



# HEI Systems

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## Report of Findings

**Assessment for a Malodorous Condition at a City Hall Building  
6130 Sunset Drive  
South Miami, Florida 33143  
File Number: 13-08-0101-M**

**Prepared For:**

*The City of South Miami*

**Attention:**

**Mr. Steven Alexander, City Manager**

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**Richard H. McMonagle, Ph. D., CIE  
HEI Systems**



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## **Section I Introduction**

On July 18, 2010, HEI Systems was retained to conduct an assessment related to a reported malodorous condition within the South Miami City Hall building located at 6130 Sunset Drive, South Miami, Florida 33143. The stated purpose of the assessment was to identify and determine both the presence and extent of the odor within the interior of the building, and to identify potential sources of the odor(s) and to make corrective recommendations for their removal.

On Thursday, August 1, 2013, HEI Systems performed a walk-through inspection for any visual or osmic evidence that would lead to any malodorous condition. Present during the August 1, 2013 assessment was Richard H. McMonagle, Ph. D., CIE, and Stacy B. Davids, Ph. D., from HEI Systems, along with Ms. Maria L. Garcia, Executive Assistant to the city Manager, who granted access to the indoor spaces of the City Hall.

On Thursday, August 1, 2013, indoor environmental sampling was conducted at the City hall. The collected samples were submitted to a fully accredited microbiology laboratory (AEML, Inc.) for identification and quantification. Richard H. McMonagle, Ph. D., CIE, evaluated the sampling laboratory results received from AEML, Inc.

This report is prepared for the exclusive use of the City of South Miami, and is not intended for any other purpose. The report is prepared in accordance with recognized procedures and appropriate scientific methods applicable and used by professionals in this field. This report is based upon the information available to HEI Systems at this time, as described in **Section IV, Basis of Report**. Should additional information become available, HEI Systems reserves the right to determine the impact, if any, of the new information on our opinions and conclusions, and to revise our opinions and conclusions, if necessary, as warranted by the discovery of additional information.

## Section II Discussion

Prior to tabulating conditions with the City Hall building that are conducive to the creation of a malodorous condition, a brief understanding of factors relating to the common body of knowledge regarding odors in building is presented. There are widely differing “opinions” about odors among people, but for the purpose of this assessment, the following definitions will apply. First, odors are gases that people notice. Odors emanate from a source, into the air, where they are perceived. Odors are perceived when odorous molecules contact olfactory nerve endings in the nasal cavities. These sensations are then transmitted to the olfactory lobe. This is referred to as “real odor”. The basis of this assessment deals with real odor.

“Heightened Awareness Odor” or “Psychological Odors” are terms used to describe odors that people “believe” they smell, based upon experiences, suggestions and past impressions, e.g. when people believe that the odor in their surrounding area is not “normal”. This assessment does not deal with heightened awareness odor.

In order to be smelled, material must have certain properties:

1. It must be *volatile*, and be able to evaporate molecules into the air.
2. An odor bearing molecule must be *soluble* in water, even if only to an infinitesimal degree. If it is not water soluble, it will be barred from reaching nerve endings by the watery film that covers their surface.
3. Odor bearing substances must be *soluble in lipids or fatty substances*, which enables them to penetrate the nerve endings through the lipid layer that forms part of the surface membrane of every cell.
4. Finally, odor bearing molecules must be *customarily absent* from the nasal tissue.

The ability of a material to hold odors is related to its porosity. The more porous a substance is, the more likely it is to adsorb odors. This process is known as *preferential adsorption*. A natural wick is a highly porous substance that tends to tenaciously cling to malodors. Some natural wicks include fabric, cellulose ceiling tiles, paper, cardboard, carpet, and unsealed concrete. Additionally, odor is most apparent when both temperature and relative humidity are high.

In conducting our assessment for malodorous conditions within the South Miami City Hall building, we focused upon potential sources, confirmation through sampling and recommendations for removal of the malodors from the building.

When recorded with a digital psychrometer, temperatures and relative humidity were within acceptable ranges (ASHRAE Standards) throughout the building. However, it should be noted that the relative humidity was > 10% the average in the Commission Chambers Room and the Mail Room at the entrance to the Finance Department. A summary of temperature and relative humidity is presented in the table below.

<b>Room</b>	<b>Temperature</b>	<b>Relative Humidity</b>
Manager's Conference Room	73.0° F	47.5%
Executive Assistant's Office	73.4° F	45.7%
City Manager's Office	73.4° F	44.8%
City Manager's Back Office	73.0°	43.9%
Hallway	74.6° F	42.8%
Lobby	72.8° F	44.8%
Finance Office (Front)	71.2° F	44.8%
Finance Office (Rear)	71.0° F	46.4%
Finance Office Mail Room	70.5° F	58.2%
Mayor's Office	71.7° F	50.2%
City Clerk's Office	70.1° F	47.1%
Break Room	70.8° F	47.7%
Records Room (Front)	70.3° F	50.6%
Records Room (Rear)	69.9° F	49.5%
Commission Chambers	73.2° F	54.6%
HVAC Room – 1 <sup>st</sup> Floor	75.5° F	40.6%

**Observations:**

Different odors were noted in different rooms throughout the building, emanating from different sources. These are articulated below.

The carpeting throughout the building is old, damaged, stained, odorous, and at the end of its normal lifespan or beyond. The carpet is replete with excessive and undifferentiated debris, insect and lizard parts, skin cells, fiberglass, and fungal spores that are no longer removable by normal maintenance and cleaning. The carpeting is beyond normal cleaning and should be removed and discarded throughout the building. The concrete slab beneath the carpeting should be abrasively cleaned and sealed, prior to

the installation of any new floor covering. Carpeting, as a new floor covering would not be recommended, rather, some form of hard surface floor covering. Should the carpeting be found to be installed upon vinyl composition tile or linoleum, then the vinyl sub-surface should be removed and discarded to the slab, and then the slab abrasively cleaned and sealed prior to the installation of any new floor covering. Vinyl composition and linoleum surfaces are usually the most difficult to decontaminate as they have a tendency to adsorb and hold odors for a long period of time.

Paper and cardboard boxes stored on the floor contribute to malodorous conditions. This condition was observed in the Manager's Conference Room, HVAC Room, the Human Resource Department and the Records Room. Banker Boxes and Cardboard storage should be placed upon shelving and plastic containers should be considered.

Stained ceiling tiles should be removed and discarded as they are repositories for fungal growth and malodorous conditions. The source of the staining should be defined and repaired. Stained ceiling tiles were noted in the Commission Chambers Room.

The vertical carpet soundproofing at the front of the Commission Chambers Room is malodorous, water damaged and separating at some seams. The exposed glue on the back side of the carpet presents with suspect fungal growth. This carpeting should be removed and discarded, and the remaining glues abrasively removed from the wall and the wall sealed.

Intrusions of warm, humid air through the building envelop should be sealed to prevent any further intrusion and subsequent condensation, water intrusion and damage, corrosion, staining and fungal growth. Intrusions of warm, humid air were found in the Commission Chambers beneath the exterior windows and the exterior metal door leading out to the generator. The area beneath the windows is allowing moisture and insects to enter the room. The door is corroded and daylight can be observed on both sides of the door when the door is fully closed at the bottom. Weather stripping and sealing are recommended for this door.

Unsealed concrete and cracking were observed in the HVAC Room in the walls and ceiling. All of the cracks should be sealed to prevent intrusion of water and outside air. Staining on the concrete at the wall bottoms and from the ceiling down is indicative of a history of water intrusion into the room.

The interior component fiberglass insulation within the HVAC system air-handlers upstream of the filters was absorbed with dirt, debris, fungal growth (diffused into the fiberglass insulation) and allowing these particulate to be distributed throughout the building via the supply diffusers. Evidence of these particulate is seen on the covers and louvers of the supply diffusers throughout the building. The wall bottom of the Commission Chambers, the wall in the Mail Room outside of the Finance Department and the supply diffuser in the Women's Restroom adjacent to the Lobby are elevated in settled *Cladosporium* spore counts. Elevated *Cladosporium* counts associated with this

particular genus of fungal growth within HVAC systems are considered common. It is recommended that “time-release” activated charcoal be placed in the return plenums of the air-handlers to reduce odor throughout the building.

<b>Room</b>	<b>Odor Source and Issue</b>
Manager’s Conference Room	Carpeting stained, worn and odorous. Storage of Paper and Cardboard on Floor.
Executive Assistant’s Office	Carpeting stained, worn and odorous.
City Manager’s Office	Carpeting stained, worn and odorous.
City Manager’s Back Office	Carpeting stained, worn and odorous. Storage of Paper and Cardboard on Floor.
Hallway	
Lobby	
Finance Office (Front)	Carpeting stained, worn and odorous. Fungal growth on supply diffusers.
Finance Office (Rear)	Carpeting stained, worn and odorous. Fungal growth on supply diffusers.
Finance Office Mail Room	Fungal growth on wall.
Mayor’s Office	Carpeting stained, worn and odorous.
City Clerk’s Office	Carpeting stained, worn and odorous.
Break Room	
Records Room (Front)	Carpeting stained, worn and odorous.
Records Room (Rear)	Carpeting stained, worn and odorous.
Commission Chambers	Carpeting stained, worn and odorous. Intrusion of warm humid air from outside beneath windows and exterior metal door. Odorous vinyl seat cushions. Odorous soundproofing carpet on wall and glue.
HVAC Room – 1 <sup>st</sup> Floor	Unsealed concrete walls, ceiling and floors. Cracks that need to be sealed. Interior air-handler insulation impacted and absorbed with dirt, debris and fungal growth. Storage of Paper and Cardboard on Floor.
2 <sup>nd</sup> Floor Human Resources Department	Carpeting stained, worn and odorous. Scented candles and electric plug-in deodorizers off-gas VOC’s. Storage of Paper and Cardboard on Floor.
Women’s Restroom adjacent to Lobby	Fungal growth on supply diffuser.

## **Hypotheses:**

H<sub>1</sub>: The 5 Liter aerosol sample collected from the City Manager's Carpet surface will substantially exceed the debris and particulate levels necessary for particulate analysis and the sample will therefore be considered to be elevated.

H<sub>01</sub>: The 5 Liter aerosol sample collected from the City Manager's Carpet surface will not substantially exceed the debris and particulate levels necessary for particulate analysis and the sample will therefore be considered to be not elevated.

H<sub>2</sub>: The 5 Liter aerosol sample collected from the Commission Chamber's Carpet surface will substantially exceed the debris and particulate levels necessary for particulate analysis and the sample will therefore be considered to be elevated.

H<sub>02</sub>: The 5 Liter aerosol sample collected from the Commission Chamber's Carpet surface will not substantially exceed the debris and particulate levels necessary for particulate analysis and the sample will therefore be considered to be not elevated.

H<sub>3</sub>: The wall bottom beneath the windows in the Commission Chamber's will exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of elevated fungal ecology.

H<sub>03</sub>: The wall bottom beneath the windows in the Commission Chamber's will not exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of normal fungal ecology.

H<sub>4</sub>: The window frame in the Commission Chamber's will exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of elevated fungal ecology.

H<sub>04</sub>: The window frame in the Commission Chamber's will not exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of normal fungal ecology.

H<sub>5</sub>: The Finance Office Mail Room wall will exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of elevated fungal ecology.

H<sub>05</sub>: The Finance Office Mail Room wall will not exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of normal fungal ecology.

H<sub>6</sub>: The Lobby Women's Rest Room supply diffuser wall will exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of elevated fungal ecology.

H<sub>06</sub>: The Lobby Women's Rest Room supply diffuser will not exceed a fungal load of 1,000 aggregate fungal spores per cm<sup>2</sup>, in the direct sterile swab sample collected, and is therefore considered to be in a state of normal fungal ecology.

### **Sampling:**

A five liter aerosol samples was collected from the carpet in the City Manager's Office to ascertain the debris and particulate load in this carpet.

Total enumeration was not possible due to the excessive load of debris present within the carpet. Observed in the sample were Basidiospores, Undifferentiated Pollen spores, Fiberglass fibers, Cellulose Fibers, Insect parts and Skin Cells.

**Basidiospores** are the sexual spores produced by Basidiomycetes. Basidiomycetes are a class of fungi characterized by spores formed on basidia. They include mushrooms, toadstools, boletes, wood bracket fungi, and puffballs. Some species are edible, such as *Agaricus bisporus*, the commercially cultivated mushroom. A few species cause wood brown rot, white rot, and dry rot in buildings.

A five liter aerosol sample was collected from the carpet in the Commission Chamber's to ascertain the debris and particulate load in these carpets.

Total enumeration was not possible due to the excessive load of debris present within the carpet. Observed in the sample were Aspergillus/Penicillium-like spores, Cladosporium spores, Epicoccum spores, Smut/Myxomyces/Periconia spores, Hyphal Fragments, Undifferentiated Pollen spores, Cellulose Fibers, Insect parts and Skin Cells.

Aspergillus and Penicillium spores are often difficult to distinguish **microscopically, and are commonly grouped together in the analysis of total count** samples. All spore-trap (Allergenco-D<sup>TM</sup>) samples are total count samples.

**Aspergillus** is found in soil, compost piles, decaying vegetation, stored grain, and other kinds of organic matter. Aspergillus can also be found indoors in water-damaged buildings. Some species are able to produce mycotoxins, depending upon the species, substrate, and/or food source.

**Penicillium** consists of many species that are common contaminants on a variety of substrates. Penicillium may be found indoors in air samples, carpet dust, or on wallpaper. Some species are able to produce mycotoxins depending upon the species, substrate, and/or food source.

**Cladosporium** are widely distributed as plant pathogens and saprobes. Cladosporium is the most frequently found fungus in outdoor air. Indoors, Cladosporium usually occurs at low concentrations in damp or humid areas, but may be found in high concentrations in water-damaged building materials. Its ability to sporulate heavily and to get airborne makes it an important fungal allergen. Cladosporium is only occasionally associated with disease in humans. The most common species include *Cladosporium elatum*, *Cladosporium herbarum*, *Cladosporium sphaerospermum*, and *Cladosporium cladosporioides*. Some *Cladosporium* spp. are causative agents of skin lesions, keratitis, onychomycosis, sinusitis and pulmonary infections.

Species of *Cladosporium* are not human pathogens except in some cases of immuno-compromised patients. However, *Cladosporium* species have the ability to trigger allergic reactions to sensitive individuals. Prolonged exposure to elevated spore concentrations can elicit chronic allergy and asthma. Concentrations of 3000 *Cladosporium* spores per cubic meter of air are generally taken as the threshold concentrations for clinical significance. However, individuals may react at lower concentrations depending on their sensitivity. Spores of *Cladosporium* are formed in simple or branched loose chains. They vary greatly in size (5-40 x 3-13  $\mu\text{m}$ ) and shape (ovoid, lemon-shaped, oblong, spherical). They are easily detected in spore traps, although small single celled spores may be easily mistaken for spores of other molds. Only the small sized spores (about 0.6% of total airborne spores of *Cladosporium*) can penetrate into the terminal bronchi and alveoli in humans.

**Epicoccum** fungi are commonly found in plant debris and soil. Indoors, Epicoccum are found in paper and textiles. They are disseminated by wind and have a Type I allergenic potential.

**Hyphal Fragments** are portions of the fungal mycelium that do not have any spores or other diagnostic fungal structures, and therefore could not be identified.

**Myxomycetes** are popularly called slime molds. They are not true fungi, taxonomically. Some species are found in the soil, in decaying wood, or other organic matter, where they produce structures full of powdery resting spores.

**Periconia** is found outdoors in grasses, dead herbaceous plant material, rushes and soils. It is primarily disseminated by the wind and is known to produce *Periconia circinata* that subsequently produces Periconin A and Periconin B; both of which are biologically inactive.

**Smuts** are pathogens of cereals crops, corn, grasses, onion, and sorghum. Smut fungi require a living plant host for growth. They are disseminated throughout the environment by wind, rain, shoes and lawnmowers. Smut fungi belong to the order Ustilaginales and there are about 4000 known species. Smuts are associated with Type I allergens (Hay Fever and Asthma).

A direct sample was collected by sterile swab from the Commission Chambers wall bottom beneath the exterior windows, as a response to the moisture intrusion, and suspect fungal growth on the surface. This sample was approximately 1 cm<sup>2</sup> in dimension. The results of this sample analysis by AEML, Inc. revealed the presence of 7,120 Aspergillus/Penicillium-like spores/cm<sup>2</sup> 10,800 Cladosporium spores/cm<sup>2</sup> and 880 Hyphal Fragments/cm<sup>2</sup> in the sample collected.

A direct sample was collected by sterile swab from the Commission Chambers window frame, as a response to the moisture intrusion, and suspect fungal growth on the surface. This sample was approximately 1 cm<sup>2</sup> in dimension. The results of this sample analysis by AEML, Inc. revealed the presence of 80 Cladosporium spores/cm<sup>2</sup> and 80 Curvularia spores/cm<sup>2</sup> in the sample collected.

**Curvularia** is a common saprobe found in soil, plants, cereals, and cellulose materials such as paper and archives. Some species are plant pathogens, but can also occur indoors. Curvularia is allergenic and may cause infections in immunocompromised people.

A direct sample was collected by sterile swab from the Finance Department Mail Room wall, as a response to the suspect fungal growth on the wall surface. This sample was approximately 1 cm<sup>2</sup> in dimension. The results of this sample analysis by AEML, Inc. revealed the presence of 942,000 Cladosporium spores/cm<sup>2</sup> and 43,800 Hyphal Fragments/cm<sup>2</sup> in the sample collected. It should be noted that when a large number of hyphal fragments is associated with the spores collected in a sample, it is typically indicative of the viability of the spores in the sample.

A direct sample was collected by sterile swab from the Lobby Women's Room supply diffuser, as a response to the suspect fungal growth on the surface. This sample was approximately 1 cm<sup>2</sup> in dimension. The results of this sample analysis by AEML, Inc. revealed the presence of 89,000 Cladosporium spores/cm<sup>2</sup>; 480 Ganoderma spores/cm<sup>2</sup> and 3,280 Hyphal Fragments/cm<sup>2</sup> in the sample collected.

**Ganoderma** are large, very hard, woody bracket fungi that grow on living and dead trees.

### **Interpretation of Laboratory Analysis:**

An interpretation of the laboratory analysis of the 5 liter aerosol sample collected from the City Manager's carpet results in the rejection of the null hypothesis, and a finding that this carpet substrate may be considered to be in a state of elevated fiber, fungi and particulate.

An interpretation of the laboratory analysis of the 5 liter aerosol sample collected from the Commission Chamber's carpet results in the rejection of the null hypothesis, and a finding that this carpet substrate may be considered to be in a state of elevated fiber, fungi and particulate.

An interpretation of the laboratory analysis of the direct sample by sterile swab collected from the Commission Chamber's wall bottom results in the rejection of the null hypothesis, and a finding that this area substrate may be considered to be in a state of elevated fungal ecology.

An interpretation of the laboratory analysis of the direct sample by sterile swab collected from the Commission Chamber's window frame results in the acceptance of the null hypothesis, and a finding that this area substrate may be considered to be in a state of normal fungal ecology.

An interpretation of the laboratory analysis of the direct sample by sterile swab collected from the Finance Department's Mail Room wall results in the rejection of the null hypothesis, and a finding that this area substrate may be considered to be in a state of elevated fungal ecology.

An interpretation of the laboratory analysis of the direct sample by sterile swab collected from the Lobby Women's Rest Room supply diffuser results in the rejection of the null hypothesis, and a finding that this area substrate may be considered to be in a state of elevated fungal ecology.

#### **Photographs:**

Photographs of odor sources are presented in **Appendix A**, Photographs. Locations where indoor environmental samples were collected may be depicted.

#### **Environmental Sample Results:**

HEI Systems personnel collected indoor environmental samples.

1. Laboratory results and the sample information logs are contained in **Appendix B, Sample Chain of Custody and Laboratory Results**.
2. Conclusions derived from the sample results are stated in **Section III, Summary and Conclusions**.

### **Section III**

## **Summary and Conclusions**

The condition of this City Hall building can be said to be a state of differential malodorous ecology. Those specific areas and/or rooms where malodorous conditions exist are identified and relate to cellulose ceiling tiles, paper, cardboard, carpet, and unsealed concrete.

The sources of the malodorous conditions present within this building should be removed by licensed professionals trained in odor restoration.

## **Section IV Basis of Report**

1. Richard H. McMonagle, Ph. D., CIE, and Stacy B. Davids conducted the walk-through visual inspection; collected environmental samples from the building, and evaluated the sampling laboratory results received from AEML, Inc. (**Appendix B, Sample Information Log [Chain of Custody] and Laboratory Results**).

2. The following reference materials were incorporated within the development of this report:

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## **Section V Appendices**

- A. Photographs
- B. Sample Chain of Custody and Laboratory Results

**Section V  
Appendix A**

**Photographs**

Photographs taken during this inspection that are not included in this report are retained in our files and are available to you upon request.

<b>Location</b>	<b>Description</b>	<b>Photo #</b>
<b>City Hall</b>	Front of City Hall on the day of the assessment.	<b>1</b>



Location	Description	Photo #
HVAC Room	Prior water intrusion. Storage of paper and cardboard on floor.	2



Location	Description	Photo #
<b>HVAC Room</b>	Prior water intrusion. Cracks in ceiling and walls should be sealed.	<b>3</b>



Location	Description	Photo #
<b>HVAC Room</b>	Cracks in ceiling at seam should be sealed to prevent moisture intrusion.	<b>4</b>



Location	Description	Photo #
HVAC Room	Concrete cracking in ceiling and walls.	5



Location	Description	Photo #
<b>HVAC Room</b>	Air-Handler interior fiberglass lining impacted with fungal growth and undifferentiated debris. The fiberglass insulation should be replaced.	<b>6</b>



Location	Description	Photo #
<b>HVAC Room</b>	Air-Handler interior fiberglass lining impacted with fungal growth and undifferentiated debris. Insulation is torn and split open reducing its capacity to insulate. The fiberglass insulation should be replaced.	<b>7</b>



Location	Description	Photo #
<b>Finance Dept.</b>	Air conditioning supply diffusers impacted with debris and fungal growth and should be cleaned.	<b>8</b>



Location	Description	Photo #
<b>Women's Room by Lobby</b>	Fungal growth and undifferentiated debris on supply diffuser. Diffuser should be cleaned.	<b>9</b>



Location	Description	Photo #
<b>Human Resource Office</b>	Employee blocking the designed air-flow likely affects the proper balance of the HVAC system resulting in thermal comfort issues.	<b>10</b>



Location	Description	Photo #
Commission Chambers	Water staining and fungal growth in ceiling tiles. Tiles should be replaced and in-line tracks should be cleaned.	11



<b>Location</b>	<b>Description</b>	<b>Photo #</b>
<b>Commission Chambers</b>	Water staining and fungal growth in ceiling tiles. Tiles should be replaced and in-line tracks should be cleaned.	<b>12</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Water staining from intrusion on ceiling tile and behind carpeting used for soundproofing. Carpeting is splitting and malodorous.	<b>13</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Water staining from intrusion on ceiling tile and behind carpeting used for soundproofing. Carpeting is splitting and malodorous. Fungal growth on back side of carpeting. Glue is source of nutrition for fungal growth.	<b>14</b>



<b>Location</b>	<b>Description</b>	<b>Photo #</b>
<b>Commission Chambers</b>	Intrusion of moisture, and warm humid air from exterior beneath windows in Chambers. Pathway for insects and reptiles tracking water from outside.	<b>15</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Intrusion of moisture, and warm humid air from exterior beneath windows in Chambers. Pathway for insects and reptiles tracking water from outside. Prior water damage.	<b>16</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Worn, stained, splitting and malodorous carpeting throughout the Chambers should be removed and concrete slab sealed prior to installation of any new floor covering.	<b>17</b>



<b>Location</b>	<b>Description</b>	<b>Photo #</b>
<b>Executive Assistant Office</b>	Worn, stained and malodorous carpeting throughout all of the 1 <sup>st</sup> Floor Offices should be removed and concrete slab sealed prior to installation of any new floor covering.	<b>19</b>



Location	Description	Photo #
<b>Human Resources Office</b>	Worn, stained and malodorous carpeting throughout all of the 2 <sup>nd</sup> Floor Offices should be removed and concrete slab sealed prior to installation of any new floor covering.	<b>20</b>



Location	Description	Photo #
<b>Human Resource Office</b>	Worn, stained and malodorous carpeting and storage of cardboard and paper on floor.	<b>21</b>



Location	Description	Photo #
<b>Human Resource Office</b>	Use of fragrance candles and plug-in deodorizers to mask odors in office space should be discouraged. Placement of time-release activated charcoal in return plenums of air-handlers should help reduce odors.	<b>22</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Corrosion and opening to outside allows warm humid air into Chambers from exterior door leading to generator. Weather stripping on door bottom and sealing holes recommended.	<b>23</b>



Location	Description	Photo #
<b>Commission Chambers</b>	Corrosion and opening to outside allows warm humid air into Chambers from exterior door leading to generator. Weather stripping on door bottom and sealing holes recommended.	<b>24</b>



<b>Location</b>	<b>Description</b>	<b>Photo #</b>
<b>Commission Chambers</b>	Intrusion above ceiling tiles running down wall on column and beneath carpet soundproofing.	<b>25</b>



**Section V**  
**Appendix B**

**Sample Chain of Custody and Laboratory Results**

The following Chain of Custody Reports and Laboratory Analysis Results are provided as attachments.

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1301 E. Atlantic Blvd., Suite 5  
Pompano Beach, FL 33060  
Phone: (954) 333-8149  
Fax: (954) 333-8151

**Project:** City of S Miami  
**Sampled:** 8/1/2013  
**Received:** 8/1/2013  
**Analysis Date:** 8/1/2013  
**Report Date:** 8/1/2013  
**Batch:** 32878

**AEML Test: A002 Expanded Spore Trap Analysis**

email: customerservice@aemlinc.com

Sample ID:	130801P001	130801P002				
Client Sample ID:	MGR Carpet 355	Commission Carp 389				
Volume Sampled (L):	5	5				
Media:	Allergenco D	Allergenco D				
Percent of Trace Analyzed:	100% at 600X Magnification	100% at 600X Magnification				
Spore Types	Raw Count	Count/m <sup>3</sup>	%	Raw Count	Count/m <sup>3</sup>	%
Alternaria	-	-	-	-	-	-
Arthrinium	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-
Aspergillus/Penicillium-Like	-	-	-	Observed 1-49	Observed 1-49	-
Basidiospores	Observed 1-49	-	-	-	-	-
Bipolaris/Dreschlera	-	-	-	-	-	-
Botrytis	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-
Cladosporium	-	-	-	Observed 1-49	Observed 1-49	-
Curvularia	-	-	-	-	-	-
Epicoccum	-	-	-	Observed 1-49	Observed 1-49	-
Fusarium	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-
Memnoniella	-	-	-	-	-	-
Nigrospora	-	-	-	-	-	-
Oidium/Peronospora	-	-	-	-	-	-
Pithomyces	-	-	-	-	-	-
Rust	-	-	-	-	-	-
Smut/Myxomyces/Periconia	-	-	-	Observed 1-49	Observed 1-49	-
Stachybotrys	-	-	-	-	-	-
Torula	-	-	-	-	-	-
Ulocladium	-	-	-	-	-	-
Unidentified Spores	-	-	-	-	-	-
<b>Total Spores</b>	-	-	-	-	-	-
Hyphal Fragments	-	-	-	Observed 1-49	Observed 1-49	-
Pollen	Observed 50-99	-	-	Observed 1-49	Observed 1-49	-
Fiberglass	Observed 1-49	-	-	-	-	-
Fibers	Observed 1000+	-	-	Observed 1000+	Observed 1000+	-
Insect Parts	Observed 1-49	-	-	Observed 1-49	Observed 1-49	-
Skin Cells	Observed 100-499	-	-	Observed 100-499	Observed 100-499	-
Debris Rating	5*	-	-	5*	5*	-
Detection Limit	200	-	-	200	200	-

\* Enumeration not possible due to excessive debris. Results reported as an observed range in and around the border of the trace.

*Joshua Krinsky*  
Joshua Krinsky  
Technical Director

Results submitted pertain only to the samples as presented on the accompanying Chain of Custody. This report shall not be reproduced, except in its entirety and with the written approval of AEML.





CHAIN OF CUSTODY/ANALYSIS REQUEST

38 NE 20<sup>th</sup> Ave, Suite 6  
 Pompano, FL 33060  
 Phone: 954-333-8149  
 Fax: 954-333-8151  
 www.aemlinc.com



Project # / Job #:

130801Pool-006

Page 1 of 1

Company: HEI Systems		Sampled By: Richard H. McMonagle, Ph. D.		Payment Type: On Account		Credit Card		Check	
Contact Name: Richard H. McMonagle		Project/Site Name: City of S. Miami		Credit Card Type: Visa		Master Card		Amex Discover	
Address: 1690 N.E. 191st Street, Suite #308		Project #: 19-08-0101-M		Credit Card #:					
City: North Miami Beach		State: FL		Zip: 33179		Name on Card (Print):			
Phone #: (786) 512-1450		Fax #: (305) 945-0755		Report (circle):		Signature:			
E-mail: mc2@bellsouth.net		Sample Type: A = Air W = Water T = Tape S = Swab B = Bulk		Turn Around Time (Rush charges may apply) Standard Other		Analysis Requested (Enter 'X' Below to indicate request)		Exp. Date: / /	
Sample #	Sample Identification	Date	Sample Type	Volume (Air)	Area (Swabs)	A000	100S	100L	For Lab Use Only
1	14355 ALLIANCE CARPET	8/1	A	5L					POO1
2	14389 Commission Club	8/1	A	5L					POO2
3	Community Center	8/1	S		1cent		X		POO3
4	Community Center	8/1	S		1cent		X		POO4
5	Male Finances	8/1	S		1cent		X		POO5
6	Lanoy Womens	8/1	S		1cent		X		POO6
7									
8									
9									
0									
Special Instructions/Requirements:									
<p>Received By: <i>[Signature]</i>                  Company: HEI Systems                  Richard H. McMonagle, Ph. D.</p>									
Date	Time	Company		Received By		Company		Good Condition	
8/1/13	12:17p	HEI Systems		<i>[Signature]</i>		AEML		Yes No	
8/1/13	1500			<i>[Signature]</i>				Yes No	