



Ms. Christine Campbell  
Project Manager  
Cushman and Wakefield, Inc.  
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Subject:  
Associate Health Complaint Investigation  
Bank of America - Blaine Banking Center  
277 G Street, Blaine, Washington  
Mail Code: WA4-105

ENVIRONMENT

Dear Ms. Campbell:

Date:  
December 20, 2010

ARCADIS U.S., Inc. (ARCADIS) was retained by Cushman and Wakefield (C&W) to conduct an investigation of the building located at 277 G Street, Blaine, Washington (the Site) in follow-up to an associate health complaint. The building is owned by Bank of America and operates as a retail banking center.

Contact:  
Mark Williams

Phone:  
925.953.3395

C&W requested that ARCADIS perform the investigation because Bank of America associates were experiencing itchy eyes over the period of a few weeks as winter weather conditions set in. ARCADIS understands that a similar reaction occurred during the previous winter.

Email:  
[Mark.williams@arcadis-us.com](mailto:Mark.williams@arcadis-us.com)

Our ref:  
HT118381.0000

Background information regarding ARCADIS' investigation, observations, conclusions and recommendations are provided below. ARCADIS' services are subject to the Terms and Conditions of our contract with the Bank of America dated December 18, 2008 and to the Limitations and Service Constraints in Attachment A.

## BUILDING INFORMATION

The 5,000 square foot building was constructed in 1982, and is a single-story, slab-on grade structure with concrete masonry walls, glass windows and a membrane roof. Typical interior finishes include the following: painted drywall, 2' x 4' suspended acoustical ceilings, carpet, vinyl tile and cove base. The banking center is served by a single air handler system (located on the roof) which utilizes ducted supply and return air.

## ARCADIS' INVESTIGATION

Mr. Daniel Jarvis performed the investigation of the Banking Center's main customer area and heating, ventilating and air-conditioning (HVAC) unit (areas of concern) on November 29, 2010. Additional information on ARCADIS' Scope of Work and our observations are provided below:

**Visual Assessment:** A visual inspection of the areas of concern was performed. The results of the visual assessment are summarized below and photographs of select key observations are included in Attachment B.

**Field Testing:** Field testing was performed for common indoor air quality indicators, including comfort parameters (temperature, relative humidity and carbon dioxide), carbon monoxide and airborne particulate. A summary of these test results, testing locations, comparisons to published guidance values and regulatory standards is presented in Table 1.

**HVAC Inspection:** A visual inspection of the HVAC units that service the area of concern was conducted. A summary of the observations made during the HVAC inspection are presented in Table 2.

**Moisture Testing:** A moisture meter was used to assess targeted portions of the perimeter walls, ceilings and carpeted floor of the areas of concern. The results of the moisture meter tests are summarized below.

## SUMMARY OF KEY FINDINGS

A summary of ARCADIS' key findings is provided below:

1. No visible suspect mold or evidence of water intrusion was observed in the lobby, break room and drive-thru teller room.
2. Dirt and dust was observed on the air diffusers and return vents in the lobby area.
3. The Bank of America space appeared to be positively pressurized relative to the exterior.
4. Fiberglass insulation on the HVAC inspection panel by the filters and the panel next to the air handler motor was observed to be dry, dirty and deteriorating. However, the HVAC filters and cooling coils appeared to be clean.

5. The field testing parameters were found to be within the published guidance values.

## RECOMMENDATIONS

Based on the summary of key findings outlined above, ARCADIS has the following recommendations:

- Replace or repair the damaged fiberglass insulation in the HVAC unit.

## CLOSING

Please do not hesitate to contact us if you have any questions or require additional information.

Sincerely,

ARCADIS U.S., Inc.



Mark Williams  
Project Manager



James J. Young, CIH, CSP  
Senior Scientist

Tables:

- Table 1 IAQ Measurements Table
- Table 2 HVAC Unit Observations

Attachments:

- A Limitations and Service Constraints
- B Photographs

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**Tables**

**Table 1 – Indoor Air Quality Measurements**

Measurements						
Sample Location	Time	Temperature <sup>1</sup> (°F)	Relative Humidity <sup>1</sup> (%)	Carbon Monoxide <sup>1</sup> (CO) ppm	Carbon Dioxide <sup>1</sup> (CO <sub>2</sub> ) ppm	Airborne Particulate <sup>2</sup> (mg/m <sup>3</sup> )
Lobby	13:05	70	32	0	484	0.003
Break Room	16:00	71	33	0	678	0.004
Storage Room	13:40	71	31	0	465	0.004
Drive Thru Teller	13:55	66	38	1	560	0.008
Outdoors	13:10	54	33	1	352	0.009
Guidance Value(s)		Winter: 68–75°F <sub>3</sub> Summer: 73–80°F <sup>3</sup>	30 – 60% <sup>3</sup>	< 9 ppm <sup>3&amp;4</sup>	< 700 above outdoor level of 352 (<1,052) <sup>3&amp;4</sup>	0.050 <sup>3&amp;5</sup>

Notes:

1. Monitoring Instrument: TSI Q-Trak - Calibration due 12/17/10
2. Monitoring Instrument: Thermo Personal Data-Ram (pDR-1000) - Calibration due 2/2010. Measurements are assumed to be respirable particulate (particles ≤10µm in diameter)
3. Guidance values from the American Industrial Hygiene Association (AIHA) Indoor Air Quality Investigator's Guide dated 2006
4. Guidance values from the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE)
5. California EPA 24-hour average ambient level for PM10 (particles of ≤10µm in diameter, or respirable particulate)

Abbreviations:

ppm = parts per million  
mg/m<sup>3</sup> = milligrams per cubic meter of air  
°F = degrees Fahrenheit  
% = percent  
< = less than

**Table 2 – HVAC Unit Observations**

**HVAC Unit 1 Service Zone Banking Center**

Fan Housing Insulation				Condensate Drip Pan			Heating Coils		Filters		Supply/Return Ducts/Diffusers/Grills
Intact?	Clean?	Wet / Dry	Visible Mold?	Standing Water Present?	Sludge / Biomatter Present? <sup>1</sup>	Easily Accessible for Cleaning?	Dust / Debris Present?	Visible Mold?	Seated Properly? <sup>2</sup>	Dust Loading?	Dust Deposits? Visible Mold?
Yes	Yes	Dry	No	No	No	Yes	No	No	Yes	No	Visible dust accumulation on supply vents

Notes:

1. Biomatter: Biological material indicative of visible mold and/or bacterial growth.
2. Seated Properly: Are the filters seated in their frame such that airflow bypass is prevented, thereby assuring proper filtration of recirculated air?

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**Attachment A**

Limitations and Service  
Constraints

## **Limitations and Service Constraints**

The opinions, conclusions and recommendations presented in this report are limited to the information obtained during the performance of the specific scope of service identified in the report. To the extent that ARCADIS relied upon any information prepared by other parties not under direct contract to ARCADIS, no representation as to the accuracy or completeness of such information is made. This report is an instrument of professional service and the services described in the report were performed in accordance with generally accepted standards and level of skill and care ordinarily exercised by members of the profession working under similar conditions including comparable budgetary and schedule constraints. No warranty, guarantee or certification express or implied, is intended or given with respect to ARCADIS' services, opinions, conclusions or recommendations. This statement is in lieu of any other statement either expressed or implied.

ARCADIS' observations, the results of testing and ARCADIS' opinions, conclusions and recommendations apply solely to conditions existing at the specific times when and specific locations where ARCADIS' investigative work was performed. Observation and testing activities such as those conducted by ARCADIS are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the project site, building or area may vary from conditions at the specific locations where observations were made and where testing was performed by ARCADIS. Additionally, other building material hazards which were not identified by ARCADIS, such as asbestos, lead-based paint and unidentified microbial impacts, may also be present in the indoor air, un-accessed areas and in walls, ceilings, cavities and floors. Therefore, the extent of ARCADIS' opinions, conclusions and recommendations are limited and 100% confidence in these opinions, conclusions and recommendations cannot reasonably be achieved. Nothing contained in this report shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards nor shall it be considered medical advice or consultation.

This report may document whether work conducted by ARCADIS, under contract to ARCADIS or under ARCADIS' observation was done so in accordance with applicable regulatory standards. In the absence of standards such as is often the case for microbial assessment and abatement, this report may not be construed as providing clearance, approval, or authorization for use or re-occupancy of a given structure. Actual site conditions and quantities should be field verified and unless expressly stated, this report may not be used as a bid specification. Although an attempt may have been made to locate microbial growth (mold) and indoor air quality issues, in many cases only further investigation or full demolition procedures will reveal sources or impacted materials. In addition, the passage of time including the nominal passage of time may result in a change in the characteristics at the project site.

This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared and for the particular purpose outlined in the report. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.



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**Attachment B**

Photographs



**Photograph #1**

**Description of Photograph:**  
Bank of America - entry signage.



**Photograph #2**

**Description of Photograph:**  
Dust loading on supply vent.



**Photograph #3**

**Description of Photograph:**  
Fiberglass insulation on inside of HVAC unit cover plate – showing heavy deterioration.



**Photograph #4**

**Description of Photograph:**  
Exterior HVAC unit on roof.