

Pulling History from the Waste Stream: Identification and Collection of Manhattan Project and Cold War Era Artifacts on the Hanford Site - 14085

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-09RL14728



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ABSTRACT

One man's trash is another man's treasure. Not everything called "waste" is meant for the refuse pile. The mission of the Curation Program is at direct odds with the remediation objectives of the Hanford Site. While others are busily tearing down and burying the Site's physical structures and their associated contents, the Curation Program seeks to preserve the tangible elements of the Site's history from these structures for future generations before they flow into the waste stream. Under the provisions of a Programmatic Agreement, Cultural Resources staff initiated a project to identify and collect artifacts and archives that have historic or interpretive value in documenting the role of the Hanford Site throughout the Manhattan Project and Cold War Era. The genesis of Hanford's modern day Curation Program, its evolution over nearly two decades, issues encountered, and lessons learned along the way – particularly the importance of upper management advocacy, when and how identification efforts should be accomplished, the challenges of working within a radiological setting, and the importance of "first hand" information – are presented.

INTRODUCTION

Over the past 17 years, the U.S. Department of Energy, Richland Operations Office (DOE-RL) has evaluated the contents of 289 of the 292 buildings selected to represent the Manhattan Project and Cold War Era history of the Hanford Site, with only 3 buildings remaining to be completed. Many of the items identified for retention are "one-of-a-kind" tools or pieces of equipment made specifically for Hanford Site operations. Others document the social history of the people who first constructed and then operated the nuclear reactors and chemical separations plants that produced plutonium for nuclear weapons that helped end World War II and stare down the Soviet Union for nearly 45 years thereafter. Hanford's Manhattan Project mission was a closely guarded secret and even most workers were kept in the dark about what they were working on. During the ensuing years of plutonium production for the Cold War, security remained tight and the public was kept at bay. When the mission turned to cleanup starting in 1989, access still remained limited, and it has only been in the last decade or so that DOE-RL has been able to whet the public's interest in Hanford by offering a steady stream of summer bus tours through the Site, and regular access to the B Reactor National Historic Landmark from April to October each year. With interest in the Manhattan Project and Hanford's history at an all-time high (the U.S. House has passed a bill to make the B Reactor and several other facilities at Hanford part of a new National Park honoring the Manhattan Project), DOE-RL has committed to supplementing the understanding of Hanford's history by completing the collection of Hanford Site artifacts and making them available to the public for the first time. What follows is a short account of how these items are identified, collected, and stored.

THE HANFORD SITE CURATION PROGRAM

Genesis

In order to facilitate the cleanup of the Hanford Site, including the demolition of buildings and structures, DOE-RL initiated consultations with the Advisory Council on Historic Preservation (ACHP) and the Washington State Historic Preservation Office (SHPO) leading to the signature of these parties on a National Historic Preservation Act (NHPA) compliance document titled the *Programmatic Agreement Among the U.S. Department of Energy, Richland Operations Office, the Advisory Council on Historic Preservation, and the Washington State Historic Preservation Office for the Maintenance, Deactivation, Alteration, and Demolition of the Built Environment on the Hanford Site, Washington* [1]. This agreement is commonly referred to as the “Historic Buildings PA” or just “the PA.” Using a Historic District approach, a team of experts assembled by DOE-RL met over a two year period “to define the historic district, evaluate Hanford’s Manhattan Project and Cold War Era buildings and structures as contributing or non-contributing properties within that district, and identify a representative sample of the contributing properties for mitigation [2].” The team devised a system that classified approximately 2,200 buildings and structures on the Hanford Site into groups or “types” based on shared similarities, and began dividing the properties accordingly.

The first division identified the “non-contributing” properties based on categories established in the PA, such as “Below Grade Structures,” “Storage Tanks,” and “Mobile Offices.” These properties were removed from further consideration, and required no mitigation prior to their alteration or demolition. Properties that were constructed after 1990 also were removed from consideration, because they post-dated the period of significance for the Historic District of 1943 to 1990. These properties will need to be evaluated when they reach 50 years in age. The SHPO concurred with these actions on September 1, 1995. The remaining 527 buildings and structures were determined “contributing properties” within the Historic District and therefore eligible for listing in the National Register of Historic Places. The SHPO concurred with these eligibility determinations when they accepted the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* in its final form on January 15, 1998. Tables A.5, A.6, and A.7 of this document present the cumulative determinations [3].

As required by the PA, DOE-RL individually documented 190 contributing properties on SHPO Historic Property Inventory Forms (HPIFs) and published an 800 page report – *The History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943 to 1990* [4] – as final mitigation for the alteration and/or demolition of any and all buildings and structures on the Hanford Site.

The scope and direction of the Curation Services program, now managed by Mission Support Alliance, LLC (MSA), derives from a single statement in the PA:

[DOE-]RL will undertake an assessment of the contents of the historic buildings and structures identified in Appendix C, Table 1 of the PA prior to any deactivation, decontamination, or decommissioning activities. The purpose of this assessment will be to locate and identify any artifacts (e.g., control panels, signs, scale models, etc.) which

may have interpretive or educational value as exhibits within local, state, or national museums. The contents of properties not identified in Appendix C, Table 1 will be assessed contingent on the availability of funds [5].

Because of the national and international significance of the Hanford Site to both the Manhattan Project and Cold War, as well as to the development of atomic energy, DOE-RL convened the Hanford Curation Workshop, and invited a panel of seven nationally-recognized subject matter experts in the fields of history and museology to develop guidance for the nascent program.

Over a four day period in March 1997, the panel drafted recommendations for both short-term and long-term activities necessary to meet the program objectives to identify and preserve Manhattan Project and Cold War Era artifacts and records, proposed “screening criteria” for determining which artifacts or records should be retained, and developed a model for curating and interpreting Hanford Site artifacts that would include public and private partnerships. In concluding the Workshop, the panel urged that:

[DOE-]RL fulfill its regulatory obligations to preserve important artifacts and records and to educate the public about the Hanford story through museum exhibits, interpretive programs and tours, and promulgation of various educational media (books, films, Web pages) to schools and the public at large [6].

Perhaps the single most important accomplishment of the Workshop, with respect to this discussion, was the development of the criteria by which artifacts and records would be evaluated for retention. The panel recommended that “special consideration be given to artifacts ‘made-at-Hanford’ and less emphasis to items that were manufactured (mass-produced) elsewhere (e.g., standard 1940’s chairs, typewriters, dials/gauges, etc.) [7].” As proposed, the criteria were:

1. Artifacts associated with **historically significant figures** in the Hanford Story.
2. Artifacts associated with **historically important events** (e.g., unusual events, important expansions, start-ups, special visits, and other discrete events that reflect Hanford’s role/contribution to national heritage).
3. Artifacts representing a **significant leap in technology** (innovations and “spin-offs”)...Such items should document the evolution of science/technology in the nuclear age.
4. Artifacts that reflect the **social historical impact** on 20th century American life (Atomic social history)...These artifacts will reflect the socioeconomic and cultural impacts on the local, regional, and national populations. Furthermore, these artifacts will document the day-to-day living and working conditions of employees of the Hanford Nuclear Reservation from 1942 to the present.
5. **Prehistory/Ethnohistory**. Objects in this category include but are not limited to artifacts that document the indigenous peoples’ role in the Hanford Nuclear Reservation history and prehistory.
6. **Archives**. Objects within this category include the printed and handwritten media record of operations, day-to-day, at Hanford [8, emphasis in original].

IMPLEMENTATION

The identification and collection of Manhattan Project and Cold War Era artifacts and archives was never a priority among the many projects taking place on the Hanford Site, and was often viewed as an impediment to getting the “real work” done. Funding was minimal to non-existent throughout most of the history of this endeavor. In fact, proactive walkthroughs were conducted primarily on an “as possible” basis by Cultural Resources staff when time allowed. Compliance-based walkthroughs, i.e., those conducted as part of the NHPA Section 106 review, were conducted prior to building demolitions as required, but the timing of the walkthroughs was often delayed such that the contents of the buildings had already been removed (see Issues and Lessons Learned). Despite these roadblocks, 304 walkthroughs were conducted between 1997 and 2013 to date. In many cases, more than one walkthrough was required to complete a building assessment. Figure 1 is a graphic representation of the walkthroughs conducted each year.

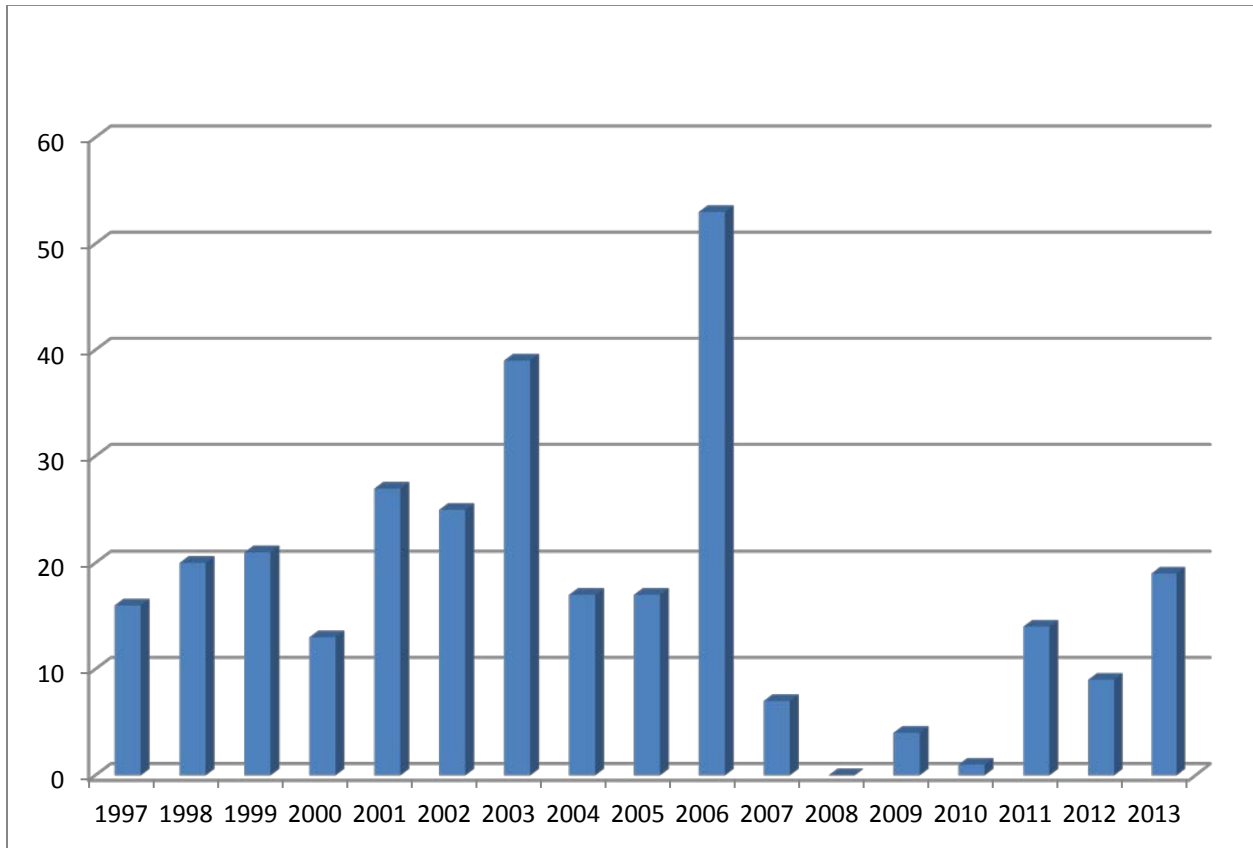


Fig. 1. Building Walkthroughs by Year.

The 1990s

A total of 57 walkthroughs were conducted in the 1990s. Following completion of the PA in 1996 enthusiasm ran high. Building demolitions had yet to begin in earnest, so most of the walkthroughs were proactive. Two areas in particular received the most attention.

The Chemical Separations facilities in the 200 Areas were being documented for inclusion in Section 4 (Chemical Separations) of Chapter 2 (Plutonium Production Facilities) of the book *The History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943 to 1990* [9]. Special funding had been secured by Bechtel Hanford, Inc. (BHI) and a large team of subject matter experts was assembled to assess the contents of B-Plant, T-Plant, U-Plant, the Reduction Oxidation Plant (REDOX), and the Plutonium-Uranium Extraction Plant (PUREX). This was the only time a thematic study was done. At this same time, the Pacific Northwest Laboratory (PNL) had assigned an Architectural Historian to this project full-time. Consequently, the assessment of the facilities they managed in the 300 Area also was initiated.

One large-scale Section 106 compliance assessment was undertaken in the late 1990s in preparation for the transfer of the 1100 Area from the Department of Energy to the Port of Benton. Prior to the transfer, the contents of the former vehicle and railroad maintenance and transportation facilities were evaluated.

The 2000s

By 2000 emphasis had changed from planning for to conducting building demolitions and waste site and groundwater remedial actions. The Environmental Restoration Contract (ERC), managed by BHI, ended late in 2004 and was replaced by the current River Corridor Closure Contract (RCCC) managed by Washington Closure Hanford (WCH). With this change came the need to educate new project managers and upper management alike on the commitments made to identify, collect, and curate artifacts and archives relating to the Manhattan Project and Cold War Era. In many ways it was like starting over.

This decade saw the completion of 202 walkthroughs, with nearly all walkthroughs conducted as part of Section 106 reviews. Given the emphasis on tearing down buildings, and the monetary incentives for doing so quickly, Cultural Resources staff worked closely with project staff to ensure that demolition and walkthrough schedules meshed as seamlessly as possible. Building contents were assessed such that the most endangered were walked first. Budget for proactive walkthroughs remained limited or non-existent.

As evidenced in Figure 1, walkthrough assessments spiked in 2003 and peaked in 2006 with 46 percent of the decade's activity taking place in those two years alone. Compliance-driven walkthroughs concentrated on the six 100 Areas where the reactors and their ancillary support structures were located, and the 300 Area where both the fuel manufacturing and research and development facilities were placed. All of these facilities were sited along the banks of the Columbia River and the overall cleanup strategy underscored cleaning up the river shoreline as the primary objective. At the same time, and to the extent possible, proactive walkthroughs were conducted in the 200 and 400 Areas, neither of which were then subject to demolition.

Between 2007 and 2009, only 11 walkthroughs were conducted, the lowest numbers recorded. Budget reductions had led the Pacific Northwest National Laboratory (PNNL) to layoff its' Architectural Historian, and WCH had evaluated all of the facilities they would demolish through the end of the decade. Neither contract had enough funding to undertake more than a

few proactive assessments, with most occurring outside the industrial areas (i.e., 600 Area) or within the 200 Area.

The 2010s

In 2011, Mission Support Alliance, LLC (MSA) was given management of the Curation Services program and with it the responsibility to conduct building walkthroughs. DOE-RL also appointed a Government Programs Manager as a direct report to the Hanford Site Deputy Manager, whose duties included identifying, collecting and “right-sizing” artifacts and archives relating to the Manhattan Project and Cold War Era (collectively referred to as the Hanford Collection). In fact, DOE-RL upper management made it clear that these tasks needed to be complete by 2015 in preparation for placing the Hanford Collection in the public domain. As a result, walkthroughs ramped up again (Figure 1) with the objective of completing this task within four years. Since 2010, 45 walkthroughs have been completed, and only three buildings remain to be assessed. MSA is on track to meet DOE-RL’s schedule.

THE PROCESS

The process for managing artifacts follows five basic steps: discovery, evaluation, relocation, cataloging, and display (or storage pending display). These activities do not necessarily occur in sequence, but are applicable to all artifacts in the Hanford Collection. Another process, de-accessioning, applies only to Hanford Collection items that are removed from the collection or are down-graded from the main collection to the Hanford Outreach Collection (consisting of items available for handling, education, conservation training, or other purposes). The following sections describe each of the five key steps.

Discovery

As previously discussed, the prescribed method for identifying Manhattan Project and Cold War Era artifacts and archives is the facility walkthrough (Figure 2). But that is only part of the story since a significant number of artifacts are discovered via other mechanisms. Artifacts have been discovered by Hanford employees as offices or other facilities are being cleared out during moves or initial decommissioning, or even during actual facility demolition as exemplified by the recent discovery of the coffee can “time capsule” discovery inside the wall of the 151-D Electrical Substation. Certain other items have been “rat holed” by employees, who recognized the historic significance of the items and have stashed them away for safe keeping. Recently, a site-wide notice was issued by DOE-RL to heighten employee awareness of the Hanford Collection, and to provide contact information for the collection and continued preservation of such items. Another source of artifact discovery is the private sector. Over the decades, former Hanford Site employees have amassed personal collections of memorabilia and excessed items with Hanford-related origins. A typical scenario involves the death of a retired former employee whose spouse understands the potential significance of the collection and therefore seeks to return the items to Hanford for preservation rather than sending them out with the garbage.



Fig. 2. Walkthrough Documentation: Left – Glove Box Line in the Plutonium Finishing Plant (PFP), 234-5Z Building. Right – Vintage Chlorine Container, Water Filtration Plant, 283-E Building.

Evaluation

Once identified, artifacts are evaluated by a team of experts against the selection criteria specified above to determine a recommended path forward. Artifacts falling outside the selection criteria are not given further consideration and are left to continue their course toward disposition in the waste stream. Artifacts meeting the selection criteria are further evaluated to determine how to mitigate them either through photo-documentation, sometimes in place, or by physical collection. Recommendations then are made to the DOE-RL Government Programs Manager, who has the final approval authority for the Hanford Collection.

Relocation

Artifacts approved for inclusion in the Hanford Collection are gathered for processing at the Artifact Staging Facility (ASF) in Hanford's 400 Area. To gather these artifacts, MSA provides an artifact pick up service as a base service to the Hanford Site. Coordination and scheduling between various organizations and functions, including other site contractor points of contact, facility operations management, and pick up crews, is required. Facility management is responsible to care for the artifacts, and to prepare and stage them for pick up, including all work processes involved in extraction, staging, and placement on the trucks for transport. Associated with this transfer is preparation of the artifact transfer paperwork which involves: radiation surveys; safety/health/industrial hygiene reviews as applicable; assembly of background or related historic documentation; and derivative classification review to ensure the

item/information is cleared for public viewing. The ASF is a metal building covering 15,000 square feet that includes separate storage and work space (Figure 3). Artifacts are off-loaded at the adjoining loading dock and transported into the facility for further processing.



Fig. 3. The Hanford Site Artifact Staging Facility (ASF)

Cataloging

Artifacts are officially added to the Hanford Collection through a cataloging process involving: the assignment of a unique number and barcode; naming; classification; physical description; provenience (to the extent known); high resolution digital photography; and storage of this information in a collection management database. The specific location of each artifact in the collection is entered into the database to facilitate retrieval and/or inventory checks. Long-term plans call for making the database available to the public via Hanford's public Website on a "read only" basis to facilitate both formal research and casual public education.

Display/Storage

Currently, select artifacts from the Hanford Collection are available for public viewing at Hanford's B Reactor. The artifacts are displayed along the tour route and represent over 10 percent of the artifacts currently in the collection. Other artifacts are on display at the U.S. Department of Energy's Headquarters located in the Forrestal Building in Washington, DC, as well as in the Smithsonian Museum. The majority of the collection is currently in interim storage at the ASF in the 400 Area pending the identification of, and relocation to, a long term curation/conservation facility, which will serve as the repository for the collection, as well as making loans to various display venues in the Government and private sectors. During fiscal year 2013, MSA issued a request for expression of interest to the local business community to determine the degree of interest in moving the collection and its management into the public sector while retaining DOE-RL's ultimate ownership of the collection. One objective is to make the collection more accessible to the public by moving it off the Hanford Site.

THE CURRENT COLLECTION

The Hanford Collection focuses on Hanford’s role in the Manhattan Project and the Cold War Era (1943 – 1990). The collection has several components including objects, photographs, archives, and outreach materials. The following sections provide additional detail for each component.

Objects

The Hanford Collection currently contains 1,764 artifacts within the objects category. These items have been photographed, measured, inspected, and documented in the collection management database, and select items are currently available for public viewing in B Reactor. Artifacts in the collection are related primarily to the Hanford Site’s nuclear mission (Figure 4), and generally include items from the various nuclear reactors located along the Columbia River, as well as the chemical processing and separations facilities located in Hanford’s Central Plateau. Included are a wide variety of: signs; tools; electronic, radiologic, and mechanical instrumentation; specialized materials and equipment; furniture and office/lab hardware and accessories; personal protective equipment; facility models and fuel assembly mock-ups; and a number of items gleaned from the remediation of the 600-202 waste site, which was formerly the burn pit for the Hanford Construction Camp – a virtual time capsule of the period from 1944 to 1945. Currently, 221 tagged artifacts remain in various facilities across the site, and efforts are underway to mitigate them either through collection where feasible or photo-documentation where infeasible.



Fig. 4. Representative Artifacts from the Hanford Site: Left – A “Flange Gun” Modified on the Hanford Site to Produce a Flange on the End of a Reactor Pile Process Tube. Right – Radiation Detection Instruments including a “Hot Dog” Probe on the Left and a “Cutie Pie” Probe on the Right.

Photographs

There are 3,087 photographs currently cataloged in the Hanford Collection, the majority being letter sized black and white prints without negatives (Figure 5). Although the photos have been

reviewed for content and are free of sensitive content, many have obsolete security markings that prevent their use in hard copy for public display at this time. Digital copies of the photographs are being made and edited to remove all such markings to make the images available for public viewing and use. A large and growing backlog exists of vintage photographs that are awaiting evaluation and potential addition to the collection.

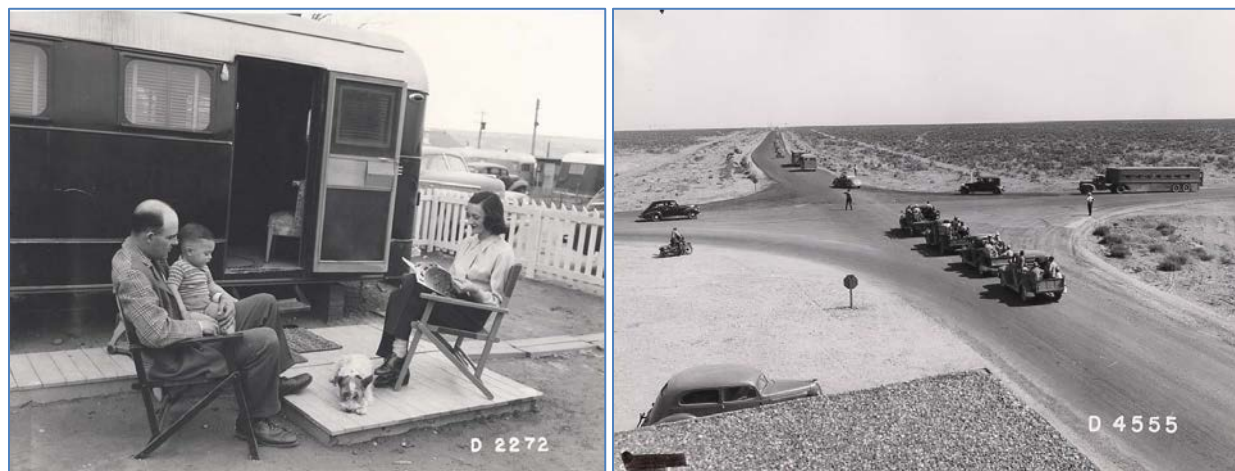


Fig. 5. Photographs Documenting the Manhattan Project: Left – A Family Relaxing in Front of their Trailer at the Hanford Construction Camp, 1944. Right – “Rush Hour” Traffic on the Hanford Engineer Works (HEW), 1944.

Archives

Currently, only 11 archive items have been processed, but the bulk of archive materials remain to be cataloged pending the retention of a qualified archivist. Although over 50 boxes of non-record, potential archive materials are currently being held for evaluation, a larger and more urgent issue looms on the horizon. The bulk of the Hanford Site’s historic record materials have been shipped offsite for storage. The recent lifting of a moratorium on the destruction of record materials now places these documents in jeopardy of destruction and loss for retention as archive materials for future education and research efforts.

Public Outreach

As an adjunct to the Hanford Collection, the Hanford Outreach Collection, more commonly referred to as the “hands-on collection,” consists of artifacts that are not retained in perpetuity, but are intended for educational and display purposes, and may be handled differently than the Hanford Collection items. The Outreach Collection currently stands at 620 objects, most of which are duplicates of lesser quality or condition than those in the main collection, and other objects deemed valuable for either education or help in creating a display setting of period-correct items. The size of this collection will ultimately be determined by the amount of space available at nominal cost, since the main collection has priority for space, attention, and expenditure. The Outreach Collection backlog primarily consists of items rejected or down-sized from the main collection.

ISSUES AND LESSONS LEARNED

Program/Management/Funding Priorities

The prime mission of the Hanford Site is environmental cleanup. Since funding is limited, there is competition for every available dollar and, to date, the identification and collection of artifacts and archive for preservation has not been a program or management priority when competing with facility demolition and waste site or groundwater remediation. For a curation program to exist and compete for these dollars, strong leadership, vision, and support within the U.S. Department of Energy are essential. The truth of this statement has been apparent on the Hanford Site with the recent appointment of a Government Programs Manager, whose advocacy has raised both the visibility and importance of the Curation Services program within DOE-RL.

Execution Timing: Value of Early Walkthrough/Tagging

Walkthroughs for the purpose of tagging artifacts should be performed at or near the end of facility operations, or at least during the idle period following operations, but in any case prior to the beginning stages of decommissioning in which many potential artifacts are stripped from the facility. Decommissioning and Demolition procedures require the generation of National Environmental Policy Act (NEPA) documentation, which includes the NHPA Section 106 cultural resources review. But in practice, this action often is not addressed until after decommissioning and only as a final prerequisite to demolition. The requirement should be made prerequisite to the initiation of decommissioning, before the facility goes “cold and dark.”

Pickup Timing: Don't Wait

As time passes following the tagging activity, life happens – tags become disassociated or destroyed, tagged items are inadvertently disposed of along with other items in the vicinity, clean zones are reclassified as radiation (or beryllium or asbestos) hazard zones. To ensure against loss due to misplacement, contamination, disposition, or changes in personnel, tagged artifacts should be collected as early as possible.

Tag Appearance/Materials

The original tag used for identifying artifacts was a cream colored, cardboard tag with a string for attachment that, unfortunately, was casually indistinguishable from many of the other tags used on the Hanford Site to label, for example, out of service equipment. The newer artifact tags are day-glow orange to make them more visible and less likely to confuse the observer or be overlooked. The inclusion of wire ties for hanging the tags also has proved to be better than string due to the ability to more easily and securely attach the tag to the majority of items.

Radiation Release Issues

Artifacts located in radiation zones (or to a lesser extent asbestos or beryllium zones) are often difficult, prohibitively expensive, or impossible to collect due to free-release requirements. Investigations necessary to declare an item free of contamination, particularly radiological

contamination, often would result in the destruction of the item. Recent contacts with other U.S. Department of Energy sites have disclosed that this problem is not unique to Hanford. While photo-documentation in place is the norm in cases where documentation supporting free release is not available or impossible to obtain, physical collection should not be written off without careful consideration. Retaining an on-site location where the display of items is possible without necessitating free release is a viable alternative.

The Importance of Artifact History/Significance Documentation

Historic knowledge related to objects and their use/significance is mostly undocumented and fading with time and the passing of generations. In the past, museum professionals have done a very good job describing the physical attributes of collection items, but lacked capturing their historic significance. The “old timers” who lived and worked during the period are dwindling, and should be tapped to explain the purpose, use, and significance of various items in the collection. This is particularly true of items that were uniquely made and used on site. Unlike other preservation or conservation activities, this task cannot be postponed until another day.

Artifact Conservation vs. Security Markings

Many of the photographs and documents currently collected contain obsolete security markings. Current Hanford Site clearance procedures would require significant and permanent alteration of the photos/documents to appropriately de-classify them, which is counter to conservation measures. Artifact conservation objectives seek to preserve artifacts without permanent alteration. Procedures for addressing this issue have yet to be adequately addressed.

The Difference Between Archives and Records

Business records have established disposition schedules that are at odds with the conservation of historic documents as Hanford Collection Archive materials. This has not been an issue in the past since the Hanford Site has been under a moratorium prohibiting the destruction of record materials. However, this moratorium has recently lifted, and now these materials are in danger of being destroyed, including many with historic significance. To date, Hanford has not earmarked the required funding to engage a professional archivist assigned the task to segregate materials for permanent retention in the Hanford Collection Archive from those destined for destruction. This activity must begin soon or significant parts of Hanford’s history will be lost forever.

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