

An Assessment of Potential Curation Facilities at the Hanford Site, Department of Energy



Technical Report No. 26



**US Army Corps
of Engineers®**
St. Louis District

**Mandatory Center of Expertise for
the Curation and Management of
Archaeological Collections**

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An Assessment of Potential Curation Facilities at the Hanford Site, Department of Energy

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Series Editors

Prepared for the
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Richland Operation Office
Hanford Site

U.S. Army Corps of Engineers, St. Louis District
Mandatory Center of Expertise for the Curation and Management
of Archaeological Collections

Archaeological Curation-Needs Assessments
Technical Report No. 26

2000

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Executive Summary

Background

The Department of Energy (DOE) is responsible for the management of archaeological and historical resources that are located on and recovered from DOE-owned or maintained lands. As mandated by federal law, DOE is required to ensure that these materials and their associated records are properly curated in perpetuity. Unfortunately, funding shortfalls, lack of a consistent national policy, and a misunderstanding of the magnitude of the problem have prevented compliance. DOE collections are public property, the result of many years of archaeological research and the expenditure of millions of federal dollars. A federally funded cultural resource management program provides for the recovery of materials from archaeological sites, the analysis of recovered items, the publication and circulation of a final report, and the placement of collections in storage facilities for preservation, display, or future study. In the past, however, federal agencies gave little attention to the maintenance of collections. Through the years, most collections have been stored free of charge by universities and museums. Inadequate funding and failing facilities now seriously hinder the ability of these institutions to adequately care for archaeological materials and associated records.

In order for DOE to address its curation concerns, which includes compliance with cultural resource management legislation (e.g., 36 CFR Part 79) and adherence to a 1996 programmatic agreement between its Richland Operations Office (DOE-RL), the Washington State Historic Preservation Office, and the Advisory Council for Historic Preservation a scope-of-work was created between DOE-RL and the U.S. Army Corps of Engineers, St. Louis District to assess, in accordance to 36 CFR Part 79, 10 facilities on the Hanford site that could be used to house archaeological and cold war collections (Table 1). Fieldwork for the project was conducted during March and June of 2000.

Table 1.
Facilities Examined During Assessment of Potential Repositories

Building	Use
6652G	Military Barracks and Storage (nonradioactive materials)
6652H	Mess Hall
6652I	Administrative and Storage Facility
6652J	Military Barracks
6652L	Underground Storage Facility
6652M	Lavatory
747	Laboratory
309E	Plutonium Test Reactor
105B	B-Reactor
4826	Fuels and Materials Examination Facility

All inspections and evaluations conducted for this project included a building evaluation—evaluating structural adequacy, space use, environmental controls, security, fire detection and suppression, and pest management—for each potential repository for DOE-RL. Data collected through discussion and observation enabled an assessment of the repositories in accordance with 36 CFR Part 79. Additionally, a brief inspection of some of the Hanford collection was made to determine the total size, the present physical condition of the material, their containers, and the nature of the curation environment.

Findings

Status of Facilities

Five of the 10 buildings examined scored in the good-to-excellent range with respect to suitability as a curation repository (See Findings Summary for detailed explanation of the scoring process). Each of the repositories would need to undergo rehabilitation before being suitable for long-term curation. Systems and environmental controls would require reactivation and/or replacement and existing floor plans will require moderate to extensive reconfiguration.

Buildings 6652J, 4826, and 747 were given excellent ratings for repository potential. This rating stems from the fact that (1) there is a large amount of space in the facilities that could be easily redesigned to accommodate collections storage and office/laboratory space; (2) the buildings also possess items that could be reused for collections storage purposes (e.g., fume hoods and cabinetry); and (3) none of the buildings possess water damage and are not contaminated.

Buildings 6652G and 105B were given good ratings for repository potential. This rating stems from the fact that (1) both buildings possess a large amount of space that could be redesigned with moderate difficulty to accommodate collections storage and office/laboratory space; (2) the buildings do not possess much in the way of reusable items, and (3) there may be a radiation and/or other concerns for at least one facility (105B) that may affect collections management personnel who work in the facility (See Griffin and Sharpe 1999 for a discussion of this concern).

In addition to rehabilitation required for the structures, DOE-RL will also need to program funding for staff. A well-rounded staff, including collections management and curation personnel, will be of the utmost importance to the creation and maintenance of a well-executed curation program.

Status of Collections

In the course of the building evaluation there was also some time given to collection examination. Some observations are provided below that could be used to better approach the consistent and managed care of the Hanford collection. However, a more detailed curation-needs assessment of these collections would be required to more accurately identify positive or negative management patterns.

Archaeological collections are stored at the Pacific Northwest National Laboratory (PNNL) curation facility. The room holding the materials is in good condition and appears to be adequately maintained and staffed. Boxes for artifacts are archival and are stacked on movable shelving units and are adequately labeled. Secondary containers appear to be either 2- or 4-mil plastic bags with paper labels inserted for easy identification of the materials. Records are stored in standard filing cabinets and are organized by project.

Although not extensively examined the records might be in need of some management especially with respect to the creation of a finding aid and security copy.

A Cold War artifacts inventory is currently underway. Some of the collection that has already been identified and removed from its places of origin is being stored in the Energy Northwest curation facility, located on the Hanford site.

Cold War collections appear to be in a general disarray. A large portion of the materials observed is in need of better storage practices. For example, boxes holding the materials should be removed from the floor and placed on shelving units, thereby offering better protection to the material and aiding the inventory process by adding some organization and easier access to the materials. Those materials that are in boxes that have been damaged through compression should be placed in new boxes so as to limit any negative impacts to the material.

The building that currently holds the materials is substandard, even as an interim curation facility. The materials should be removed and placed in a more suitable and preferably larger area so that better maintenance of the materials can ensue.

It is important to note that the Cold War collection is currently being inventoried and assembled by CREHST (Columbia River Exhibition of History, Science and Technology) and that this task is still very much in progress. However, the following observations are offered to assist DOE-RL personnel to better approach and define the collections management tasks they currently face.

Recommendations

Based on the results of this examination DOE-RL should select a repository from the number of good or excellent facilities derived from the St. Louis District assessment. From observations made during the assessment and a purely collections-oriented stand point buildings 4826 and 747 have the highest ratings and offer the best overall floor plan for storage and easy access to the collections. Once a selection has been made, DOE-RL should consider consulting with an architect or architectural firm with museum and collections center design capabilities in order to plan and create the most efficient and cost effective plan for the curation facility. In the interim, DOE-RL should consider conducting a curation-needs assessment of the Hanford archaeological collections and, once assembled, of the Cold War collections in order to accurately address the needs of the materials. This

information would complement the design aspect by accurately listing infrastructure and collections management requirements for the collection, thereby effectively communicating these needs to the design team for inclusion within the curation facility.

Acknowledgments

We thank Dee Lloyd and Ellen Pendergast of the DOE-RL cultural resource program for their assistance with this project. In addition, the following individuals provided great time and effort to assist St. Louis District personnel in the completion of their work. For their assistance and contributions to this report, and to those not mentioned who may have assisted us in any way, we offer our whole-hearted gratitude.

6652 Complex

Bill Bjorklund

6652L

Roy Gephart

747 Laboratory Building

Steve Mattair

Plutonium Recycle Test Reactor

Bruce Cornwell

Fuels and Materials Examination Facility

James Ritter

Pacific Northwest National Laboratory

Darby Stapp

Columbia River Exhibition of History, Science and Technology

Connie Estep and Michelle Skinner

1

Introduction

The Department of Energy (DOE) is responsible for historic materials and accompanying documentation (hereafter referred to as historic collections) recovered from DOE-owned or maintained land. This responsibility is mandated through numerous pieces of legislative, including the Antiquities Act (16 U.S.C 431-433), the Historic Sites Act of 1935 (16 U.S.C. 461-467), the Reservoir Salvage Act of 1960 (16 U.S.C. 469-469c), the National Historic Preservation Act of 1966 (16 U.S.C. 470-470x-6), and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm). Executive Order 11593 (U.S. Code 1971) and amendments to the National Historic Preservation Act in 1980 provide additional protection for these resources.

Preservation of historic collections is detailed in 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. The Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq. [NAGPRA]), which was passed into law in 1990, requires federal agencies to identify Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony in their holdings and to establish an agreement to repatriate these remains and objects to Indian Tribes, Native Alaskans, or Native Hawaiian Organizations.

In July of 1996 a programmatic agreement (PA) to identify, evaluate, and treat buildings and historic and archaeological remains on the Hanford Site was signed by the Department of Energy, Richland Operations Office, the Washington State

Historic Preservation Office, and the Advisory Council for Historic Preservation. As part of the PA, DOE-RL developed a curation strategy, which addresses the collections being identified by focusing on a multifaceted approach to preserving Hanford history. Under this approach, DOE-RL would establish a curation center in a newly constructed building or through adaptive reuse and rehabilitation of an existing facility on the Hanford site.

Methods

In January 2000, DOE-RL contacted the U.S. Army Corps of Engineers, St. Louis District to discuss an assessment of ten facilities on the Hanford site that might be suitable for long-term curation of Hanford historic collections. A plan was developed by DOE-RL in consultation with the St. Louis District, to produce and evaluation of the potential repositories following guidelines in 36 CFR Part 79. The potential repositories selected by DOE-RL are: Nike Missile Defense Complex (6652G, H, I, J, and M); Nike Missile Base-Underground Storage Facility (6652L); 747 Laboratory Building; B-Reactor (105B), Plutonium recycle Test Reactor (309E); and the Fuels and Materials Examination Facility (4826). These facilities were visited and examined on March 14–16 and June 8, 2000.

A brief examination of portions of the Hanford collection was also made during the assessment trip in order to better understand the kinds of materials that will be stored at the repository.

Field Inspection and Assessments of Repositories

1. A building evaluation form—evaluating structural adequacy, space use, environmental controls, security, fire-detection and -suppression, and pest management—was completed for each potential repository for DOE-RL. Data collected through discussion and observation enabled an assessment of the repositories in accordance with 36 CFR Part 79.

2. An brief inspection of some of the Hanford collection was made to determine the total size, the present physical condition of the material, their containers, and the nature of the curation environment.

Report Preparation

A detailed written report of the results of the assessments is a requirement of the agreement between the St. Louis District and DOE-RL. This

report includes an evaluation of each of the selected potential repositories in terms of 36 CFR Part 79 as well as comments on the current curatorial conditions of the collections examined.

Chapter Synopsis

Chapters 2–7 describe the current condition of the potential repositories selected by DOE-RL cultural resource personnel. Each chapter consists of a detailed evaluation of each potential repository and recommendations for the use of the facility as a long-term curation repository. Chapter 8 is the findings summary for DOE-RL potential repositories examined in this report. It also provides limited observations made on the Hanford archaeological and Cold War collections.

The Hanford collection is very important to the history of the United States. Through its attempt to secure a suitable long-term curation facility DOE-RL has taken an important first step in stabilizing these irreplaceable resources.

2

Nike Missile Defense Complex (6652)

Date of Visit: March 14, 2000

Points of Contact: Dee Lloyd, Hanford Cultural Resource Manager; Bill Bjorklund, Building Manager

The H-52 Nike Missile Base is located on the Fitzner-Eberhardt Arid Lands Ecology Reserve (ALE) and was a strategic military installation during the early Cold War era. The complex was deactivated in the early 1960s. During the assessment for DOE-RL only certain buildings were evaluated. These include 6652G, 6652H, 6652I, 6652J, and 6652M. Data for each of these buildings are presented below. General photographs for each building are referenced in Figure 1.

Structural Adequacy

Building 6652G

The building was built in 1956 and served as a barracks building for personnel at the missile base and as storage for nonradioactive materials. It has a concrete slab foundation, concrete block exterior walls and a built-up asphalt roof, none of which have been observed leaking. All windows in the building have wooden frames and are locked with simple window locks. Some air was noted coming through the window frames. The ceilings are plaster in some parts of the building and suspended acoustical tile in others. Interior walls are wallboard, lighting is incandescent, and floors are concrete with tile atop. Asbestos is present throughout the facility. It is

not friable, however, and has not presented a problem to date.

Building 6652H

The building was built in 1956 and served as a mess hall for the missile base. After closure of the base it served as a laboratory for the ALE. It has a concrete slab foundation, concrete block exterior walls and a built-up asphalt roof. The roof has experienced several leaks over the years that has led to some moderate water damage. All windows in the building have wooden window frames and are locked with simple window locks. Some air was noted coming through the window frames. The ceilings are plaster in some parts of the building and suspended acoustical tile in others. Interior walls are wallboard, lighting is fluorescent, and floors are concrete with tile atop. Asbestos is present throughout the facility. It is not friable, however, and has not presented a problem to date.

Building 6652I

The building was built in 1955 and served as an administrative and storage facility for the missile base. After closure of the base it served as a laboratory for the ALE. It has a concrete slab foundation, concrete block exterior walls and a built-up asphalt roof. The roof has experienced several leaks over the years that has led to some severe water damage (e.g., standing water was noted throughout the building). All windows in the building have wooden window frames and are locked with simple window locks. Some air was

noted coming through the window frames. The ceilings are plaster in some parts of the building and suspended acoustical tile in others. Interior walls are wallboard, lighting is fluorescent, and floors are concrete with tile atop. Asbestos is present throughout the facility. It is not friable however and has not presented a problem to date.

Building 6652J

The building was built in 1955 and served as a barracks for military personnel at the missile base. After closure of the base it served for laboratory and storage purposes for the ALE. It has a concrete slab foundation, concrete block exterior walls and a built-up asphalt roof. Some minor water stains were noted on the ceiling. All windows in the building have wooden window frames and are locked with simple window locks. Some air was noted coming through the window frames. The ceilings are plaster in some parts of the building and suspended acoustical tile in others. Interior walls are wallboard, lighting is incandescent and fluorescent, and floors are concrete with tile atop. Asbestos is present throughout the facility. It is not friable however and has not presented a problem to date.

Building 6652M

The building was built in 1955 and served as a lavatory, shower, and change room for military personnel at the missile base. After closure of the base it served as a laboratory for the ALE. It has a concrete slab foundation, concrete block exterior walls and a built-up asphalt roof. The roof of this building has experienced major leaks that have caused the ceiling to begin to fall. All windows in the building have wooden window frames and are locked with simple window locks. Some air was noted coming through the window frames. The ceilings are plaster. Interior walls are wallboard, lighting is fluorescent, and floors are concrete with tile atop. Asbestos is present throughout the facility. It is not friable however and has not presented a problem to date.

Environment, Pest Management, Security, and Fire-Detection and -Suppression Systems

Building 6652G

The building is currently abandoned and as such all environmental controls have been suspended. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services have likewise been suspended and all fire-detection and -suppression devices have been shut down. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Building 6652H

The building is currently abandoned and as such all environmental controls have been suspended. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services have likewise been suspended and all fire-detection and -suppression devices have been shut down. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Building 6652I

The building is currently abandoned and as such all environmental controls have been suspended. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services have likewise been suspended and all fire-detection and -suppression devices have been shut down. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Building 6652J

The building is currently abandoned and as such all environmental controls have been suspended. There

is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services have likewise been suspended and all fire-detection and -suppression devices have been shut down. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Building 6652M

The building is currently abandoned and as such all environmental controls have been suspended. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services have likewise been suspended and all fire-detection and -suppression devices have been shut down. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Potential for Collection Storage

Building 6652G

A significant portion of the 6,600 ft² building is occupied by large open spaces that were used to accommodate sleeping quarters for missile base personnel. These areas are divided by thin walls that could be removed to form a single large compartment. This compartment could then be used to hold standard or compact shelving units for both artifacts and record collections. The compartment could be further subdivided to accommodate limited laboratory and office space.

The building would need to undergo extensive rehabilitation before it could be effectively used as a collections repository. All environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both

intrusion detection and deterrence. Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.

Building 6652H

This 3,800 ft² facility has several large rooms that used to serve as laboratories. These rooms could be rehabilitated to once again serve as laboratories for collection management. Many have existing cabinetry and fume hoods that could be reused once rehabilitated. Additionally, some of the laboratory space could be converted into limited storage areas. A connecting hallway between 6652H and 6652I could also be used for additional office and/or storage space.

Because these laboratories were used in conjunction with radioactive materials, requisite cleanup procedures would need to be enacted before any Hanford collections could be moved to the building. Additionally, any areas that have been impacted by water damage would need to be repaired. All environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-suppression and -detection systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence. Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.

Building 6652I

This 4,100 ft² facility has a good general floor plan with rooms that could be rehabilitated to serve as laboratories, offices, and collections storage. Many of the original laboratories have existing cabinetry and fume hoods that could be reused once rehabilitated. A connecting hallway between 6652H

and 6652I could also be used for additional office and/or storage space.

Because these laboratories were used in conjunction with radioactive materials, requisite cleanup procedures would need to be enacted before any Hanford collections could be moved to the building. Additionally, any areas that have been impacted by water damage would need to be repaired. Also all environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence. Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately protected.

Building 6652J

This 7,400 ft² facility has several large areas that once served as sleeping quarters for base personnel. These areas are similar to those noted in 6652G and could be easily modified to accommodate storage units for artifacts or records. Additionally, the large size and floor plan of this building also possess adequate space for offices and laboratories.

However, all environmental controls would have to be reinitiated or replaced completely and

pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence. Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.

Building 6652M

This 850 ft² facility is essentially a large rectangle that could be rehabilitated to hold storage units for collections, but space would be limited. Additionally, the severe water damage has begun to cause structural problems that are in need of repair.

However, all environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-suppression and -detection systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence. Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.



Building 6652I



Building 6652H



Building 6652M



Building 6652G

Plate 1. Interior or exterior views of buildings that are part of the 6652 Nike Missile Complex.



Building 6652J



Building 6652L

Figure 1. Interior or exterior views of buildings that are part of the 6652 Nike Missile Complex (Continued).

3

Nike Missile Base—Underground Storage Facility (6652L)

Date of Visit: March 14, 2000

Points of Contact: Dee Lloyd, Hanford Cultural Resource Manager; Roy Gephart, Building Manager

The H-52 Nike Missile Base underground storage facility is located on the Fitzner-Eberhardt Arid Lands Ecology Reserve and consists of two Nike missile magazines that, at one time, held 20 AJAX missiles. The facility, like the rest of the 6652 complex, was deactivated in the early 1960s. General photographs for this building are referenced in Figure 1.

Structural Adequacy

Building 6652L

The building was built in 1955 and served as an underground storage facility for Nike missile. After closure of the base it served as an emergency relocation center for use in the event of a nuclear attack. The only surface manifestations of the facility are two entrances that are set in cement and bounded by earthen mounds. The subsurface portion of the facility has a concrete slab foundation and concrete block exterior walls. The ceilings are suspended acoustical tile and there are no windows. Interior walls are concrete block, lighting is fluorescent, and floors are concrete or wood with tile atop or bare concrete in some areas.

Environment, Pest Management, Security, Fire-Detection and -Suppression Systems

The building is currently being used as a physics laboratory however, only the lighting and electrical systems are functioning. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial services are being conducted on an as-needed basis by laboratory personnel. Fire-detection and -suppression devices are currently still operable, but will be shut down in the near future. Security for the building consists of a locked gate located at the entrance to the ALE and controlled access into the building.

Potential for Collection Storage

Several large rooms within the building could be rehabilitated to hold storage units for collections, but because access to the interior of the building is limited (only steep staircases are available for entrance and exit) getting collections into the facility would be difficult.

However, all environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have

to be reactivated. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence.

Given the relatively isolated location of the missile complex adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.

4

747 Laboratory Building

Date of Visit: March 14, 2000

Points of Contact: Dee Lloyd, Hanford Cultural Resource Manager; Steve Mattair, Building Manager

Constructed in the 1950s, with additions made in the 1980s, this building has served primarily as office, laboratory, and warehouse space. It is located in downtown Richland a few blocks from the federal building. General photographs for this building are referenced in Figure 2.

Structural Adequacy

The building has a concrete slab foundation and brick exterior walls. The roof is flat and tar covered (the roof of the addition is metal). The ceilings are suspended acoustical tile and windows are aluminum framed and have some shades. They are secured with simple window locks. There has been some leaking from the roof, but none from the foundation or window frames. Interior walls are wallboard, lighting is fluorescent, and floors are wood with tile atop. Asbestos is present throughout the facility. It is not friable however and has not presented a problem to date.

Environment, Pest Management, Security, and Fire-Detection and -Suppression Systems

The building is currently abandoned and as such all environmental controls have been suspended. There

is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management and janitorial have likewise been suspended. Fire-detection and -suppression devices are turned off and security for the building consists of controlled access only.

Potential for Collection Storage

The large size (12,350 ft²) and floor plan of the building are suitable for a collections repository. There is space for offices and laboratories. In addition, there is a large warehouse-like section in the facility that would easily accommodate storage units for collections. Many of the original laboratories have existing cabinetry and fume hoods that could be reused once rehabilitated. The building also possess a roll-up door and loading dock for easy placement of collections. The location would also facilitate easy monitoring of the materials by Hanford personnel.

However, all environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. All asbestos would need to be removed or more fully encapsulated throughout the building. Fire-suppression and -detection systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence.



Figure 2. Interior and exterior views of Building 747.

5

Plutonium Recycle Test Reactor (309E)

Date of Visit: March 16, 2000

Points of Contact: Dee Lloyd, Hanford Cultural Resource Manager; Bruce Cornwell, Building Manager

Constructed in 1960 this building was a test reactor used in the production of plutonium. It has many rooms that were devoted to office space and laboratories. Additionally, there are a number of large computer rooms that housed some of the earliest computers used by the federal government. The reactor is built in to the main structure but is accessible only through specific locations. General photographs for this building are referenced in Figure 3.

Structural Adequacy

The building has a concrete slab foundation, concrete block exterior walls with aluminum siding (the reactor dome has concrete exterior walls) and a metal roof. Ceilings in 309E are suspended acoustical tile or, in some areas, are exposed to the insulation and piping systems. Windows are aluminum framed, have no shades, and are secured with simple window locks. No leaks from either the roof or foundation has been noted however some air was passing through the window frames. Also, some water has slipped through under doorways resulting in small areas of standing water in various portions of the building. Interior walls are wallboard, lighting is fluorescent, and floors are concrete with tile atop, in some areas, and exposed concrete in others. Asbestos is present throughout the facility. It is not friable, however, and has not presented a problem to date.

Environment, Pest Management, Security, and Fire-Detection and -Suppression Systems

The building is currently abandoned and as such all environmental controls have been suspended. Electrical systems are still on and lighting is available to the building. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management is conducted on a biannual basis, but janitorial services have been suspended. Fire-detection and -suppression systems are currently off line and security consists of controlled access only.

Potential for Collection Storage

The cavernous size of the building would offer ample space for office, laboratories, and storage. There is a roll-up door that could be used for easy placement of the collections within the building. There are also several laboratories with existing cabinetry that could be reused if needed. Cleanup procedures are underway in the reactor and would need to be completed prior to the arrival of any Hanford collections. Similarly, there are a number of areas in the lower levels of the building that are referred to as Fixed Radiation Areas, these areas would likewise need to be adequately maintained to ensure that collections personnel would be safe from exposure.

All environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. Standing water would need to be removed and safe guarded against. All asbestos would need to be removed or more fully

encapsulated throughout the building. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to include both intrusion detection and deterrence.

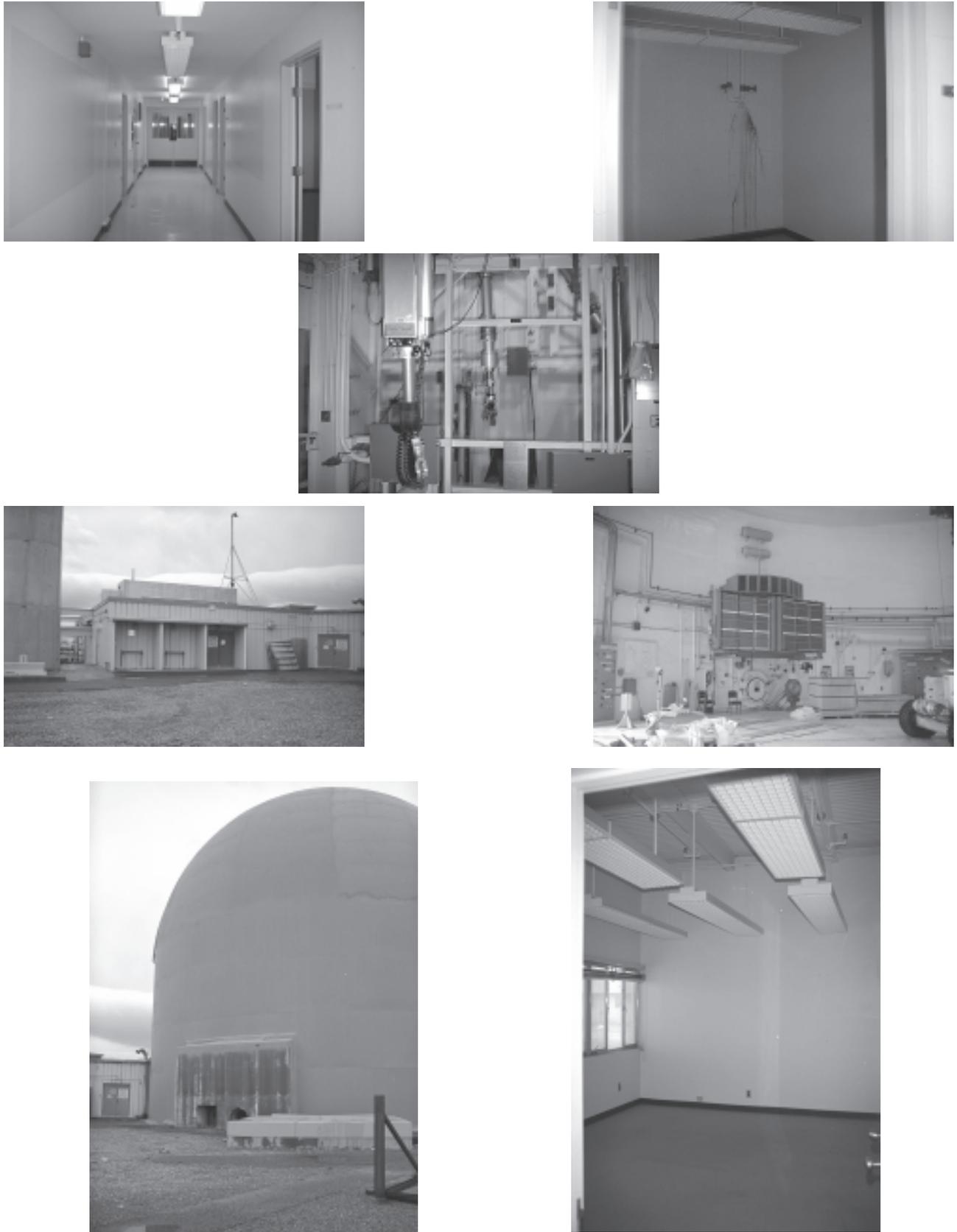


Figure 3. Interior and exterior views of Building 309E

6

B-Reactor (105B)

Date of Visit: March 16, 2000

Point of Contact: Dee Lloyd, Hanford Cultural Resource Manager

Constructed in 1943 this building was one of the first reactor to go online during World War II. This facility has recently received attention as the site of a museum for the Hanford site. A large area that is near to the reactor block is currently being used for displays that recount the history of Hanford. General photographs for this building are referenced in Figure 4.

Structural Adequacy

The building has a concrete slab foundation, concrete and transite exterior walls and a concrete and steel roof. Ceilings in 105B are steel panels throughout the building. Windows are steel framed, have no shades, and have been sealed. No leaks from either the roof or foundation has been noted however some of the old vents from the heating and cooling system have been leaking in the lower levels. Interior walls are plaster, lighting is fluorescent and incandescent, and floors are concrete. Asbestos is present throughout the facility but is not friable and has not been problematic to date.

Environment, Pest Management, Security, and Fire-Detection and -Suppression Systems

The building is currently abandoned and as such all environmental controls have been suspended. Electrical systems are still on and lighting is available to the building. There is no heat or air conditioning in the facility, although these systems were present and should still function if restarted. Pest management is conducted on a monthly basis, but janitorial services have been suspended. Fire-detection and -suppression systems are shut off and security consists controlled access only.

Potential for Collection Storage

The building has several rooms that would offer ample space for office, laboratories, and storage. Some, like the large Fan Room, could accommodate large storage units for different types of collections. Additionally, there are roll-up doors that could be used for easy placement of collections. Cleanup procedures have been completed however monitoring of the reactor continues (Griffin and Sharpe 1999). DOE-RL personnel would have to ensure that the facility is safe for collections personnel prior to the arrival of any Hanford collections.

All environmental controls would have to be reinitiated or replaced completely and pest management and janitorial services would have to be reactivated. Fire-detection and -suppression systems would have to be completely upgraded to fit current building codes and to comply with 36 CFR Part 79. Security would likewise need to be upgraded to

include both intrusion detection and deterrence. Given the relatively isolated location of reactor adequate planning for protection of the collections in terms of fire safety and theft would be called for to ensure that any collections stored at the repository would be adequately maintained.



Figure 4. Interior and exterior views of Building 105B.



Figure 4. Interior and exterior views of Building 105B (Continued).

7

Fuels and Materials Examination Facility (4826)

Date of Visit: June 8, 2000

Point(s) of Contact: Dee Lloyd, Hanford Cultural Resource Manager, James Ritter, Building Manager

Constructed in 1980 this building was one of the newest, most state-of-the-art facilities designed for use at the Hanford site. Currently the building is not used as its mission for Hanford has changed in the recent past and a suitable alternate use has not yet been defined. General photographs for this building are referenced in Figure 5.

Structural Adequacy

The building has a concrete slab foundation, concrete exterior walls and a built-up asphalt roof. Ceilings are suspended acoustical tile and windows are steel framed, have shades, and are sealed. No leaks from either the roof or foundation has been noted however some minor leaks have been noted from some vents. Interior walls are wallboard, lighting is fluorescent, and floors are concrete with tile or carpet atop. Asbestos is present throughout the facility but is not friable and has not been problematic to date.

Environment, Pest Management, Security, and Fire-Detection and -Suppression Systems

The building is currently abandoned and as such all environmental controls have been suspended.

Electrical systems are still on and lighting is available to the building. There heat is turned in the winter, there is no air conditioning during the summer. A cooling system is present and should still function if restarted. Pest management is conducted on an as-needed basis, but janitorial services have been suspended. Fire-detection and -suppression systems are functioning, however, all fire extinguishers have been removed. Security consists of controlled access only.

Potential for Collection Storage

The building has several rooms and large open spaces on the ground floor and on the mezzanine level that would offer ample space for office, laboratories, and storage. Additionally, there are roll-up doors that could be used for easy placement of collections and a large transfer bay complete with load-lifting equipment that could be converted into a dirty collection/processing laboratory area. All environmental controls would have to be reinitiated and pest management and janitorial services would have to be reactivated. Fire-detection and -suppression systems are currently on line, but the replacement of all fire extinguishers is required. Security measures would require reactivation.



Figure 5. Interior and exterior views of Building 4826.

8

Findings Summary

Buildings

Each of the facilities examined would need to undergo complete rehabilitation before being able to serve as a long-term curation facility for the Hanford collection. Table 2 summarizes observations made on the facilities in an effort to point to facilities that

appear to be best suited to serve as a collections center. Observations were given scores that, once added together, provided an overall score for the facility. The total number of points possible was 13, therefore facilities closer to 13 are those that would be better suited to serve as a collections center. Facilities with scores of 12 and higher were

Table 2.
Observation Scores for Each of the Assessed DOE-RL Facilities

Building	Size (ft ²)	Systems ¹	Access ²	Radioactivity ³	Damage ⁴	Reusable Items ⁵	Adaptable Floor plan ⁶	Repository Potential
6652G	6,600	none	2=fair	2=no	3=none	1=no	3=good	11=good
6652H	3,800	none	2=fair	1=yes	2=minor	2=yes	2=fair	9=poor
6652I	4,100	none	2=fair	1=yes	1=major	2=yes	2=fair	8=poor
6652J	7,400	none	2=fair	2=no	3=none	2=yes	3=good	12=excellent
6652M	850	none	2=fair	2=no	1=major	1=no	1=poor	7=poor
6652L	n/a	electrical	1=poor	2=no	3=none	1=no	1=poor	9=poor
747	12,350	none	3=good	2=no	3=none	2=yes	3=good	13=excellent
309E	n/a	electrical	3=good	1=yes	2=minor	2=yes	2=fair	10=fair
105B	n/a	electrical	3=good	1=yes	2=minor	2=yes	3=good	11=good
4826	250,000	electrical, fire	3=good	2=no	3=none	2=yes	3=good	13=excellent

1. Refers to systems that are still functioning within the facility. (Note all systems will need to undergo upgrading.)
2. Refers to the ability to easily bring collections in and out of the facility. A rating of good (total score=3) indicates the presence of roll-up doors and/or loading docks that would allow for easier placement of materials into the building. A rating of fair indicates that there are single or double doors that could accommodate collection entry but no loading dock or roll-up door to accommodate large numbers of boxes at one time (total score=2), and a rating of poor (total score=1) indicates the presence an entry that would not easily accommodate collections.
3. Refers to the presence of radiation within the facility (score for yes=1, score for no=2).
4. Indicates the level of damage that has occurred in the building (e.g., most of the damage observed was due to water). Major indicates that water damage was observed as contributing to the deterioration of the building (total score=1). Minor indicates that only small areas have been impacted by water or that only some standing water was observed in the building (total score=2). Both major and minor episodes would need attention.
5. Indicates that the building has existing cabinetry, fume hoods, or other accoutrements that could be reused for curation/collections management purposes (score for yes=2, score for no=1).
6. Indicates the adaptability of the existing floor plan to accommodate a collections center (score for good=3, score for fair=2, score for poor=1).

classified as **excellent**; 11=**good**, 10=**fair**, and 9 or lower=**poor**. Points were not assigned to the systems (e.g., electrical, heating, cooling etc.) observation since none of the facilities possess adequate systems. Likewise size was not scored because a total number of boxes to be placed within the repository was not yet available, however, this observation will become important once the inventory of the Hanford collection is complete.

It is important to understand that even though one facility may be better than another according to the observations noted below, none of the facilities currently comply with 36 CFR Part 79. This is mainly due to the nonfunctional status of the environmental controls and major systems for the building. In some cases, however this is extended to include damage to structures, either from water damage or disuse, that was observed.

Repository Potential

As noted previously, each of the repositories would need to undergo rehabilitation before being suitable for long-term curation. Systems and environmental controls would require reactivation and/or replacement and existing floor plans will require moderate to extensive reconfiguration. However, from Table 2 it is clear that some of the facilities appear more adaptable to collections storage than others.

Five buildings received scores of 11 or higher (good-to-excellent ratings) indicating that they would be the *most* suitable for a collections storage area.

1. Building 6652G was given a **good** rating for repository potential. This rating stems from the fact that (1) the building possesses a large amount of space that could be redesigned with *moderate* difficulty to accommodate collections storage and office/laboratory space; and (2) the building currently *does not possess* much in the way of reusable items. Figure 6 suggests some uses of the facility for collections storage.
2. Building 105B was given a **good** rating for repository potential. This rating stems from the fact that (1) the building possesses a large amount of space that could be redesigned with *moderate* difficulty to accommodate collections storage and office/laboratory space; (2) the building currently

does not possess much in the way of reusable items, and (3) there may be a radiation and/or other concerns that may affect collections management personnel who work in the facility. Figure 7 suggests some uses of the facility for collections storage.

3. Building 6652J was given an **excellent** rating for repository potential. This rating stems from the fact that (1) there is a large amount of space in the facility that could be *easily* redesigned to accommodate collections storage and office/laboratory space; (2) the building also *possesses* items that could be reused for collections storage purposes (e.g., fume hoods, and cabinetry); and (3) the building possess no water damage and is not contaminated. Figure 8 suggests some uses of the facility for collections storage.

4. Building 747 was given an **excellent** rating for repository potential. This rating stems from the fact that (1) there is a large amount of space in the facility that could be *easily* redesigned to accommodate collections storage and office/laboratory space; (2) the building also *possesses* items that could be reused for collections storage purposes (e.g., fume hoods, and cabinetry); and (3) the building possess no water damage and is not contaminated. Figure 9 suggests some uses of the facility for collections storage.

5. Building 4826 was given an **excellent** rating for repository potential. This rating stems from the fact that (1) there is a large amount of space in the facility that could be *easily* redesigned to accommodate collections storage and office/laboratory space; (2) the building also *possesses* items that could be reused for collections storage purposes (e.g., fume hoods, and cabinetry); and (3) the building possess no water damage and is not contaminated.

Collections

Current Collections Condition

In the course of the building evaluation there was also some time given to collection examination. Some observations are provided below that could be used to better approach the consistent and managed care of the Hanford collection. However, a more

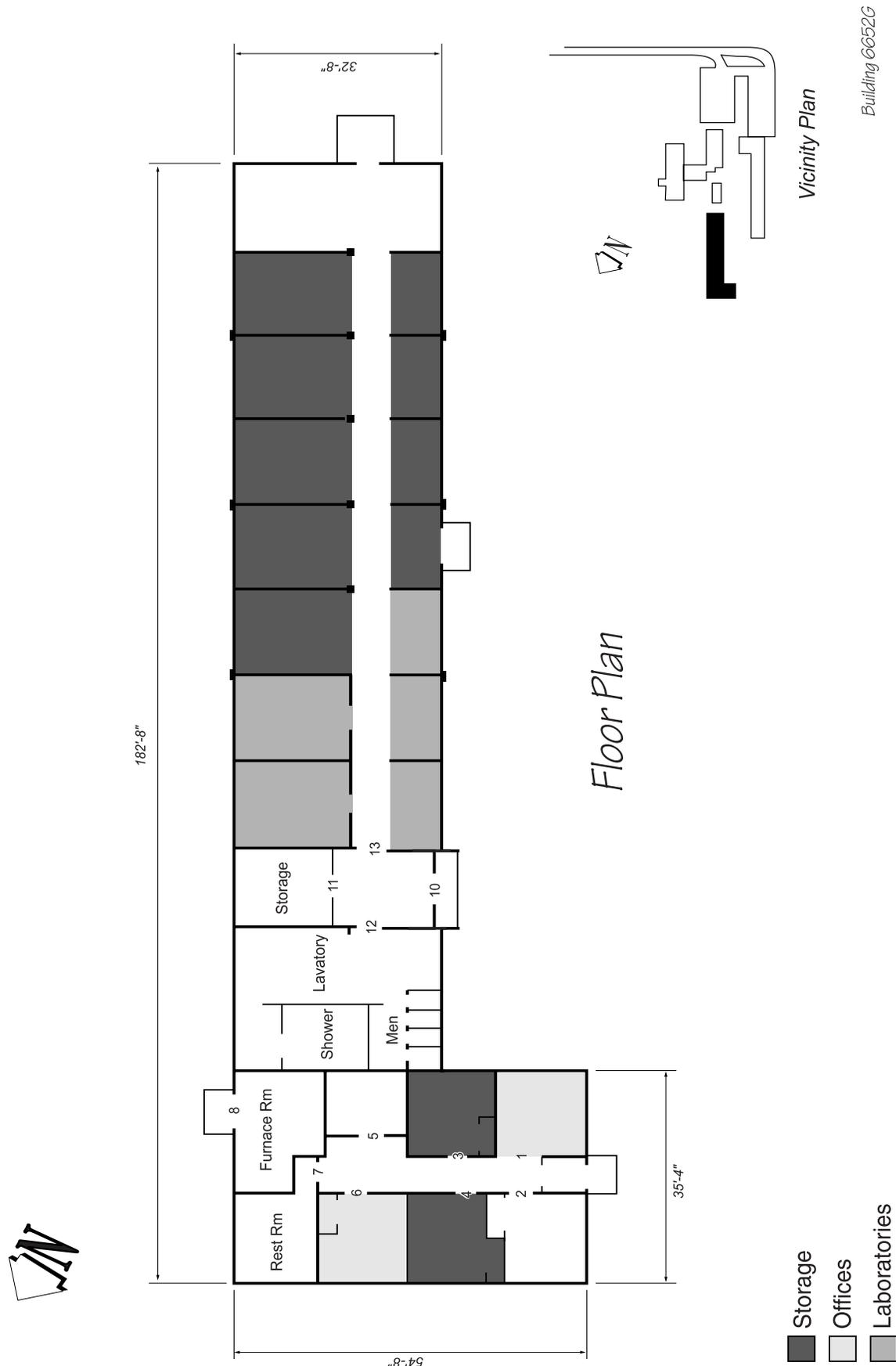


Figure 6. Suggested uses of building 6652G for collections storage based on observations conducted during the assessment.

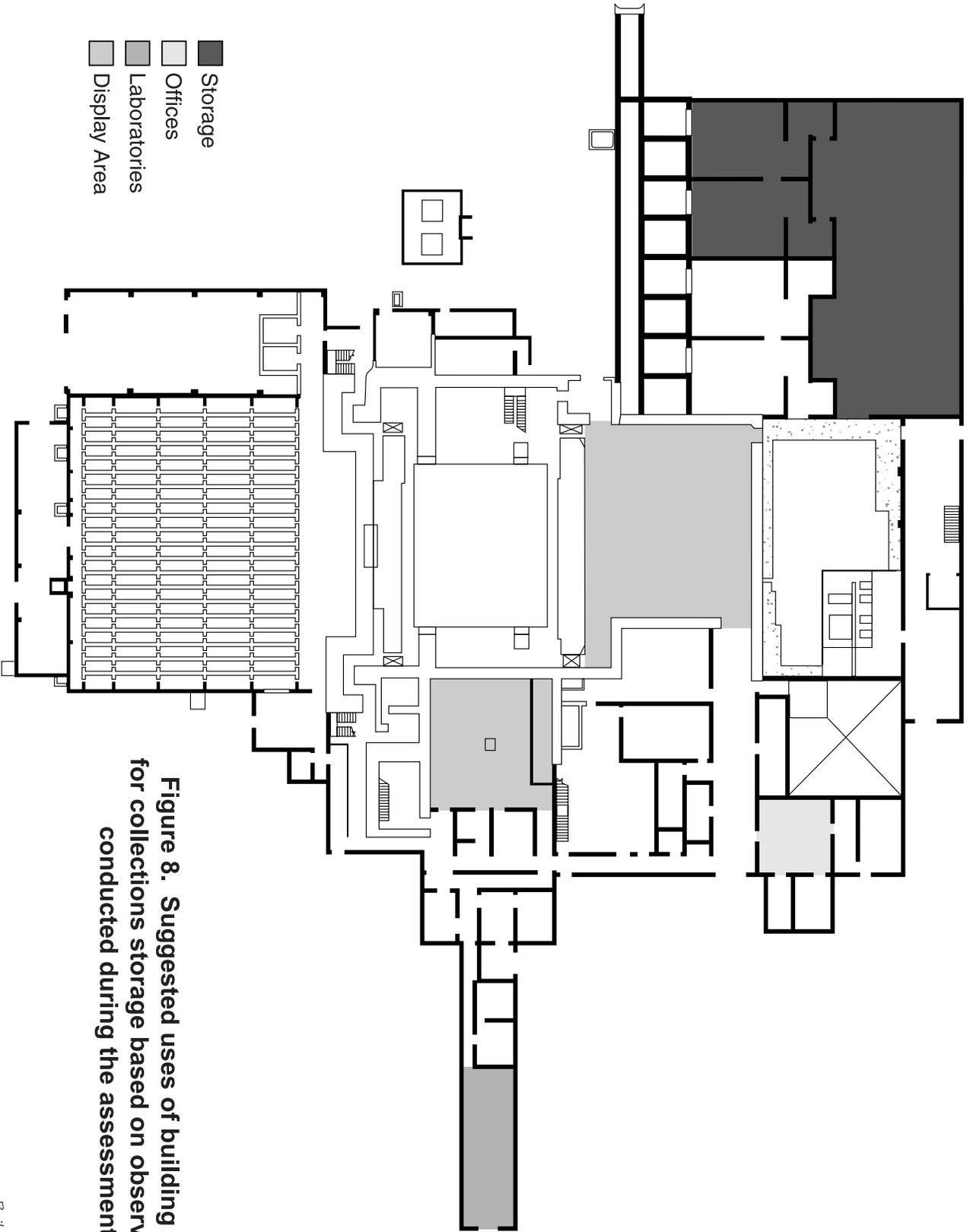


Figure 8. Suggested uses of building 105B for collections storage based on observations conducted during the assessment.

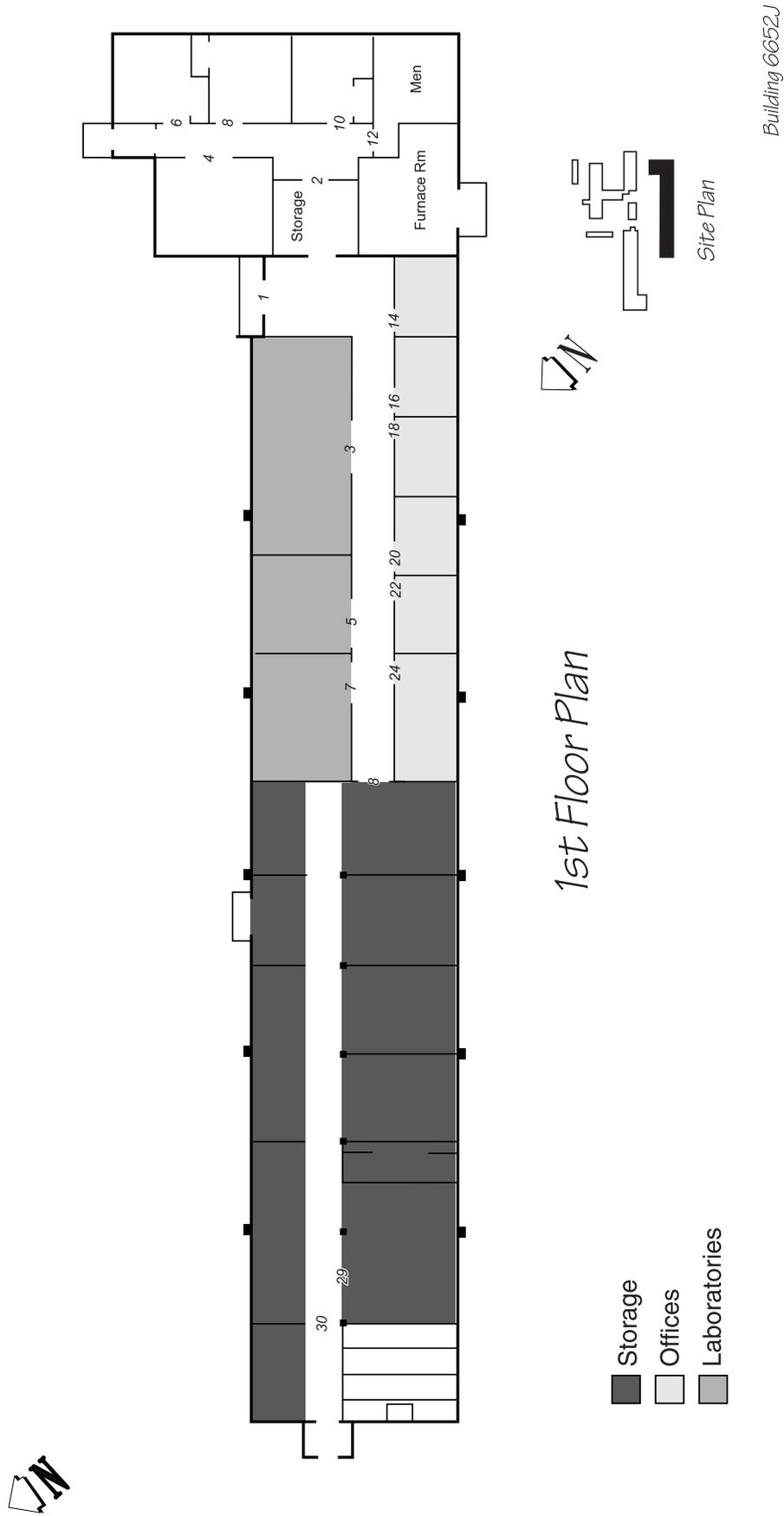
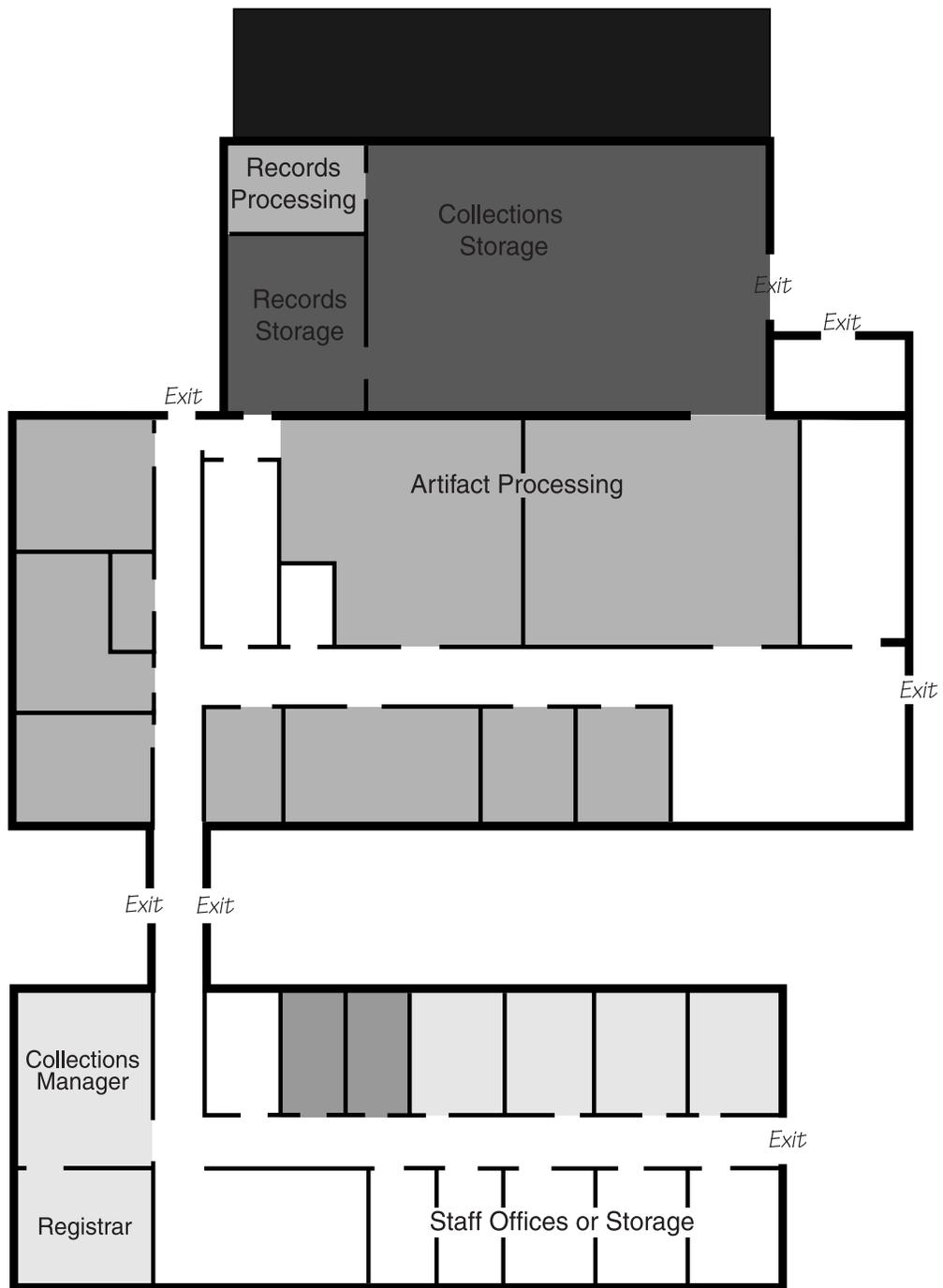


Figure 7. Suggested uses of building 6652J for collections storage based on observations conducted during the assessment.

747 AND 747-B Buildings



- Storage
- Restrooms
- Offices
- Laboratories
- Loading Dock

Figure 9. Suggested uses of Building 747 for collections storage based on observations conducted during the assessment.

detailed curation-needs assessment of these collections would be required to more accurately identify positive or negative management patterns.

Archaeological Collections

Archaeological collections, which are stored at the Pacific Northwest National Laboratory (PNNL) curation facility, appear to be in good condition. The room holding the materials is in good condition and appears to be adequately maintained and staffed. Boxes for artifacts are archival and are stacked on movable shelving units and are adequately labeled. Secondary containers appear to be either 2- or 4-mil plastic bags with paper labels inserted for easy identification of the materials. records are stored in standard filing cabinets and are organized by project.

Although not extensively examined the records might be in need of some management especially with respect to the creation of a finding aid and security copy.

Cold War Collections

Cold War artifacts that have been identified and removed from their original resting places are stored in the Energy Northwest curation facility that is located on the Hanford site. Cold War collections appear to be in fair to poor condition. Most of the collection is stored on the floor and is in a general disarray. Some of the photographs and video media are in need of better storage practices. First and foremost the boxes should be removed from the floor and placed on shelving units. This would not only better protect the material but would aid in the inventory process by adding some organization to the

materials. Those materials that are in boxes that have been damaged through compression should be placed in new boxes so as to limit any negative impacts to the material.

The building that currently holds the materials is substandard, even as an interim curation facility. The materials should be removed and placed in a more suitable and preferably larger area so that better maintenance of the materials can ensue.

It is important to note that the Cold War collection is currently being inventoried and assembled by CREHST (Columbia River Exhibition of History, Science and Technology) and that this task is still very much in progress. However, the following observations are offered to assist DOE-RL personnel to better approach and define the collections management tasks they currently face.

DOE-RL has been entrusted with an important historic collection that reflects a point in American history that has defined subsequent periods and generations. Citizens of the United States trust that their national heritage will be preserved for the edification of future generations and DOE-RL contributions to this preservation effort are essential.

References Cited

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1999 *Hanford B Reactor Building Hazard Assessment Report*. Report Number BHI-01282. Prepared by Bechtel Hanford for the U.S. Department of Energy, Richland Operations Office, Office of Environmental Restoration.