NARA 1571, Archival Storage Standards

Effective Date: January 17, 2023

Transmittal Memo

DATE: January 17, 2023

SUBJECT: NARA 1571, Archival Storage Standards

TO: Office Heads, Staff Directors, and OIG

Purpose: This transmits an updated policy on the structural, environmental control, fire safety, preservation, and security standards for archival storage in NARA facilities.

Background/significant changes: Updates include revised guidance on acceptable relative humidity ranges, pollutant levels, security requirements, responsible program areas, and supplement references to related NARA Directives. Requirements pertaining to the storage standards for NARA archival facilities and the appraisal of NARA holdings are provided in Supplements 1, 2, 3 to this directive. Supplement 4 has the bibliography of sources. Architecture and Design Standards for Presidential Libraries, previously issued as Supplement 1, has been renumbered as Supplement 5 to NARA 1571 but otherwise remains unchanged.

Available forms: None

Cancelled policy: NARA 1571, Archival Storage Standards, dated February 15, 2002.

Related policies:

- NARA 211, Exit Inspections of Property at NARA
- NARA 260, Food and Drink Near Archival and Records Center Holdings
- NARA 1561, Records Emergency Preparedness and Recovery in NARA Facilities
- NARA 1562, Integrated Pest Management (IPM) Requirements for NARA Holdings
- NARA 1571 Supplement 1, Storage Standards for Archival Facilities

- NARA 1571 Supplement 2, Temperature, Relative Humidity and Air Pollutant Tables
- NARA 1571 Supplement 3, Determining the Significance of NARA Holdings
- NARA 1571 Supplement 4, Bibliography
- NARA 1571 Supplement 5, Architecture and Design Standards for Presidential Libraries
- NARA 1572, Preventing Theft and Vandalism of NARA Holdings in NARA Facilities
- NARA 1573, Preservation, Security, and Transportation Standards for Exhibition of Original NARA Holdings
- 36 CFR Part 1234, Facility Standards for Records Storage Facilities

Effective date: This policy is effective upon signature.

Contact information: For questions on this policy, please contact Allison Olson, Director of Preservation Programs at (301) 837-0678 or by email.

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Deputy Archivist of the United States

Policy

1571.1 Policy

a. NARA is responsible for the preservation of records and other documentary material in its custody. The agency protects its holdings by establishing and implementing structural, environmental control, fire safety, preservation, and security standards for appropriate archival storage in its archival facilities, in accordance with its authority to design, maintain, operate, protect, and improve facilities used by NARA for archival storage.

b. Appropriate storage physically protects records and slows chemical deterioration. Careful attention to the design and operation of archival facilities is a cost-effective strategy to facilitate access to the records for as long as needed with limited conservation treatment intervention.

c. This policy provides guidance to records custodians at archival facilities on carrying out their responsibility to preserve NARA holdings.

d. NARA considers the following key factors when determining the applicable archival storage standards for NARA holdings:
    1. Significance of holdings, when the standards in NARA 1571 cannot be implemented. See Supplement 3 to NARA 1571 for guidance on how to determine the significance of holdings;
    2. Material sensitivities: recognizing that different materials react in different ways to agents of deterioration;
    3. Expected lifetime of holdings: the amount of time the usable life of collections can be prolonged through preservation measures; and
    4. Impact on the energy use and level of energy efficiency at a particular facility.
e. "Archival facilities" include:
    1. NARA-owned or -leased facilities used to store archival holdings;
    2. GSA-owned or -leased facilities used by NARA to store archival holdings;
    3. Presidential Libraries acquired by agreement in accordance with 44 U.S.C. 2112(a)(1)(B)(i); and
    4. Affiliated Archives, as defined in NARA 1501.3(b).
f. "Holdings Areas" are those where records and artifacts can be kept for extended periods and have special environments, security, and handling requirements, and include holdings storage rooms, designated processing areas, exhibit areas, and preservation (conservation, duplication, microfilm, digital imaging) laboratories.
g. Requirements pertaining to the storage standards for archival facilities, architectural and design standards for NARA Presidential Libraries, and the appraisal of NARA holdings are provided in supplements to this directive.

1571.2 Scope and Applicability

a. This policy applies to the storage of all archival records and holdings in NARA's legal and/or physical custody at archival facilities, all of which will be referred to herein as "NARA holdings" in this policy. Examples of NARA holdings include:
    1. Records, as defined in 44 U.S.C. 3301 ("books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics");
    2. Historical materials, as defined in 44 U.S.C. 2101(2), including artifacts, artwork, and other museum holdings, and assassination records as defined in 44 U.S.C. 2107;
    3. Presidential records, as defined in 44 U.S.C. 2201(2), that are in the physical and/or legal custody of NARA;

4. Supreme Court records and the records of Congress deposited in NARA's physical custody.

b. New space leased for archival programs on a short-term basis while a permanent archival facility is being built or renovated must meet these standards to the extent feasible and financially practicable. In all cases, new space leased on a short-term basis must meet the facility standards for storage of permanent Federal records specified in 36 CFR 1234.

c. If an archival facility cannot be brought into conformance with every standard in this policy, the affected program office determines the needed mitigating action that will be taken to minimize threats to the holdings. RX and the Executive for Business Support Services will provide technical advice and consultation with the program office on mitigating action. Mitigating actions must be approved by the Chief Operating Officer (COO).

d. Research Services will serve as the affected program office for the Affiliated Archives.

1571.3 Responsibilities

In addition to the authorities delegated in NARA 101, NARA Organization and Delegation of Authority, the following responsibilities are assigned in order to effectively implement this policy.

a. **Real Property Planning Division** (BR)

   1. Coordinates planning for NARA archival records storage development in GSA and commercially leased facilities; and

   2. Coordinates development of building requirements and provides project liaison for new and upgraded GSA and leased records storage facilities.

b. **Space Planning and Projects** (BFS)

   1. Conducts periodic building condition surveys of NARA-owned facilities as outlined in Supplement 1, paragraph r, which starts with "Frequency of building condition surveys conducted at NARA-owned facilities". BFS also assists program offices in establishing and maintaining a system-wide facility improvement and renovation program;

   2. In coordination with other NARA offices, establishes architectural and design standards for NARA-owned facilities;

   3. Furnishes professional and technical advice to NARA project managers and local NARA managers on the design and construction of NARA archival facilities that the latter are responsible for. That advice includes building requirements for GSA and commercially leased storage facilities;

4. Acts as project manager for NARA archival facility design and construction projects.

c. **Preservation Programs** (RX)

1. Coordinates the development and implementation of NARA archival storage standards and policies;
2. Provides technical advice and consultant services on preservation storage requirements to Research Services (R), Federal Records Center Program (AF), Office of Presidential Libraries (LP), Legislative Archives (LL), and Business Support Services (B);
3. Reviews design and construction plans for archival storage facilities for preservation standards and best practices;
4. Provides specifications, testing, and approval of construction, finishing, and other materials that will come into contact with holdings or could affect the archival storage environment or exhibition of original NARA holdings (e.g. paint, adhesives and finishes, carpeting, pesticides, and cleaning supplies);
5. Develops holdings-based environmental monitoring programs for storage, work, and exhibition areas; evaluates environmental conditions in these areas; and advises facility and records storage managers on maintaining preservation environments. As used herein, the "records storage manager" is the onsite manager at a NARA Field Office or Offsite Archival Storage facility for the NARA program area controlling the space where the archival records are stored;
6. Identifies facility or environmental conditions at existing archival facilities that do not support long-term preservation of NARA holdings and discusses mitigation strategies with the appropriate program office, facility staff, and B;
7. Coordinates Records Emergency and Integrated Pest Management Program planning;
8. Undertakes Preservation Reviews of NARA-owned and -leased records storage facilities to identify high-level preservation risks and potential mitigation strategies; and
9. Provides documentation and advice on facility condition, maintenance, and other risk management issues for lease renewal projects.

d. **Research Services (R), Legislative Archives, Presidential Libraries, and Museum Services (L), and Agency Services (A)** implement policy, procedures, and management controls as required by this policy and related supplements and directives, and develop specific guidance as needed to address internal operating procedures within the office programs.

e. **Presidential Library Directors** administer the day-to-day facilities management program of the library in coordination with LP, holdings preservation programs in

consultation with LP and RX, and major renovation and restoration projects in coordination with LP and B, and in consultation with RX on projects affecting NARA holdings or holdings areas.

f. **Research Services Field Archives Directors and Agency Services Federal Records Center Directors at FRC facilities with physical custody of accessioned archival records** are the designated archival storage managers at those facilities. They manage holdings areas, implement environmental monitoring programs, and collaborate with RX on preservation concerns.

g. **Field Support Officers** (BQ) provide administration services for Archives Field Office and Federal Records Center facilities and liaise with GSA, building owners, and contractors during facility development and renovation projects, and then ongoing operations, including response to maintenance problems and issues with storage environments.

h. **Security Management** (BX) coordinates physical and operational security requirements for holdings storage facilities.

i. **Facilities and Property Services** (BFF) is responsible for the day-to-day facility management program of the National Archives Building (AI) and the National Archives at College Park (AII).

j. **Holdings Protection and Recovery** (CH) advises other NARA offices concerning the security of materials on exhibit or loan, and conducts announced and unannounced verification and compliance inspections to mitigate internal and external threats by improving oversight, surveillance, and access controls to holdings.

k. **Chief Operating Officer** (COO) approves mitigating actions to reduce any outstanding risks associated with the inability to fully comply with a standard due to, for example, structural restraints in an existing building or prohibitive costs required to renovate an existing storage facility or to construct new archival storage.

l. **Chief of Management and Administration** ensures economical, effective, and accountable operation of NARA administrative and management functions, provides strategic direction for facility management, and oversees systems for internal controls and evaluation of strategic risks.

m. **Custodial units** are NARA archival and museum staff who have and provide high levels of knowledge about the holdings in NARA's physical or legal custody, including their media and format, relative values, national significance, access restrictions (classified national security information or other statutory or regulatory restrictions, and privacy). Custodial units help approve and implement the holdings storage practices described in the supplement. Custodial units assess the significance of holdings in their custody, when needed.

1571.4 Authorities

a. 44 U.S.C. 2109, which makes the Archivist of the United States responsible for the preservation of records or other documentary material transferred to the Archivist's legal custody. Appropriate storage conditions are essential for preserving archival records.

b. 44 U.S.C. 2112 and 2903, which make the Archivist responsible for custody, control and operation of certain buildings, land, and space.

c. 44 U.S.C. 2112(a)(2), which requires the Archivist to promulgate architectural and design standards for new and existing Presidential Libraries.

1571.5 Releasability

Unlimited. This directive is approved for public release.

1571.6 Records management

Records created in following this directive are primarily covered by the following items in the NARA Records Schedule:

- Building Design and Construction Records, file numbers 610 and 611
- Records Storage and Security Files, file number 1442-2
- Environmental Condition Report - file number 1438
- Environmental Condition Operating Records - file number 632
- Preservation Project Case Files including preservation reviews - file number 1436
- Some operational and administrative records are covered by General Records Schedule items.

Due to the complexity, and the potential permanent value of some of these records, consult with Corporate Records Management before implementing records disposition.

Supplement 1- Storage Standards for Archival Facilities

Effective Date: January 17, 2023

a. **Design and structural standards applicable to archival facilities in addition to regulatory standards pursuant to 36 CFR 1234.**

1. Facilities must be designed in accordance with the applicable national, regional, state, or local building codes (whichever is most stringent) and applicable federal regulations to provide protection from building progressive collapse or failure of essential equipment from earthquake hazards, wind speed hazards, hurricanes, and other potential natural and manmade disasters. Holdings storage units, exhibit cases, and other containers housing NARA archival holdings must be secured to prevent collapse.
2. When authorized to construct or alter buildings, NARA will give due consideration to local codes in accordance with 40 U.S.C. § 3312. NARA is under no obligation to conform to state or local laws, regulations, and codes, except with respect to local codes relating to earthquake hazards, wind speed hazards, hurricanes, and other potential natural and manmade disasters as specified directly above.
3. The plans for the facility or renovation project must be reviewed by RX at each submission stage, and RX must be involved throughout the development and construction process. Plans must also be reviewed by the program office or custodial unit that will store archival holdings in the space.
4. The facility must be constructed with non-combustible materials and building elements, including roofs, walls, columns, and floors.
5. Fire resistance-rated firewalls and supporting construction must be independent of other structural building elements, so that they remain intact with complete building collapse. The location of firewalls must allow for a continuous wall assembly from exterior wall to exterior wall, and from the ground slab through the roof structure (e.g., parapet). Holdings storage rooms, which serve as dedicated holdings space for permanent storage, must also be protected. Specific fire resistance rating for firewalls or fire barriers must be designed to protect the holdings storage rooms as follows:

    a. Between adjacent holdings storage rooms - four-hour rating.
    b. Between holdings storage rooms and adjacent spaces, and between processing rooms and adjacent spaces - two-hour rating.
6. Facility fire protection systems and structural systems must be designed by a licensed fire protection engineer and a licensed structural engineer to avoid catastrophic failure of the structure due to an uncontrolled fire on one or more levels.
7. A floor load limit must be established for the holdings storage room by a licensed structural engineer. The limit must take into consideration the weight of the specific type(s) of archival records to be stored, height and type of the shelving or storage equipment, the width of the aisles, the configuration of the space, etc. The allowable load limit must be posted in a conspicuous place and must not be exceeded.
8. The building envelope must be designed to limit outside air exchange. Circulation of outside air and make-up air must be achieved through a deliberate system. Intake air must be integrated into the return side of the HVAC system serving holdings storage rooms, undergoing the same filtration and climate conditioning as the re-circulated air.
9. A continuous air barrier must be installed as part of the entire exterior wall and roof construction of the facility, including appropriate flashing at all transitions between materials and building systems and all penetrations in the exterior enclosure. All operable penetrations in the building envelope such as doors and windows must be fitted with seals and weather stripping to minimize air and pest infiltration.
10. The building must be designed to accommodate NARA environmental requirements in a highly energy efficient manner following Guiding Principles for Sustainable Federal Buildings created by the Office of Energy Efficiency & Renewable Energy.
11. The building envelope must be moisture tolerant, allowing the relative humidity standards to be maintained without damage to the structure. This is a particular concern for facilities in a cold climate.
12. Vapor barriers must be installed between any two areas that have different humidity and temperature requirements. Within the building envelope, areas for storing, processing, and displaying holdings must be separated from other parts of the building by a non-permeable air barrier. The holdings storage

rooms must be provided with sufficient insulation to support the required level of relative humidity and temperature. NARA requires the following minimum building envelope insulation requirements. Where the local or national code exceeds these minimum requirement values, use the most extensive local or national code.

a. Minimum roof insulation standard is R-30.

b. Minimum wall insulation standard is R-19.

13. Vestibules must be considered as a means to stabilize the environment in holdings storage rooms. The processing room can serve as a vestibule to the holdings storage room. Doorways, duct runs, sprinkler runs, and all other penetrations in holdings storage room must be well-sealed as appropriate to limit the flow of air in and out of the room.

b. **Standards necessary to protect holdings against water damage**
All standards must be applied in accordance with national, state, or local building codes, whichever is the most stringent.

1. **Location of facility.** The facility must be sited a minimum of five feet above and 100 feet away from any current 100-year flood plain area, or be protected by an appropriate flood wall that conforms to local or regional building codes.

2. **Roof.** The facility design must ensure that the roof membrane does not permit water to penetrate the roof. Equipment must be mounted with sufficient roof clearance to allow future replacement of the roof without the need for disconnecting or removing the equipment.

    a. Major HVAC equipment must not be mounted directly above holdings areas. Roof penetrations are prohibited over holdings storage rooms, processing rooms, and exhibit galleries.

        i. Small fans and vents can be roof mounted but must not be located over any holdings areas.

        ii. To allow future replacement of the roof without the need for disconnecting or removing the equipment, any equipment mounted on the roof must be panned and drained.

    b. Avoid roof penetrations, including vents, over holdings areas. Local codes may require automatic roof vents designed solely to vent in the case of a fire. During cold weather, there is a risk of condensation on metal components of these vents because of the humidity requirements in holdings storage rooms. Extra caution is required to

ensure these vents are properly sealed and insulated to avoid condensation and water damage to the holdings.

c. Do not install windows, skylights, or sloped glazed windows in areas where holdings are stored, processed, or displayed.

3. **Piping**

    a. Do not run piping (except fire protection sprinkler piping) through or directly above holdings storage rooms, research rooms, processing rooms, exhibit galleries, or any other area where holdings are routinely present. The term “Research room” as used herein shall refer to a secure room where researchers may use original holdings and which require researcher identification cards for entry.)

    b. Mechanical rooms and mechanical equipment, including water tanks and cooling towers, must not be located over any holdings storage, processing, or research rooms, or exhibit galleries. When major equipment is located adjacent to holdings storage, special precautions must be taken to guard against water infiltration. These measures may include drain pans, recessed floors, raised areas, water detection systems, and sump pumps.

    c. If drainage piping from roof drains in existing buildings runs through holding storage rooms, the piping must be run to the nearest vertical riser and must include a continuous seamless gutter sized and installed beneath the lateral runs to prevent leakage into the records storage room. Vertical pipe risers in records storage rooms should be fully enclosed by shaft construction with appropriate maintenance access panels.

    d. No fountains, pools, or standing water are allowed over or adjacent to areas where holdings are stored, processed, used, or exhibited.

    e. All pipes must be tested and found to be watertight prior to concealment in walls, floors, or false ceilings.

4. **Location of holdings within the NARA Archival Facility**

    a. Do not store holdings below grade, adjacent to water sources, or in any locations vulnerable to water infiltration, such as below gardens, parking lots, plazas, driveways, or roadways where traffic can impact the integrity of the roofing system and cause leakage or moisture infiltration into storage rooms.

b. Cave/underground facilities may be exempted from the requirement for above-ground storage if the facilities meet the other standards in this directive.

c. Store records at least three inches from the floor.

d. If storing records along an exterior wall, maintain clearance between the wall and records to prevent condensation and facilitate inspection and cleaning.

e. Holdings must not block vents or returns. This requirement will necessitate coordination between the HVAC system(s) design and the layout of storage furniture.

f. The location of ductwork throughout storage and exhibit galleries must be designed to meet the required environmental conditions while providing the maximum amount of usable space.

g. If holdings are stored on the shelving canopy, they must be housed in closed-lid containers and otherwise protected from water. NARA's testing has shown a shelving canopy protects holdings from water damage in the case of sprinkler, roof, and other leaks, and distributes sprinkler discharge more efficiently in the case of fire.

c. **General heating, ventilation, and air conditioning (HVAC) requirements**

1. Holdings storage rooms must be served by dedicated HVAC system(s) that are separate from those serving the remainder of the facility. The system(s) may be stand-alone units or fully integrated systems. All other areas of the building may share the same HVAC system(s), although certain areas may require additional controls.

2. Air handling units serving holdings areas must provide sufficient air exchanges and mixing to maintain requirements for temperature, relative humidity, pollutant control, and positive pressure. The system should be designed and operated following ASHRAE Standard 62.1 - 2016, Ventilation for Acceptable Indoor Air Quality. Occupant density values for holdings areas must be based on consultation with NARA, not default values.

3. Redundant equipment such as fans, heating and cooling coils, humidification supply, dehumidification systems, pumps, and controls should be considered for holdings storage rooms in order to maintain conditions during maintenance or equipment failures. One hundred percent redundancy in air

handler units provided by one additional unit or with load transfers from non-holdings areas should be considered.

4. Air handling units and other mechanical units must not be located within the holdings storage and processing rooms. Exceptions include certain stand-alone designs that must be approved by B. Cooling coils and associated fans may be located within the cold storage room(s). However, the remaining mechanical components must be placed outside of the cold storage room.
5. To reduce intake of pollutants and to maintain temperature and humidity levels, holdings storage rooms must be kept under positive air pressure, especially in the areas adjacent to the loading dock. Loading docks must have an air supply and exhaust system that is separate from the remainder of the facility. Some spaces in the building, including the loading dock, exhibit production rooms, and areas where food is prepared, must be kept under negative pressure in relation to adjacent spaces.
6. Areas where holdings are used, processed, stored, or exhibited must be isolated from sources of pollutants and particulates, such as the loading dock, machine rooms, food preparation areas, or rooms where woodworking or painting takes place. Doors to the holdings areas must not open directly onto the loading dock, machine rooms, locations where woodworking or painting takes place, or other similar areas. The air intakes and returns for such locations must have direct venting to the outdoors and must be designed such that lower quality air and environment cannot affect the holdings areas.
7. To prevent the introduction of contaminants in the supply air, all outside air intake grills/louvers must be located at least 12 feet above the ground level and away from sources of external pollution, including areas of vehicular traffic, loading docks, and where automobiles, buses, and trucks idle.

d. **Requirements for pre- and post-occupancy testing for environmental conditions in holdings areas**

1. The HVAC system must undergo a pre-occupancy purge sufficient to test all systems and to remove construction dust from the ductwork and system components.
2. Systems serving holdings areas should be operable and tested before the required aeration period, which is running the HVAC system with the filtration systems on a continuous basis for at least four weeks prior to moving holdings

into the building. This will allow the system to be monitored and any necessary adjustments to be made prior to holdings exposure.

3. The mechanical contractor for the project must be retained for 12 months after NARA accepts the building or project, and with the design engineer, must make any adjustment necessary to maintain the environmental requirements established for the project.

4. For maximum energy efficiency, the HVAC system needs to be balanced after the holdings are shelved. The humidity buffering capacity of the holdings should also be considered. “Buffering capacity” refers to the time needed for holdings in containers to equilibrate with the temperature and relative humidity of the storage space. The buffering capacity of large volumes of cellulose-based materials is maximized at low air exchange rates.

e. **Temperature and relative humidity conditions appropriate for the preservation of holdings**

1. The environmental conditions set out for NARA holdings takes into account: the expected holdings lifetime to be achieved, the materials and structures of holdings and their sensitivity to changes in temperature and relative humidity, as well as energy efficiency, local climate, and the significance of the records and national security classified records. In general, cooler temperatures and drier relative humidity conditions effectively extend the useful life of the holdings.

2. **Supplement 2, Table 1** sets out the permissible upper and lower temperature and relative humidity conditions in areas where holdings are stored, processed, exhibited, and used. Fluctuation between these upper and lower limits is acceptable. (See **Supplement 2, Table 1, Temperature and Relative Humidity**)

3. “Seasonal drift” describes the slow and gradual changes in the targeted indoor temperatures of holdings storage rooms that allow for closer alignment with outside temperatures. Drift benefits the energy efficiency of NARA facilities and may be used in actual operation of the general building systems(s) to reconcile energy efficiency and the external climate. For example, during the winter, storage rooms can be heated and humidified at the lower limits in Supplement 2, Table 1. Because lower temperatures provide enhanced preservation benefits, the additional cost and resources needed to heat a storage room to a

higher allowable temperature or to maintain a flat line condition has no preservation benefit.

4. When required storage conditions specified in Supplement 2, Table 1 are not available, the Custodial Unit must consider significance of the holdings, sensitivity of the materials, and practical considerations when determining storage locations. Holdings with higher significance and/or higher sensitivity have higher priority for required storage conditions.

5. Outdoor air design criteria must be based on weather data tabulated in the latest edition of the ASHRAE Handbook of Fundamentals. Winter design conditions must be based on the 99% column dry-bulb temperature in the ASHRAE table. Summer design conditions must be based on the 2.5% column dry-bulb temperature with its corresponding mean coincident wet-bulb temperature. In holdings areas that require temperature and relative humidity to be maintained to close tolerances, cooling loads must be based on the 1% column dry-bulb temperature with its corresponding mean coincident wet-bulb temperature.

f. **Requirements for monitoring and reporting environmental data**

Environmental monitoring data and reporting provides the critical evidence needed to optimize preservation environments. Archived data from the building management system that operates the HVAC equipment and from independent data loggers documenting the actual room conditions is required. NARA facility staff and RX must regularly review environmental data to identify concerns. When targeted conditions are not being met, appropriate actions will vary according to building ownership and lease provisions and management.

1. **Building Management System**

    a. Temperature and relative humidity sensors, thermostats, and humidistats controlling the HVAC system must be located inside the spaces, not only within the return ducts. Depending on the size of the room and the configuration of the systems, multiple sensors may be required in a single room in order to maintain NARA requirements. When multiple sensors are used, data should be averaged for reporting and control.

    b. The outdoor temperature and relative humidity must also be monitored.

c. The sensitivity of sensors must be at least within 2° F and 2% relative humidity.

d. Twelve months of temperature and humidity data from the HVAC control systems must be maintained and made available upon request by RX for review. Trend data for the previous five years should be archived and similarly available for review. The temperature and humidity data should be recorded at least hourly.

e. Facility managers in NARA-owned facilities must maintain the HVAC systems and integrated monitoring equipment according to manufacturer's specifications. The NARA facility manager or Field Support Officer is responsible for reviewing building management data and, in consultation with RX, for coordinating responses when conditions are not maintained.

2. **Preservation Monitors**
   Independent room monitoring using a separate system of data loggers according to RX guidelines is required in addition to the HVAC control systems.
   a. Temperature and relative humidity conditions in holdings areas must be monitored in a sufficient number of locations and recorded at regular intervals.

   b. NARA facility and custodial units are responsible for implementing the independent environmental monitoring program and inputting data quarterly.

   c. When conditions are not being maintained, consult with RX to determine the potential preservation impact on the holdings and to discuss any needed mitigation strategies.

g. **Limits for air pollutants: particulates and gasses**
   Externally and internally generated pollutants can cause paper and photographic materials to become brittle and contribute to fading and yellowing, and contribute to corrosion of some artifacts. Particulates in the form of dust or other matter is abrasive and will damage the surface of most materials, particularly film-based and magnetic media and certain artifacts. Gaseous pollutants can build up in enclosed spaces such as exhibition cases and storage containers. The strategy outlined below focuses on evaluating, monitoring, and mitigating the risks from specific air pollutants that pose the most significant risks to most NARA holdings. **Supplement 2, Table 2** lists the allowable concentrations for specific air pollutants.

1. **Pollutant Testing**
    a. Baseline gaseous pollutant testing using passive monitors according to RX guidelines is required to determine levels of gaseous pollutants in holdings areas. Selection of monitors will consider geographic factors (e.g., seasonal changes in outdoor pollutant levels), building-scale variables (e.g., street-level air intakes exposed to more vehicle pollutants compared to upper-level intakes), and the holdings in particular rooms (e.g. sensitivities that depend on material type, age, etc.). Results will be reported to RX.

    b. For areas where the pollutant levels exceed the limits in Supplement 2, Table 2, a mitigation strategy will be developed in consultation with RX and facility staff. This strategy might involve inspection of filter installation, replacement of spent filters, relocation of problematic materials (e.g., severely degraded acetate films), or other measures. Holding-level monitoring down to the container level may be used to identify the mitigation strategy. Follow-up monitoring will evaluate the success of the mitigation steps.

    c. The NARA facility manager or Field Support Officer is responsible for ensuring that particulate and gas filtration systems are maintained according to manufacturer's specifications and ameliorating problems as they develop. Ongoing issues with filtration systems should be reported to RX.

h. **Required filtration systems**

1. Gas-phase and particulate filtration systems are required in any air handling unit serving the holdings storage spaces.
    a. Both the return air and make-up air must be filtered.

    b. The gas-phase filter must be located before the final particulate filter.

    c. Filters must be easy to access and change.

    d. For new construction, an aeration time of at least four weeks running the HVAC system with the filtration systems on a continuous basis before holdings are moved into the space must be built into the project schedule.
2. **Gas-phase filtration system.** The filtration system may be a combination of chemisorption, adsorption, and/or catalytic processes. The system must be

designed to allow access to detectors for periodic monitoring upstream and downstream of the filters to evaluate performance.

3. **Particulate filtration system.** The particulate filtration system for archival holdings storage must have a Minimum Efficiency Reporting Rating (MERV) of 14 or greater based on ASHRAE 52.2, "Methods of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size." To extend the service life of the system, it may be desirable to install preliminary filters with lower MERV ratings. A pressure drop measurement system or other equipment must be provided to determine when the filters need to be changed.

i. **Required humidity control systems**

1. The air handling units serving holdings areas must be designed for dehumidification and humidification.
    a. Dehumidification may be provided through reheat of cooled air or desiccant dehumidification systems.
    b. Humidification must be achieved by a clean steam injection system (such as an electronic steam humidifier) or equivalent system located downstream of the filtration system.
2. The water source to humidification units must remove salts and other chemicals dissolved or carried by the water. Acceptable filtration systems include reverse osmosis and deionization.
3. Failsafe systems to ensure that relative humidity in holdings areas does not exceed those specified in Supplement 2, Table 1 are required. There must be a humidistat downstream from the humidifier that detects excessive humidity and shuts the humidifier down rather than relying on the humidity sensors in the space.
4. Humidification units and water supplies and drains must be designed to prevent any water leakage or overflow. The design of the system, including condensate drainage, must ensure that the system does not generate or harbor microorganisms.
5. Humidifiers must be installed with 100% of the make-up air capacity in the base unit and 100% capacity in the zone ducts. Monitors and alarms must alert staff to over-production of humidity or a leak in water supply lines.
6. Humidifiers must be on the supply side of the unit and must be sized based on the intended design parameters.

7. The humidifier must be in a stainless steel duct section and must include a drain section to remove any moisture that condenses out of the air. Recovery of condensate water for reuse is encouraged.

j. **General requirements for archival storage shelving**

1. A shelving plan that provides appropriate storage for the size and quantity of holdings and artifacts and that facilitates storage procedures that protect holdings while allowing efficient storage and access must be developed in consultation with RX. The storage plan must specify specialized shelving or adjustments to standard shelving for oversized or non-textual holdings, artifacts, and other holdings that cannot be stored safely or efficiently in standard archival configurations.
2. Storage shelving, as appropriate to the need, may be either fixed (static) type or electrically operated compact mobile type.
3. Only all-steel storage shelving is acceptable for archival storage. Storage shelving must have a powder-coated surface finish using a dry powder epoxy coated finish or best equivalent available that passes NARA-conducted or independent lab tests for hardness, coating stability, bending, coating adhesion, coating durability, and off-gassing limits. Powder coating must not be applied to metal surfaces onsite in the holdings storage room. For certain specialized artifact storage units, aluminum may be acceptable.
4. The shelving must be installed, braced, and otherwise secured to prevent deflection, lean, or collapse under full load during normal use. In addition, installed shelving systems, including compact mobile shelving, must be laterally braced against seismic forces, as required by the International Building Code (IBC) and applicable local building code, either through top bracing or rotational restraint at the base.
5. All shelves should be adjustable at a maximum of 1 ½-inch height intervals, with dimensions to accommodate the size and number of storage boxes indicated on the storage plan.

k. **The construction and finish of materials that may be used in holdings areas**

1. NARA must approve all materials affecting the air quality in holdings areas and exhibit cases. NARA may test or direct the testing of materials to assess suitability and document approval. Sufficient time to undertake testing must be incorporated into planning and construction schedules. Materials such as

paint, varnishes, caulks, and adhesives that can emit volatile organic compounds (VOCs) are of particular concern.

2. Information on products proposed for use in holdings areas, including the specific product name, manufacturer, material safety data sheet, and intended use, must be submitted to RX for review. Initial selection of no- or low-VOC emitting materials is advised and will increase the likelihood that a product is approved for use in holdings areas.
3. The following materials are known to off-gas harmful pollutants and are prohibited from use in holdings storage rooms, including exhibit cases that will display original holdings.
    a. Cellulose nitrate lacquers and adhesives
    b. Cellulose diacetate fabrics
    c. Polyurethane products, especially foams and carpet pads, but including most polyurethane paints and varnishes
    d. Oil-based and alkyd resin paints and varnishes, and oil-based caulks and glazing compounds
    e. Latex paint that is based on vinyl acrylic, or styrene acrylic latex. Acrylic latex is generally acceptable
    f. Acid-curing silicone sealants and adhesives or similar products that emit acetic acid during cure
    g. Products that release ammonia during cure
    h. Sulfur containing materials that could release SO2 such as natural and synthetic sulfur vulcanized rubber, animal glue, wool, sulfur-based dyes, and disodium phosphate fire retardant treatments
    i. Most pressure-sensitive adhesives and contact cements and adhesives
    j. Polyvinyl chlorine polymers (PVCs)
    k. Formaldehyde-emitting compounds, especially urea-formaldehyde, such as might be found in particleboard, interior-grade plywood, and formaldehyde-finished fabrics and wall coverings
    l. Woods, such as oak, known to have high acid content and any wood or wood product that is not encapsulated to prevent off-gassing
    m. Vinyl tile

n. Amine based products

o. Biocides

p. Cellulose acetate containing fabrics and films

q. Unsealed concrete, due to its production of fine particulate, alkaline dust

r. Self-leveling floor compound

4. Ensure that all surfaces, including concrete, stone, and similar porous materials, do not produce dust, grit, or particulate matter by sealing the surfaces with an appropriate approved material.
5. Use a no- or low-volatile organic compound (VOC) acrylic membrane curing material for exposed concrete, stone, and similar floors in holdings areas; after which, apply an approved low- or no-VOC floor epoxy on floor surfaces. Inorganic sealants that are no- or low-VOC, especially those based upon sodium silicates, can also be used to finish concrete, stone, and similar floors.
6. Use a water-based acrylic latex paint to seal walls and ceilings. Consider special coatings to seal exposed rock surfaces in underground holdings storage rooms to prevent release of dust and rock debris.
7. If ceiling pipe or exterior stack wall metal panels on shelving are to be painted, use an acrylic water reducible primer covered by two latex paint coats.
8. Wood products including particleboard, pressboard, and similar wood composite panels must not be used inside holdings storage or processing rooms or be exposed to the air space within exhibit display cases.
9. A minimum aeration time for off-gassing of new construction materials prevents an accumulation of pollutants from building up in rooms and enclosed exhibit cases.
    a. Four weeks between the time construction in holdings storage rooms is completed and holdings are moved into the rooms is recommended and should be built into the schedule.

    b. Newly constructed or renovated exhibit casework must be completed four weeks before installation of holdings. During this period, keep exhibit cases open to dissipate chemical off-gassing from exhibit case components. Do not install NARA holdings in casework if there is a discernible smell indicating off-gassing chemicals. Consult RX for guidance.

l. **Light exposure guidance**

1. All sources of natural and artificial light can cause damage to holdings such as fading and chemical degradation that affects the mechanical properties of materials. Light damage is cumulative and proportional to exposure and can be reduced by limiting the levels and/or the duration of light exposure. Acceptable visible lighting levels will depend on the sensitivity of the holdings and length of exposure. UV light should be eliminated or minimized.
2. Occupancy sensors, user activated lighting, or other methods that activate lighting only when a user is present are preferred in holdings storage rooms and may be used to extend the length of an exhibition while complying with the specified exhibit time for an individual holding and provide additional energy efficiency.
3. Natural light must be excluded from holdings storage rooms and exhibition galleries. If windows exist in any research, processing, or lab areas, use black-out curtains, scrims and filters, or other barriers or techniques to meet the requirements for visible, ultraviolet, and infrared radiation.
4. A separate low-intensity maintenance lighting system for cleaning and a low intensity lighting system for security are recommended for exhibition galleries.
5. Light must be monitored to determine the visible light levels and the amount of ultraviolet radiation falling on holdings. Measure light intensity at the same angle and in the same plane as the surface of the holding.
6. **Holdings areas**
    a. Light levels in holdings storage rooms are required to be within 200–500 lux measured 36 inches above the floor level.
    b. Light levels in processing, research, preservation, conservation, digitization, and other areas where holdings are processed or used may be normal office level.
    c. When records are protected by a box, cabinet, or other enclosure, UV filtration is not required. The specification for UV radiation is 400 nanometers in wavelength in stacks when holdings are not protected by a box, cabinet or other enclosure.
7. **Exhibit areas**

a. Lighting must have the capability of full control for light levels 0–200 lux with holdings illuminated to the appropriate maximum levels as outlined in NARA 1573(A5).4.

b. UV filtration is required so that UV radiation below 400 nanometers in wavelength falling on any holding does not exceed 10µ W/lumen.

c. The visible light levels illuminating any holding and the length of time the holding is on display will be determined by the custodial units, in consultation with RX.

d. Choose lighting technologies that do not generate heat or dissipate the heat generated from lamps or their housings so that holdings are not exposed to temperatures above 75°F.

m. **General fire-safety requirements for NARA archival facilities**

1. NARA archival facilities must comply with requirements and recommended practices specified in NFPA 232-2017, Standard for the Protection of Records, unless a requirement in this directive is more stringent.

2. A water-type portable fire extinguisher should be located in holdings areas when required.

3. Do not install mechanical equipment containing motors rated in excess of 1 HP within holdings storage rooms.

4. Do not install high-voltage electrical distribution equipment (i.e., 13.2kv or higher switchgear and transformers) within holdings storage rooms.

5. Penetrations in the walls must not reduce the specified fire resistance ratings.

6. Provide a redundant source of primary electric service, such as a second primary service or an appropriately rated emergency generator to ensure continuous, dependable service to the fire alarm and fire protection systems. Manual switching between sources of service is acceptable.

n. **Smoke detection system requirements**

1. Holding areas must have an approved, supervised automatic smoke detection system providing full-building coverage. Smoke detection systems must meet the requirements of NFPA 72, National Fire Alarm Code, and must be maintained in accordance with NFPA 72, Part H.

2. Locate smoke detection devices to provide a 99% reliability of detecting the origin of the fire in less than 5 minutes. Use photoelectric-type detectors in holdings storage rooms.

o. **The requirements for automatic sprinklers**

1. All holdings storage and adjacent areas must be protected by a professionally designed automatic sprinkler system that is designed to limit the maximum anticipated loss from any single fire event to a maximum of 300 cubic feet of holdings destroyed. Sprinkler systems for holdings storage rooms must be separately zoned from other building areas.

2. A wet sprinkler system, installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, must be used except for in cold storage rooms as provided in subpar. c.

3. Clean agent systems that comply with NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems, pre-action sprinkler systems, or dry pendants must be used in cold-storage rooms and other areas subject to temperatures below 40°F, and may be used in holdings storage vaults and holdings storage rooms specifically designed for artifacts.

p. **Security requirements for NARA archival facilities**

1. The initial Facility Security Level (FSL) determination will be made as soon as practical in accordance with the Interagency Security Committee (ISC) Risk Management Process after the identification of a space requirement. The FSL determination ranges from a Level I (lowest risk) to Level V (highest risk). The determination should be made early enough in the space acquisition process to allow for the implementation of required countermeasures (or reconsideration of the acquisition caused by an inability to meet minimum physical security requirements). BX has the lead on making this determination.

2. The facility and designated storage areas and exhibit cases must have a centrally monitored anti-intrusion alarm system to protect against unauthorized entry.

3. The facility must enforce controls on access to the facility and all holdings storage rooms.

4. Special security measures may be required for holdings storage vaults to comply with national security information requirements or to protect materials of high intrinsic, monetary value or specially protected holdings.

5. BX will schedule compliance inspections of the facility based on the final FSL determination.

q. **Monitoring and maintaining the building conditions**
The NARA facility manager or Field Support Officer must ensure that:

1. Schedules are developed for maintenance and calibration of control system devices for all major building systems in accordance with manufacturers' recommendations;
2. Scheduled equipment maintenance is performed promptly; and
3. Schedules are reviewed and updated annually.

r. **Frequency of building condition surveys conducted at NARA-owned facilities**
To ensure that archival facilities subject to this directive meet the standards, BF should conduct (or contract for) building condition surveys according to the following schedule:

1. **New facilities.** Once before acceptance of a new archival facility, at two years, and again when 10 years old. After 10 years, follow the schedule for existing facilities. If any "punch-list" items are identified in the inspection before acceptance, BF must monitor correction/completion of those items.
2. **Existing facilities.** Every five years. When an existing facility is renovated or significantly modified, the five-year cycle begins again in the fiscal year following completion of the renovations or modifications. A pre-acceptance inspection is performed for building renovations. If any "punch-list" items are identified in the inspection before acceptance, BF must monitor correction/completion of those items.
3. RX reviews building condition surveys. Critical issues are reported during Preservation Reviews.

s. **Assessment of facility condition and maintenance at GSA- and commercially leased storage facilities**

1. Field Support Officers liaise with NARA lease managers, GSA, landlords, and their contractors to coordinate inspection and maintenance programs at each facility to identify and respond to problems.
2. RX consults with Field Support Officers and custodial units at the facilities during Preservation Reviews and after records emergency incidents to evaluate inspection and maintenance programs and risk management and reports significant issues.

Supplement 2: Temperature, Relative Humidity and Air Pollutant Tables

Effective Date: January 17, 2023

Table 1: Temperature and Relative Humidity Standards

Overall Temperature and Relative Humidity Guidelines

This guidance reflects research evidence of the effects of temperature and relative humidity on collection materials that supports moving away from set points towards bands. It also reflects research showing that different materials have different requirements, and past storage conditions a material was exposed to can affect its storage requirements for the future. The guidelines for temperature and relative humidity conditions balance long-term preservation of the holdings and energy efficiency.

The rates of chemical, biological, and physical deterioration increase as temperature and relative humidity increase; therefore, keeping holdings in a low temperature and moderate relative humidity environment is the most efficient and cost-effective way of prolonging the life of the holdings.

Very low temperatures are effective in slowing chemical degradation and should be maintained for highly sensitive materials. Acidic papers, magnetic media, and many films and plastics have a usable life of only decades if stored at temperatures at or above 70ºF.

Standard Storage: Low Sensitivity Holdings

Holdings not readily affected chemically and mechanically by higher temperatures, relative humidity, and pollution. Most papers, paper-based black-and-white photographs, polyester-based black-and-white film, ceramics, glass, and metals are examples of low-sensitivity holdings. It also includes holdings where cold storage does not increase the longevity of the holding, such as electronic and magnetic media, and may cause damage.

Cold Storage: High Sensitivity

Holdings highly affected by temperature and relative humidity and pollution. These include cellulose acetate photographic media, and color films, and color prints of high significance.

Specific microclimates (cases, sealed frames, special housings) may be required for some materials on exhibit and in storage. Materials might include parchment, some photographic holdings, ivory, organic composite artifacts, fragile bound volumes, and unstable metals. Items loaned from other institutions may require tighter relative humidity control depending on the loan agreements.

Location	Material Sensitivity: Types of holdings or media	Storage Temperature	Relative Humidity Range
Textual Holdings Storage (and Mixed Storage*)	*Low Sensitivity*		
Stacks, bays, or rooms where textual records are housed for long-term storage.	**Paper**: Textual records including bound volumes.	50 - 65° F	30 - 50%
Non-textual Holdings Storage	*Low Sensitivity*		
Stacks, bays, or rooms where non-textual records such as audiovisual media, microfilm, photo albums, and cartographic materials are housed for long-term storage.	Photographic: **black-and-white paper prints, polyester-based film material, glass plate negatives.** Color Prints*: **Cibachrome, Polaroid, and chromogenic** * To slow the rate of change it is recommended that color prints identified as significant should be kept in cold storage.	50 - 65° F	30 - 50%

	Paper: maps, plans, punch cards		
	Electronic Media: computer tapes and disks, optical disks, hard drives (These materials are included in low sensitivity, because cold storage does not increase their longevity and can cause damage to this type of holdings.)		
	Audio / Visual Media: video tapes, audio tapes, disk recordings, wire recordings (These materials are included in low sensitivity, because cold storage does not increase their longevity and can cause damage to this type of holdings.)		
Artifact Holdings Storage	***Low Sensitivity***		
Stacks, bays, or rooms where two- and three-dimensional artifacts are housed for long-term storage. Typically located in Presidential Libraries.	Ceramics, glass, stable metals, tanned leather, textiles, stable oil and acrylic paintings, furniture, watercolors, most modern books	50-65º F	30 - 50%
	Medium sensitivity		
	Untanned skin products, organic composite objects, flaking surfaces	50-65º F	40-50%

	High sensitivity		
	Parchment, ivory, lacquerware, unstable glass, unstable efflorescent ceramics, unstable iron and bronze, some plastics	Generally, 50-65° F. Some plastics may benefit from cold storage.	Specific microclimates created through use of conditioned silica gel in storage cabinets, cases, sealed frames, or special housings may be required for some high sensitivity artifacts
Cold storage	*High sensitivity*		
Stacks, bays, or rooms used to store sensitive media known to deteriorate rapidly at higher temperatures. Lower temperatures prevent deterioration of media in good condition and slow down existing autocatalytic decay.	**Cellulose acetate-based media:** motion picture and still picture film negatives, aerial film, x-rays, microfilms and microforms, vesicular microforms, slides, animation cells **Color:** still picture negatives and transparencies, and motion picture film **Plastics:** dependent on type of plastic and significance. Microclimates may also be considered. **Nitrate film:** has many storage requirements beyond temperature and humidity. Please contact RX if identified. To slow the rate of change it is recommended that color prints identified as significant should be kept in cold storage.	35° F Do not allow temperature to go below 32° F. This will prevent the accumulation of damaging moisture from micro-condensation that can occur during freeze – thaw cycles.	30-40%

Cold Storage Transition / Acclimation Room	***High sensitivity***		
Room used to slowly acclimate holdings stored in cold storage to higher temperatures before they are moved to processing or other rooms for use. Holdings remain in Acclimation Room 4 - 24 hours to prevent micro-condensation, according to RX guidance.		Dependent on dew point calculations. (consult with RX) For 35° F Cold Storage, Acclimation Room should be 50° F	30-50%
Frozen storage	***High sensitivity***		
Stacks, bays, rooms, and stand-alone freezers used to store sensitive media known to deteriorate rapidly at higher temperatures. Alternative to cold storage, especially for highly sensitive, highly significant, or deteriorated holdings.	Priority is given to deteriorated motion picture film.	<30º F Do not allow temperature to go above 32º F. This will prevent accumulation of damaging moisture from micro-condensation during freeze – thaw cycles.	30-40%
Frozen Storage Transition / Acclimation Room	***High sensitivity***		
Room used to slowly acclimate holdings stored in frozen storage to higher temperatures before		Dependent on dew point calculations.	30-40%

they are moved to processing or other rooms for use. Holdings remain in Acclimation Room for a period of time dependent on temperatures and material vulnerability to micro-condensation.			
Mixed Media Storage Rooms	***Mixed Sensitivity***		
Stacks, bays, or rooms used to store records that are predominately paper-based but which may have non-textual or artifact holdings interspersed.		50-65° F	30-50%
Holdings Work Rooms	***Mixed sensitivity***		
Rooms in which original records are processed, researched, digitized, conserved, or otherwise used. Includes designated processing, preservation, digitization, and research rooms.		50-75° F	30-55%
Exhibit Galleries or Areas	***Low and Medium Sensitivity***		

Rooms or spaces where holdings are displayed, typically in exhibition cases or frames, which meet preservation and security requirements outlined in NARA 1563.		50-75° F	30-55%
Exhibit Cases Displaying Original Holdings	***High sensitivity***		
Display cases or frames used to exhibit original holdings.		Specific microclimates created through use of conditioned silica gel cases, sealed frames, or housings may be required for some materials on exhibit. Items loaned from other institutions may require tighter RH control, depending on loan agreements.	Specific microclimates created through use of conditioned silica gel cases, sealed frames, or housings may be required for some materials on exhibit. Items loaned from other institutions may require tighter RH control, depending on loan agreements.

Table 2: Air Pollutant Thresholds for NARA Holdings Storage Rooms

This table lists the gaseous air pollutants that are the primary risks to NARA's paper-based, photographic, and audio-visual holdings. For these materials, experimental studies indicate that the listed pollutants can cause significant damage at low micrograms per cubic meter (µg/m3) concentrations over periods of a few years or decades. This risk to the bulk of holdings can be cost-effectively reduced at the room level by air filtration. Certain artifacts or groups of special materials may be more sensitive or affected by pollutants not listed. While room-level air filtration may assist in protecting these specific holdings, the use of microclimates and other protective measures is a more effective approach.

Outdoor Generated Pollutants	**Common Sources**	**Maximum Concentration After Air Filtration** **µg/m3:** micrograms per cubic meter **ppb:** parts per billion
Sulfur dioxide (SO2)	Coal combustion, industrial processes	5 µg/m3 or 1.9 ppb
Nitrogen dioxide (NO2)	Engine exhaust, power plants, industrial processes	5 µg/m3 or 2.6 ppb
Ozone	By-product of engine exhaust	5 µg/m3 or 2.5 ppb
Indoor Generated Pollutants		
Acetic acid	Cellulose acetate-based materials Paper Certain woods and wood-based products Cleaning products Adhesives during cure	250 µg/m3 or 100 ppb

Note: Degrading cellulose acetate film releases high levels of acetic acid. Nearby un-degraded film may absorb this vapor and catalyze new deterioration. In principle, air filtration to low µg/m3 acetic acid levels could reduce this risk, but this approach does not address the already-degrading film. Cold storage is a much more effective and cost-efficient preservation method for holdings at risk from acetate film degradation sometimes called “vinegar syndrome.” The 250 µg/m3 (100 ppb) concentration indicates the presence of severely deteriorating film.
Note: While ozone is listed as an outdoor pollutant, it may also be generated by some photocopiers and printers.
Note: Pollutant limits for exhibit cases and other types of microclimates are more restrictive. Upper limits are: sulfur dioxide 2.7 µg/m3 (1 ppb); formaldehyde 5.0 µg/m3 (4.0 ppb); acetic acid 10.0 µg/m3 (4.0 ppb)

Supplement 3 - Determining the Significance of NARA Holdings

Effective Date: January 17, 2023

1. The significance of NARA holdings and the sensitivity of the material may be taken into account when the standards in NARA 1571 and related Supplements cannot be feasibly implemented in an existing archival facility or when determining the applicable archival storage standards.
2. The significance of holdings usually at a series level guides decisions about the preservation, storage, access needs, processing, and digitization of records and is determined by an appraisal of characteristics after accessioning. Significance is evaluated along several dimensions that indicate how valuable the records are as sources of information, as artifacts, as evidence of government actions, as guarantors of individual rights, to ensure government accountability, and as continued value for understanding the actions of the government. Appraisal of significance weighs factors such as intrinsic value, evidential value, the nature of the government function and activity represented by the records, age, and historical importance. The results are generalized to three levels of significance: low, medium, and high.
3. Specific records within a series (items, files, volumes, etc.) may have high significance even though the series as a whole does not (this includes "specially protected holdings," which are unclassified or national security classified holdings to which extra physical, intellectual, and access controls are assigned because they bear exceptional intrinsic or monetary value and are therefore subject to heightened risk of theft or vandalism). When it is not possible or practical to treat specific records differently than the whole series, the whole series should be treated at the same level as the most significant records. An example where this is not the case is where highly significant items or files are separated as specially protected holdings.
4. Records with low significance have little or no intrinsic value, were the product of minor or routine government functions, and have limited informational or evidential value. These are often series created by functions in the course of administering a business process or a routine program such as providing individual entitlements, carrying out registrations (such as draft cards and passports), issuing licenses, or providing services. Other series held by NARA or published sources may contain the same amount of information. These records were usually created after 1900.
5. Moderately significant records may have low or limited value as artifacts, but contain important information about, or were produced as a result of, major government processes and functions. They provide evidence of the basis for substantive functions performed by a Federal agency, commission, or court, and possess evidentiary value for documenting policy formation and government decisions at leadership levels. The information contained in the records is generally considered to be unique to the records, with no other known sources having the same range and type of information or reflecting the way it is organized. Age may also be a factor, and records that otherwise may be considered of low significance could be designated as having moderate significance primarily because they date to a period when few records survived or before the National Archives was created. Generally, all records created

before 1900 should be considered as moderately or highly significant regardless of other characteristics.

6. Highly significant records have characteristics that are similar to moderately significant records, but the importance of the original physical copy of the record is as great as, or even greater than, the importance of the information contained. These records have either great intrinsic value as unique artifacts, association with significant historical events, or the nature of the original documents conveys important information that reproductions or other sources cannot convey. The records may be considered international or national historical icons or treasures, unique or irreplaceable, and have few peers, or they may be viewed as works of art in addition to sources of information. These records may also provide exceptional documentation of functions and activities at the highest levels of government. Handmade annotations by historic figures and great age (generally NARA holdings created before 1800) may be an important determinant of high significance independent of most other characteristics. Highly significant records often have a high monetary value and may be attractive targets for theft. Significant harm to the Federal Government would occur if these records were lost.

Example Archival Significance Worksheet

Purpose:

Use this worksheet to determine how significant a series of records are to assist in making decisions about storage, processing priorities, selection for digitization, and recommendations for reappraisal. Factors determining significance include research importance, level of use, and uniqueness. This worksheet is based on appraisal criteria in NARA 1441 and worksheets used by other cultural management organizations, such as the Smithsonian.
Limitations concerning level of use (#7):

- The amount that records have been used must be based on a fairly subjective assessment, considering knowledge of reference activity. At this time the amount of actual records use is not consistently recorded below the record group level. Recording researcher pull requests through an electronic pull request system would be needed to provide more accurate data on usage at and below the series level.
- Certain records may be regularly used by researchers yet only make up less than 1% of the whole series.
- Low use may be due to the use of surrogates (microfilm, digitized, etc.) in lieu of the original records.

- Low use may be due to restrictions on access and therefore may not indicate a lack of demand or interest in the records.

Step One: Identify the score for each of the following four factors, according to the criteria. Examples are included for each criterion to guide evaluation.

Factors	Description	Criteria
1. Intrinsic significance of the physical item	Evaluate the significance of the **physical item** apart from its content. • Is there any special symbolic significance of the physical item (e.g. the Constitution, Declaration, treaties)? • Is there an association with an important historical figure (a President), or landmark event (Brown vs. Board or Roe vs. Wade)? • Is the physical form important? Is it an artistic work or does it include artistic work? • Age-- does the material have significance because of great age-- for instance, making it scarce or providing rare insight into functions and activities? • Unique physical features	0- Records that have no, negligible, or undetermined physical significance. A reproduction could replace the original. Examples of such records might be • *Bankruptcy case files* • *Non-trial case files* • *Soil conservation documents, and etc.* 1- Records that have limited physical significance with minor intrinsic interest. However, a reproduction could replace the original. Examples of such records might be: • *Naturalization and passport records containing photographs* • *Indian School Student Case files* • *Military draft cards* 2- Records that have moderate significance due to an unusual physical form or shape that can't easily be reproduced. The physical form or shape provides some informational value about

		the document to the researchers (enhances the content for the researcher). Examples of such records might be: • *Railroad right-of-way maps* • *Ship drawings (minor drawings)* 3- Records that have high physical significance as a result of the association with historical events, persons, or age. • *Written opinions of the Supreme Court (Highest Court in the U.S. Government) or equivalent type Federal entity (FISC Court)* • *Documents signed by heads of cabinet departments and heads of other agencies* • *Age of the document, such as 17th and 18th century records. (And in some cases, certain 19th century records)* 4- Records that have exceptional physical significance. Perceived to be international or national/historical icons or treasures, irreplaceable, or having few peers. Examples of such records might be: • *Holograph documents associated with prominent historical*

		figures (such as the "Lincoln Telegrams"); • *A unique physical artifact that has an association with an important historical event, such as Mediterranean passports or the SS passports; Confederate currency;* • *Those with high monetary value, such as the first Batman comic book, Ansel Adams photographs, Brady glass plate negatives)* • *Treaties* • *Richard Nixon's resignation letter* • *Himmler document* • *Letters to Heads of State*
2. Government Significance of Content	Evaluate the overall importance of the records in **providing evidence of the substantive functions** performed by a creating agency or court. How significant is the content of the records for citizens or a branch of government to determine the reasons, or nature of governmental decisions, actions, or policies? How significant is the content for providing evidence of policy formation, governmental processes, deliberations, decisions, actions, and impact?	0- Records that have no, negligible, or undetermined significance. Reappraisal should be considered. 1- Records that have limited informational significance. Examples of such records might be: • *Bankruptcy Case Files,* • *Railroad Retirement board,* • *Interstate Commerce Commission Railroad Dockets,* • *Bituminous Coal Commission records*

		• *National Science Foundation Grant case files* 2- Records that have moderate significance due to the information value and possibly some evidentiary value. Examples of such records might be • *Civil works project files, such as Dam construction.* • *Records of formerly used defense sites.* • *U.S. Patent Case Files* • *Indian Claims Commission Records* 3- Records that have high significance as a result of key informational and evidentiary value. Examples of such records might be • *International Boundary Commission Records* • *Records of the Department of State* • *Department of Justice classification case files* • *Records about the Tuskegee Airman Study, Center for Disease Control:* • *Information on Looted Art from World War II.* • *Government Accountability Office*

		• *Records of hearings, testimony, etc. preceding major decisions.* 4. Records that have exceptional significance due to critical informational and/or evidentiary value. Significant harm to the Federal Government would occur if lost. Examples of such records might be: • *records of the FISC Court*
3. Historical Research significance of Content	Evaluate the overall importance of the records in **providing unique evidence of a historical event, topic, or persons.** How significant is the content of the records for providing information to researchers about important historical events, topics or persons?	1- Records that have limited historical significance. Examples of such records might be • *Land Grant Records* • *Environmental Impact Statements* • *Records of the Office of the Housing Expediter* 2- Records that have moderate significance due to the historical value. Examples of such records might be • *WW2 Naval shipyard records* • *Early records of the U.S. Mint* • *Records relating to Native Americans* 3. Records that have high historical significance. Examples of such records might be • *Central Files of the records of the Department of State*

		• *Policy files of cabinet departments and independent agencies:* • *Records concerning the Manhattan Project or Oak Ridge Lab* • *early TVA records* • *Army Command records such as General Subject Files* • *Related case files and other materials relating to Brown vs. Board of Education* • *Records of the Office of Strategic Services* 4. Records that have exceptional historical significance due to documentation of a major event, topic, or person. Examples of such records might be: • *Papers of the Continental Congress* • *Watergate Commission* • *JFK Assassination Records* • *September 11 Commission*
4. Rights and Interests Significance	Evaluate the overall **importance of the records as a source of unique information about subjects, events, processes, or individuals** regardless of historical significance. How significant is the content of the records for providing unique	0- Records that have no, negligible, or undetermined non-historical significance as a unique source of information about a subject, event, topics, or person. Reappraisal should be considered.

	non-historical information to researchers about subjects, events, processes, or individuals? Records with non-historical significance establish rights, provide important scientific or technical information, data or other information that furthers scientific research, genealogical information, or provide information used by students and educators for non-history educational purposes.	1- Records that have limited non-historical significance as a unique source of information about a subject, event, topics, or person. Examples of such records might be • *National Technical Information Service* • *Defense Technical Information Center* 2- Records that have moderate non-historical significance as a unique source of information about a subject, event, topics, or person. Examples of such records might be: • *Fishing Logs* • *Railroad Retirement Board Personnel files* • *Records of the Foreign Claims Settlement Commission of the United States* • *Japanese-American Reparation Act Claims Case files* • *Government Publications Office* 3. Records that have high non-historical significance as a unique source of information about a subject, event, topics, or person. Examples of such records might be: • *USCIS A-Files* • *Records of Naturalization*

		• *Official Military Personnel Files* • *War Relocation Authority Internee Case Files*

Step Two: Answer yes or no to questions 5-7

5. Uniqueness	Is the information contained in the records unique? • This is the only source of information. • The same information is not available in other NARA holdings. • The information is not available in other publicly available sources (published or not). • If other sources exist, this source provides additional information not found in any other source.	Yes No (not unique)
6. Usability of Records	Are the records physically usable in their current condition? • These records be provided to researchers. • The records are in a media type that can be used in its current format.	Yes No (not usable)
7. Level of Use (a)	Have these records been used in the past 10 years? Base this on actual or estimated researcher use of the records (see "limitations" above).	Yes No (no use)
(b)	If 7a is "yes", is all use limited to less than 10% of the series?	Yes (less than 10%) No
(c)	If 7a is "yes", has use averaged one or more times each year?	Yes (used one or more times per year) No

Enter amount of use, if an estimate is available. Indicate the period of the estimate (e.g., monthly, annually, over decade) _____

Guidance for Interpreting and using the results

Exceptional Significance: at least one category = 4
Highly Significant: at least one category = 3 and no score is higher than 3 in any category
Moderately Significant: no score is higher than 2 in any category
Low Significance: All categories = 0 or 1

Step 1 (questions 1-4) indicates the significance of records. For records scored “Highly Significant” or lower, the significance may be rated even lower if the records are not unique (question 5) and/or they are not physically usable in their current condition (question 6). The answers to step 2 (questions 5-7) should be used with significance to make recommendations about prioritizing processing actions, digitizing records, candidates for internal disposal, and relocating records.

Supplement 4- Bibliography

Effective Date: January 17, 2023

The research evidence supporting this directive and its supplements is drawn from the sources listed below.

Standards Publications

ISO: 1820 -2011 Imaging Materials – Reflection Prints – Storage Practices

ISO: 18933:2012 Imaging Materials – Magnetic Tape – Care and Handling for Extended Use

PAS: 198: 2012, Specification for Managing Environmental Conditions for Cultural Collections, British Standards Institute

NFPA: 232-2017 Standard for the Protection of Records

Temperature and Relative Humidity

ASHRAE (2007) ASHRAE Handbook, Chapter 21: "HVAC Applications, Museums, Galleries, Archives and Libraries. Atlanta, GA: American, Heating, Refrigerating and Air-Conditioning Engineers Inc, ASHRAE.

Bigourdan, J. L. (2006) "Stability of Acetate Film Base: Accelerated-Aging Data Revisited," *Journal of Imaging Science and Technology*, 50: 5 September/October 494-501.

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American Industrial Hygiene Association. (2017) Volatile Organic Compounds (VOC) Criteria for New Construction.
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Ligterink, F. and G. Di Pietro (2018) The limited impact of acetic acid in archives and libraries. Heritage Science, 6: 59.

Menart, E., G. de Bruin, and M. Strlič. (2014) Effects of NO2 and acetic acid on the stability of historic paper. *Cellulose* (21) 5: 3701-3713.

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Tétreault, Jean, A-L. Dupont, Paul Bégin, and Sabrina Paris. "The impact of volatile compounds released by paper on cellulose degradation in ambient hygrothermal conditions." *Polymer degradation and stability* 98, no. 9 (2013): 1827-1837.

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