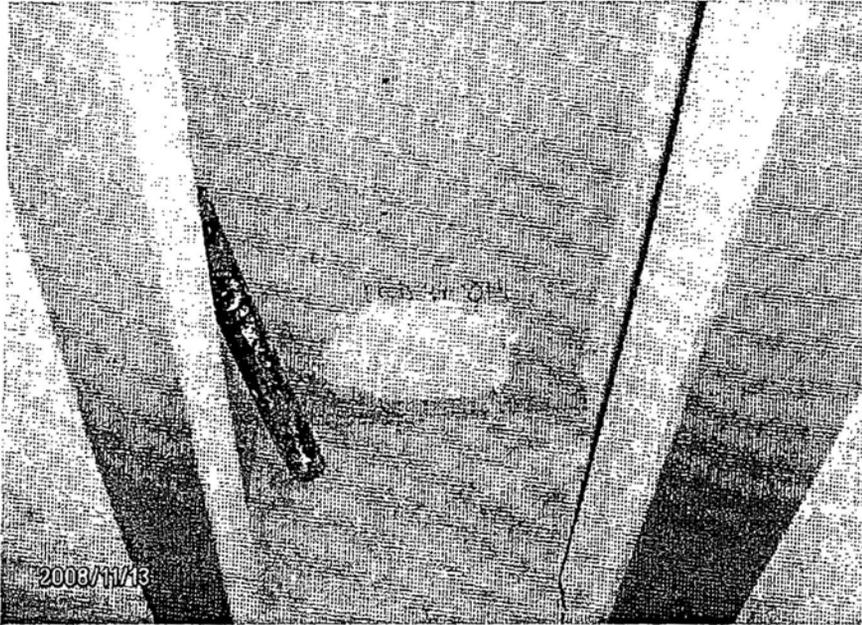
5) Image of baseboard removal and wall repair within LCD-C-3 at time of assessment.



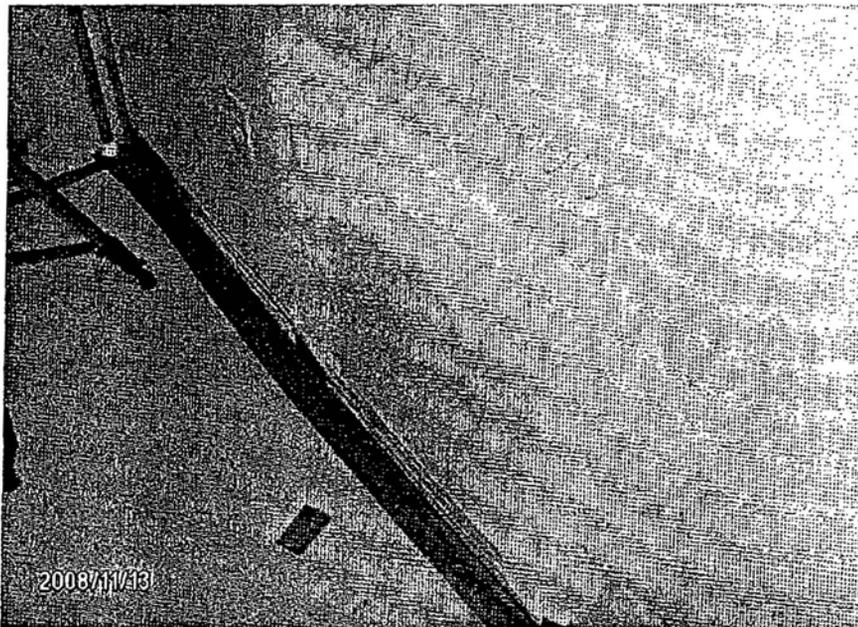
6) Image of air sampling activity performed within Women's Restroom LCD-C-4 at time of assessment.

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Sacramento, CA

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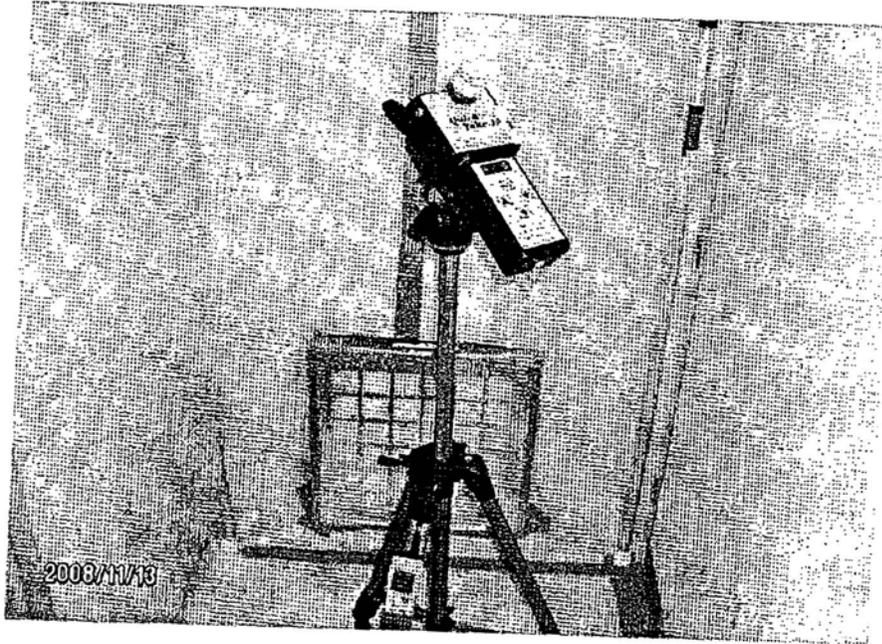
7) Image of exposed wall cavity as viewed from interior side of containment LCD-C-4 at time of assessment.



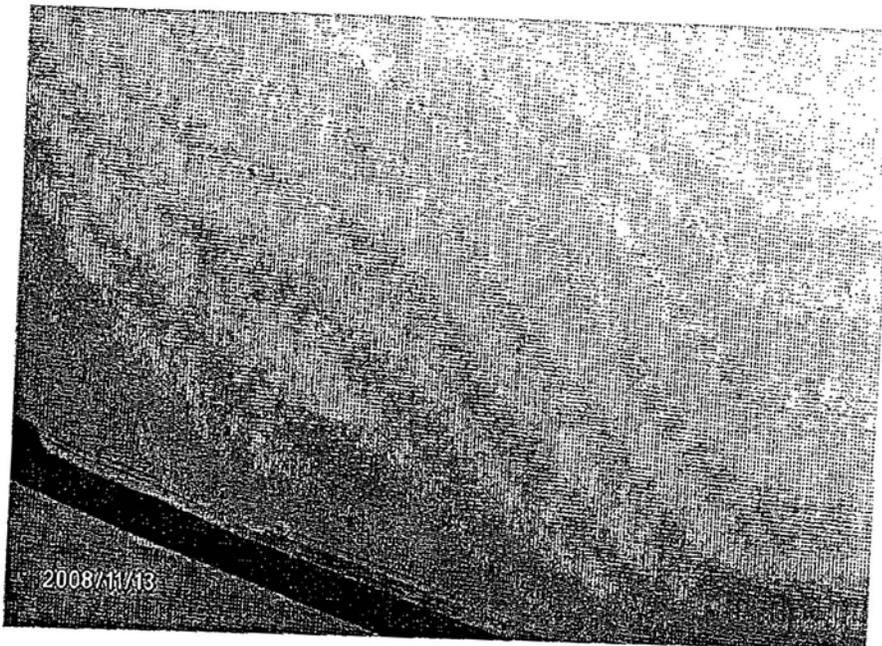
8) Image of wallboard repair within LCD-C-5 containment area at time of assessment.

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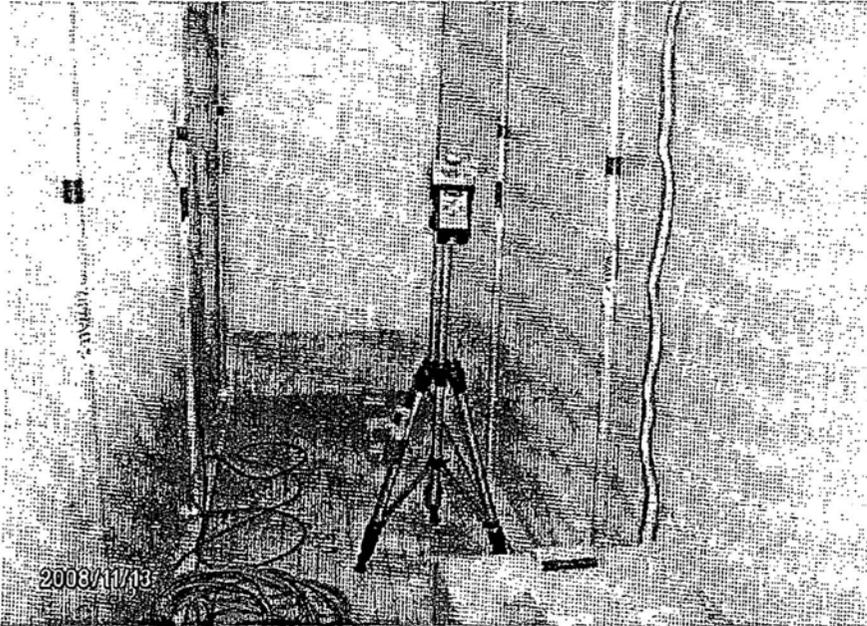
9) Image of air sampling equipment and critical barriers erected within LCD-C-5 containment system at time of assessment.



10) Image of baseboard removal and wallboard repair following LCD's inspection within LCD-C-6 at time of clearance assessment.

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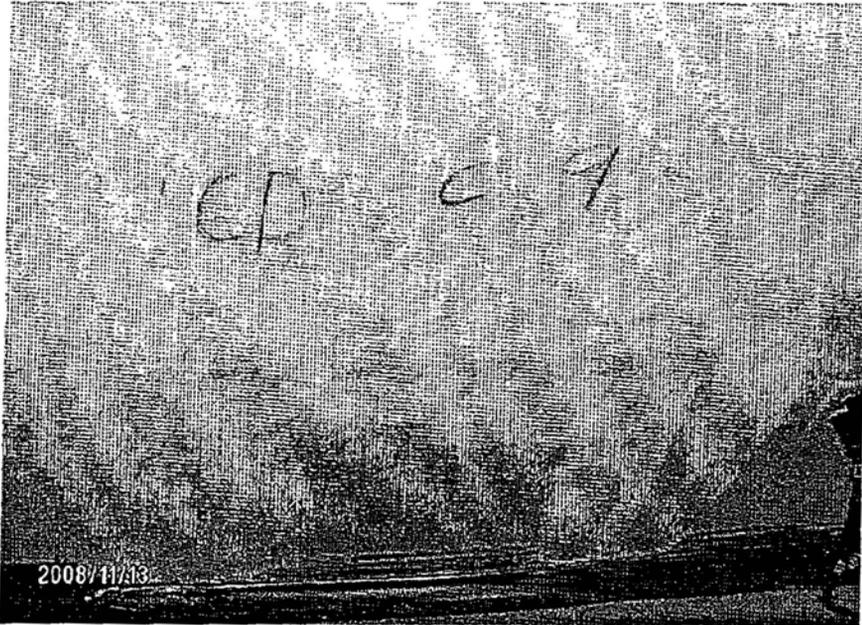
11) Image of air sampling equipment and containment structures within LCD-C-7 containment at time of assessment.



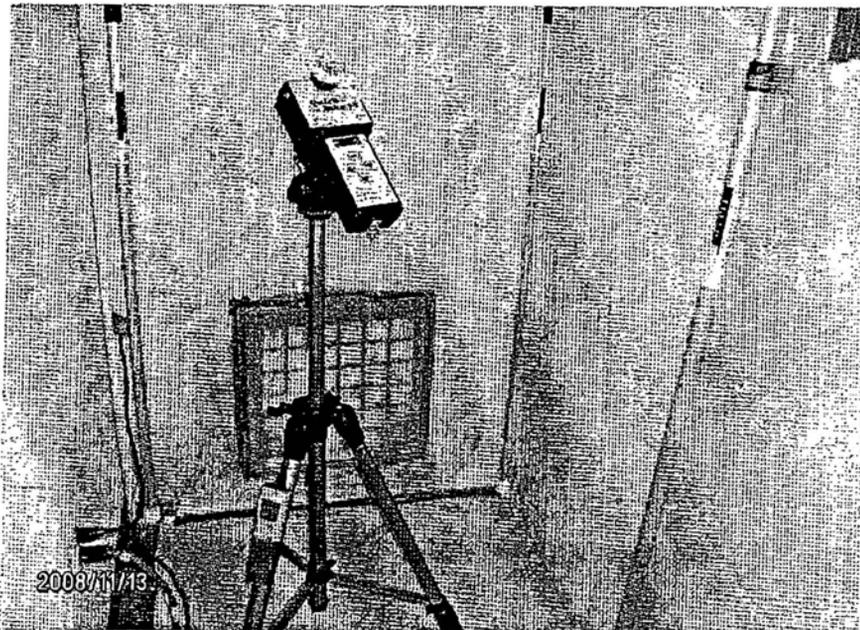
12) Image of wallboard repair within LCD-C-8 containment at time of assessment.

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Sacramento, CA

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13) Image of wallboard repaired following LCD inspection within LCD-C-9 containment at time of assessment.



14) Image of air sampling equipment within LCD-C-9 performed at conclusion of interior clearance inspection sampling.