



Office of Inspections
Office of Inspector General
U.S. General Services Administration

Ventilation Issues Persist in Unrenovated Wings of GSA Headquarters Building

**JE23-001
November 28, 2022**

Introduction

In December 2021, the Office of Inspector General (OIG) Office of Inspections initiated an inspection of indoor air quality (IAQ) in the unrenovated Wings 0 and 3 at the General Services Administration (GSA) Headquarters Building, at 1800 F Street Northwest, Washington D.C. We initiated this inspection after receiving information from GSA concerning ventilation and air quality in the unrenovated Wings 0 and 3 of the Headquarters Building.

Our objective was to assess the impact of building occupancy in Wings 0 and 3 of the Headquarters Building on IAQ, ventilation, filtration, and circulation test results. Early in our inspection, we determined that GSA's outdated and deteriorating ventilation systems and equipment in Wings 0 and 3 significantly impaired IAQ in these Wings, especially during the heating season. Additionally, we identified actions GSA has taken, is taking, or plans to take in implementing Centers for Disease Control and Prevention (CDC) and other guidance to mitigate risks in the unrenovated areas. Finally, as we discuss later, we found that GSA's mitigating actions do not completely abate the ventilation issues to ensure a safe work environment in the unrenovated areas.

On March 10, 2022, during the course of this inspection, we issued a Management Alert report, *Inadequate Ventilation in GSA Headquarters Child Care Center*, to bring GSA management's attention to the deficiencies in the agency's compliance with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standard for ventilation in the Child Care Center.¹ Our report found that PBS leadership knew that it was not meeting the ASHRAE standards for ventilation in the Child Care Center. The lack of ventilation meant that PBS did not provide the occupants of the Child Care Center with fresh air when the outside air temperature reached 40° F or lower. Even when the Child Care Center received fresh air, the space lacked ventilation due to the absence of return vents needed for removing used air. Furthermore, a contractor found that a drop ceiling in the infant room essentially covered the supply vents. Following our management alert report, PBS National Capital Region (NCR) installed a new air handler unit (AHU) in May 2022.

Our inspection found that PBS leadership knew of significant deficiencies in the ventilation systems and equipment throughout the unrenovated Wings 0 and 3 of the Headquarters Building for years, but did not take sufficient action to address those deficiencies. During the Coronavirus-19 (COVID-19) pandemic, GSA began to implement CDC recommended mitigation actions to reduce the risk of spreading SARS-CoV-2, the virus that causes COVID-19. However, these actions did not improve or address the larger and more significant ventilation issues in Wings 0 and 3.

Our report makes two recommendations to address the issues identified during the inspection. In response to our report, GSA management agreed with our recommendations. Management comments can be found in their entirety in Appendix 2.

¹ OIG Management Alert report, *Inadequate Ventilation in GSA Headquarters Child Care Center*, March 10, 2022.

Background

GSA Headquarters, a historic building in Washington D.C., was constructed between 1915 and 1917. In 2013, GSA modernized part of its Headquarters Building, including Wings 1 and 2. Plans for a second modernization phase include Wings 0 and 3, but GSA has not started that portion of the project. The Phase 1 modernization included renovations to significant portions of Wings 1 and 2, while Wings 0 and 3 went through a “refresh.” The refresh did not include updating or replacing the operational systems, such as heating, ventilation, and air-conditioning (HVAC) systems.

Since at least 2017, GSA officials knew of serious ventilation issues in the unrenovated Wings 0 and 3 of the Headquarters Building, when GSA consultants submitted a feasibility study for completing the Phase 2 modernization by June 2022. The consultant’s report observed the new HVAC systems installed in Phase 1 “are efficient and provide better comfort, control, maintainability, indoor air quality, and energy efficiency by utilizing modern systems.”² By contrast, the report found “the deterioration of these old systems [in the non-renovated wings] is extreme and many of these systems are well beyond their useful service”³

The report also identified “serious concerns with quality of ventilation, chiller redundancy and life cycle operation costs that will occur should the [old] HVAC system not be replaced.”⁴ Additionally, the report stated:

AHUs located within the stacked fan rooms of Wing[s] 0 and 3, are intended to provide cooled and heated ventilation to each respective wing...[h]owever, because the heating function within the AHUs are inoperative, these ventilation units are not operated in the heating season.⁵ [Emphasis added.]

Maintenance of Headquarters Building

PBS NCR, Office of Facilities Management, is responsible for ensuring basic building operations at the Headquarters Building. This responsibility includes ensuring that the building systems function, the GSA-provided building-specific safety and security features remain operational, problems are addressed, and problems and corrective actions are communicated to tenants’ contacts.

Prior OIG reports, as recently as 2021, have found that PBS is vulnerable to rising maintenance and repair costs and an increased risk of building system failure, accelerated deterioration of systems and structures, and potential life safety hazards. In addition, one report concluded that

² GSA 1800 F Street Consolidation Feasibility Study, Draft Final Recommendations Report, August 1, 2017, (Sensitive But Unclassified), at page 42.

³ *Id.*

⁴ *Id.* At page 137.

⁵ *Id.* At page 43.

PBS was not effectively overseeing contractor performance of its operations and maintenance contracts.⁶

PBS's responsibility for building maintenance includes management and oversight of IAQ. The *PBS Desk Guide for Indoor Air Quality Management* (Desk Guide), September 22, 2016, defines acceptable IAQ as, "building conditions in normally occupied areas are maintained so that airborne gasses, vapors, particles, ventilation and thermal conditions meet the PBS-adopted action levels and do not adversely affect the health or comfort of building occupants."⁷ GSA Order 1000.8 PBS, *Indoor Air Quality Management*, requires implementation of ASHRAE standards to reduce the most common causes of IAQ problems.⁸ ASHRAE standard 62.1, *Ventilation for Acceptable Indoor Air Quality*, provides the specific minimum ventilation rates and other measures intended to provide IAQ that is acceptable to human occupants and minimizes adverse health effects.⁹

Building Readiness for COVID-19

In March 2020, GSA transitioned to an emergency telework status because of the COVID-19 pandemic. In conjunction with the declaration of the COVID-19 pandemic, the CDC issued guidance that recommended a layered approach to reduce the risk of exposure to COVID-19.

The CDC recommended improvements to building ventilation, among other mitigation strategies, based on the ASHRAE Epidemic Task Force guidance for Building Readiness.¹⁰ Strategies to improve ventilation included:

- Increasing the introduction of outside (fresh) air;
- Ensuring ventilation systems operate properly; and
- Increasing air filtration.¹¹

⁶ See: *Audit of the Public Buildings Service's Effectiveness in Managing Deferred Maintenance*, Report Number 190066/P/2/R21009, September 30, 2021, and *PBS's Northeast and Caribbean Region is Not Effectively Overseeing its Operations and Maintenance Contracts*, Report Number A201046/P/2/R21007, September 24, 2021.

⁷ PBS Office of Facilities Management, *Desk Guide for Indoor Air Quality Management* September 22, 2016, at page 2. The Desk Guide is a companion to GSA Order 1000.8 PBS, *Indoor Air Quality Management*, October 3, 2016.

⁸ GSA 1000.8 PBS, *Indoor Air Quality Management*, October 3, 2016, at page 2.

⁹ ASHRAE standard 62.1-2019, *Ventilation for Acceptable Indoor Air Quality*, at page 2. ASHRAE defines ventilation as the process of supplying air to or removing air from a space for the purpose of controlling the air contaminant levels, humidity, or temperature within a space.

¹⁰ The ASHRAE Epidemic Task Force issued its initial *Building Readiness* guidance on May 7, 2020. ASHRAE issued subsequent updates on August 18, 2020, February 2, 2021, April 27, 2021, and May 17, 2022.

¹¹ CDC, *Ventilation in Buildings*, updated June 2, 2021.

The ASHRAE guidance noted that ventilation systems should be evaluated to ensure they are capable and operating in order to provide the code-required or system-designed levels of fresh air when the building is occupied.

In preparation for reentry to offices during the ongoing pandemic, GSA leadership initiated evaluation and testing of IAQ and ventilation systems. The testing confirmed the previously reported deteriorated conditions of the AHUs in the unrenovated Wings 0 and 3 at the Headquarters Building.

GSA permitted full-reentry into the Headquarters Building in April 2022.

According to PBS NCR, Office of Facilities Management, prior to the COVID-19 pandemic, GSA had approximately 4,500 staff assigned to the Headquarters Building, which has a maximum occupancy of approximately 6,430. Post COVID-19 pandemic, GSA has approximately 1,100 staff assigned to the Headquarters Building. Since full reentry in April 2022, GSA is averaging 219 occupants per day in the Headquarters Building, not including other tenants such as the Child Care Center, contractors, or visitors.

However, the limitations of the AHUs in Wings 0 and 3 prevent GSA from ensuring proper ventilation with fresh air for occupants in these spaces. Our inspection examines the Headquarters Building failed AHUs that bar adequate ventilation and preclude increasing ventilation in accordance with CDC recommend guidance, and PBS's intended mitigation plan.

Finding

Improperly maintained ventilation systems and equipment cannot meet ASHRAE standards despite mitigation attempts.

In July 2020, the Headquarters Building's operations and maintenance contractor, Northern Management Services, Inc., provided a deficiency report to GSA management. This report noted that ventilation equipment issues, which had persisted for over 17 years, were ongoing. Despite GSA management officials' awareness of longstanding issues with the ventilation systems and equipment in the unrenovated Wings 0 and 3 at the Headquarters Building, they failed to take sufficient action to correct the issues. The current condition of the AHUs prevents the agency from ensuring proper ventilation and therefore may compromise the health and safety of Headquarters Building occupants.

Independent Contractors' Reports Identified Longstanding and Persistent Ventilation Issues

In 2017, a GSA contractor provided a feasibility study to consider implementing the Phase 2 modernization of Wings 0 and 3 of the Headquarters Building, and the consolidation of the NCR Regional Office Building staff to the Headquarters Building. The study noted:

Many of the building's original [ventilation] systems are still in place and in service areas that are to be modernized in Phase 2 including the proposed Child Development Center in

the old library area. The deterioration of these old systems is extreme and many of these systems are well beyond their useful service life.¹²

Despite the deteriorated ventilation systems, GSA consolidated the NCR Regional Office Building staff into both the renovated and unrenovated spaces of the Headquarters Building in December 2019.

On July 20, 2020, the Vice-President for Northern Management Services, Inc., notified the agency of additional AHU equipment deficiencies. The Northern Management Services, Inc.'s deficiency report stated:

There are 34 air handlers [AHUs] located in Wings 0 and 3. All the air handlers have failed and abandoned in place pneumatic controls and have not been providing fresh air (Make-up Air) for over 17 years. The steam coils are disconnected or isolated due to holes in the coils. The chilled water valves are manually set to wide open all the time and in most cases the actuators have been removed. The air handlers do not have code required smoke detectors. The AHU's have to be manually turned on and off each day by having a mechanic enable a switch on the existing 25 plus year old timers at the unit. The chilled water coils are rusting out and much of the air handler structural casing is rusted beyond repair. The fans have bad bearings.¹³

The deficiency report also stated that the mechanical rooms required abatement of lead and asbestos contaminates before repairing the AHUs.

In August 2020, the PBS NCR Acting Director, Office of Facilities Management, provided the deficiency report and a GSA-developed factsheet on the ventilation concerns in Wings 0 and 3 to then PBS NCR Regional Commissioner, Darren Blue.¹⁴

The notice to Blue reported that these deficiencies likely have existed more than 40 years:

During the winter, we have no outside air coming into the building on phase 2. The air handlers have no heat in wings 3 and 0, the steam heat was secured years ago due to age, and then with the understanding phase 2 would be done. These units have no outside air dampers or valve controls and if we were to turn them on, we would sub-cool the unheated hallways and offices. To my knowledge it has been this way for over 4 decades.

¹² GSA's *1800 F Street Consolidation Feasibility Study, DRAFT Final Recommendations Report*, August 1, 2017, (Sensitive But Unclassified) at page 42.

¹³ On February 8, 2022, the inspection team identified a total of 49 AHUs, which included abandoned units and those outside of the mechanical rooms, in Wings 0 and 3.

¹⁴ According to the Acting PBS NCR Regional Commissioner, Blue departed GSA in January 2022.

The GSA fact sheet, prepared by the NCR Safety, Environment, & Fire Protection Branch, concluded:

GSA is not achieving the minimum ventilation guidelines per regulatory and industry standards that we have committed to meeting for all of our tenants.

In order to ensure the health and safety of its associates GSA must implement corrective actions immediately to include at a minimum:

- Procure the services of a professional mechanical engineering firm to evaluate the existing ventilation system and determine a permanent corrective action plan to bring in the mandatory minimum amount of fresh air into the 4300 and 4000 Wings [4th floor, Wings 0 and 3]. Special consideration must be given to the ventilation in the Child Care Center portion of the Zero Wing.
- In the interim remove the available seating in all areas not in compliance with ASHRAE and CDC guidelines until the ventilation deficiencies are corrected.

According to the Acting Director, PBS NCR believed they had time to address the AHU issues because the building was at low occupancy due to the COVID-19 maximum telework posture. However, although the Child Care Center in the unrenovated Wing 0 reopened at a reduced occupancy on July 27, 2020, the Child Care Center Eastern Regional Director told us that GSA did not notify the Center of the AHU ventilation issues.

In the fall of 2021, GSA received two additional studies done by outside contractors that assessed the ventilation equipment. Both reports identified major deficiencies. An October 4, 2021 report from Rambin Global Joint Venture (RGJV) agreed with the Northern Management Services, Inc. deficiency report. The RGJV report also found that for the window air conditioner units, which GSA relies on to control temperature and airflow in Wings 0 and 3, the measured outdoor air introduction was below the capability of all units assessed, which were designed to provide up to 10% outdoor air according to the manufacturer's specifications. The RGJV report pointed out the importance of a "well-maintained and operated HVAC [heating, ventilation and air conditioning] system."

The RGJV report concluded:

The mechanical system servicing the older areas appears well overdue for an upgrade and is not being maintained sufficiently to provide adequate ventilation for the spaces. The obvious lack of outside air introduction, the potential for stagnation pockets within occupied offices with closed doors, when combined with the high velocity horizontal air flow from the window units, presents a real potential infection risk for multiple individuals occupying a space. These older areas also appear to lack the air exchange rates necessary to provide optimal air quality.

In December 2021, Summer Consultants, Inc. (Summer) provided their final assessment of the ventilation equipment in Wings 0 and 3, which concluded, "None of the existing units are

capable of meeting the level of performance that will be required by the reoccupation of the building.”

The Summer assessment also stated:

Originally, air returned to the air handling units [AHUs] by transferring from the office areas to the corridor by transoms over the corridor doors or through louvers in the doors. Over the years, the transoms have either been removed or permanently closed and the door louvers blocked off. These changes have disrupted the air balance of the air system.

In addition, the Summer assessment stated that using corridors as part of the return air paths does not comply with the International Code Council Building Code, which GSA incorporated in the PBS P100 Facilities Standard.¹⁵ As a result, the existing return air path restricts the flow of return air to the AHUs, which causes a reduction in the air supplied to Wings 0 and 3.

Summer’s assessment concluded by reiterating, “[i]n its current condition the existing HVAC system is incapable of providing the ventilation necessary to support the anticipated building occupancy.”

Acknowledging that the ventilation equipment is in disrepair, PBS NCR management officials and personnel consistently told us that GSA could not meet the ASHRAE standard 62.1 in the unrenovated Wings 0 and 3.

Ventilation Equipment in Disrepair

During our on-site inspection of the ventilation equipment in Wings 0 and 3 of the Headquarters Building, Northern Management Services, Inc. personnel showed us four AHUs abandoned in place and several AHUs that were not properly functioning or repaired. In addition, Northern Management Services, Inc. personnel notified us of additional AHUs that were not included in the independent contractors’ prior assessments or tests, a missing AHU, and duct work that was not connected to the AHU supply in several places throughout the unrenovated Wings 0 and 3.

One of the four abandoned AHUs was housed in a conference room closet on the 2nd floor, intended to service the conference room as well as the adjacent office in Wing 0. A note affixed to the AHU stated, “Unit abandoned, 3-14-2010, Compressor and Condenser is bad GSA doesn’t want to replace.” (See Photo 1.)

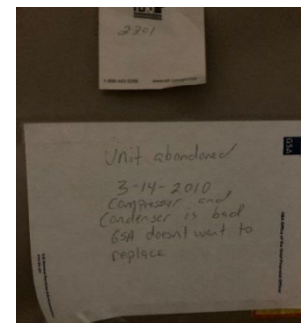


Photo 1

The second unit, servicing the 4th floor, Wing 3 area, was abandoned in place. Neither the Northern Management Services, Inc. personnel nor the Building Manager could determine how long the unit had been abandoned. A third unit, originally servicing the 6th Floor, Wing 3 area, was abandoned in a crawl space between the 6th and 7th floors due to previous remodeling. The fourth abandoned unit originally serviced a ground floor supply room. Because these units were abandoned, they did not supply fresh air to the areas they were meant to service, in one instance for over 12 years.

¹⁵ P100 Facilities Standards for the Public Buildings Service, October 2021, at page 17.

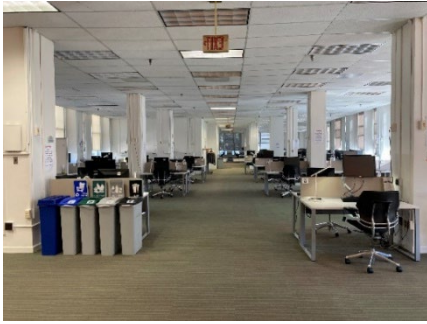


Photo 2

Also during our inspection, Northern Management Services, Inc. personnel notified us of an area on the 1st floor, Wing 3 that lacked a servicing AHU. According to a PBS NCR employee, the AHU was to be installed during the Phase I modernization but GSA ran out of money and was unable to finish the project. A functioning AHU would have provided fresh air to office areas near room 1336. (See Photo 2.) Instead, for over nine years, the occupants in that area have been without any ventilation.

In order to bring fresh air through the AHUs into Wings 0 and 3, GSA relies on the AHU dampers being open. However, the



Photo 3

Building Manager explained that when outside temperature drops below 40° F the contractors cannot open the dampers because the cold weather could damage the equipment.

During our site visit, we also identified several mechanically faulty AHU dampers that had to be propped open with objects such as door stoppers to allow the introduction of fresh air when temperatures were above 40° F. (See Photo 3.) We found some dampers held open with binder clips, and



Photo 4

several others jerry-rigged with wire handles to enable the operator to manually open them without having to reach inside the unit. (See Photo 4.)

As a result of our inspection, PBS NCR learned of four areas in the unrenovated Wings 0 and 3 that lacked ducting needed to connect supply vents to the AHU ducting, or lacked functioning AHUs, creating “dead air zones.”¹⁶ The Building Manager was unaware of the missing ducting in three of the areas prior to our inspection, but said they promptly notified PBS NCR management after our onsite inspection.

Two additional areas, one in the Child Care Center and one on the 5th floor, lacked ducting to connect the supply vents to the AHU ducting. Emails showed that Northern Management Services, Inc. identified the missing ducting in the Child Care Center and reported it to the Building Manager in September 2021, but GSA took no action at the time to address the issue.¹⁷

¹⁶ On March 3, 2022, the Building Manager notified supervisors about the zones that were not receiving sufficient airflow.

¹⁷ We discussed this issue in our Management Alert report, *Inadequate Ventilation in GSA Headquarters Child Care Center*, March 10, 2022, at page 4.

The Building Manager told us that he did not speak to his supervisor regarding the Child Care Center issue.¹⁸

In February 2022, an inspection by Northern Management Services, Inc., the OIG facilities team, and building management, identified additional missing ducting on the 5th floor, Wing 0. The Building Management Office took action in March 2022 to fix the ducting issue. In April 2022, PBS also took action to install a new fan and ducting for the abandoned AHU servicing the 4th floor, Wing 3.

However, GSA has not replaced or upgraded the AHUs in Wings 0 and 3 to address the larger deficiencies described in the 2017 feasibility study, the 2020 Northern Management Services, Inc. deficiency report, and the 2021 RJGV report.

COVID-19 Mitigation Actions

As reported above, GSA and PBS NCR knew about the ventilation issues in Wings 0 and 3 at least since 2017, but did not take sufficient action to correct the issues. Consequently, GSA did not have assurance that the IAQ was acceptable for those working in the unrenovated Wings 0 and 3 of the Headquarters building when the COVID-19 pandemic occurred. In July 2021, the OAS Deputy Chief Administrative Services Officer, Daniel Miller, sought information from PBS Deputy Commissioner Allison Azevedo and PBS Assistant Commissioner Andrew Heller on the air quality in the unrenovated Wings 0 and 3. Heller responded:

PBS Facilities Management does not recommend populating unrenovated spaces of the building.

In a follow up email, Heller clarified:

...based on CDC guidelines and ASHRAE standards, we do not believe risk can be appropriately mitigated in the unrenovated areas of the building where hotel seating is in place.

Despite having determined the unrenovated space was not usable, PBS NCR attempted to test and mitigate the conditions caused by the ventilation issues.

In the fall of 2021, GSA installed monitors throughout Wings 0 and 3 to assess the carbon dioxide levels, temperature, and relative humidity; although the tests did not include all elements of IAQ that PBS recognizes in its Desk Guide.¹⁹ (See Photo 5.) The monitoring results for the period of June 15 – June 29, 2022, showed that 59 of the 77 tested locations exceeded the ASHRAE maximum recommended temperature and 76 of the 77 locations tested exceeded the ASHRAE maximum recommended relative humidity.



Photo 5

¹⁸ PBS NCR has since installed a new AHU in May 2022.

¹⁹ The Desk Guide states that temperature, relative humidity, carbon dioxide, carbon monoxide, formaldehyde, airborne asbestos, and airborne mold are elements of IAQ.

In addition, RGJV conducted IAQ and ventilation testing for GSA and on October 4, 2021 reported:

... the building was largely unoccupied during the measurements which would tend to skew the data towards the “best” performance capabilities versus when the building is fully occupied and the systems [sic] performance would be skewed to “worst” performance capability.

As noted earlier, the RJGV report further concluded:

The obvious lack of outside air introduction, the potential for stagnation pockets within occupied offices with closed doors, when combined with the high velocity horizontal air flow from the window units, presents potential infection risk for multiple individuals occupying a space.

GSA added diverters to the window air conditioning units throughout Wings 0 and 3 to push the air up. However, no one took into account that all of the diverters GSA purchased fit window air conditioning units with vents that are horizontal across the unit, but not vents that are stacked into a vertical panel. (See Photo 6 – with vertical vents on the right and the filter cover on the left.) As a result, the diverters cannot cover all the vents to push the air up, rather than across, the breathable space. Further, we observed that the adhesive used to attach the diverters to the units did not always work, resulting in diverters sliding down and not functioning as intended.



Photo 6

GSA also increased the Minimum Efficiency Reporting Value (MERV) rating of filters used in the AHUs to the highest possible rating, which was either a MERV 8 or 10. However, GSA could not meet the ASHRAE Epidemic Task Force guidance for building readiness recommendation that organizations use at least MERV 13 to help mitigate the spread of infectious particles.²⁰ PBS NCR personnel explained that using a higher MERV rating in the AHUs would suffocate the AHU systems.²¹

However, these and other measures did not correct the longstanding ventilation issues, so the Chief Administrative Services Officer made the decision to minimize the use of the unrenovated space. In November 2021, the Chief Administrative Services Officer sent an email notifying occupants that, “[o]ut of an abundance of caution, as we reenter 1800 F and while COVID-19 transmission rates remain in the substantial or high range, we are going to **maximize the use of the renovated space at 1800 F** while minimizing the use of unrenovated space.”

²⁰ASHRAE Epidemic Task Force, *Building Readiness*, April 27, 2021, at pdf page 36.

²¹ A recent GSA OIG audit report, *COVID-19: PBS Faces Challenges in Its Efforts to Improve Air Filtration in GSA-Controlled Facilities*, Report Number A201018/P/4/R22008, September 30, 2022, also found impediments to using a higher rated filter on GSA Headquarters AHUs in the unrenovated Wings 0 and 3, at pg. 6.

As of June 2022, the Building Management Office's planned actions for reentry included:

PBS recommends the modernization of the unrenovated side of the building... This construction work is needed as a long term solution if the building were to ever return to full occupancy to ensure ventilation that is in accordance with industry standards.

PBS continues to implement mitigating actions to reduce the risk of COVID-19 exposure in the unrenovated Wings 0 and 3 but has not yet achieved a solution for the underlying ventilation issues causing the need for mitigating actions.

Conclusion

GSA management knew of the ventilation systems deficiencies in the unrenovated Wings 0 and 3 of the Headquarters Building years ago, but failed to address the issues or communicate the severity of the ventilation systems' deficiencies before or during the COVID-19 pandemic to the occupants of the Wings 0 and 3. Instead, PBS identified mitigation actions to reduce the risk of COVID-19 exposure in Wings 0 and 3. GSA's failure to fix, upgrade, or install functioning ventilation systems in Wings 0 and 3 means that the agency cannot achieve adequate ventilation and acceptable IAQ for occupants in those wings in accordance with ASHRAE standard 62.1. Additionally, because IAQ tests were conducted when the building was largely unoccupied, GSA does not have the most accurate information to identify IAQ problems or determine whether any mitigating actions can reduce the risk of exposure to COVID-19 in Wings 0 and 3.

Recommendations

The Public Buildings Service Commissioner should:

1. Continue to monitor IAQ in Wings 0 and 3 of the Headquarters Building, in accordance with the PBS Desk Guide.
2. Expeditiously notify Headquarters Building occupants of any IAQ results that do not meet ASHRAE standards.

Appendix 1: Objectives, Scope, and Methodology

On December 17, 2021, the Office of Inspections initiated an inspection to assess the potential impact of building occupancy in Wings 0 and 3 of the Headquarters Building on IAQ, ventilation, filtration, and circulation test results, and; to identify any actions GSA has taken, is taking, or plans to take, in implementing CDC and other guidance for a safe work environment to mitigate risks in these unrenovated areas. However, due to minimal building occupancy since March 2020 and testing, we were unable to assess the impact of building occupancy in Wings 0 and 3. To accomplish our objectives, we:

- Researched, reviewed, and identified Federal and GSA guidance for IAQ, ventilation, filtration, and circulation;
- Inspected the AHU's and window air conditioning units and mitigation actions taken at 1800 F Street Northwest, Washington, D.C., on three separate dates between February and April 2022;
- Interviewed personnel from PBS, PBS NCR, OAS, and GSA Contractors; and
- Reviewed and analyzed IAQ and ventilation testing from January 2018 through June 2022.

This evaluation was conducted in accordance with the *Quality Standards for Inspection and Evaluation* (January 2012), issued by the Council of the Inspectors General on Integrity and Efficiency.

Appendix 2: Management Comments

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Public Buildings Service

NOVEMBER 21, 2022

MEMORANDUM FOR: PATRICIA D. SHEEHAN
ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS
(JE)

FROM: FOR NINA M. ALBERT
COMMISSIONER
PUBLIC BUILDINGS SERVICE (P)

A handwritten signature in blue ink, appearing to read "Nina M. Albert".

SUBJECT: Response to the Office of Inspector General Draft Audit
Report entitled Ventilation Issues Persist in Unrenovated
Wings of GSA Headquarters Building, JEF22-002-000,
(October 28, 2022)

The U.S. General Services Administration's (GSA) Public Buildings Service (PBS) appreciates the opportunity to review and comment on the subject audit report from the Office of Inspector General (OIG). PBS agrees with the two recommendations set forth in the report and has already begun implementing controls, processes, projects, and tools to address these recommendations.

In advance of your final report, we would like to take this opportunity to make you aware of several action items that have been implemented or are in the planning stages to include:

Completed Actions:

- Portable HEPA filters were installed in the OIG space in September 2022.
- The Childcare Center air handling unit (AHU) replacement was completed in May 2022 and the space is achieving the ASHRAE 62.1 standard.
- A bird deterrent project was completed in July 2022 to keep birds away from the window air conditioning units on the unrenovated side of the building. This measure was undertaken to reduce the potential of an individual inhaling hazardous matter from birds.
- In May 2022, AHUs #57, #58, and #62 located in the mechanical room G319 that service the ground floor were rebuilt, reinstalled, and are now operable.
- In May 2022, repairs were made to three of the four dead air zones identified by the OIG in the subject report to correct heating ventilation and air conditioning

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(HVAC) deficiencies. The fourth location, Room 6340, was taken off the BookIt reservation system by OAS as it is no longer occupied by the tenant.

- In April 2022, PBS made repairs and alterations to address the ventilation in Room 1004 of the Childcare Center. The space was assessed to determine occupancy based on ASHRAE 62.1 standards. The maximum occupancy allowed for the space is fourteen persons. The Childcare Center's Program Coordinator was advised, and signage posted.
- In March 2022, thirty-three window air conditioning units were installed as needed. All units are cleaned and receive preventative maintenance on a quarterly basis.
- In February 2022, dust in the return grilles - on the 1st Floor, Wing 0 - as identified by the OIG, were cleaned. Cleaning will continue quarterly and/or as needed.
- In November 2021, the Office of Administrative Services (OAS) shared the decision to not allow any workplace reservations in the BookIt system anywhere within the unrenovated portions of the building.
- When the CDC guidance was issued in June of 2021, the building's operation and maintenance contractor explored using higher rated MERV filters. However, the higher MERV rating hindered the functionality of the existing AHUs. The filters currently in use are at the highest possible MERV rating that still allows for functionality, as indicated in the article provided by the CDC, "Guidance for Building Operations During the COVID-19 Pandemic." (<https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.html>).

Ongoing and Future Actions:

- Ongoing carbon dioxide (CO2), temperature, and relative humidity monitoring will continue in the 0 and 3 Wings in occupied areas until HVAC deficiencies are corrected.
- PBS will continue to work with OAS to reduce occupancy in the 0 and 3 wings as much as possible.
- In July 2022, a project was awarded to the operations and maintenance (O&M) vendor to install inline fans into the existing restroom exhaust systems. Project completion is expected by January 2023.
- A contract for a central cooling system for the Childcare Center was awarded in April 2022 to eliminate the need for the existing window air conditioning units and to introduce additional cooling, filtration, and controls. Project completion is expected by June 2023.

- Due to potential deficiencies identified in the ventilation system servicing the unrenovated portions of 1800 F Street building, a mechanical engineering ventilation study was commissioned with Summer Consultants, a third-party vendor (final report dated December 22, 2021). This study identified specific ventilation deficiencies and outlined five ventilation alternatives. PBS is considering the alternatives that have been identified as a means to bring additional fresh air into the unrenovated side of the building.
- Diverters were installed on all window air conditioning units (completed December 2, 2021), to minimize the horizontal movement of pathogens (i.e., COVID) in the workplace. A full diverter inspection was completed on November 04, 2022, to identify the malfunctioning diverters from the draft report. Given the failure rate, a replacement plexiglass baffle prototype has been identified and will replace the existing diverters. The new baffles will be installed in the occupied space by November 18, 2022. The new baffles will be installed in the unoccupied space by December 15, 2022. The baffles will be inspected daily while performing cleaning inspections and performing tours of the building.
- Public Buildings Service National Capital Region (PBS NCR) started CO2 data-logging on October 20, 2021. The data-logging was initiated to establish baseline CO2 levels and monitor those levels as occupancy increased at 1800 F. The CO2 data-logging was intended to be a means of tracking the efficacy of the ventilation system servicing the unrenovated areas of the 1800 F Street building. In addition to CO2, the data-loggers also record temperature and humidity levels. These readings have varied extensively since the unrenovated wing is almost entirely unoccupied and a large majority of the data-loggers are placed in closed private offices. The above referenced third party data logging has yielded no CO2 levels above ASHRAE guidelines. Ongoing CO2 data-logging will continue until HVAC deficiencies are permanently addressed.
- In order to mitigate occupant indoor air quality (IAQ) concerns, PBS NCR is currently scheduling a comprehensive baseline IAQ test of the entire unrenovated portion of the 1800 F Street building. This IAQ testing will include the parameters referenced in the PBS IAQ Desktop Guideline, IAQ Order 1000.8. Testing will include temperature, humidity, carbon monoxide, CO2, formaldehyde, and asbestos in the air. Additionally, a visual inspection will be conducted for any suspected mold growth and moisture screening of building components. Based on the findings of the IAQ testing, interim corrective measures will be implemented as needed. Once the recommended HVAC improvements are completed, to bring the unrenovated portions of the 1800 F Street building into compliance with ASHRAE 62.1, another comprehensive re-occupancy IAQ test will be conducted following the same parameters referenced above.

Thank you for the opportunity to provide a response to the draft report. If you have any questions, please contact Shauna Carter, Director, Office of Facilities Management at shauna.carter@gsa.gov or 202-302-2140.



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